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Community-level interventions for improving access to food in low- and middle-income countries (Review)

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[Intervention Review]

Community-level interventions for improving access to food in low- and middle-income countries

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ABSTRACT

Background

After decades of decline since 2005, the global prevalence of undernourishment reverted and since 2015 has increased to levels seen in 2010 to 2011. The prevalence is highest in low- and middle-income countries (LMICs), especially Africa and Asia. Food insecurity and associated undernutrition detrimentally affect health and socioeconomic development in the short and long term, for individuals, including children, and societies. Physical and economic access to food is crucial to ensure food security. Community-level interventions could be important to increase access to food in LMICs.

Objectives

To determine the effects of community-level interventions that aim to improve access to nutritious food in LMICs, for both the whole community and for disadvantaged or at-risk individuals or groups within a community, such as infants, children and women; elderly, poor or unemployed people; or minority groups.

Search methods

We searched for relevant studies in 16 electronic databases, including trial registries, from 1980 to September 2019, and updated the searches in six key databases in February 2020. We applied no language or publication status limits.

Selection criteria

We included randomised controlled trials (RCTs), cluster randomised controlled trials (cRCTs) and prospective controlled studies (PCS). All population groups, adults and children, living in communities in LMICs exposed to community-level interventions aiming to improve food access were eligible for inclusion. We excluded studies that only included participants with specific diseases or conditions (e.g. severely malnourished children).

Eligible interventions were broadly categorised into those that improved buying power (e.g. create income-generation opportunities, cash transfer schemes); addressed food prices (e.g. vouchers and subsidies); addressed infrastructure and transport that affected physical

access to food outlets; addressed the social environment and provided social support (e.g. social support from family, neighbours or government).

Data collection and analysis

Two authors independently screened titles and abstracts, and full texts of potentially eligible records, against the inclusion criteria. Disagreements were resolved through discussion or arbitration by a third author, if necessary.

For each included study, two authors independently extracted data and a third author arbitrated disagreements. However, the outcome data were extracted by one author and checked by a biostatistician.

We assessed risk of bias for all studies using the Effective Practice and Organization of Care (EPOC) risk of bias tool for studies with a separate control group.

We conducted meta-analyses if there was a minimum of two studies for interventions within the same category, reporting the same outcome measure and these were sufficiently homogeneous. Where we were able to meta-analyse, we used the random-effects model to incorporate any existing heterogeneity. Where we were unable to conduct meta-analyses, we synthesised using vote counting based on effect direction.

Main results

We included 59 studies, including 214 to 169,485 participants, and 300 to 124, 644 households, mostly from Africa and Latin America, addressing the following six intervention types (three studies assessed two different types of interventions).

Interventions that improved buying power:

Unconditional cash transfers (UCTs) (16 cRCTs, two RCTs, three PCSs): we found high-certainty evidence that UCTs improve food security and make little or no difference to cognitive function and development and low-certainty evidence that UCTs may increase dietary diversity and may reduce stunting. The evidence was very uncertain about the effects of UCTs on the proportion of household expenditure on food, and on wasting. Regarding adverse outcomes, evidence from one trial indicates that UCTs reduce the proportion of infants who are overweight.

Conditional cash transfers (CCTs) (nine cRCTs, five PCSs): we found high-certainty evidence that CCTs result in little to no difference in the proportion of household expenditure on food and that they slightly improve cognitive function in children; moderate-certainty evidence that CCTs probably slightly improve dietary diversity and low-certainty evidence that they may make little to no difference to stunting or wasting. Evidence on adverse outcomes (two PCSs) shows that CCTs make no difference to the proportion of overweight children.

Income generation interventions (six cRCTs, 11 PCSs): we found moderate-certainty evidence that income generation interventions probably make little or no difference to stunting or wasting; and low-certainty evidence that they may result in little to no difference to food security or that they may improve dietary diversity in children, but not for households.

Interventions that addressed food prices:

Food vouchers (three cRCTs, one RCT): we found moderate-certainty evidence that food vouchers probably reduce stunting; and low-certainty evidence that that they may improve dietary diversity slightly, and may result in little to no difference in wasting.

Food and nutrition subsidies (one cRCT, three PCSs): we found low-certainty evidence that food and nutrition subsidies may improve dietary diversity among school children. The evidence is very uncertain about the effects on household expenditure on healthy foods as a proportion of total expenditure on food (very low-certainty evidence).

Interventions that addressed the social environment:

Social support interventions (one cRCT, one PCS): we found moderate-certainty evidence that community grants probably make little or no difference to wasting; low-certainty evidence that they may make little or no difference to stunting. The evidence is very uncertain about the effects of village savings and loans on food security and dietary diversity.

None of the included studies addressed the intervention category of infrastructure changes. In addition, none of the studies reported on one of the primary outcomes of this review, namely prevalence of undernourishment.

Authors' conclusions

The body of evidence indicates that UCTs can improve food security. Income generation interventions do not seem to make a difference for food security, but the evidence is unclear for the other interventions. CCTs, UCTs, interventions that help generate income, interventions that help minimise impact of food prices through food vouchers and subsidies can potentially improve dietary diversity. UCTs and food vouchers may have a potential impact on reducing stunting, but CCTs, income generation interventions or social environment interventions do not seem to make a difference on wasting or stunting. CCTs seem to positively impact cognitive function and development, but not UCTs, which may be due to school attendance, healthcare visits and other conditionalities associated with CCTs.

PLAIN LANGUAGE SUMMARY

Improving access to food in low- and middle-income countries

Review question

We looked at the effect of community-level interventions to improve access to nutritious food in low- and middle-income countries (LMICs) on people, households and communities.

Background

Food security exists when people have physical, social and economic access to sufficient, safe, nutritious foods to be healthy. The number of people who do not have enough to eat in the world has started increasing since 2015. Most of these people live in LMICs, especially in Asia and Africa. Not being able to access nutritious food, either because of not having enough money or because of not having somewhere to shop or find food near where people live, affects the health and socioeconomic situation of people and societies, both in the short and long term. Strategies focusing on communities may be important for increasing access to food in LMICs.

Study characteristics

We found 59 studies assessing different interventions in LMICs, including 214 to 169,485 participants and 300 to 124,644 households, mainly in Africa and Latin America. Many studies assessed cash transfers, which are welfare programmes where money is provided to households. Of these, 21 studies evaluated unconditional cash transfers, where there are no conditions for receiving the money, and 14 studies assessed conditional cash transfers, where there are specific conditions required to meet in order to receive the money. Seventeen studies looked at income generation interventions (for example, livestock management or self-help groups), four studies at food vouchers, four studies at providing food and nutrition subsidies, and two studies looked at social support interventions such as village savings and loans and community grant programmes.

Search date

The evidence is current to February 2020.

Key results

Interventions that improved buying power:

Unconditional cash transfers improve food security and make little or no difference to cognitive function (thoughts and understanding) and development (high-quality evidence), may increase dietary diversity (variety of the foods that people or households eat from different food groups) and reduce stunting (poor growth) (low-quality evidence). It is very uncertain whether UCTs reduce the proportion of household expenditure on food and reduce wasting. Regarding adverse outcomes, evidence from one trial indicates that UCTs reduce the proportion of infants who are overweight.

Conditional cash transfers make little to no difference in the proportion of household expenditure on food and slightly improve cognitive function in children (high-quality evidence), probably slightly improve dietary diversity (moderate-quality evidence), and may make little to no difference to stunting or wasting (low bodyweight) (low-quality evidence). Evidence on adverse outcomes (two studies) shows that CCTs make no difference to the proportion of overweight children.

Income generation strategies make little or no difference to stunting or wasting (moderate-quality evidence), may result in little to no difference to food security and may improve dietary diversity in children but not for households (low-quality evidence).

Interventions that addressed food prices:

Food vouchers probably reduce stunting (moderate-quality evidence), may slightly improve dietary diversity and may result in little to no difference in wasting (low-quality evidence).

Food and nutrition subsidies may improve dietary diversity among school children (low-quality evidence). We are very uncertain about the effects on household expenditure on healthy foods as a proportion of total expenditure on food (very low-quality evidence).

Interventions that addressed the social environment:

Social support interventions such as community grants probably make little to no difference to wasting (moderate-quality evidence) and may make little or no difference to stunting (low-quality evidence). We are very uncertain about the effects of village savings and loans on food security or dietary diversity (very low-quality evidence).

None of the included studies addressed the intervention category of infrastructure changes and none of the included studies reported on one of the primary outcomes: prevalence of undernourishment.

Some limitations of the review include not having all necessary information about what was measured (outcomes), judgements that had to be made regarding which outcome measures to report and inability to pool the results of all studies reporting on the same outcome. Another limitation was that we were unable to find out what specific intervention features enable or impede the effective implementation of the intervention.

SUMMARY OF FINDINGS

Summary of findings 1. Unconditional cash transfers compared to no intervention for food security

Unconditional cash transfers compared to no intervention for food security

Patient or population: children, adults, households
Setting: poor rural and urban households in LMICs
Intervention: UCTs
Comparison: no intervention

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
Prevalence of undernourishment	—	—	—	0 included studies measured this outcome.
Proportion of household expenditure on food follow-up: range 1–2 years	1 study showed a clear effect favouring UCTs, 2 studies showed unclear effect potentially favouring UCTs and 2 studies showed clear effect favouring the control. Data not pooled.	11271 households (5 RCTs)	⊕⊝⊝⊝ **Very low** a,b,c	Evidence is very uncertain about the effects of UCTs on the proportion of household expenditure on food.
Food security assessed with: proportion of households consuming > 1 meal per day; modified HFIAS; FSI follow-up: range 1–2 years	6 studies showed a clear effect favouring UCTs. A meta-analysis of 3 of these studies showed a small improvement in food security scores (SMD 0.18, 95% CI 0.13 to 0.23; 6209 households)	10,251 households, 7604 children (6 RCTs)	⊕⊕⊕⊕ **High**	UCTs improve food security.
Dietary diversity assessed with: dietary diversity scores (i.e. number of food groups consumed); proportion with minimum dietary diversity follow-up: range 1–2 years	5 studies showed a clear effect favouring UCTs and 5 studies show an unclear effect potentially favouring UCTs. Data not pooled.	12,631 households, 890 children (10 RCTs)	⊕⊕⊝⊝ **Low** a,b	UCTs may increase dietary diversity.
Stunting assessed with: HAZ < –2SD follow-up: 2 years	1 study showed a clear effect favouring UCTs, 2 studies showed an unclear effect favouring UCTs and 1 study showed an unclear effect favouring the control. A meta-analysis of 2 of these studies showed a reduction in stunting with UCTs (OR 0.62, 95% CI 0.46 to 0.84; 2914 children)	4713 children (4 RCTs)	⊕⊕⊝⊝ **Low** a,b	UCTs may reduce stunting.
Wasting assessed with: WHZ < –2SD follow-up: range 2 years	1 study showed an unclear effect potentially favouring UCTs and 3 studies showed an unclear effect potentially favouring the control. Data not pooled.	6396 children (4 RCTs)	⊕⊝⊝⊝ **Very low** a,b,c	We are uncertain whether UCTs reduce wasting.
Cognitive function and development	3 studies reported unclear effect potentially favouring intervention.	10,813 children	⊕⊕⊕⊕ **High**	UCTs make little or no differ-

assessed with: cognitive test scores, language scores follow-up: 2 years		(3 RCTs)		ence on cognitive function and development.

*No meta-analyses carried out.

CI: confidence interval; **FSI:** Food Security Index; **HAZ:** height-for-age z-score; **HFIAS:** Household Food Insecurity Access Scale; **LMIC:** low- and middle-income country; **OR:** odds ratio; **RCT:** randomised controlled trial; **SD:** standard deviation; **SMD:** standardised mean difference; **UCT:** unconditional cash transfer; **WHZ:** weight-for-height z-score.

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded one level for risk of bias: at least one study was at high overall risk of bias due to selection or attrition bias, or both.
[b]Downgraded one level for inconsistency: there was wide variance of point estimates.
[c]Downgraded one level for imprecision: wide confidence intervals.

Summary of findings 2. Conditional cash transfers compared to no intervention for food security

Conditional cash transfers compared to no intervention for food security

Patient or population: children, adults, households
Setting: poor urban and rural communities in LMICs
Intervention: CCTs
Comparison: no intervention

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
Prevalence of undernourishment	—	—	—	0 included studies measured this outcome.
Proportion of household expenditure spent on food follow-up: 9 months to 2 years	1 study showed a clear effect potentially favouring the control and 1 study showed an unclear effect favouring the control. Data not pooled.	4760 households (2 RCTs)	⊕⊕⊕⊕ **High**	CCTs result in little to no difference in the proportion of household expenditure on food.
Food security	—	—	—	0 included studies measured this outcome.
Dietary diversity assessed with: Food Consumption Score follow-up: 7 months to 2.5 years	Meta-analysis of 2 studies showed a clear effect favouring CCTs (MD 0.45, 95% CI 0.25 to 0.65)	3937 households (2 RCTs)	⊕⊕⊕⊖ **Moderate** [a]	CCTs probably slightly improve dietary diversity

Stunting assessed with: HAZ < –2SD follow-up: range 20 months to 3 years	3 studies showed an unclear effect potentially favouring CCTs and 1 study showed an unclear effect potentially favouring the control. A meta-analysis of 3 of these studies showed an unclear effect favouring CCTs (MD –2.51, 95% CI –7.78, 2.75)	3529 children (4 RCTs)	⊕⊕⊖⊖ **Low** [a,b]	CCTs may make little or no difference to the proportion of stunted children.
Wasting assessed with: WHZ < –2SD follow-up: 2 years	A meta-analysis of 2 studies showed an unclear effect favouring CCTs (MD –2.50 95% CI –8.04 to 3.04)	2116 children (2 RCTs)	⊕⊕⊖⊖ **Low** [b,c]	CCTs may make little or no difference in wasting.
Cognitive function and development assessed with: cognitive test scores; cognitive and socioemotional outcomes scores follow-up: range 9 months to 2 years	A meta-analysis of 2 studies showed a slight improvement with CCTs (SMD 0.13, 95% CI 0.09 to 0.18)	5383 children (2 RCTs)	⊕⊕⊕⊕ **High**	CCTs slightly improve cognitive function in children.

*No meta-analyses carried out.

CCT: conditional cash transfer; **CI:** confidence interval; **HAZ:** height-for-age z-score; **MD:** mean difference; **RCT:** randomised controlled trial; **SD:** standard deviation; **SMD:** standardised mean difference; **WHZ:** weight-for-height z-score.

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded one level for risk of bias: at least one study was at high overall risk of bias due to selection or attrition bias, or both.
[b]Downgraded one level imprecision: wide confidence intervals.
[c]Downgraded one level for inconsistency: wide variation in point estimates.

Summary of findings 3. Income-generation interventions compared to no intervention for food security

Income-generation interventions compared to no intervention for food security

Patient or population: children, adults, households
Setting: poor rural communities in LMICs
Intervention: income-generation interventions (e.g. livestock transfers, community development programmes)
Comparison: no intervention

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
Prevalence of undernourishment	—	—	—	0 included studies reported this outcome.

Proportion of household expenditure on food follow-up: range 1–2 years	2 studies reported this outcome but did not provide relevant numerical data or indicated clearly the direction of effect.	434 households (2 prospective controlled studies)	—	—
Food security assessed with: proportion experiencing food security; Household food security score follow-up: 3–4 months	1 trial reported no effect measure and 1 trial showed an unclear effect potentially favouring the control.	2193 households (1 trial)	⊕⊕⊖⊖ **Low** [a,b]	Income-generation interventions may result in little to no difference in food security.
Dietary diversity assessed with: DDS, HDDS, MDD follow-up: 2 years	2 trials showed a clear effect favouring income-generation interventions, 1 trial showed an unclear effect favouring the intervention and 1 trial showed an unclear effect favouring control. A meta-analysis of 3 of these studies showed that the intervention improved the proportion of children achieving MDD (OR 1.28, 95% CI 1.11 to 1.47)	3677 households and 3790 children (4 RCTs)	⊕⊕⊖⊖ **Low** [a,c]	Income-generation interventions may improve dietary diversity in children and may result in little or no difference to household dietary diversity.
Stunting assessed with: HAZ follow-up: 12 months	Meta-analysis of 2 studies showed no difference to stunting (OR 1.00, 95% CI 0.84 to 1.19)	3466 children (2 RCTs)	⊕⊕⊕⊖ **Moderate** [d]	Income-generation interventions probably make little or no difference to stunting.
Wasting assessed with: WHZ follow-up: 2 years	Meta-analysis of 2 studies showed unclear effect favouring the intervention (OR 1.13, 95% CI 0.92 to 1.40)	3500 children (2 trials)	⊕⊕⊕⊖ **Moderate** [d]	Income-generation interventions probably make little or no difference to wasting.
Cognitive function and development	—	—	—	0 included studies reported this outcome.

CI: confidence interval; **DDS:** Dietary Diversity Score; **HAZ:** height-for-age z-score; **HDDS:** Household Dietary Diversity Score; **MDD:** minimum dietary diversity; **OR:** odds ratio; **RCT:** randomised controlled trial; **WHZ:** weight-for-height z-score.

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded one level for risk of bias: at least one study was at high overall risk of bias due to selection or attrition bias, or both.
[b]Downgraded one level for indirectness: results are from a single study which assessed a public works programme and the effects may be different from other types of income generation interventions. Additionally public works programmes are often implemented in different ways in different settings.
[c]Downgraded one level for inconsistency: wide variation in point estimates.
[d]Downgraded one level for imprecision: wide confidence intervals.

Summary of findings 4. Food vouchers compared to no intervention for food security

Food vouchers compared to no intervention for food security

Patient or population: poor households
Setting: urban and agrarian communities in LMICs
Intervention: food vouchers
Comparison: no intervention

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
Prevalence of undernourishment	—	—	—	0 included studies reported this outcome.
Proportion of household expenditure on food	—	—	—	0 included studies reported this outcome.
Food security	—	—	—	0 included studies reported this outcome.
Dietary diversity assessed with: FCS follow-up: 7 months to 1 year	2 studies reported improved dietary diversity (not pooled).	2459 households (2 RCT)	⊕⊕⊖⊖ **Low** [a,b]	Food vouchers may improved dietary diversity slightly.
Stunting (HAZ < –2SD) follow-up: 12 months	1 study reported reduced stunting (OR 0.48, 95% CI 0.31 to 0.73)	1633 children (1 RCT)	⊕⊕⊕⊖ **Moderate** [c]	Food vouchers probably reduce stunting.
Wasting (WHZ < –2SD) follow-up: 12 months	1 study reports an unclear effect potentially favouring the control (OR 1.17, 95% CI 0.75, 1.82)	1633 children (1 RCT)	⊕⊕⊖⊖ **Low** [c,d]	Food vouchers may result in little to no difference in wasting
Cognitive function and development	—	—	—	0 included studies reported this outcome.

CI: confidence interval; **FCS:** Food Consumption Score; **HAZ:** height-for-age z-score; **OR:** odds ratio; **RCT:** randomised controlled trial; **SD:** standard deviation; **WHZ:** weight-for-height z-score.

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded one level for overall risk of bias: two studies at high risk of selection and attrition bias.
[b]Downgraded one level for inconsistency: confidence intervals had minimal overlap.
[c]Downgraded one level for indirectness: findings are from one single study that assessed a programme of fresh food vouchers redeemed at designated vendors. Food vouchers may be implemented in different ways across different settings, e.g. for staple foods alone, or with, no vendor- restrictions.
[d]Downgraded one level for imprecision: findings ranged from an important harm to important benefit.

Summary of findings 5. Food and nutrition subsidies compared to no intervention for food security

Food and nutrition subsidies compared to no intervention for food security				
Patient or population: primary schools and households and members of healthcare plan **Setting:** urban and rural settings in LMICs **Intervention:** food and nutrition subsidies **Comparison:** no intervention				
Outcomes	**Impact**	**№ of participants (studies)**	**Certainty of the evidence (GRADE)**	**Comments**
Prevalence of undernourishment	—	—	—	0 included studies reported this outcome.
Proportion of household expenditure on food assessed with: ratio of healthy to total food expenditure follow-up: 28 months	1 study reported that food rebates of 10% improved the ratio of healthy, to total food expenditure	169,485 households (1 prospective controlled study)	⊕⊖⊖⊖ **Very low** [a,b]	The evidence is very uncertain about the effects of food rebates on household expenditure on healthy foods.
Food security	—	—	—	0 included studies reported this outcome.
Dietary diversity	1 study reported a clear effect favouring nutrition subsidies.	656 children (1 RCT)	⊕⊕⊖⊖ **Low**[c,d]	Nutrition subsidies may improve dietary diversity among school children
Stunting	—	—	—	0 included studies reported this outcome.
Wasting	—	—	—	0 included studies reported this outcome.
Cognitive function and development	—	—	—	0 included studies reported this outcome.

LMIC: low- and middle-income country; **RCT:** randomised controlled trial.

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded one level for risk of bias: high risk of selection bias due to disparate baseline expenditure on healthy food as a ratio of total expenditure between households in the intervention and control group.
[b]Downgraded one level for indirectness: results are from a single study that assessed food rebates at a supermarket in South Africa. The population was restricted to members of the health insurance company's program, who are usually healthier and wealthier in general. Effects in other populations may differ.

cDowngraded one level for indirectness: results are from a single study that assessed the effects of providing nutrition subsidies to schools. Subsidies to individuals or households may have different effects.
[d]Downgraded one level for risk of bias: study was at high overall risk of bias due to attrition bias.

Summary of findings 6. Social support compared to no intervention for food security

Social support compared to no intervention for food security

Patient or population: households at risk of food insecurity
Setting: poor communities in LMICs
Intervention: village savings and loans groups and community cash transfers
Comparison: no intervention

Outcomes	Impact	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
Prevalence of undernourishment	—	—	—	0 included studies reported this outcome.
Proportion of household expenditure on food	—	—	—	0 included studies reported this outcome.
Food security assessed with: self-reported months of food sufficiency follow-up: 3 years	1 study reported an unclear effect favouring village savings and loans	1687 households (1 prospective controlled study)	⊕⊖⊖⊖ **Very low** [a]	The evidence is very uncertain about the effects of village savings and loan on food security.
Dietary diversity assessed with: HDDS follow-up: 3 years	1 study showed an unclear effect favouring the control.	1615 households (1 prospective controlled study)	⊕⊖⊖⊖ **Very low** [a]	The evidence is very uncertain about the effects of village savings and loan on dietary diversity.
Stunting assessed with: HAZ < –2SD follow-up: 2 years	1 study showed an unclear effect favouring the control.	1481 children (1 RCT)	⊕⊕⊖⊖ **Low**[b,c]	Community grants may make little or no difference to stunting.
Wasting assessed with: WHZ < –2SD follow-up: 2 years	1 study showed an unclear effect favouring a community grant programme.	1481 children (1 RCT)	⊕⊕⊕⊖ **Moderate**[b]	Community grants probably make little or no difference to wasting.
Cognitive function and development	—	—	—	0 included studies reported this outcome.

*No meta-analyses carried out.
CI: confidence interval; **HAZ:** height-for-age z-score; **HDDS:** Household Dietary Diversity Score; **LMIC:** low- and middle-income country; **RCT:** randomised controlled trial; **SD:** standard deviation; **WHZ:** weight-for-height z-score.

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded one level for indirectness: results from a single study which assessed the effects of microfinance program to villages in Mozambique. Effects of other types of social support interventions may be different. As this was a prospective controlled study the certainty of evidence started at low.

[b]Downgraded one level for indirectness: results are from a single study which assessed the effects of a community cash transfer programme implemented in rural villages in Indonesia. Village management teams allocated funds to different types of social support interventions, Effects in urban populations and with different intervention implementation may differ.

[c]Downgraded one level for imprecision: wide confidence interval.

BACKGROUND

Description of the condition

Food security "exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO 2019). When these conditions are not met, the population and people within it are said to be food insecure.

Food insecurity and associated undernutrition affect health and socioeconomic development on different levels (Black 2013; Ecker 2012; Victora 2008). For adults, it has been associated with an increased risk of disability, morbidity and mortality, and with a decrease in income-generation potential (Black 2008; Black 2013; Victora 2008). Food insecurity is also associated with mental health problems such as depression and anxiety, both in high-income as well as low- and middle-income settings (Arenas 2019; Carter 2011; Cole 2011; Hadley 2006; Hadley 2008; Maynard 2018). Children who are affected may experience impaired physical and cognitive development, and decreased school performance (Black 2008; Black 2013; Liu 2012; Victora 2008). At the macro-level, undernutrition is associated with direct and indirect costs. Direct costs are due to increased healthcare costs for preventing and treating affected individuals (Black 2013; Victora 2008). Indirect costs are due to poor productivity and losses of human resources due to mental and physical under-performance and death (Victora 2008). Given these far-reaching consequences, and considering that food security is defined as a human right by the United Nations (FAO 2003), it is important to address food insecurity.

Building on the first 2010 to 2015 Millennium Development Goal (MDG), which was to eradicate extreme poverty and hunger, the second 2015 Sustainable Development Goal (SDG) aimed to end hunger by 2030 and sought to "achieve food security and improve nutrition and promote sustainable agriculture" (UN 2015). Progress towards this goal has been insufficient. Following decades of decline, the global prevalence of undernourishment, has, since 2015, increased to levels seen in 2010–2011, approximately 11% (FAO 2019). Although this prevalence is highest in Asia, it has been sharply increasing in Africa which is now home to 30% of the world's undernourished population (FAO 2019). The global number of undernourished people, estimated at 820 million in 2018, has been steadily rising particularly in Africa, Latin America and Western Asia. Globally, the prevalence and number of stunted children under five years of age has decreased since 2012, although this is uneven as Africa and Asia account for more than 90% of stunted and wasted children globally (FAO 2019; SOWC 2019). Factors that have delayed improvements in rates of chronic hunger include the food price crisis of 2008, brought about by trade restrictions of major food exporters, biofuels policies and increased commodity speculation, among others (Ecker 2012). The higher demand for food due to changing dietary patterns and growing population, and food price increases and volatility due to climate change are other factors that will contribute to food insecurity in the long term (Ecker 2012).

Food security is a complex concept that encompasses several different dimensions (Ecker 2012; FAO 2013; FAO 2019; Gross 2000), where 1. food availability refers to the quantity of food that is physically available in the relevant vicinity of a population during a given period (ACF-IN 2008); 2. food access is a measure of the capacity of a household to acquire sufficient and appropriate foods to ensure a diet that is diverse, nutrient-rich and safe, and that satisfies the nutrient needs of its members during a given period, which is often influenced by the proximity and price of food (ACF-IN 2008; WHO 2013); 3. food utilisation refers to the intake of food by the people within a household and how the body assimilates the nutrients physiologically; and 4. food stability introduces the condition of time to the food security concept, that is it refers to chronic or transient food insecurity (FAO 2003). Chronic food insecurity refers to long-term, persistent lack of food and results from continued problems with structural poverty, relating to the inability of the labour market to produce enough jobs to keep people out of poverty, low incomes and with lack of sufficient social safety nets to assist the poor (Ecker 2012; FAO 2003; Rank 2003). In contrast, transient food insecurity refers to food and nutrient shortages during certain periods of food crises due to natural disasters, economic collapse or conflict (Ecker 2012; FAO 2003). In addition, the nutrition dimension was added to the food security concept at the 2009 World Food Summit (Ecker 2012) as food insecurity is associated with nutrient deficiencies and poor nutritional outcomes. Furthermore, food and nutrient intake interact in a bidirectional manner with health status (Ecker 2012). This means that nutritional status is the primary measure of food security.

The four dimensions of food security operate at different levels of influence, although these are often inter-related (Ecker 2012; Gross 2000). At the macro-level (national, regional, global) and meso-level (community), food security issues are mainly related to food availability and stability, whereas at the micro-level they are mainly related to food access and utilisation by households and individuals (Ecker 2012; Gross 2000; Pinstrup-Andersen 2009). Food security in one level does not ensure food security at another level (Gross 2000). For example, food might be available at the national level but not accessible for certain disadvantaged communities or districts, or among lower income or otherwise marginalised population groups. In Ghana, despite improvements in reducing poverty and increasing food production, there has been less progress in reducing undernutrition and disparities remain (FAO 2013; Hjelm 2013). There, poorer households and those headed by women tend to be more food insecure due to their low-diversity diets compared with the wealthier or male-headed households (FAO 2013; Hjelm 2013). In Nepal, there is still widespread undernutrition despite the country producing sufficient food, and those living in rural areas are at a higher risk of food insecurity and have a higher prevalence of undernutrition and stunting in children as poor infrastructures and poverty limit their physical and economic access to food (FAO 2013; MOHP 2012). Furthermore, households might have access to food, but this does not guarantee that all individuals in the household are able to access and utilise sufficient amounts of good quality and safe food. This is because the distribution of food within the household may be influenced by cultural beliefs, practices, attitudes, gender and age-specific roles and responsibilities, as well as decision-making hierarchies (Gittelsohn 2003; Pinstrup-Andersen 2009; Renzaho 2010).

In addition to the burden of undernutrition, low- and middle-income countries (LMICs) also have high rates of overweight and obesity that are on the rise (Hossain 2007; Popkin 2012; Subramanian 2011). In an analysis of data from 54 LMICs, 27% of women were overweight (Subramanian 2011). The prevalence of overweight in 2008 ranged from approximately 18% in low-income countries to 59% in upper middle-income countries, with a mean prevalence of 28% in the African region (WHO 2010). Among

children under five years of age, the prevalence of overweight and obesity is also increasing, with 12.9% of boys and 13.4% of girls overweight in LMICs in 2013 (Ng 2014). Most of this burden is concentrated in Africa and Asia, regions that accounted for almost three-quarters of the global share of overweight children in 2018 (FAO 2019; SOWC 2019). The increased rates of overweight and obesity are associated with the nutrition transition and poorer-quality diets increasingly consisting of more affordable processed foods, high intake of refined sugars and fats, and increased intake of food away from home, further exacerbated by decreased levels of physical activity (Popkin 2012; SOWC 2019). In LMICs, the consumption of processed or junk foods and sugar-sweetened beverages has increased, with 54% of the global consumption of soft drinks 1997 and 2010 occurring in LMICs (Basu 2013). These dietary patterns are partly the result of high food prices, which cause consumers, particularly those in poorer households, to buy less-expensive foods. These are often energy dense (higher in calories) and less nutritious (containing fewer nutrients per serving size). Consumption of these foods is, therefore, associated with increased risk of overweight, obesity and micronutrient deficiencies. In this context, it is important to consider the quantity and quality of the food intake in any intervention.

Description of the intervention

Scoping review: preparation for this systematic review

The complexity of food security allows for a wide range of interventions addressing its different dimensions at varying levels of influence. In order to better conceptualise the framework for our review with regards to the type(s) of intervention(s) to assess, the eligibility criteria for study selection and the outcomes to be assessed, we conducted a scoping review of existing systematic reviews of interventions addressing food security in LMICs (more information about the methods is available on request).

We included 29 systematic reviews in the scoping review (references available on request). Fourteen reviews addressed food availability, mainly assessing food production interventions and food utilisation (13 reviews, including five which also addressed availability), specifically around issues of nutrition education for people to improve their dietary intake. Seven reviews addressed food access. The scoping review also revealed that the included reviews were unclear regarding the description of participants and settings, types of interventions and comparisons, or the outcomes they would assess (Table 1). The quality of reviews varied considerably, some with very low-quality scores using the AMSTAR tool (Shea 2009).

Interventions selected based on scoping review results

Based on the findings of the scoping review, we decided to focus this Cochrane Review on community-level interventions that aim to improve access to nutritious food in LMICs; as we found that there are fewer reviews addressing food access compared to food availability or utilisation. Furthermore, we know that in many areas of LMICs, nutritious food is available at a national level, but physical distance and financial constraints prevent thousands of people from accessing the food (FAO 2013). As explained above, increased intake of ultraprocessed food products and sugar-sweetened beverages has contributed to the rise in overweight and obesity in LMICs and poor diet quality is also responsible for micronutrient deficiencies. Thus, interventions should aim to improve access to nutritious food. Nutritious foods can be defined as those that are nutrient dense, that is providing substantial amounts of vitamins and minerals (Pennington 2007). This includes fresh or minimally processed foods from the different food groups, such as whole grains, lean meats, dairy products, legumes, vegetables and fruits, and excludes ultraprocessed products and sugar-sweetened beverages that provide empty calories (Drewnowski 2005; Ministry of Health of Brazil 2014).

The interventions addressing food access include those aimed at infrastructure and transport, food prices, the social environment, coping strategies and buying power. In our scoping review, we found no systematic reviews addressing infrastructure and transport or coping strategies. We did, however, find reviews focusing on food prices, social environment and buying power, but these did not assess all relevant outcomes and not all were of good quality. Therefore, we included all these interventions addressing food access in this review.

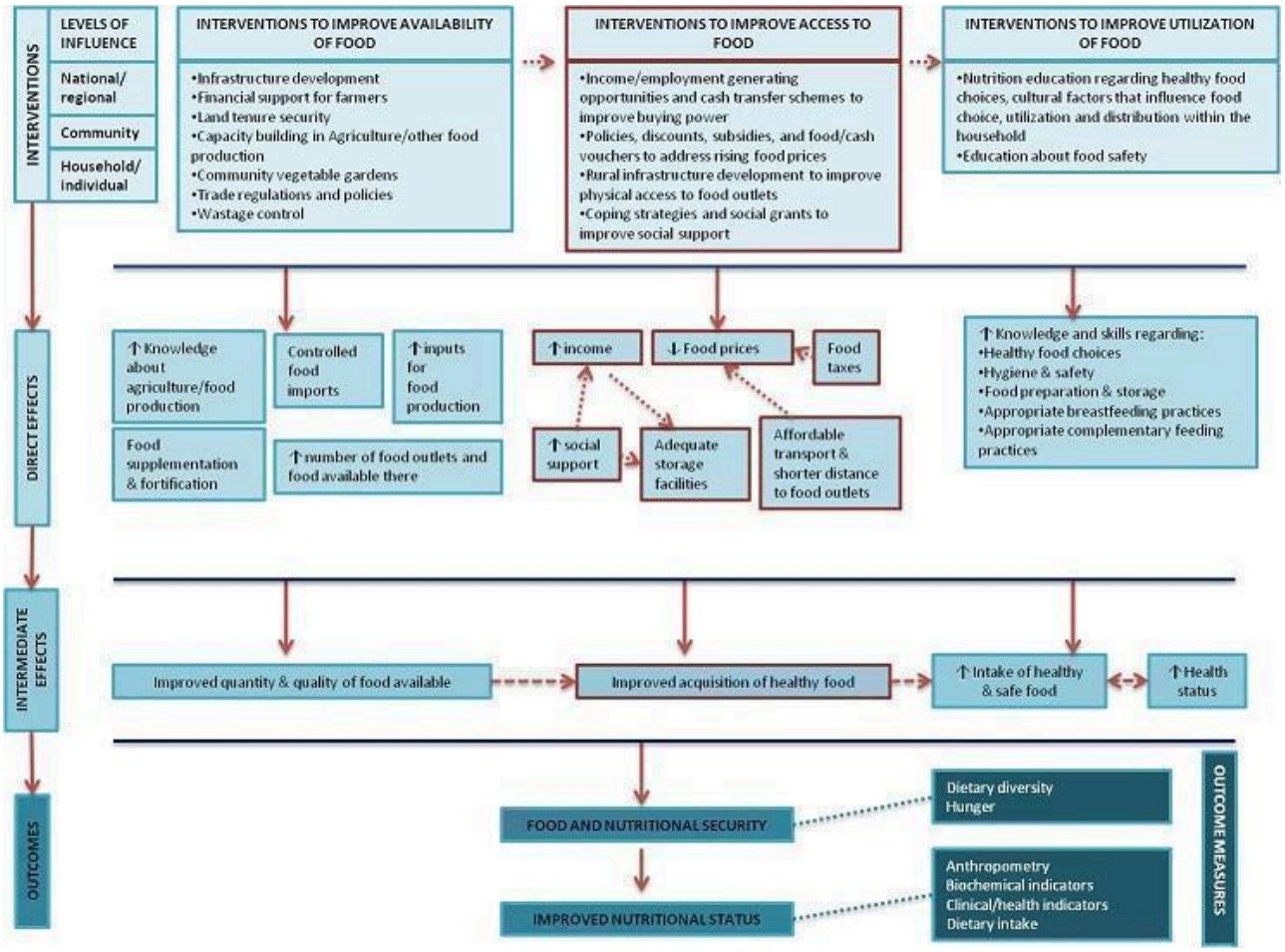
We chose to assess community-level interventions because every community member residing in the setting where they are implemented can potentially benefit from them (McLeroy 2003). These types of interventions have been shown to be effective (Bhandari 2003; Mohammadifard 2009), and include interventions that take place across cities or within community institutions, such as schools, neighbourhoods, churches or work sites. The intervention may involve individuals, families, organisations or public policy.

This review focused on LMICs as they experience the greatest burden from food insecurity and malnutrition and because another Cochrane Review will address food security in developed countries (Burns 2010).

How the intervention might work

Based on the literature cited in the above sections, and on guidance on how to use logic models in systematic reviews (Rohwer 2016), we developed a logic model that illustrates how interventions addressing food insecurity might work in improving the nutritional status of individuals (Figure 1). In this model, we present interventions that address food availability, access and utilisation. The interventions may operate at different levels of influence, including the macro (national, regional, global), meso (community) and micro (household and individual) levels. As mentioned above, food security at one level does not ensure food security at another level (Gross 2000). As our review focused on chronic food insecurity, the logic model does not include interventions that address transient food insecurity.

Figure 1. Food security logic model: how interventions influence food and nutritional security.



Although this logic model encompasses three dimensions of food security – availability, access and utilisation – we only explored how interventions addressing access to food may lead to food and nutrition security. As mentioned above, access to food concerns the ability of households (and communities) to acquire sufficient and appropriate foods to ensure a diet that is diverse, nutrient dense and safe, and that satisfies the nutrient needs of its members (ACF-IN 2008; WHO 2013). This logic model provides examples of interventions that address the determinants of food access. These include income- or employment-generating opportunities, coping strategies (e.g. borrowing money from a community fund, childcare), social grants, food price policies and regulations, rural infrastructure development, and food or cash vouchers. The direct effects of these interventions include increased financial resources in the household, reduced food prices, increased social support and assistance (e.g. from family, neighbours or the government), having adequate facilities to store food, and ensuring that there is affordable transport to food outlets as well as existence of food outlets closer to where people live (Cotta 2013; Ecker 2012; FAO 2012). Many of these factors interact with each other. For example, having more money may enable the household to buy a fridge to store fresh food, being able to borrow money increases the money available to buy food or the existence of adequate road infrastructure may lead to decreased food prices. These direct effects all lead to a common intermediate effect, which is better ability of households to acquire healthy and nutritious food. The acquisition of healthy food is dependent on there being food available. Being able to acquire healthy food makes it easier for households to make healthy food choices, which in turn influences their intake of healthy and safe food. This represents the interaction across the different dimensions of food security. When the intermediate effects across all dimensions of food security are in place – that is, when nutritious food is commonly available in sufficient quantities at fair prices – households are able to acquire healthy food, all individuals within the household can eat healthy food that meets their nutritional requirements as well as their preferences, and long-term outcomes of food and nutrition security, and thus of improved nutritional status of everyone in the household and in the community, are achievable.

One potentially harmful unintended consequence of interventions that improve access to food is the increased risk of overweight or obesity (Cotta 2013; Ruel 2013), particularly if there is increased intake of energy-dense ultraprocessed products and sugar-sweetened beverages (Lignani 2011). People may choose to acquire these foods because of lower cost; lack of knowledge about healthy diets; or other social, cultural or individual preferences (Ruel 2013).

Although we are assessing interventions addressing access to food, it is important to note that, in order to have long-term food and nutrition security, all three dimensions need to be in place: food

needs to be available; people need to be able to access it; and they also need to know how to choose the food, prepare and store it appropriately (Pinstrup-Andersen 2009; WHO 2013).

Why it is important to do this review

Although many interventions are being implemented to address food insecurity globally, the lack of sufficient improvements in levels of undernutrition over time, particularly in LMICs, highlights the need for the effectiveness of these interventions to be assessed. Furthermore, our scoping review highlighted that existing reviews addressing access to food in LMICs were not of high methodological quality. Therefore, we aimed to apply rigorous Cochrane Review methods to produce a high-quality review to identify effective interventions addressing food access. This evidence would then inform relevant stakeholders' decisions about which interventions to implement in order to achieve desirable results and ensure that scarce resources are utilised efficiently. Furthermore, improving access to food would help improve overall food security and the health and nutritional status of populations, which are requisites for the socioeconomic development of individuals and societies (FAO 2003).

OBJECTIVES

Primary objective

To determine the effects of community-level interventions that aim to improve access to nutritious food in LMICs, for both the whole community and for disadvantaged or at-risk individuals or groups within a community, such as infants, children and women; elderly, poor or unemployed people; or minority groups.

Secondary objectives

To determine the features of community-level interventions that enable or impair the effective implementation of these interventions to improve access to food.

To identify unintended consequences of interventions to improve access to food.

METHODS

Criteria for considering studies for this review

Types of studies

We included randomised controlled trials (RCTs) and cluster randomised controlled trials (cRCTs). We also included non-randomised studies because: 1. we did not expect to find many RCTs that would answer our question; and 2. to increase the external validity of the review findings. In these studies, observations are made before and after an intervention has been implemented or an exposure has occurred, both in an intervention and a control group. These types of studies are sometimes referred to as prospective analytical cohort studies or controlled before-after studies. We collectively termed them prospective controlled studies (PCS). We planned to include interrupted time series (ITS), but found none. ITS studies observe the effects of an intervention at multiple time points before and after an intervention. ITS studies needed to have at least three time points both before and after the intervention in order to be included.

Types of participants

We included all population groups living in communities in LMICs exposed to community-level interventions aiming to improve food access. For the purpose of this review, we defined a community as a group of people with diverse characteristics who are linked by social ties, share common perspectives and engage in joint action in geographical locations or settings (MacQueen 2001). We included both adults and children living in those communities, as well as disadvantaged groups within those communities. LMICs were defined according to the World Bank 2020.

Most interventions addressing food insecurity are usually implemented in areas and among populations at high risk for food insecurity, such as low-income areas, unemployed people, women and children. We did not restrict studies on the basis of social and demographic characteristics, and reported these characteristics in the review.

We excluded studies which only included participants with specific diseases or conditions (e.g. severely malnourished children) as these types of participants require specialised approaches to address malnutrition caused by these diseases or conditions.

Types of interventions

We included community-level interventions that aim to improve access to food, as detailed in our logic model (Figure 1). Community-level interventions were defined as those in which the community was the setting where the intervention was implemented, with every member of that community potentially benefiting from it (McLeroy 2003). This includes interventions that are district-, city- or village-wide or interventions that take place within community institutions such as schools, neighbourhoods, churches or work sites. The intervention may involve individuals, households, organisations or public policy. Based on the literature in this field, and on the findings of our scoping review, we decided to include the following interventions that address access to food (Table 2):

- interventions that improve buying power (e.g. income-generation opportunities, cash transfer schemes);
- interventions addressing food prices (e.g. policies, discounts, vouchers and subsidies);
- interventions addressing infrastructure and transport that affect physical access to food outlets;
- interventions addressing the social environment and social support (e.g. social support from family, neighbours or government).

We included studies that compared these interventions, individually or in combination, to no intervention or to other eligible interventions, including treatment as usual.

We chose this broad approach because we did not expect to find many eligible studies to include for each of the intervention types.

As we anticipated variability in the duration of included interventions, we included interventions of any duration.

Although we were interested in interventions that have measured access to *nutritious* food, we did not apply this as an inclusion criterion. Instead, we captured this information when extracting the details of included interventions, if this was available.

We excluded interventions that addressed transient food insecurity (e.g. food aid during natural disasters and wars) and that provided short-term relief from food insecurity (e.g. one-off food voucher, food banks or soup kitchens). We also excluded interventions that provided food in the form of food baskets or in-kind transfers of food. These types of interventions, according to our logic model, fall under the groups of interventions addressing availability and were, therefore, excluded. Other types of in-kind transfers (e.g. livestock, food vouchers, etc), that were not directly providing food to participants but contributed to their economic access to food, were eligible for inclusion. Interventions that involved agricultural production also typically fall under 'food availability', however, if their aim was specifically to generate income, they were included.

Types of outcome measures

Given the complex nature of food security, we assessed outcomes at different levels, namely at the community, household and individual levels.

The findings of our scoping review showed that the types of outcomes measured across food security interventions vary considerably. For this reason, we took a broad approach regarding the outcomes to include.

Given that our main interest was in determining whether these interventions improve access to food and, consequently, food security and nutritional status, we included only interventions that had measured outcomes related to food access or nutritional status, or that used a food security measurement tool. We included any study that had at least one of the outcomes listed below.

Primary outcomes

Our primary outcomes included those that measure access to food at the household and community level. Following from our logic model, these were the following changes in the (FAO 2013; Smith 2006):

- prevalence of undernourishment (i.e. proportion of people with insufficient intake to meet minimum dietary energy requirements (MDER) (inddex.nutrition.tufts.edu/data4diets/indicator/prevalence-undernourishment?back=/data4diets/indicators);
- proportion of household expenditure on food (as proportion of household income or of total household expenditure);
- proportion of households who were food secure (e.g. according to various measures or indices of food security and dietary diversity at an individual or household level), as measured in the included study.

Secondary outcomes

Secondary outcomes were those that reflect access to food and food availability and utilisation. Thus, they reflect nutritional status, which is the ultimate goal of food security interventions at the individual level. Following from our logic model, the secondary outcomes at the individual level were:

- change in adequacy of dietary intake (e.g. food or energy intake and whether it meets energy and nutrient requirements; if intake was not assessed for adequacy, i.e. only calories reported, this was not reported in the review);
- change in anthropometric indicators (e.g. stunting, wasting and underweight in children, according to height, weight, height-for-age z-scores (HAZ), weight-for-height z-scores (WHZ), and weight-for-age z-scores (WAZ); underweight and overweight in adults according to body mass index (BMI) classifications);
- change in biochemical indicators (e.g. micronutrient levels in the blood);
- cognitive function and development during the intervention period (e.g. Denver Developmental Screening Test, Bayley Scales of Infant Development);
- change in proportion of anxiety or depression (as described by the included study's authors);
- morbidity (as described by the review authors);
- adverse outcomes (e.g. proportion overweight or obese as a potentially harmful consequence of these type of interventions).

We only included outcomes that were measured at least three months after the intervention was implemented as outcomes measured earlier are not likely to reflect sustainable changes.

Search methods for identification of studies

Electronic searches

We searched electronic databases from 1980 onwards for relevant studies. We applied no language or publication status limits. We chose the year 1980 as the starting point because it was around this time that the term 'food security', encompassing access to food, started being used (Masset 2011). The initial searches were conducted in September 2016 in the following databases:

- Ovid MEDLINE(R) Epub Ahead of Print 11 July 2016, Ovid MEDLINE 1946 to June week 5 2016, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations 11 July 2016, Ovid MEDLINE Daily Update 11 July 2016;
- Cochrane Central Register of Controlled Trials (CENTRAL): Issue 6, 2016 (the Cochrane Library/Wiley);
- Embase (Elsevier);
- GreenFILE (EBSCO);
- AfricaBib (africabib.org);
- AGRIS;
- AGRICOLA;
- AFRICAN HEALTHLINE, African Journals Online (via Africa-Wide Information, EBSCO);
- Trials Register of Promoting Health Interventions (TRoPHI);
- WHO Global Index Medicus;
- Web of Science (Conference Proceedings Citation Index, Science Citation Index Expanded, Social Science Citation Index);
- Sociological Abstracts (ProQuest);
- International Bibliography of the Social Sciences (IBSS) (ProQuest);
- Global Health (EBSCO);
- ClinicalTrials.gov;
- WHO International Clinical Trials Registry Platform.

A combination of text words and controlled vocabulary terms related to the interventions and possible outcome measures were used to develop a sensitive search strategy. The search strategies for the different databases are available in Appendix 1, which is an adaptation of the search strategy for the Cochrane Review

assessing interventions to improve food security in developed countries (Burns 2010). We applied a study design filter to the search that has been developed by Joy Oliver, the information specialist at Cochrane South Africa. The original search strategy for MEDLINE published with the protocol of this review had to be revised by a librarian and adapted for Ovid MEDLINE, as it retrieved an excessive number of results. The Ovid MEDLINE search strategy was then modified to be adapted for the other databases and reported as appendices in our full review. We recruited the Cochrane Public Health Group's information specialist to advise on and implement the search strategy.

The search was updated in April 2019 and February 2020. For the updates, we followed the recommendations of Garner 2016. The Cochrane Public Health Group's information specialist defined a minimum set of databases that would have identified the original included studies and optimised the remaining database searches to improve the balance of sensitivity and precision of the search strategies. We searched the following databases from 1980 onwards:

- Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions;
- CENTRAL (the Cochrane Library/Wiley);
- Web of Science (Conference Proceedings Citation Index, Science Citation Index Expanded, Social Science Citation Index);
- Global Health (EBSCO);
- Sociological Abstracts (ProQuest);
- International Clinical Trials Registry Platform.

The search strategies for each database included in the latest search, which is the same as for the April 2019 search, are available in Appendix 1. Appendix 2 presents the search strategies of the original search strategy in September 2016.

Some of the electronic databases specified above index a combination of published and unpublished studies, such as doctoral thesis and conference abstracts. Therefore, the electronic searches captured some of the unpublished studies. For further searching for unpublished studies, see Searching other resources.

Searching other resources

We identified additional studies through searching reference lists of similar reviews or contacting authors of included studies. However, much of the additional searches we were planning to undertake at the protocol stage were not carried out. We provide reasons in the Differences between protocol and review section.

Data collection and analysis

Selection of studies

Two author pairs (SD, AS, MV, AB, JO, VR, BS) independently screened all titles and abstracts retrieved to determine eligibility against the inclusion criteria. Full-text copies of eligible titles and of those for which eligibility was unclear were retrieved for closer examination. Any disagreements regarding eligibility were resolved through discussion or through arbitration by a third author, if necessary. We recorded the reasons for excluding studies at the full-text screening stage in the Characteristics of excluded studies table. We completed a PRISMA flow chart of study selection.

The initial title and abstract screening, from the first search, was carried out using Word documents. The full-text screening and all subsequent screening was carried out using the Covidence platform.

Where we found relevant studies in a language other than English, Portuguese or Spanish, we planned to contact Cochrane Public Health for options for translations. We found studies in French, which a colleague reviewed against the eligibility criteria. As these were not eligible for inclusion, no translations were required. We found no studies in any other language that required translation.

We used EndNote X8 to manage the retrieved records and to remove duplicate reports of the same study. The study was considered the unit and all references related to the same study were grouped under the same identifier.

Data extraction and management

For each included study, author pairs (SD, AS, MV, AB, JO, VR, BS) extracted data independently and resolved disagreements through discussion or arbitration by a third author. We collected all data except those concerning outcomes using Covidence, using a standardised data collection form, which was piloted on two studies. One author extracted outcomes data using a standardised and piloted form in Microsoft Excel 2007 and a second author (a biostatistician; YB) checked all the data extracted. We based our data extraction form on the forms from Cochrane Public Health and Cochrane Effective Practice and Organisation of Care (EPOC), modified to suit our review. We extracted the following data.

- Study design and methods (recruitment of participants, representativeness of sample, number of intervention groups, randomisation procedure, statistical methods).
- Details about the participants, including PROGRESS-Plus characteristics and number in each group at baseline and at the endpoint. PROGRESS-Plus characteristics refer to characteristics of participants that can be used to identify disadvantaged groups and that allow us to differentiate the effects of the intervention across social categories (Tugwell 2010). These characteristics include: place of residence, race or ethnicity, occupation, gender, religion, education, socioeconomic status and social capital; and Plus characteristics include age). We extracted details about withdrawals and dropouts, if these were available.
- Details about the intervention, including process measures (e.g. aims; social and cultural context; comparison interventions; length of the intervention; duration of follow-up; implementation factors such as amount of conditional cash transfers, number of times transport is given or total amount of food vouchers given to each individual), and whether the intervention was universal or targeted. This information aimed to provide insight on the factors that may impair or facilitate implementation of the intervention, which addresses the second objective of this review. We also extracted information on whether the intervention aimed to improve access to nutritious food, how nutritious food was defined, if specific nutritious foods were targeted for increased access and what types of food were accessed by participants.
- Description of outcomes used to measure effectiveness and how they were measured.
- Primary outcomes at the household and community level.

- Secondary outcomes at the individual level.
- Other process measures including intervention cost and sustainability.
- Source of study funding and sponsorship of the interventions.

We incorporated the Cochrane-Campbell Methods Group Equity Checklist into our data extraction form (methods.cochrane.org/sites/methods.cochrane.org.equity/files/public/uploads/EquityChecklist2012.pdf); however, the included studies reported very little of this information.

We extracted information on potential confounders or moderators of the study outcomes. These included sociodemographic variables such as gender, ethnicity or race, and place of residence, and other PROGRESS-Plus characteristics based on the details available in the studies.

When necessary, we contacted the authors of primary studies to for clarification or to seek missing information.

We used Review Manager 2014 for data management and analysis.

Assessment of risk of bias in included studies

Author pairs (SD, AS, MV, AB, JO, VR, BS) conducted the risk of bias assessment and resolved disagreements through discussion or arbitration by a third author. Risk of bias assessments were also carried out in Covidence.

We assessed the risk of bias for all RCTs and PCS using the EPOC risk of bias tool for studies with a separate control group (EPOC 2017). This tool assesses the same risk of bias domains as the Cochrane 'Risk of bias' tool for RCTs (Higgins 2011), namely sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessors, incomplete outcome data (including loss of clusters in the case of cRCTs), selective outcome reporting and other bias. It also includes additional domains to assess the risk of bias from inappropriate methods regarding: similarity of baseline outcome measurements, similarity of baseline characteristics and whether the study was protected against contamination. For other bias, we specifically assessed misclassification bias of the exposure, measurement bias and two domains related to cRCTs: incorrect analysis (i.e. whether the study adjusted for clustering) and recruitment bias. We assessed the risk of bias from lack of blinding of participants and personnel and of outcome assessors separately. We had planned to assess the risk of bias from lack of blinding separately for objective and subjective outcomes and to assess the risk of bias from incomplete outcome data separately for different outcomes. However, given the disparity and multiplicity of outcomes reported, we decided not to do this. However, we did consider whether the outcome was objective or subjective when assessing the risk of bias from lack of blinding.

We had planned to use the EPOC risk of bias tool for ITS study designs; however, we included no ITS studies.

For each item, we made a judgement of 'High risk', 'Unclear risk', or 'Low risk', with supportive information to justify these judgements provided in the Characteristics of included studies table. We incorporated the risk of bias assessment in the interpretation of our review findings, and we did not restrict analysis by degree of risk of bias. We presented a 'Risk of bias' graph and a summary figure.

To assess overall risk of bias at study level, we considered its risk of bias for two key domains: selection and attrition bias. For example, if a study was classified at high risk of either selection or attrition bias, it was classified as having overall high risk of bias.

Measures of treatment effect

Where data allowed, we conducted meta-analysis using Review Manager 5 (Review Manager 2014). However, due to sparsely reported data, we were unable to conduct a meta-analysis in many instances.

For binary outcomes, we planned to report the risk ratio (RR) of outcomes in the intervention group compared to the control group. Only one included study reported the RR as an overall effect measure for the intervention. The other 28 included studies that reported dichotomous outcomes reported the change in proportion using percentage points (pp) (68%) or using reported odds ratios (OR) (32%).

For continuous outcomes, and where baseline data were available, we reported the mean difference (MD) between the change in the intervention and control groups if the outcomes had been measured in the same way by all studies. If the continuous outcomes were measured in distinct ways in different studies in a comparison, we used the standardised mean difference (SMD) between the intervention and control groups. Where the change per group was not available, we used end values where randomisation was successful. If there was a reasonable risk of selection bias, and the change per group was not available, the study was not included in a meta-analysis.

The included studies reported mostly estimates from regression or from difference-in-difference analyses, which were interpretable as an MD and thus were reported as such. None of the studies reported the effects per group, and in most cases the data were only available either for baseline or endline, and if it was available, often there was no measure of variance reported. Thus, we described the effect measures as reported in the included studies.

We reported 95% confidence intervals (CIs) alongside all effect estimates, when these were available or when it was possible to calculate them. Calculations of 95% CI were done in Review Manager (using the inverse variance option; Review Manager 2014) or using a Microsoft Excel 2007 spreadsheet with the formula to calculate the 95% CI from the regression estimate and standard error (SE) value. We report P values only where no 95% CI was reported or could be calculated to illustrate the strength of evidence for the effect size.

Unit of analysis issues

cRCTs that randomise groups rather than individuals to intervention groups and that report analyses at the individual level needed to also report the method used to account for clustering. A biostatistician (YB) checked all studies to ensure that the clustering effect had been accounted for correctly. If they had not taken the clustering effect into account in their analyses, we would have requested individual participant data, calculated an intracluster correlation coefficient (ICC), and re-analysed the data appropriately. If we had been unable to obtain primary data, we would have attempted to find an appropriate ICC from the literature and adjust the sample size accordingly. We had planned to meta-analyse the effect estimates and SEs from cRCTs using generic

inverse-variance methods in Review Manager 2014. If we had re-analysed the data, we would have clearly marked the results as re-analysed and we would have stated where re-analysis had not been possible. However, we did not have to re-analyse the data for included cRCTs as they all correctly accounted for clustering.

In cases where the outcomes were measured at multiple time points, we had planned to group the outcomes measured at similar time points where this was possible. For any particular outcome, if most studies were reporting a specific time point and only one study reported multiple time points, we reported the most commonly reported time point. In most cases, the time points were similar and, for the few instances where this was not the case, we extracted measures from all time points but reported the latest time point. Taking into account that the minimum duration after implementation at which we extracted outcomes was three months, the short-term time point was three to six months.

We only considered outcomes reported immediately at the end of the intervention, not postintervention follow-up.

In many cases, studies reported multiple outcome measures for the same outcome domains. To prioritise the outcomes, we selected the measure that provided the largest scale measure of the domain (i.e. the most comprehensive outcome). For example, in cases where individual and composite measures for the same outcome domain were reported for the same study, we preferentially reported composite measures as these are probably more useful to decision-makers. For anthropometry, we did not report effects on weight and height units, but rather reported z-scores for weight-for-age and height-for-age, in which weight and height are assessed against a reference standard. All outcomes reported in a study are presented in the Characteristics of included studies table, as well as an indication of which were selected for synthesis.

For interventions with multiple comparison groups, all groups that met this review's inclusion criteria were included. If there were more than two relevant comparison groups for the same intervention, we attempted to combine the relevant experimental and control groups to make a single pairwise comparison. This was the case in three studies, for which two interventions groups were combined. If this was not possible, we made multiple pairwise comparisons between the relevant groups and divided the sample size of the shared intervention group evenly across the comparisons to avoid double counting of participants in a meta-analysis. If a meta-analysis was not possible and we could not combine the results of different groups, we presented the results of all relevant groups.

Dealing with missing data

If there were unclear or missing data related to study methodology, participants lost to follow-up, outcome data or statistics, we contacted the study's primary author via email. We recorded all communications with authors in Appendix 3.

We recorded all missing outcome data in the data extraction form and in the Characteristics of included studies table. If it was not possible to obtain missing outcome information after attempting to do so, we would have excluded these studies from the meta-analysis. We did not exclude any studies due to missing outcome data.

Five included studies did not report the number analysed for at least one outcome (for which the number (n) is stated as not reported (NR)) (Ahmed 2019a; Ahmed 2019b; Andaleeb 2016; Ferre 2014; Hoddinott 2013). This lack of reporting reduces our confidence in the estimated treatment effect as we are unable to assess if the study was powered to detect an effect, analysed accounting for any clustering or if attrition bias was likely. In addition, it has been shown that trial sample sizes can influence treatment effect, with smaller studies reporting larger effect estimates (Dechartres 2013). With no sample sizes reported, it is difficult to ascertain whether this bias exists.

Assessment of heterogeneity

Where we were able to meta-analyse, we assessed heterogeneity, or the variability among the studies included in a meta-analysis, by visual inspection of overlap of CIs, and by assessing statistical heterogeneity with the Chi^2 statistic ($P < 0.1$) (Deeks 2019). We calculated the I^2 statistic to quantify heterogeneity; with an I^2 statistic of 75% and above indicating substantial heterogeneity. We also calculated Tau^2, which reflects the extent of variation among intervention effects in different studies, to assess heterogeneity (Deeks 2019). However, in most cases, we were unable to carry out meta-analyses or create forest plots due to heterogeneity. Instead, we assessed clinical, methodological and conceptual heterogeneity, through tabulation of characteristics of studies included in the same synthesis. For specific comparisons and outcomes, we assessed clinical or conceptual heterogeneity by considering variability in the participants and interventions, or co-interventions, including study duration, intervention dosing and outcome assessment. We assessed methodological heterogeneity by considering the variability in study design and risk of bias (Deeks 2019; Singh 2017).

Assessment of reporting biases

We had planned to assess the likelihood of reporting bias through funnel plots for each outcome with 10 or more included studies in a meta-analysis (Sterne 2019). We would have assessed the funnel plots visually for sources of asymmetry, such as small-study effects, publication bias or other. If it was likely that asymmetry was caused by small-study effects, we would have conducted sensitivity analysis to explore how this affected the results and conclusions of the meta-analysis. However, we were unable to do this as none of the compared outcomes were assessed by at least 10 studies.

Data synthesis

In most cases, we were unable to include all studies reporting a specific outcome domain in a meta-analysis. This was due to studies reporting multiple measures for the same domain that could not be combined, either because there was missing information regarding variance measures, or because the effect measures reported could not be converted to a standardised metric. Therefore, we synthesised the data from all studies reporting on the same outcome domain using vote counting based on the effect direction method (McKenzie 2019). The results of individual studies were presented in one of four categories: 1. 'favours control' if the point estimate favoured the control and the 95% CI did not cross the null; 2. 'unclear effect; potentially favouring the control' if the point estimate favoured the control but the 95% CI crossed the null; 3. 'unclear effect; potentially favouring the intervention' if the point estimate favoured the intervention and

the 95% CI crossed the null; and 4. 'favours intervention' if the point estimate favoured the intervention and the 95% CI did not cross the null. Where no CI was provided or could be calculated, we decided whether the effects were 'clear' or 'unclear' based on provided P values. However, P values did not inform the effect direction reported. Although this is a useful method to synthesise data when meta-analysis is not possible, there are some limitations associated with this method, for example, it does not provide information on the magnitude of effects, does not account for differences in the relative sizes of the studies and is a less powerful method than that used to combine P values (McKenzie 2019).

Regarding the effect direction synthesis, we reported the number of studies with results in the different effect categories for each outcome domain, and the probability of observing this based on the multinomial distribution (for outcome domains with two or more studies and assuming the true proportion is 0.25 for all categories). This information was reported in the first paragraph reporting results for a specific outcome in the effects of interventions section. If a meta-analysis of all studies in the outcome domain was possible, the multinomial distribution P value was not reported. To visually display the results for key outcomes included in the 'Summary of findings' tables, we created harvest plots for each comparison. These harvest plots depict data both from RCTs and from PCS for key summary of findings outcomes. We presented the results of the effect direction synthesis separately for RCTs and for PCS, in the Effects of interventions section.

In some instances, we were able to carry out a meta-analysis, either for all studies reporting on the same outcome measure (n = 35), or for a subset of studies that could be combined in a meta-analysis (n = 8). We conducted meta-analyses in Review Manager 2014 if the included studies were sufficiently homogeneous (I^2 < 75%) and if there was a minimum of two studies for any type of intervention being compared reporting the same outcome measure. Not pooling results in cases of high heterogeneity is an accepted approach in the *Cochrane Handbook for Systematic Reviews of Interventions* (Deeks 2019). We also explored heterogeneity and reported this when there was high heterogeneity. We did not have sufficient data to carry out any subgroup analysis or meta-regression to more formally explore heterogeneity. We carried out meta-analyses separately for each outcome and type of study design, and we used the random-effects model for all analyses to account for any existing heterogeneity. We generated forest plots for each comparison and outcome where meta-analyses could be carried out (see Data and analyses).

In preparation for synthesis, we first grouped all studies assessing the same intervention categories to identify which studies could be grouped under each preplanned comparison, and no changes to prespecified grouping were required. The comparison groups were based on the pre-specified types of interventions listed in table 2: cash transfers (unconditional; conditional), income generation interventions, food vouchers, food subsidies, and social support interventions. Under each comparison, we tabulated the available data and time frames reported for each outcome, which helped identify what data were available, and thus where meta-analysis was possible and where we had to synthesise using effect direction. A meta-analysis was possible if the effect and variance estimates were available for all studies or could be calculated from the available data, and if all effect estimates were of the same type (e.g. OR or MD) or could be converted for the comparison (e.g. OR to SMD). Where necessary, we converted OR to SMD, MD to SMD, or MD to SMD to OR.

We prepared two additional types of tables to aid visualisation of available data. One was the 'Overview of included studies' table, summarising main characteristics and reported outcomes of included studies for each comparison (McKenzie 2019). In this table, we organised studies first by study design, with RCTs first followed by PCS, and second according to their overall risk of bias (low, unclear and then high risk of bias). The second type were tables with the results for individual studies, for each comparison, for scrutiny by the reader. The studies in these tables were also ordered according to their overall risk of bias.

We had planned to assess and discuss the implementation factors common to effective interventions, if this information was reported in included studies or in published process evaluations that are mentioned in the study report. However, there was insufficient information from included studies on this.

Subgroup analysis and investigation of heterogeneity

We did not have enough data per outcome and comparison to carry out subgroup analyses. If data allowed, we would have conducted subgroup analysis to assess effectiveness for people at different levels of disadvantage. In updates of this review, we will include the following subgroups.

- Geographic location (e.g. urban versus rural, country or region).
- Sex (male versus female).
- Age (e.g. elderly people, adults, children, infants).
- Baseline nutritional status (e.g. underweight, overweight, micronutrient deficiencies).

We would also have assessed important implementation factors through subgroups analyses, including the following.

- Intensity of intervention (high intensity versus low intensity, e.g. in relation to amount of food vouchers or of conditional cash transfers).
- Length of study and follow-up (e.g. three to six months, more than six months to less than two years, and two years and beyond).
- Whether the intervention specifically aimed to improve access to nutritious food.

These analyses would have allowed further exploration of heterogeneity. In order to compare the different subgroups with each other, we would have conducted a standard heterogeneity test in Review Manager 2014 across the subgroup results, by calculating the I^2 statistic. We would have made sure that the subgroup data being compared were independent.

Sensitivity analysis

We conducted a sensitivity analysis to assess risk of bias for outcomes with five or more studies. Studies with overall low risk of bias were included in the sensitivity analysis. We reported the results of study designs separately.

Summary of findings and assessment of the certainty of the evidence

The 'Summary of findings' tables include information regarding the number of participants and studies for key outcomes, a summary of the intervention effect and a measure of the certainty of evidence for each outcome according to GRADE considerations. GRADE is a system of rating certainty of evidence in systematic reviews (Guyatt 2010). We rated the overall certainty of evidence for a particular outcome on-line with GRADEpro as high, moderate, low or very low. All RCTs started at high-certainty evidence and the following factors were considered to downgrade the certainty: overall risk of bias, consistency of effect, imprecision, indirectness and publication bias. All PCS started at low-certainty evidence and the following factors would have been considered to upgrade the certainty: large magnitude of effect, dose-response gradient and effect of plausible residual confounding. We did not upgrade the certainty of evidence for PCS as there were existing reasons for downgrading (Schünemann 2019). As most of the evidence was not from pooled data, we used the 'Summary of findings' table format for narrative synthesis.

We had planned to include a 'Summary of findings' table for the primary outcomes of this review. However, we decided to also include some of the secondary outcomes. The choice of outcome categories and specific outcome measures to report in the 'Summary of findings' table were decided by the review author team through in-depth discussion until consensus was reached, taking into consideration which outcomes would be useful to decision-makers. The 'Summary of findings' tables included the following outcomes.

- Prevalence of undernourishment.
- Proportion of household expenditure on food.
- Proportion of households who were food secure.
- Dietary diversity.
- Stunting.
- Wasting.
- Cognitive function and development.

Three authors met to rate the evidence per outcome for each of the 'Summary of findings' tables. Decisions about whether to downgrade or not were made through discussion and reaching consensus. Evidence on different outcomes was available from different study designs. Where there was evidence for a particular outcome from both RCTs and PCS, we reported the data from the RCTs in the 'Summary of findings' table. When there were no data from RCTs for a particular outcome, we reported data from PCS that reported that outcome. We reported the certainty of the evidence in the Effects of interventions for outcomes which assessed with GRADE. For other outcomes, we report the risk of bias, as an indicator of the certainty of the evidence to consider when interpreting the findings.

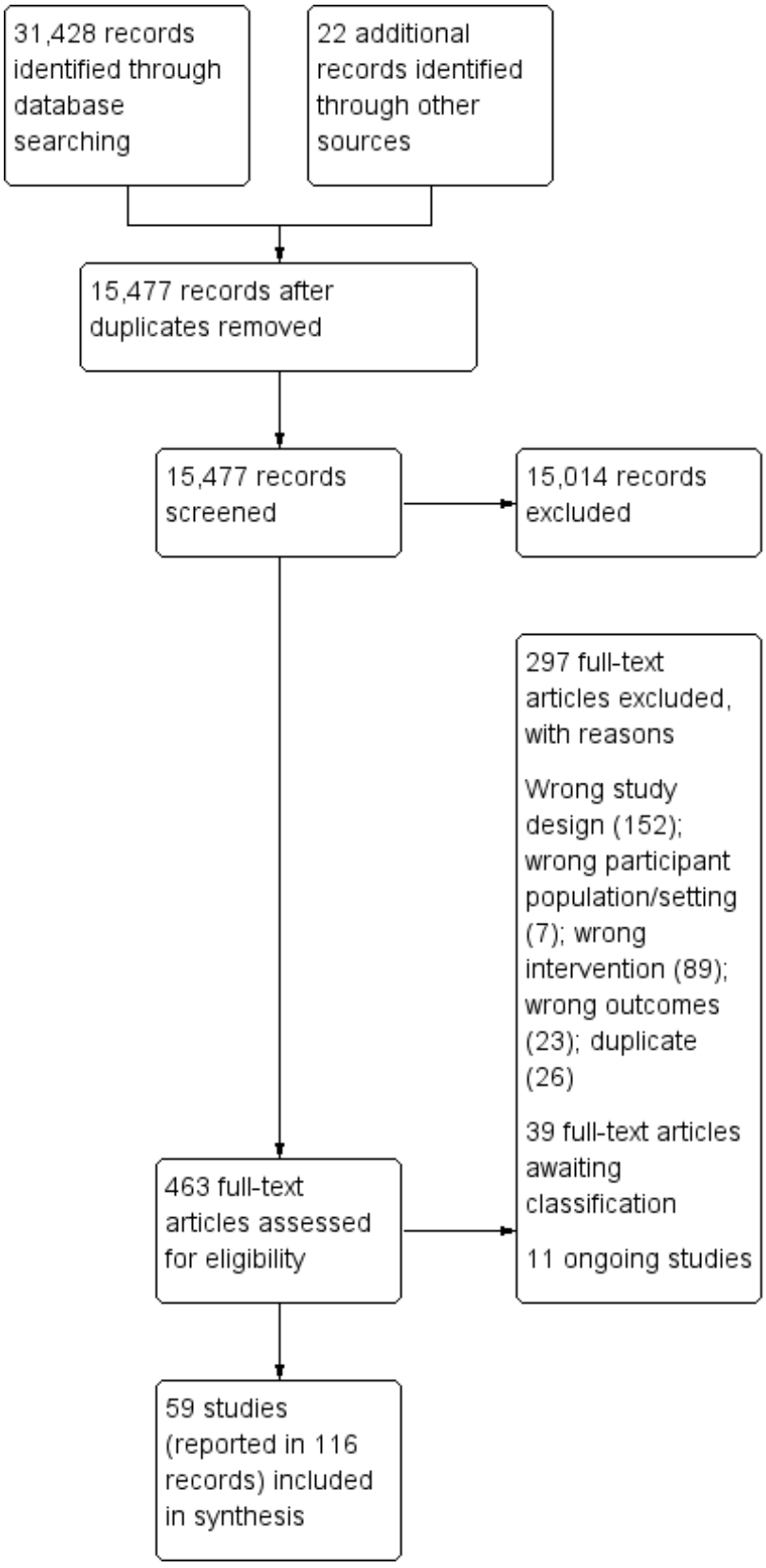
RESULTS

Description of studies

Results of the search

We screened titles and abstracts of 15,477 deduplicated records identified through searching electronic databases and reference searching of eligible studies. Of these, we assessed the full texts of 463 records against the eligibility criteria. After assessing available full-texts, we included 59 studies reported in 116 records in this review. Some interventions were reported in more than one study, and two records each reported on two different studies. Of the remaining records: we placed 39 studies under awaiting classification as we could not access them or they were conference abstracts, 11 studies are still ongoing and we excluded 297 records with reasons. In the Characteristics of excluded studies table, we report a subset of key excluded studies. The study selection process is described in Figure 2.

Figure 2. Study flow diagram.



Included studies

We included 59 studies in this review (Table 3). In this section we provide a summary overview of included studies. More details are provided in the results of interventions section, for studies included in each comparison, and in the Characteristics of included studies table.

Study design, sample size and follow-up

Of the 59 studies included:

- 36 were RCTs: six with individual or household level randomisation (Baird 2013; Daidone 2014; Gangopadhyay 2015; Haushofer 2013; Jensen 2011; Macours 2012), and 30 with cluster/group randomisation (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Beegle 2017; Brugh 2018; Chen 2019; Darrouzet Nardi 2016; Evans 2014; Fenn 2015; Fernald 2011; Gertler 2000 (PROGRESA); Hidrobo 2014; Hjelm 2017; Hoddinott 2013; Kandpal 2016; Kurdi 2019; Kusuma 2017b; Kusuma 2017a; Maluccio 2005; Marquis 2018; Merttens 2013; Miller 2011; Olney 2016; Osei 2017; Pellerano 2014; Ponce 2017; Schwab 2013; Skoufias 2013; Tonguet Papucci 2015; Verbowski 2018);
- 23 were PCS (Aguero 2006; Alaofe 2016; Alaofe 2019; Andaleeb 2016; Andersen 2015; Asadullah 2015; Breisinger 2018; Brunie 2014; Chakrabarti 2018; Doocy 2017; Ferre 2014; Huerta 2006 (PROGRESA); Jodlowski 2016; Kangmennaang 2017; Katz 2001; Kennedy 1989; Leroy 2008 (PROGRESA); Lopez Arana 2016; Murshed E Jahan 2011; Porter 2016; Renzaho 2017; Sturm 2013; Weinhardt 2017). Huerta 2006 (PROGRESA) is a nested study of the PROGRESA cluster-RCT (Gertler 2000 (PROGRESA)).

It is important to note that three studies, of different design, evaluated the same programme: PROGRESA (Gertler 2000 (PROGRESA); Huerta 2006 (PROGRESA); Leroy 2008 (PROGRESA)) (Table 4). In addition, two studies assessed the effects of a programme in Malawi in different study settings (Miller 2011; Brugh 2018), whereas two studies reported the effects of an income-generation intervention during different periods (Alaofe 2016; Alaofe 2019).

All studies had a control group. Most studies compared the intervention with a control group where there was no intervention implemented, six studies compared the intervention with another food security-related intervention (Andaleeb 2016; Chakrabarti 2018; Gangopadhyay 2015; Hoddinott 2013; Renzaho 2017; Schwab 2013), and one study compared the intervention with another intervention unrelated to food security (Weinhardt 2017). Four studies had three intervention groups (Chen 2019;Gangopadhyay 2015;Ponce 2017; Verbowski 2018), four studies had four intervention groups (Brunie 2014; Fenn 2015; Hidrobo 2014; Skoufias 2013), and two studies had five intervention arms (Ahmed 2019a; Ahmed 2019b). In all but three cases the study groups were either not relevant for the review or they pertained to different comparisons, therefore, there were no issues with overlapping control groups. For three studies with two relevant intervention arms, these were combined. In some studies, the control group received the intervention at a later stage; this review only captured data for the period during which the control group was not yet receiving the intervention.

The unit of allocation or exposure to the intervention was at group level in 41 studies (including communities, electoral divisions, municipalities, parishes, districts, villages, other), at household level in 14 studies (Alaofe 2016; Andersen 2015; Asadullah 2015; Gangopadhyay 2015; Haushofer 2013; Huerta 2006 (PROGRESA); Jensen 2011; Jodlowski 2016; Kennedy 1989; Kurdi 2019; Leroy 2008 (PROGRESA); Macours 2012; Porter 2016; Sturm 2013), and individual level in four studies (including individuals, women, and children) (Aguero 2006; Baird 2013; Katz 2001; Murshed E Jahan 2011).

The sample size in included studies ranged from 214 to 169,485 participants and 300 to 124,644 households. All studies collected data on individual participants except for Sturm 2013, which collected supermarket sales data.

Maximum follow-up was three months in one study (Hoddinott 2013), greater than three months to 12 months in 10 studies (Alaofe 2016; Alaofe 2019; Chen 2019; Fenn 2015; Gangopadhyay 2015; Hidrobo 2014; Jensen 2011; Miller 2011; Ponce 2017; Schwab 2013), greater than 12 months to two years in 25 studies, greater than two years to five years in 17 studies (Asfaw 2014; Baird 2013; Beegle 2017; Breisinger 2018; Brunie 2014; Chakrabarti 2018; Doocy 2017; Evans 2014;Hjelm 2017; Kurdi 2019; Lopez Arana 2016; Macours 2012; Murshed E Jahan 2011; Osei 2017; Sturm 2013; Tonguet Papucci 2015; Weinhardt 2017), and greater than five years to nine years in six studies (Aguero 2006; Andaleeb 2016; Andersen 2015; Asadullah 2015; Porter 2016; Renzaho 2017).

Interventions

Included interventions were classified according to the categories of interventions in our logic model (Figure 1; Table 2). See Table 3 for a summary of categories and types of interventions included in this review.

Fifty-two studies assessed interventions aimed at increasing buying power, including:

- unconditional cash transfers (18 RCTs: Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Baird 2013; Brugh 2018; Daidone 2014; Fenn 2015; Fernald 2011; Gangopadhyay 2015; Haushofer 2013; Hjelm 2017; Hoddinott 2013; Merttens 2013; Miller 2011; Pellerano 2014; Schwab 2013; Skoufias 2013; Tonguet Papucci 2015; three PCS: Aguero 2006; Breisinger 2018; Renzaho 2017), and
- conditional cash transfers (nine RCTs: Baird 2013; Evans 2014; Gertler 2000 (PROGRESA); Hidrobo 2014; Kandpal 2016; Kurdi 2019; Kusuma 2017a; Macours 2012; Maluccio 2005; five PCS: Andersen 2015; Ferre 2014; Huerta 2006 (PROGRESA); Leroy 2008 (PROGRESA); Lopez Arana 2016), and
- interventions to generate income (six RCTs: Beegle 2017; Darrouzet Nardi 2016; Marquis 2018; Olney 2016; Osei 2017; Verbowski 2018; 11 PCS: Alaofe 2016; Alaofe 2019; Asadullah 2015; Doocy 2017; Jodlowski 2016; Kangmennaang 2017; Katz 2001; Kennedy 1989; Murshed E Jahan 2011; Porter 2016; Weinhardt 2017). Under the income-generation category, each individual study assessed different types of interventions, including agricultural programmes, livestock transfer programmes or community-based programmes) (Table 5).

Eight studies assessed interventions addressing food prices: four RCTs evaluated the effects of food vouchers (Fenn 2015; Hidrobo 2014; Jensen 2011; Ponce 2017); one cRCT (Chen 2019) and three PCS (Sturm 2013; Andaleeb 2016; Chakrabarti 2018) evaluated the effects of food and nutrition subsidies.

Two studies assessed social environment interventions: one cRCT (Kusuma 2017b) and one PCS (Brunie 2014) evaluated an intervention addressing the social environment, namely the effects of village savings and loans (VSL) and community grants.

Some studies assessed more than one type or category of intervention. Hidrobo 2014 and Fenn 2015 included a group for a CCT and another for food vouchers. Baird 2013 included two groups for conditional and unconditional cash transfers. Porter 2016 assessed a public works intervention providing either cash or food for work, or an UCT.

Participants

Twenty-five studies included children or households in which children lived. Of these, five studies included households with children under 18 months of age (Andersen 2015; Fernald 2011; Marquis 2018; Olney 2016; Tonguet Papucci 2015); 10 studies included households with children under six years of age (Ahmed 2019a; Ahmed 2019b; Alaofe 2019; Daidone 2014; Fenn 2015; Kennedy 1989; Kurdi 2019; Osei 2017; Renzaho 2017; Verbowski 2018), and six with children under 18 years of age (Chen 2019; Kandpal 2016; Kusuma 2017b; Kusuma 2017a; Lopez Arana 2016; Pellerano 2014); three included households with children, without specifying their age (Aguero 2006; Asfaw 2014; Huerta 2006 (PROGRESA)). Baird 2013 included girls 13 to 22 years of age who had never married.

Five studies included adults; in one study, these were members of a healthcare plan (Sturm 2013), one included farmers (Murshed E Jahan 2011), one include men and women (Doocy 2017), and three studies included only women and their respective households (Alaofe 2016; Alaofe 2019; Katz 2001).

Twenty-nine studies included households without specifying the inclusion of children (Andaleeb 2016; Asadullah 2015; Beegle 2017; Breisinger 2018; Brugh 2018; Brunie 2014; Chakrabarti 2018; Darrouzet Nardi 2016; Evans 2014; Ferre 2014; Gangopadhyay 2015; Gertler 2000 (PROGRESA); Haushofer 2013; Hidrobo 2014; Hjelm 2017; Hoddinott 2013; Jensen 2011; Jodlowski 2016; Kangmennaang 2017; Leroy 2008 (PROGRESA); Macours 2012; Maluccio 2005; Merttens 2013; Miller 2011; Ponce 2017; Porter 2016; Schwab 2013; Skoufias 2013; Weinhardt 2017).

We extracted information from included studies on the following PROGRESS-Plus characteristics: age, place of residence, sex, ethnicity and language, occupation, education, socioeconomic status and social capital, where this was available. There was considerable variation in the reporting of these characteristics. Most studies (48/59) reported on an aspect of socioeconomic status, with 38 studies on age, 37 on sex, 34 on place of residence, 32 on education, 17 on ethnicity and language, 16 studies on occupation and 13 studies on social capital.

Setting and context

Most included studies were conducted in Africa (27): one each in Egypt (Breisinger 2018), the Democratic Republic of the Congo (Doocy 2017), Ghana (Marquis 2018), Ethiopia (Porter 2016), Lesotho (Pellerano 2014), Mozambique (Brunie 2014), Niger (Hoddinott 2013), and Tanzania (Evans 2014); two each in Benin (Alaofe 2016; Alaofe 2019), Burkina Faso (Olney 2016; Tonguet Papucci 2015), and South Africa (Aguero 2006; Sturm 2013); three in Zambia (Daidone 2014; Jodlowski 2016; Hjelm 2017); four in Kenya (Asfaw 2014; Haushofer 2013; Kennedy 1989; Merttens 2013); six in Malawi (Baird 2013; Beegle 2017; Brugh 2018; Kangmennaang 2017; Miller 2011; Weinhardt 2017).

Nineteen included studies were conducted in Asia: five in Bangladesh (Ahmed 2019a; Ahmed 2019b; Asadullah 2015; Ferre 2014; Murshed E Jahan 2011); four in Nepal (Darrouzet Nardi 2016; Katz 2001; Osei 2017; Renzaho 2017); three in India (Andaleeb 2016; Chakrabarti 2018; Gangopadhyay 2015) and two in China (Jensen 2011; Chen 2019), Indonesia (Kusuma 2017b; Kusuma 2017a); and one each in Cambodia (Verbowski 2018), Pakistan (Fenn 2015), and Philippines (Kandpal 2016).

Five included studies were conducted in South America: one each in Colombia (Lopez Arana 2016) and Peru (Andersen 2015), and three in Ecuador (Fernald 2011; Hidrobo 2014; Ponce 2017).

Two studies were conducted in Nicaragua, Central America (Macours 2012; Maluccio 2005), and four studies took place in Mexico, North America (Gertler 2000 (PROGRESA); Huerta 2006 (PROGRESA); Leroy 2008 (PROGRESA); Skoufias 2013). Two studies were conducted in Yemen, Middle East (Kurdi 2019; Schwab 2013).

All studies specifically targeted poor communities or households except two; one that included data from supermarkets in urban areas in South Africa (Sturm 2013), and one that targeted children enrolled in elementary schools in rural China (Chen 2019). Of those targeting communities, 24 studies did not specify the type of communities, 29 included rural communities, including farming communities, and four included urban communities.

Outcome measures

No included study assessed the primary outcome, namely the prevalence of undernourishment (i.e. people with insufficient food intake to meet their dietary requirements).

Eleven studies reported household expenditure on food (Alaofe 2016; Asfaw 2014; Brugh 2018; Ferre 2014; Hjelm 2017; Kennedy 1989; Macours 2012; Maluccio 2005; Merttens 2013; Miller 2011; Sturm 2013). Household expenditure was reported using different units, for example, household food expenditure per day, week or month; or as a proportion of total weekly or monthly household expenditure. One of these studies reported sales data, including the ratio of expenditure on healthy foods, on fruits and vegetables and on less desirable foods, compared to the total food expenditure (Sturm 2013).

Food security was reported as food security indices and dietary diversity measures. Thirteen studies reported food security outcomes using measures such as the proportion of participants experiencing food security or food deficit always, of households consuming more than one meal per day, Household Food Insecurity Access Scale (HFIAS) and Food Security Index (FSI) (Asadullah 2015; Beegle 2017; Brugh 2018; Brunie 2014; Daidone 2014; Doocy 2017; Haushofer 2013; Hjelm 2017; Kangmennaang 2017; Miller 2011; Osei 2017; Pellerano 2014; Weinhardt 2017). Twenty-four studies reported on dietary diversity using a variety of measures including individual and Household Dietary Diversity Scores (HDDS), Food Consumption Scores (FCS), minimum dietary diversity (MDD) or minimum acceptable food consumption (Ahmed 2019a; Ahmed 2019b; Alaofe 2019; Asfaw 2014; Beegle 2017; Breisinger 2018; Brugh 2018; Brunie 2014; Chen 2019; Daidone 2014; Darrouzet Nardi 2016; Doocy 2017; Ferre 2014; Hidrobo 2014; Jodlowski 2016;

Kurdi 2019; Marquis 2018; Merttens 2013; Miller 2011; Olney 2016; Pellerano 2014; Ponce 2017; Skoufias 2013; Tonguet Papucci 2015). Definitions for the food security and dietary diversity measures reported in included studies are provided in Table 6.

Six studies reported adequacy of dietary intake (Ahmed 2019a; Ahmed 2019b; Andaleeb 2016; Brugh 2018; Jensen 2011; Kennedy 1989). Measures reported included the proportion of calorie-deficient households and of preschool children meeting caloric requirements; mineral and vitamin sufficiency indices; calorie-deficient households; and ratio of caloric, protein and fat intake to the dietary recommendations. Many studies reported intake in terms of calories or nutrients consumed without relating it to a measure of adequacy; these measures were not reported in this review.

A variety of anthropometric measures were reported in included studies. Twenty-seven studies reported on measures of stunting in children (i.e. chronic undernutrition), such as the proportion stunted (HAZ < –2 standard deviations (SD)), severely stunted (HAZ < –3SD) or mean HAZ (Aguero 2006; Ahmed 2019a; Ahmed 2019b; Andersen 2015; Asfaw 2014; Daidone 2014; Darrouzet Nardi 2016; Doocy 2017; Evans 2014; Fenn 2015; Fernald 2011; Ferre 2014; Kandpal 2016; Kennedy 1989; Kurdi 2019; Kusuma 2017b; Kusuma 2017a; Leroy 2008 (PROGRESA); Lopez Arana 2016; Macours 2012; Maluccio 2005; Marquis 2018; Merttens 2013; Osei 2017; Renzaho 2017; Tonguet Papucci 2015; Verbowski 2018). Twenty studies reported on measures of wasting in children (i.e. acute undernutrition), such the proportion wasted (WHZ < –2SD), severely wasted (WHZ < –3SD) or mean WHZ (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Daidone 2014; Evans 2014; Fenn 2015; Ferre 2014; Kennedy 1989; Kurdi 2019; Kusuma 2017b; Kusuma 2017a; Leroy 2008 (PROGRESA); Lopez Arana 2016; Maluccio 2005; Marquis 2018; Merttens 2013; Osei 2017; Renzaho 2017; Tonguet Papucci 2015; Verbowski 2018). Twenty-seven studies reported on measures of underweight in women and children, including WAZ or the proportion of underweight based on these (i.e. WAZ < –2SD), BMI for age or mean BMI, or mid-upper arm circumference (MUAC) (Alaofe 2019; Andersen 2015; Asfaw 2014; Brunie 2014; Chen 2019; Daidone 2014; Darrouzet Nardi 2016; Doocy 2017; Evans 2014; Fenn 2015; Ferre 2014; Kandpal 2016;Katz 2001 Kennedy 1989; Kusuma 2017b; Kusuma 2017a; Lopez Arana 2016; Macours 2012; Maluccio 2005; Marquis 2018; Merttens 2013; Olney 2016; Osei 2017; Pellerano 2014; Renzaho 2017; Verbowski 2018; Weinhardt 2017).

Six studies reported biochemical outcomes, including haemoglobin in five studies (Chen 2019; Fenn 2015; Fernald 2011; Osei 2017; Verbowski 2018) and vitamin A and iron deficiency in one study (Alaofe 2019).

Five studies reported cognitive function and development outcomes using a variety of measures including Ravens Colored Matrixes and other cognitive tests, Early Childhood Development Index, individual cognitive function measures such as language and memory, and grade attainment (Andersen 2015; Baird 2013; Daidone 2014; Fernald 2011; Macours 2012). Definitions for cognitive function and development measures reported in included studies are described in Table 7.

Four studies reported mental health outcomes including measures such as depression score, stress, psychological distress and psychological well-being (Baird 2013; Fernald 2011; Haushofer 2013; Hjelm 2017).

Seventeen studies reported morbidity outcomes (Ahmed 2019a; Ahmed 2019b; Alaofe 2019; Asadullah 2015; Chen 2019; Daidone 2014; Evans 2014; Fenn 2015; Gertler 2000 (PROGRESA); Kandpal 2016; Kennedy 1989; Macours 2012; Merttens 2013; Osei 2017; Pellerano 2014; Tonguet Papucci 2015; Verbowski 2018). Various measures of morbidity were reported including incidence of respiratory infections, diarrhoea and anaemia; the proportion of participants who were ill in a specified reference period or the number of days or percent of time ill.

No studies reported specific adverse events. We had specified that overweight and obesity would be considered adverse events in this review, and three studies reported this outcome in young and older children (Andersen 2015; Lopez Arana 2016; Pellerano 2014); however, not as adverse events per se.

Funding and conflicts of Interest

Most included studies were funded either by non-profit organisations (including research institutes, world bank, non-government organisations, etc) or governmental/ intergovernmental agencies (or both) except for one study that was funded by a for-profit organisation (Elanco Animal Health; Jodlowski 2016). One study did not disclose their funding (Gangopadhyay 2015).

Of 59 included studies, 39 did not report on potential conflicts of interest (COI) and 27 did. Of those that reported their COI, all declared that none of the authors had any potential COI.

Excluded studies

We excluded 297 studies. Of the excluded studies: 152 had an ineligible study design, seven did not have an eligible population or setting, 89 did not address an eligible intervention, 23 did not report on relevant outcomes and 26 were duplicates. A selection of 85 key excluded studies is reported in the Characteristics of excluded studies table.

Studies awaiting classification

We placed 39 studies awaiting classification because we could not assess their eligibility properly without access to the full text, or they were conference abstracts with insufficient data to include them in the review (see Characteristics of studies awaiting classification table).

Ongoing studies

We identified two studies that could potentially be included in the review once completed. Eleven studies were identified as ongoing. More details on these studies are available in the Characteristics of ongoing studies table.

Risk of bias in included studies

See the Characteristics of included studies table for more details for each domain of bias assessed for each study. Figure 3 presents a summary of the judgements per risk of bias items and Figure 4 presents the summary of the risk of bias judgments for each included study.

Figure 3. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.

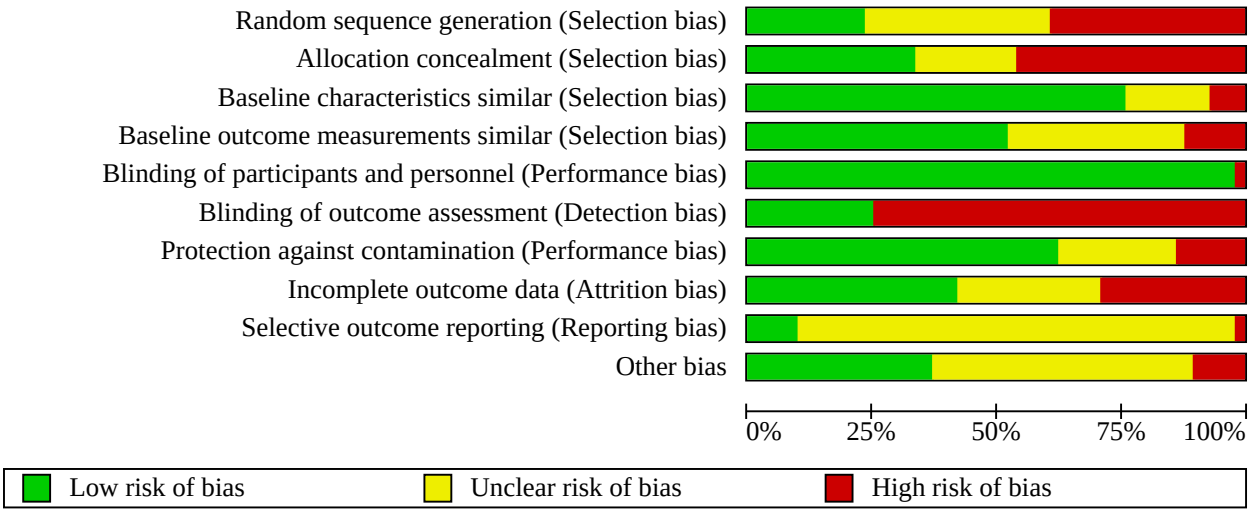


Figure 4. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

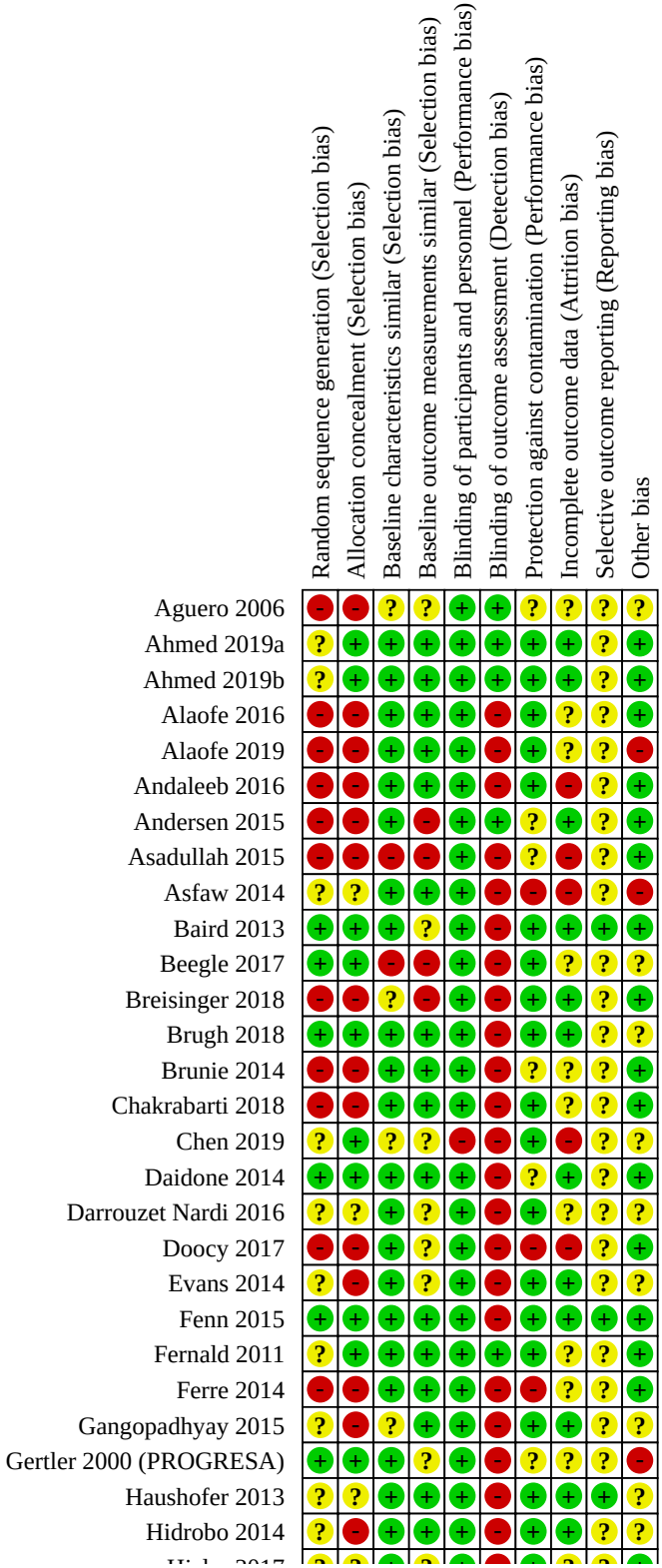
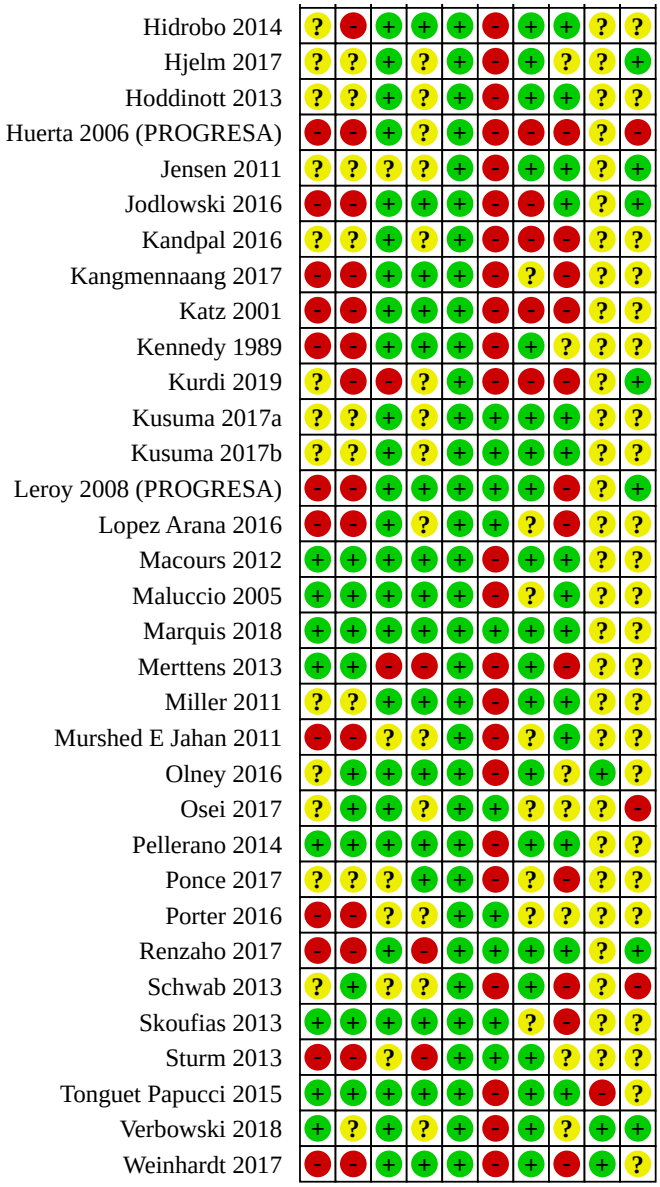


Figure 4. (Continued)



Allocation

Risk of selection bias is determined by whether participants were randomly allocated to the intervention groups (random sequence generation) and whether there was no possibility of altering the sequence while allocating participants to the intervention groups (allocation concealment).

Of the 36 included RCTs, 14 studies described adequate methods of random sequence generation and were at low risk of selection bias. Five studies described doing this using computer-generated random numbers (Baird 2013; Beegle 2017; Fenn 2015; Marquis 2018; Verbowski 2018), one each used STATA software (Gertler 2000 (PROGRESA)) and a randomisation algorithm (Skoufias 2013), while the remaining seven studies randomised communities through public lottery events (Brugh 2018; Daidone 2014; Macours 2012; Maluccio 2005; Merttens 2013; Pellerano 2014; Tonguet Papucci 2015). Twenty-two studies reported randomising individuals or clusters to intervention groups, but did not report how the random sequence had been generated and thus were at unclear risk of selection bias (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Chen 2019; Darrouzet Nardi 2016; Evans 2014; Fernald 2011; Gangopadhyay 2015; Haushofer 2013; Hidrobo 2014; Hjelm 2017; Hoddinott 2013; Jensen 2011; Kandpal 2016; Kurdi 2019; Kusuma 2017b; Kusuma 2017a; Miller 2011; Olney 2016; Osei 2017; Ponce 2017; Schwab 2013).

Of the 36 included RCTs, 20 reported that allocation was at the cluster level (communities, parishes, electoral divisions, etc.) and carried out at the beginning of the study, and these were classified at low risk of selection bias (Ahmed 2019a; Ahmed 2019b; Baird 2013; Beegle 2017; Brugh 2018; Chen 2019; Daidone 2014; Fenn 2015; Fernald 2011; Gertler 2000 (PROGRESA); Macours 2012; Maluccio 2005; Marquis 2018; Merttens 2013; Olney 2016; Osei

2017; Pellerano 2014; Schwab 2013; Skoufias 2013; Tonguet Papucci 2015). Three studies did not conceal allocation or report this, but household selection was done after villages had been allocated to each intervention group, and knowledge of allocation could have influenced the household selection process (Evans 2014; Hidrobo 2014; Kurdi 2019). In Gangopadhyay 2015, participants self-selected into the intervention. These four studies were at high risk of selection bias. The remaining 12 studies did not report details on allocation concealment and were at unclear risk of selection bias (Asfaw 2014; Darrouzet Nardi 2016; Haushofer 2013; Hjelm 2017; Hoddinott 2013; Jensen 2011; Kandpal 2016; Kusuma 2017b; Kusuma 2017a; Miller 2011; Ponce 2017; Verbowski 2018).

All 23 PCS were at high risk of selection bias (both for random sequence and allocation concealment), according to EPOC's risk of bias tool guidance (EPOC 2017).

Baseline similarity in participants characteristics and outcome measures (selection bias)

Baseline imbalances in participant characteristics or outcome measures may occur in non-randomised studies as well as in randomised studies in which the allocation procedure was not performed adequately.

Participants characteristics

In 46 included studies, there were no baseline imbalances reported for participant characteristics or, if there were, these were adjusted for in the analyses, and thus they were at low risk of selection bias (Figure 4). Four studies had significant differences at baseline that were not adjusted for in the analyses; thus they were at high risk of selection bias (Asadullah 2015; Beegle 2017; Kurdi 2019; Merttens 2013). Ten studies were at unclear risk of selection bias: six did not report any or some baseline characteristics (Aguero 2006; Breisinger 2018; Murshed E Jahan 2011; Ponce 2017; Porter 2016; Sturm 2013), one reported baseline characteristics but not whether these were balanced (Gangopadhyay 2015), one reported that characteristics were balanced at household level but not at province level (Jensen 2011), one reported discrepancies and it was unclear whether these were adjusted for in the analysis (Schwab 2013), and one only had baseline data for the group analysed, not for the entire sample (Chen 2019).

Outcome measures

Thirty-one studies either were balanced at baseline with regards to outcome measures, or adjusted for any imbalance in the analyses, and were at low risk of selection bias (Figure 4). In seven studies there were significant baseline imbalances in relevant outcomes which were not controlled for in the analyses, and these were at high risk of selection bias (Andersen 2015; Asadullah 2015; Beegle 2017; Breisinger 2018; Merttens 2013; Renzaho 2017; Sturm 2013). The remaining 21 studies were classified at unclear risk of selection bias: 15 did not report any or relevant outcomes at baseline (Aguero 2006; Baird 2013; Chen 2019; Darrouzet Nardi 2016; Evans 2014; Gertler 2000 (PROGRESA); Hjelm 2017; Huerta 2006 (PROGRESA); Kandpal 2016; Kurdi 2019; Kusuma 2017b; Kusuma 2017a; Murshed E Jahan 2011; Porter 2016; Verbowski 2018); in three, the baseline data collection occurred after the intervention started, so true baseline data were not available (Hoddinott 2013; Lopez Arana 2016; Schwab 2013), in two studies it was unclear if reported imbalances were adjusted for (Doocy 2017; Osei 2017), and in one, although the outcomes were balanced at household level, there were imbalances at province level (Jensen 2011).

Blinding

Blinding participants and personnel to intervention allocation during the study helps prevent systematic differences in how participants are treated or behave during the trial due to knowledge of treatment allocation (performance bias). In the types of studies included in this review, blinding of participants and personnel was often not feasible; however, it is also unlikely that it would have influenced the behaviour of participants or personnel beyond that expected as part of the intervention, and thus less likely to be susceptible to performance bias. Thus, in all but one study included in this review, the risk of performance bias was low. One study was at high risk of performance bias as blinding was not possible and the delivery of the intervention, a nutrition subsidy to schools, was dependent on the school principal (Chen 2019).

Blinding of outcome assessors helps prevent systematic differences in how outcomes are assessed in either intervention groups due to knowledge of treatment allocation (detection bias). Fifteen studies were at low risk of detection bias; in 14 of these studies, blinding was not done; however, the outcomes measured and reported were objective and thus unlikely to have been influenced by knowledge of treatment allocation (Aguero 2006; Ahmed 2019a; Ahmed 2019b; Andersen 2015; Fernald 2011; Kusuma 2017b; Kusuma 2017a; Leroy 2008 (PROGRESA); Lopez Arana 2016; Marquis 2018; Osei 2017; Porter 2016; Renzaho 2017; Skoufias 2013). The other study was based on scanner sales data from supermarkets, which is not susceptible to detection bias due to lack of blinding (Sturm 2013). The remaining 44 studies were at high risk of detection bias either because there was no blinding or they included self-reported or subjective outcomes that were susceptible to be influenced by knowledge of treatment allocation.

Protection against contamination (performance bias)

If the control group is exposed to the intervention intended for the intervention group, contamination occurs, introducing performance bias.

Thirty-seven studies were at low risk of bias in this domain either because they reported evidence of no contamination, or because the intervention and control groups were allocated at the community/village/district level (i.e. in distinct geographical areas), which precludes contamination. Eight studies were at high risk of bias as they reported evidence of control group exposure to the intervention (Asfaw 2014; Doocy 2017; Ferre 2014; Huerta 2006 (PROGRESA); Jodlowski 2016; Kandpal 2016; Katz 2001; Kurdi 2019). The remaining 14 studies were at unclear risk (Aguero 2006; Andersen 2015; Asadullah 2015; Brunie 2014; Daidone 2014; Gertler 2000 (PROGRESA); Kangmennaang 2017; Lopez Arana 2016; Maluccio 2005; Murshed E Jahan 2011;Osei 2017; Ponce 2017; Porter 2016; Skoufias 2013). In these studies, the location or the distance between intervention and control communities was unclear, or the control and intervention households were in same community and there was potential for control households to have benefited from the intervention through interaction with intervention households (e.g. sharing), or communities were geographically near/adjacent.

Incomplete outcome data

Twenty-five studies were at low risk of bias because they had low attrition (i.e. 10% or less) or because attrition between the groups was non-differential or unrelated to the outcome. Seventeen studies were at high risk of attrition bias, because of high levels of attrition or they reported differential attrition between intervention groups or characteristics of those lost to follow-up were different from those remaining in the study, or a combination of these (Andaleeb 2016; Asadullah 2015; Asfaw 2014; Chen 2019; Doocy 2017; Huerta 2006 (PROGRESA); Kandpal 2016; Kangmennaang 2017; Katz 2001; Kurdi Leroy 2008 (PROGRESA); Lopez Arana 2016; Merttens 2013; Ponce 2017; Schwab 2013; Skoufias 2013; Weinhardt 2017). Skoufias 2013 reported only a 5% difference in attrition between groups but lost one entire cluster and participants were excluded from the analysis were different than those included in the analysis, thus was classified at high risk. Seventeen studies were classified at unclear risk of attrition bias, as they either did not report attrition at all or did not report enough information to make this judgement (Aguero 2006; Alaofe 2016; Alaofe 2019; Beegle 2017; Brunie 2014; Chakrabarti 2018; Darrouzet Nardi 2016; Fernald 2011; Ferre 2014; Gertler 2000 (PROGRESA); Hjelm 2017; Kennedy 1989; Olney 2016; Osei 2017; Porter 2016; Sturm 2013; Verbowski 2018). Sturm 2013 analysed supermarket sales scanner data and did not report if any of these data were excluded or missing.

Selective reporting

Selective outcome reporting occurs when authors do not report on all outcomes prespecified and assessed in the study. Six studies were at low risk of bias, as they reported the same outcomes that were prespecified in the trial registry (Baird 2013; Fenn 2015; Haushofer 2013; Olney 2016; Verbowski 2018; Weinhardt 2017).

One study was at high risk of bias because some of the morbidity outcomes (oedema and measles) reported in protocol were not reported in the published paper (Tonguet Papucci 2015).

The remaining 52 studies were at unclear risk of bias as there were no protocols available.

Other potential sources of bias

Under other potential sources of bias we considered whether the study could have been influenced by 1. misclassification bias of the exposure (i.e. when exposure to the intervention was self-reported); 2. measurement bias (i.e. whether outcomes were measured appropriately; 3. incorrect analysis, in the case of cRCTs (i.e. whether study data were adjusted for clustering. Such analyses do not lead to biased estimates of effect but in the meta-analysis such studies receive undue weight leading to overprecision of the effect estimate); and 4. recruitment bias, in the case of cRCTs (i.e. whether recruitment of participants was done before allocation of clusters to intervention groups).

Twenty-two studies were at low risk as no other potential sources of bias were identified. Six studies were at high risk of bias as at least one other potential source of bias was identified (Alaofe 2019; Asfaw 2014; Gertler 2000 (PROGRESA); Huerta 2006 (PROGRESA); Osei 2017; Schwab 2013). Asfaw 2014 was at high risk for misclassification bias as receipt of the intervention was based on self-report. Three were at high risk of recruitment bias as clusters were assigned before households were recruited (Asfaw 2014; Gertler 2000 (PROGRESA); Osei 2017). Two studies were at high risk of measurement bias: in Huerta 2006 (PROGRESA) preliminary analyses showed evidence of reporting error regarding health outcomes, and in Alaofe 2019 dietary data were collected with only one 24-hour recall. Schwab 2013 was at high risk of other bias due to the different timing of implementation of interventions in each group. The remaining 31 studies were at unclear risk of other bias; in these studies there was at least one of the other potential sources of bias for which there was insufficient information to make a judgement.

Effects of interventions

See: **Summary of findings 1** Unconditional cash transfers compared to no intervention for food security; **Summary of findings 2** Conditional cash transfers compared to no intervention for food security; **Summary of findings 3** Income-generation interventions compared to no intervention for food security; **Summary of findings 4** Food vouchers compared to no intervention for food security; **Summary of findings 5** Food and nutrition subsidies compared to no intervention for food security; **Summary of findings 6** Social support compared to no intervention for food security

We present the effects of interventions on primary and secondary outcomes separately for each category of intervention as outlined below (see Table 2 for definitions of intervention categories and types).

- Interventions that improved buying power:
  - Unconditional cash transfers
  - Conditional cash transfers
  - Income generation interventions
- Interventions that addressed food prices:
  - Food prices – food vouchers
  - Food prices – food and nutrition subsidies
- Interventions that addressed the social environment
  - Social support interventions (community grants/savings schemes)

We found no studies addressing the intervention category of infrastructure changes, which we had intended to include in the review.

The 'Summary of findings' tables provide an overview of effects on all primary outcomes and key secondary outcomes, for each comparison.

Comparison 1: unconditional cash transfers

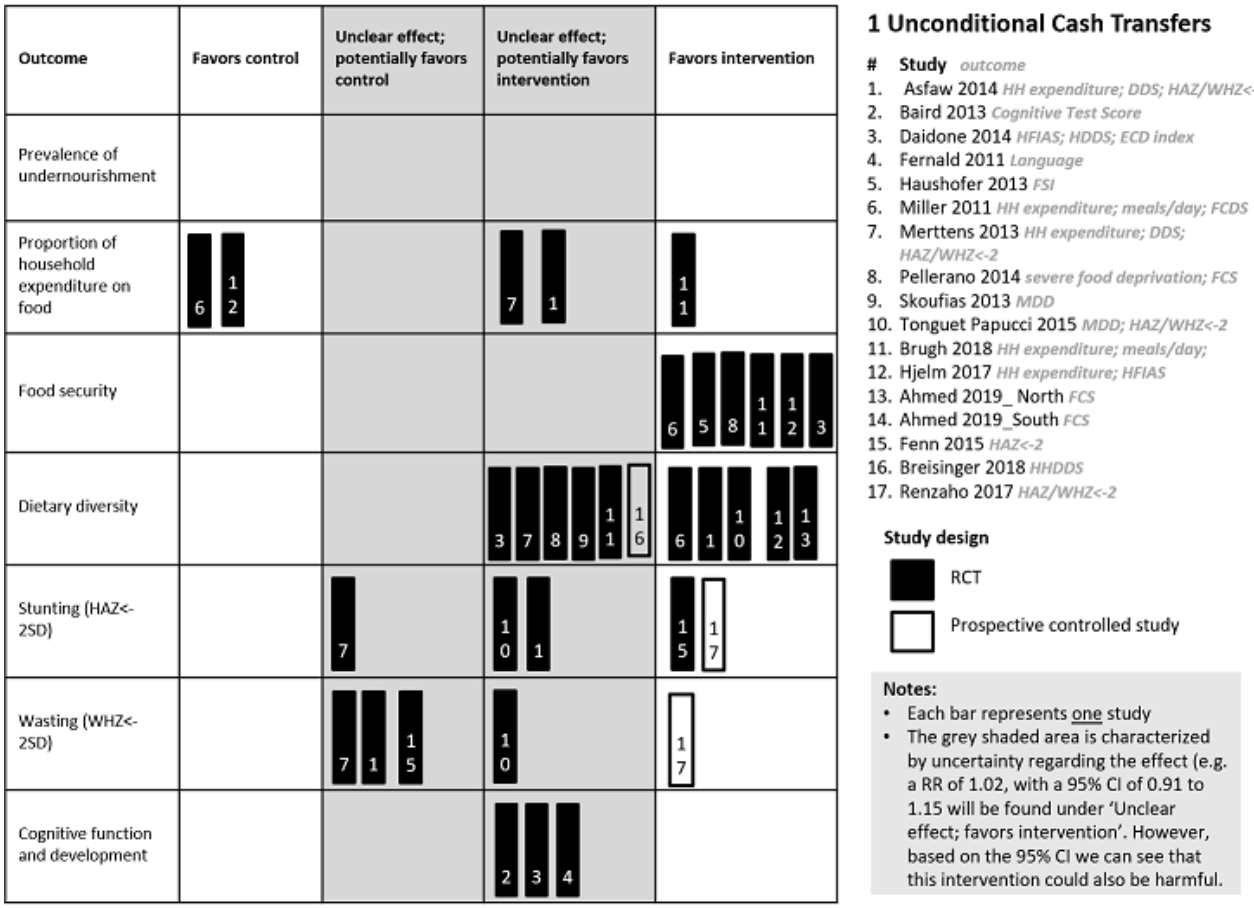
Twenty-one included studies assessed UCTs, where a specific amount of money was transferred to poor families monthly or once every two months, with no conditions regarding behaviours expected from the families. Fourteen cRCTs (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Baird 2013; Brugh 2018; Daidone 2014; Fenn 2015; Fernald 2011; Hjelm 2017; Merttens 2013; Miller 2011; Pellerano 2014; Skoufias 2013; Tonguet Papucci 2015), two RCTs (Gangopadhyay 2015; Haushofer 2013), and three PCS (Aguero 2006; Breisinger 2018; Renzaho 2017) assessed the effects of UCTs versus no intervention. Two cRCTs assessed UCTs versus food transfers (Hoddinott 2013; Schwab 2013).

Five cRCTs reported on the proportion of household expenditure on food (Asfaw 2014; Brugh 2018; Hjelm 2017; Merttens 2013; Miller

2011). Five cRCTs (Brugh 2018; Daidone 2014; Hjelm 2017; Miller 2011; Pellerano 2014) and one RCT (Haushofer 2013) reported on various food security measures, and 10 cRCTs reported on various dietary diversity measures (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Brugh 2018; Daidone 2014; Merttens 2013; Miller 2011; Pellerano 2014; Skoufias 2013; Tonguet Papucci 2015). Eight cRCTs (Asfaw 2014; Daidone 2014; Fernald 2011; Merttens 2013; Pellerano 2014; Tonguet Papucci 2015; Fenn 2015; Ahmed 2019a; Ahmed 2019b), and one PCS (Aguero 2006) reported various anthropometric measures. Two clusters RCT reported and biochemical indicators (Fernald 2011; Fenn 2015), and three cRCTs reported on cognitive function and development outcomes (Baird 2013; Daidone 2014; Fernald 2011). Three cRCTs (Baird 2013; Fernald 2011; Hjelm 2017) and one RCT (Haushofer 2013) reported on measures of mental well-being. Seven cRCTs reported measures of morbidity (Ahmed 2019a; Ahmed 2019b; Daidone 2014; Fenn 2015; Merttens 2013; Pellerano 2014; Tonguet Papucci 2015), and one cRCT reported adverse effects (Pellerano 2014). Hoddinott 2013 and Schwab 2013, the cRCTs where the comparison group was food transfers, reported on measures of dietary diversity, and Schwab 2013 also reported measures of food security.

Further details about the studies in this comparison are presented in Table 8. Table 9 presents results of individual trials included and Table 10 presents results of individual PCS included, on all reported outcomes. The Summary of findings 1 and the harvest plot in Figure 5 summarise the effects of UCTs on key outcomes.

Figure 5. Harvest plot: unconditional cash transfers.



Primary outcomes

1.1 Change in prevalence of undernourishment

None of the included studies measured prevalence of undernourishment.

1.2 Proportion of household expenditure on food

As household income increases, the share of household expenditure on food should decrease relative to other household expenditure (INDDEX Project 2018). Five cRCTs reported this outcome (Asfaw 2014; Brugh 2018; Hjelm 2017; Merttens 2013; Miller 2011), with evidence being very uncertain about the effects of UCTs on the proportion of household expenditure on food (5 trials, 11,271 households; very low certainty evidence; Summary of findings 1). Effects varied across the five studies, with one study showing a clear effect favouring UCTs, two studies showing an unclear effect potentially favouring UCTs, and two studies show a clear effect favouring the control (P = 0.003; Figure 5). Three of these studies could be included in a forest plot but data could not be pooled due to high heterogeneity (I^2 = 92%; Analysis 1.1). Miller 2011 and Brugh 2018 were two different studies assessing the Malawi cash transfer scheme and thus are the same in terms of the characteristics of participants and interventions although Miller 2011 was a pilot study. Hjelm 2017 assessed the Zambia cash

transfer programme. These programmes differed in the amount provided by the cash transfer (USD 11 every second month which was fixed versus USD 40 monthly which varied depending on household size and the number of school-aged children). As expected, the effect in Miller was worse than in the other studies.

Brugh 2018 reported a clear effect favouring UCTs, with a decrease in the proportion of household expenditure on food by 2 percentage points at 1 year (pp −2, 95% CI −3.96 to −0.4; 3290 households). This study was at low overall risk of bias.

Asfaw 2014 and Merttens 2013 reported an unclear effect potentially favouring UCTs, showing a decrease in the proportion of monthly amount spent on food: Merttens 2013 by −0.4 pp at one year (2435 participants; P > 0.1) and Asfaw 2014 by −0.95 pp at two years (1824 participants; P > 0.1). These studies were both at high overall risk of bias.

Miller 2011 and Hjelm 2017 reported a clear effect favouring the control. Miller 2011 reported an increase in the proportion of total weekly expenditures on food by 12 pp in the intervention group compared to the control at one year (P < 0.0001, 752 participants); Hjelm 2017 reported an increase in per capita share of food expenditure of 4.2 pp (95% CI 0.67 to 7.72). Miller 2011 is at low overall risk of bias and Hjelm 2017 at unclear overall risk of bias.

1.3 Proportion of households who were food secure

Twelve trials reported on different food security and dietary diversity measures. Food security measures reflect the frequency and severity of food insecurity experienced by households within a specific reference period (e.g. past month), with a higher number usually indicating more food insecurity. Dietary diversity refers to the number of food groups or food items consumed, by households or individuals within a specific reference period (e.g. past 24 hours), with a higher number indicating better dietary diversity. In our analysis, we included composite measures for food security and dietary diversity (e.g. reported scores or indices), in preference to single outcome measures; details of their definitions and interpretations are presented in Table 6.

1.3.1 Food security

Five cRCTs and one RCT reported this outcome, with evidence showing that UCTs improve food security (6 trials, 10,251 households and 7604 children; high-certainty evidence; Summary of findings 1). All six studies showed a clear effect favouring UCTs (P < 0.001; Figure 5). Miller 2011 and Brugh 2018 reported an increase in the proportion of people eating more than one meal per day with the UCTs: Miller 2011 reported an increase of 42 pp at one year follow-up (P < 0.0001; 752 participants); Brugh 2018 reported an increase of 11 pp at one year (95% CI 5.12 to 16.9; 3290 households). Data from these studies could not be pooled due to high heterogeneity (I^2 = 87%; Analysis 1.2). These two studies assessed cash transfers in Malawi and the characteristics of participants and interventions were the same, but Miller 2011 was a smaller pilot study and was at unclear overall risk of bias whereas Brugh 2018 was at low overall risk of bias. Daidone 2014, Haushofer 2013, and Hjelm 2017 reported food security scores; Hjelm 2017 using the FSI and Daidone 2014 and Haushofer 2013 using a food security scale based on the HFIAS, and for both of these the higher the value the more beneficial. A meta-analysis of these three studies showed a slight improvement in scores (SMD 0.18, 95% CI 0.13 to 0.23; 6209 households; I^2 = 0%; Analysis 1.3). Pellerano 2014 reported a decrease in severe food deprivation (FSI > 2) at two years in children aged from birth to five years (−16.63 pp; P < 0.05; 2220 children) and in children aged six to 17 years (82116.10 pp; P > 0.1; 5384 children) receiving the UCT compared to children in the control group. Brugh 2018, Daidone 2014, and Pellerano 2014 were at low overall risk of bias, whereas Haushofer 2013, Hjelm 2017, and Miller 2011 were at unclear overall risk of bias.

One cRCT at higher overall risk of bias compared food transfers with UCTs (Schwab 2013). They reported on the number of months of the previous six months that households had difficulty satisfying their food needs, with an unclear effect potentially favouring UCTs (MD −1.06; P > 0.05; 1983 households).

1.3.2 Dietary diversity

Ten cRCTs and one PCS reported dietary diversity measures.

Randomised controlled trials

Evidence showed that UCTs may increase dietary diversity (10 RCTs; 11,145 households and 3578 children; low-certainty evidence; Summary of findings 1). Five cRCTs reported a clear effect favouring UCTs and five cRCTs reported an unclear effect potentially favouring UCTs (P < 0.001; Figure 5).

Ahmed 2019a, Ahmed 2019b, Asfaw 2014, Miller 2011, and Tonguet Papucci 2015 reported clear effects favouring UCTs. Miller reported an increase in the food diversity composite score (scale: 1 to 8) of 2.4 points more with UCTs compared to the control group (95% CI 1.22 to 3.58; 752 households). Ahmed 2019a reported an increase in FCS (scale: 0 to 112) with UCTs at two years of 6.84 points (95% CI 4.64 to 9.03; n NR) and Ahmed 2019b of 2.62 points (95% CI 0.58 to 4.66; n NR). Asfaw 2014 reported a mean dietary diversity score (scale 0 to 8) higher by 0.82 at two years (1824 households; P < 0.01). Tonguet Papucci 2015 reported the odds of achieving MDD, which were approximately three-fold higher in the children from the UCT group (OR 2.95, 95% CI 1.86 to 4.68; n = 322; P < 0.001). Of these studies, Ahmed 2019a, Ahmed 2019b, and Miller 2011 were at unclear overall risk of bias; Asfaw 2014 was at high overall risk of bias and Tonguet Papucci 2015 was at low overall risk of bias.

Brugh 2018, Daidone 2014, Merttens 2013, Pellerano 2014, and Skoufias 2013 reported unclear effects potentially favouring UCTs. Four of these cRCTs reported an increase in the mean dietary diversity score at household level (scale: 0 to 12) (Brugh 2018: 0.23 points, 95% CI −0.39 to 0.86; 3290 households; Daidone 2014: 1.43 points; 2298 households; P = NR; Merttens 2013: 0.3 points; 2436 households; P = NR; Pellerano 2014: 0.16; 1486 households; P > 0.1). Skoufias 2013 reported an increase of 10.6 percentage points in the proportion of children in the intervention group achieving MDD, which referred to consuming at least three to six food groups, compared to the control group at two years (pp 10.6, 95% CI −6.65 to 27.85; 568 children; P > 0.05).

Three studies reporting diet diversity scores had sufficient data for a meta-analysis, but results were not pooled due to high heterogeneity (I^2 = 83%; Analysis 1.4) (Asfaw 2014; Brugh 2018; Miller 2011). These studies reported slightly different measures of dietary diversity but, in all cases, a higher value indicated higher dietary diversity. Two studies assessed a cash transfer programme in Malawi and Asfaw 2014 assessed the Kenya cash transfer programme. Both studies in Malawi included ultra-poor

households, the one in Kenya included households with orphans and vulnerable children, which may be more vulnerable. Asfaw 2014 was also at high overall risk of bias whereas the others were at unclear and low overall risk of bias. Two studies reporting the proportion of children with MDD could not be pooled due to high heterogeneity (I^2 = 94%, Analysis 1.5) (Skoufias 2013; Tonguet Papucci 2015). The interventions in these two studies differed somewhat; Skoufias 2013, which was at high overall risk of bias, made a payment of approximately USD 14 every two months and accompanied by health education sessions that were not compulsory. Tonguet Papucci 2015 assessed seasonal cash payments of USD 17 (from July to November only), with no educational sessions, and payments were made to mothers. The effect was larger for Tonguet Papucci 2015, which was at low overall risk of bias.

Two cRCTs compared UCTs with food transfers (Hoddinott 2013; Schwab 2013). Both reported a clear effect on the FCS favouring UCTs (Hoddinott 2013: MD 4.65, 95% CI 2.41 to 6.87, n = NR; Schwab 2013: MD 4.52, 95% CI 6.85 to 2.19; 1581 households). Hoddinott 2013 was at unclear overall risk of bias and Schwab 2013 was at high overall risk of bias.

Prospective controlled studies

One PCS reported an unclear effect on the HDDS potentially favouring UCTs (0.16, 95% CI −0.07 to 0.39; 6003 households) (Table 9) (Breisinger 2018). This study was at high overall risk of bias.

Secondary outcomes

1.4 Change in adequacy of dietary intake

Three cRCTs reported change in adequacy of dietary intake (Ahmed 2019a; Ahmed 2019b; Brugh 2018). One study reported a clear effect favouring UCTs and two studies reported an unclear effect potentially favouring UCTs (P = 0.047) (Table 9).

Brugh 2018 reported a clear effect favouring the intervention on the proportion of households who were food energy deficient (i.e. where the total household caloric availability was lower than the total household caloric requirement) (pp −10, 95% CI −17.8 to −2.16; 3290 households). This study was at low overall risk of bias.

Ahmed 2019a and Ahmed 2019b reported an unclear effect potentially favouring UCTs. A meta-analysis of these two studies showed that UCTs may make no difference to the proportion of households with food poverty, defined as per capita daily caloric intake below 2122 calories (MD −4.64, 95% CI −9.34 to 0.06, n = NR). These studies were at low overall risk of bias.

1.5 Change in anthropometric indicators

Ten cRCTs (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Daidone 2014; Fenn 2015; Fernald 2011; Merttens 2013; Pellerano 2014; Skoufias 2013; Tonguet Papucci 2015) and two PCS (Aguero 2006; Renzaho 2017) reported various anthropometric measures.

1.5.1 Stunting: height-for-age z-scores < −2SD; chronic undernutrition)

Randomised controlled trials

Four cRCTs reported on the proportion of children who were stunted (Asfaw 2014; Fenn 2015; Merttens 2013; Tonguet Papucci 2015), with evidence showing that UCTs may reduce stunting (4 trials, 4713 children; low-certainty evidence; Summary of findings 1). One study showed a clear effect favouring UCTs, two studies showed an unclear effect favouring UCTs, and one study showed an unclear effect favouring control (P = 0.047; Figure 5). A meta-analysis of two of these studies showed a reduction in stunting with UCTs (OR 0.62, 95% CI 0.46 to 0.84; 2914 children; I^2 = 0%; Analysis 1.7) (Fenn 2015; Tonguet Papucci 2015).

Fenn 2015 reported a clear effect favouring UCTs, with a reduction in the odds of stunting of 46% at 12 months (OR 0.54, 95% CI 0.36 to 0.81; 1664 children). There was a similar effect for the proportion of children who were severely stunted (HAZ < −3SD) (Table 9). This study was at low overall risk of bias.

Tonguet Papucci 2015 and Asfaw 2014 reported unclear effects potentially favouring UCTs. Tonguet Papucci 2015 reported a reduced likelihood of stunting in the intervention group compared to the control group at 24 months by 27% (OR 0.73, 95% CI 0.47 to 1.14; n = 1250; P = 0.17), but the effect ranged from a beneficial effect on the outcome to worsening the outcome. In Asfaw 2014, the intervention reduced the proportion of stunted children by 4.63 pp (P > 0.1). Tonguet Papucci 2015 was at low overall risk of bias whereas Asfaw 2014 was at high overall risk of bias.

Merttens 2013 reported an increase in the proportion of stunted children (pp 7.0; 1062 children; P > 0.1) and severely stunted children (pp 1.9; 1062 children; P > 0.1) among those in the UCT group compared to those in the control group. This study was at high overall risk of bias.

In addition to the proportion of stunting, six trials reported the effects on mean HAZ (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Daidone 2014; Fenn 2015; Fernald 2011); and one on mean z-score per month (Tonguet Papucci 2015). A meta-analysis showed an unclear effect of UCTs on HAZ (MD 0.07, 95% CI −0.04 to 0.18; I^2 = 56%; Analysis 1.8). A sensitivity analysis performed using only studies at overall low risk of bias showed a clear effect favouring UCTs (MD 0.16, 95% CI 0.02 to 0.29; Appendix 4) (Daidone 2014; Fenn 2015).

Prospective controlled studies

One PCS reported a clear effect favouring UCTs on stunting at five years (pp −5.16, 95% CI −9.55 to −0.77; 1491 children; Table 9; Figure 5) (Renzaho 2017).

Renzaho 2017 and Aguero 2006 also reported on the effect of UCTs on mean HAZ (data not pooled as SE was not available for either study). Renzaho 2017 reported a clear effect favouring UCTs at five years (pp 18, 95% CI 9 to 27; 1491 children). Aguero 2006 reported that after 72 months, the mean z-score was better in children receiving the intervention (−0.84) than in those who only received the intervention after they were aged three years (−0.91) (566 children) or those who were rejected or were not yet receiving the intervention (−1.08) (399 children). Both studies are at high overall risk of bias.

Aguero 2006 also reported the effects of the intervention on HAZ for children receiving the child care grant for different periods of the critical nutritional window aged between 0 and 36 months. They found that for children receiving the intervention for less than 20% of this period there was no effect on HAZ. Compared to receiving a 'small dose', they found a significant impact on HAZ for children receiving the intervention during 45% to 80% of the

nutrition window (mean change in HAZ 0.15 at 45%, and 0.25 at 80% of nutritional window; data derived from graphs).

1.5.2 Wasting: weight-for-height z-score < –2SD (acute undernutrition)

Randomised controlled trials

Four cRCTs reported effects of UCTs on wasting (Asfaw 2014; Fenn 2015; Merttens 2013; Tonguet Papucci 2015). Evidence showed that there was uncertainty about whether UCTs reduce wasting (4 trials, 6396 children; very low-certainty evidence; Summary of findings 1). One study showed an unclear effect potentially favouring UCTs and three studies showed an unclear effect potentially favouring the control (P = 0.016; Figure 5).

Tonguet Papucci 2015 reported an unclear effect potentially favouring the intervention, observing a 2% decrease in the risk of wasting at two years (incidence rate ratio (IRR) 0.92, 95% CI 0.64 to 1.32; 1250 children; P = 0.66). However, this effect ranged from a 36% reduction to a 32% increase in risk.

Asfaw 2014, Merttens 2013, and Fenn 2015 reported an unclear effect potentially favouring the control as they observed an increase in the proportion of wasting among children receiving UCTs, but reported a CI that crossed the null. In Fenn 2015, the odds of wasting was 10% higher among children receiving the intervention at one year (OR 1.10, 95% CI 0.71 to 1.71; 1664 children). At two years, the proportion of wasted children was 5.95 pp higher among those in the UCT group in Asfaw 2014 (989 children; P > 0.1) and 4.7 pp in Merttens 2013 (1062 children; P > 0.1). In Merttens 2013, the proportion of children younger than five years who were severely wasted also increased by 3.9 pp (P > 0.1). Both studies are at high overall risk of bias.

In addition to the effects on stunting, five cRCTs reported on the effect of UCTs on mean WHZ (Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Daidone 2014; Fenn 2015) and one on mean WHZ/month (Tonguet Papucci 2015). A meta-analysis of data from these studies showed that UCTs made no difference on WHZ (MD –0.02, 95% CI –0.10 to 0.06; I^2 = 36%; Analysis 1.9). Two of these studies were at unclear overall risk of bias and one at high overall risk of bias. A sensitivity analysis of studies at low overall risk of bias studies changed the direction of effect to unclearly favour UCTs (MD 0.02, 95% CI –0.18 to 0.21; Appendix 4) (Daidone 2014; Fenn 2015).

Prospective controlled studies

One PCS reported on stunting, with effects clearly favouring UCTs (pp –2.84, 95% CI –5.58 to –0.1; 1491 children) (Figure 5) (Renzaho 2017). This study was at high overall risk of bias.

This study also reported on effect of UCTs on mean WHZ, also reporting a clear effect favouring UCTs (MD 0.19, 95% CI 0.09 to 0.03; 1491 children) (Table 10).

1.5.3 Underweight

1.5.3.1 Weight-for-age z-scores < –2SD

Three cRCTs reported unclear effects of UCTs on the proportion of underweight children (Asfaw 2014; Merttens 2013; Pellerano 2014). Two trials reported unclear effects potentially favouring UCTs and one trial reported unclear effects potentially favouring the control (P = 0.047) (Table 9; Figure 5).

The two studies favouring the intervention reported an unclear effect potentially favouring UCTs on underweight (Asfaw 2014; Pellerano 2014). Pellerano 2014 reported a reduction in proportion of children aged from birth to 36 months who were underweight at two years by 3.64 pp when they were aged 12 months (P > 0.05), Asfaw 2014 reported a reduction of 0.62 pp in the proportion of children aged under five years who were underweight (pp –0.62; 1491 children; P > 0.1).

Merttens 2013 reported an unclear effect favouring the control, as they reported an increase in the proportion of children who were underweight or severely underweight in the UCT group (3.9 pp with UCT versus 3.2 pp with control; 1062 children; P > 0.1).

In addition to the effects of UCTs on underweight, two trials also reported on the effects of UCTs on mean WAZ (Asfaw 2014; Daidone 2014). A meta-analysis of these two studies showed that UCTs may have no effect on underweight (MD –0.04, 95% CI –0.43, 0.35; 7577 children: I^2 = 74%; Analysis 1.10). Daidone 2014 was at low overall risk of bias, whereas Asfaw 2014 was at high overall risk of bias. Daidone 2014 assessed a child grant programme and Asfaw 2014 assessed a cash transfer programme for households with orphans and vulnerable children, where in some districts some conditions, such as school attendance, and penalties were imposed even though the programme was unconditional.

1.5.3.2 Body mass index

One cRCT reported unclear effects potentially favouring the control on BMI of mothers at six months (MD –0.1, 95% CI –0.36 to 0.16; 1208 mothers; Table 9) (Fenn 2015).

1.5.3.3 Mid-upper arm circumference

One cRCT reported unclear effects potentially favouring UCTs on MUAC measures for mothers and children (MD 0.09, 95% CI –0.13 to 0.3; 1208 mothers; MD 0.06, 95% CI –0.02 to 0.15; 1683 children; Table 9) (Fenn 2015).

1.6 Change in biochemical indicators

1.6.1 Haemoglobin concentration

Two cRCTs reported on the effects of UCTs on haemoglobin concentration (Fenn 2015; Fernald 2011). A meta-analysis of these two studies showed an unclear effect of UCTs on haemoglobin in children (MD –0.06, 95% CI –0.21 to 0.09; 2605 children; Analysis 1.11). Fenn 2015 also reported on the effects in mothers, finding a clear effect favouring the control on haemoglobin in mothers receiving UCTs (MD –0.42, 95% CI –0.63 to –0.20; 1208 mothers). Both studies were at low overall risk of bias.

1.7 Cognitive function and development

Three cRCTs reported different measures of cognitive function and development (Baird 2013; Daidone 2014; Fernald 2011). Evidence showed that UCTs make little or no difference on cognitive function and development (3 cRCTs; 10,813 children; high-certainty evidence; Summary of findings 1). All three trials reported an unclear effect favouring the intervention (P = 0.016; Figure 5).

Baird 2013 reported an increase in the cognitive test score based on a version of Raven's Colored Progressive matrices at two years (MD 0.14 SDs, 95% CI 0.02 to 0.26; 2057 children) and Daidone 2014 reported an increase in the Early Childhood Development score among children receiving UCTs at two years (MD 0.31; 5670 children;

P > 0.1) (Table 9). Fernald 2011 reported on scores after two years for language development in young children receiving UCTs, using two different measures: scores for early language skills of children aged 12 to 35 months using the Inventario do Desenvolvemento de Habilidades Comunicativas (IDHC)-B tool (MD 2.43, 95% CI −1.01 to 5.86; 1192 children; P > 0.1), and scores for the receptive vocabulary test (Test de Vocabulario en Imagenes Peabody (TVIP)) in children older than 36 months (MD 0.01, 95% CI −0.08 to 0.10; 1894 children; P > 0.1). However, for both of these, the effect ranged from a decrease to an increase in scores. All cognitive measures reported in the included studies are summarised in Table 7.

1.8 Change in proportion of anxiety or depression (mental health indicators)

Three cRCTs (Baird 2013; Fernald 2011; Hjelm 2017) and one RCT (Haushofer 2013) reported different measures of mental health.

1.8.1 Depression

Fernald 2011, Haushofer 2013, and Hjelm 2017 reported effects of UCTs on depressive symptoms scores using the Center for Epidemiologic Studies Depression Scale (CES-D) (higher scores indicate worse symptoms). The meta-analysis indicated that UCTs do not make a difference in depression scores at two years (MD −0.41, 95% CI −1.31 to 0.49; 5787 participants; I^2 = 36%; Analysis 1.12). Fernald 2011 assessed the effect of the intervention on men and women, Haushofer 2013 on mothers, and Hjelm 2017 on adolescents. Fernald 2011 and Haushofer 2013 were at low overall risk of bias and Hjelm 2017 was at unclear overall risk of bias.

1.8.2 Perceived stress

Two cRCTs (Fernald 2011; Hjelm 2017) and one RCT (Haushofer 2013) reported on the effects of UCTs on perceived stress using Cohen's Perceived Stress Scale (PSS) (lower values correspond to less stress). A meta-analysis of Haushofer 2013 and Hjelm 2017 indicated that UCTs may reduce perceived stress (MD −0.15, 95% CI −0.26 to −0.03; n = 3570; I^2 = 0%; Analysis 1.13). Fernald 2011 reported an increase in the perceived stress z-score of mothers in the intervention group at two years, both for those in the bottom quartile of baseline expenditure (MD 0.18, 95% CI −0.02 to 0.37; n = 1430; P < 0.1) and for those in the top three quartiles of baseline expenditure at two years (MD 0.05, 95% CI −0.11 to 0.20; P > 0.1).

1.8.3 Psychological distress

One cRCT reported on psychological distress, a binary measure of psychological distress, anxiety and depression; social dysfunction; and loss of confidence based on the 12-item General Health Questionnaire (GHQ-12) (Baird 2013). Among girls who were attending school and exposed to a UCT compared to girls in the control group, the proportion of psychological distress was smaller by 14.3 pp at one year (95% CI −21.0 to −7.6), and by 3.8 pp at two years (95% CI −13.14 to 5.8; n = 2089; P > 0.1), but the effect at two years was imprecise.

1.9 Morbidity

Seven cRCTs reported on different morbidity measures (Ahmed 2019a; Ahmed 2019b; Daidone 2014; Fenn 2015; Merttens 2013; Pellerano 2014; Tonguet Papucci 2015).

1.9.1 Respiratory infections

Four cRCTs reported on the effects of UCTs on respiratory infections (Asfaw 2014; Daidone 2014; Fenn 2015; Tonguet Papucci 2015). Two trials reported a clear effect favouring the intervention and two trials reported an unclear effect potentially favouring the intervention (P = 0.023; Table 9). Data could not be pooled.

Asfaw 2014 and Tonguet Papucci 2015 reported clear effects favouring UCTs. Tonguet Papucci 2015 reported a 21% reduced incidence of acute respiratory tract infection episodes among children aged from birth to 15 months in the previous seven days, as refereed by mothers (IRR 0.79, 95% CI 0.78 to 0.81; 1250 children; P < 0.001). Asfaw 2014 reported a reduced risk of respiratory infections of 44% among children aged from birth to seven years (957 children; P < 0.05). Asfaw 2014 was at high overall risk of bias whereas Tonguet Papucci 2015 was at low overall risk of bias.

Daidone 2014 and Fenn 2015 reported unclear effects potentially favouring UCTs. Daidone 2014 reported that the proportion of children aged from birth to 60 months with acute respiratory tract infection in a two-week reference period was lower by 3.6 pp in the intervention group compared to the control group (effect estimate −0.036, 95% CI −0.061 to −0.011; P > 0.05). In Fenn 2015, the odds of respiratory infections was 27% lower among children in the UCT group (OR 0.73, 95% CI 0.51 to 1.03; 1683 children). Both studies were at low overall risk of bias.

1.9.2 Diarrhoeal disease

Five cRCTs reported on the effects of UCTs on diarrhoeal disease (Ahmed 2019a; Ahmed 2019b; Daidone 2014; Fenn 2015; Tonguet Papucci 2015). One study reported a clear effect favouring UCTs, two studies reported an unclear effect potentially favouring UCTs, one study reported an unclear effect potentially favouring the control, and one study reported no effect (P = 0.047) (Table 9).

Daidone 2014 reported clear effects favouring UCTs. Among children aged from birth to 60 months in the UCT group, the proportion with diarrhoea in the previous two weeks reduced by 4.9 pp at one year (pp −4.9, 95% CI −8.9 to −0.9; 7232 children; P < 0.05).

Ahmed 2019a and Ahmed 2019b reported unclear effects potentially favouring UCTs. In Ahmed 2019a, there was a reduction in the proportion of children with diarrhoea of 0.3 pp (95% CI −0.04 to 0.04, n = NR), and in Ahmed 2019b of 0.9 pp (95% CI −0.05 to 0.03, n = NR). All studies were at low overall risk of bias.

Tonguet Papucci 2015 reported no difference between the groups in the incidence of diarrhoeal episodes in the previous seven days, as reported by the mother, after one year of the intervention (IRR 1.00, 95% CI 0.97 to 1.03; 1250 children; P = 0.89). This study was at low overall risk of bias.

1.9.3 Any illness

Two cRCTs reported on the effects of UCTs on the proportion of children or people who were ill (Merttens 2013; Pellerano 2014), one reporting a clear effect favouring UCTs and the other unclear effects favouring the control (P = 0.125) (Table 9).

Pellerano 2014 reported a reduction in the proportion of children who were ill in the previous month in the intervention compared to the control group by 15 pp at one year (from 39% to 31%) (pp −15,38; 1996 children; P < 0.1).

In Merttens 2013, there was no difference between the intervention and control groups in the proportion of people who reported being ill or injured in the previous three months, after one year of the intervention (pp 1.0; 14,342 participants; P > 0.1). In this study, these proportions reduced significantly in both intervention and control groups, and injuries were also included as an 'illness'. Pellerano 2014 was at low overall risk of bias whereas Merttens 2013 was at high overall risk of bias due to high risk of selection and attrition bias.

1.10 Adverse outcomes (proportion of participants overweight or obese)

Pellerano 2014, a cRCT, reported unclear effects potentially favouring UCTs on the proportion of infants who were overweight when they were aged six and 12 months, at two years of the intervention (6 months old: pp −5.08; 474 children; P > 0.05; 12 months old: pp −6.46; 293 children; P > 0.05) (Table 9).

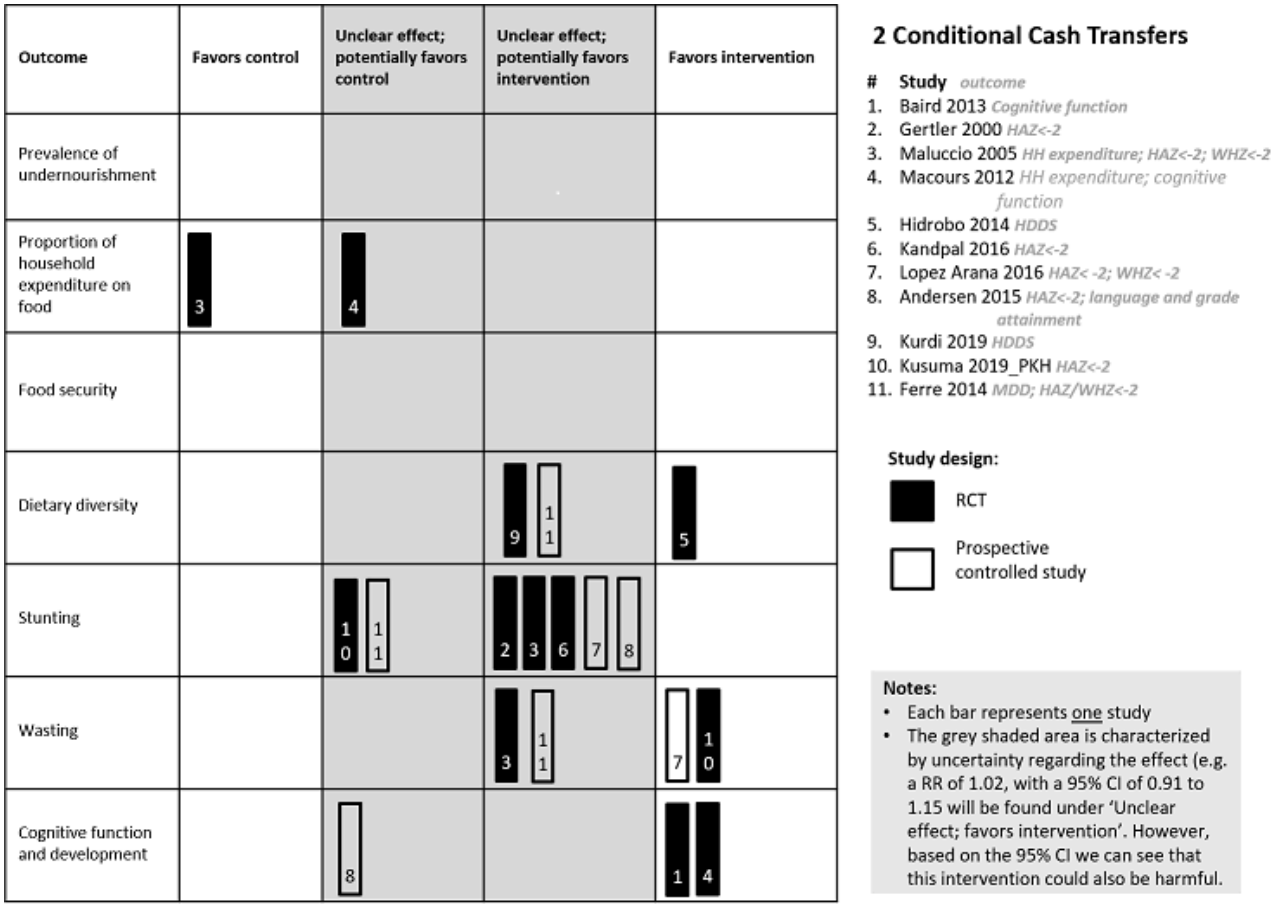
Comparison 2: conditional cash transfers

Fourteen included studies assessed CCTs, where a specified amount of money was transferred to poor families regularly as long as they meet specific conditions. Nine were cRCTs (Baird 2013; Evans 2014; Gertler 2000 (PROGRESA); Hidrobo 2014; Kandpal 2016; Kurdi 2019; Kusuma 2017a; Macours 2012; Maluccio 2005) and five were PCS (Andersen 2015; Ferre 2014; Huerta 2006 (PROGRESA); Leroy 2008 (PROGRESA); Lopez Arana 2016). All studies compared CCTs with no intervention. However, requirements and other intervention components differed across studies. Requirements (or conditions) included regular check-ups for children, school enrolment and regular attendance, vaccination, micronutrient supplementation for children or for pregnant women, and attending nutrition education sessions.

Two cRCTs (Macours 2012; Maluccio 2005) and one PCS (Ferre 2014) reported the proportion of household expenditure on food. Two cRCTs (Hidrobo 2014; Kurdi 2019) and one PCS (Ferre 2014) reported on dietary diversity measures. Seven cRCTs (Evans 2014; Gertler 2000 (PROGRESA); Kandpal 2016; Kusuma 2017a; Kurdi 2019; Macours 2012; Maluccio 2005;) and four PCS (Andersen 2015 Leroy 2008 (PROGRESA); Lopez Arana 2016; Ferre 2014) reported on various anthropometric measures. Two cRCTs (Baird 2013; Macours 2012) and one PCS (Andersen 2015) reported on cognitive function and development measures. One cRCT (Baird 2013) reported on psychological distress. Four cRCTs reported measures of morbidity (Evans 2014; Gertler 2000 (PROGRESA); Kandpal 2016; Macours 2012). Two PCS reported adverse measures of overweight (Andersen 2015; Lopez Arana 2016).

Further details about the studies in this comparison are presented in Table 11. Table 12 presents the results of cRCTs and Table 13 of PCS. Summary of findings 2 and harvest plot in Figure 6 summarise the results of CCTs on key outcomes.

Figure 6. Harvest plot: conditional cash transfers.



Primary outcomes

2.1 Change in the prevalence of undernourishment

None of the included studies measured prevalence of undernourishment.

2.2 Proportion of household expenditure on food

Two cRCTs (Macours 2012; Maluccio 2005) and one PCS (Ferre 2014) reported proportion of household expenditure on food.

Randomised controlled trials

Evidence from two cRCTs indicated that CCTs result in little to no difference in the proportion of household expenditure on food (4760 households, 2 RCTs; high-certainty evidence; Summary of findings 2). One study reported a clear effect favouring the control and one study reported an unclear effect potentially favouring the control (P = 0.125) (Figure 6). Both studies were at low overall risk of bias.

Maluccio 2005 reported clear effects favouring the control, with an increase in the proportion of household expenditure of 3.9 pp at one year (1490 households; P < 0.01) and of 4.1 pp at two years (1434 households; P < 0.01) (Table 12).

Macours 2012 reported an unclear effect potentially favouring the control because among those in the intervention group the proportion of household expenditure increased very slightly by 0.01 SDs (95% CI −0.01 to 0.02; 3326 households).

Prospective controlled studies

Ferre 2014 reported on this outcome but did not report an effect estimate (Table 13).

2.3 Proportion of households who were food secure

2.3.1 Food security

None of the studies in this comparison reported food security.

2.3.2 Dietary diversity

Randomised controlled trials

Evidence from two cRCTs indicated that CCTs probably slightly increase dietary diversity (3937 households; 2 cRCTs; moderate-certainty evidence; Summary of findings 2; Figure 6) (Hidrobo 2014; Kurdi 2019). A meta-analysis of these two studies, which reported FCS (scale: 0 to 112, higher score indicating better dietary diversity) showed a clear effect favouring CCTs (MD 0.45, 95% CI 0.25 to 0.65; 3937 households; I^2 = 0%). Both trials were at high overall risk of bias.

Prospective controlled trials

Ferre 2014 reported an unclear effect potentially favouring CCT on the proportion of children with MDD (i.e. proportion of children aged six months and above fed from at least four food groups) (Figure 6). The proportion of children with MDD increased by 3.1 pp with CCTs compared to the control group at 13 months (MD 0.03, 95% CI −0.07 to 0.13, n = 1318) (Table 13).

Secondary outcomes

2.4 Change in adequacy of dietary intake

No included study reported the adequacy of dietary intake. Some studies reported caloric availability and intake; we have not reported these data as they do not relate to measures of adequacy.

2.5 Change in anthropometric indicators

Seven cRCTs (Evans 2014; Gertler 2000 (PROGRESA); Kandpal 2016; Kusuma 2017a; Kurdi 2019; Macours 2012; Maluccio 2005) and four PCS (Andersen 2015; Ferre 2014; Leroy 2008 (PROGRESA); Lopez Arana 2016) reported on various anthropometric measures.

2.5.1 Stunting: height-for-age z-scores < −2SD (chronic undernutrition)

Cluster randomised controlled trials

Evidence from four cRCTs (Gertler 2000 (PROGRESA); Kandpal 2016; Kusuma 2017a; Maluccio 2005) showed that CCTs may make little or no difference to the proportion of stunted children (4 RCTs, 3529 children; low-certainty evidence; Summary of findings 2). Three studies showed an unclear effect favouring CCTs and one study showed an unclear effect potentially favouring the control (P = 0.016) (Figure 6).

Gertler 2000 (PROGRESA), Kandpal 2016, and Maluccio 2005 reported an unclear effect potentially favouring CCTs. The proportion of stunted children was reduced among those receiving CCTs in these three studies; however, all the 95% CI crossed the null effect (Table 12). In Maluccio 2005, the proportion reduced by 5.3 pp at two years (95% CI −11.38 to 0.78; 722 children aged under 5 years); in Gertler 2000 (PROGRESA), the odds of children being stunted was lower by 8.6% at 1.6 years (OR 0.91; 1062 children; P = 0.495); and in Kandpal 2016 the proportion of stunted children was lower by 3.77 pp at three years (95% CI −13.83 to 6.29; 351 children younger than 36 months; P > 0.1). Kandpal 2016 also reported that, in the CCT group, the proportion of children who were severely stunted was reduced by 10.19 pp compared to the control group at three years (95% CI −18.77 to −1.61; 351 children).

Kusuma 2017a reported an unclear effect potentially favouring the control. Among children aged 24 to 36 months in the CCT group, the proportion of stunting increased by 3.5 pp (95% CI −5.5 to 12.5; 1394 children) (Table 12). This study reported a similar effect on the proportion of children who were severely stunted (HAZ < −3SD).

A meta-analysis of three of these studies showed an unclear effect favouring CCTs (MD −2.51, 95% CI −7.78 to 2.75; 2467 children; I^2 = 22%; Analysis 2.2) (Kandpal 2016; Kusuma 2017a; Maluccio 2005). The two studies that reported on the effects of CCTs on severe stunting could not be pooled due to high heterogeneity (I^2 = 78%; Analysis 2.3) (Kandpal 2016; Kusuma 2017a). The cash transfer programmes evaluated in these studies are similar in the cash transfer amount and programme conditions; however, Kusuma 2017a included children aged 24 to 36 months whereas Kandpal 2016 included children under 36 months. They also differed in their overall risk of bias, with Kandpal 2016 at high and Kusuma 2017a at unclear risk.

In addition to reporting the effects of CCTs on stunting, five cRCTs reported on mean HAZ (Evans 2014; Kandpal 2016; Kurdi 2019; Macours 2012; Maluccio 2005). A meta-analysis of these studies indicated that CCTs improve mean HAZ (MD 0.09, 95% CI 0.04 to

0.15; 5619 children; I^2 = 0%; Analysis 2.4). The follow-up period ranged from nine months to three years. Three of the studies in this comparison were at high overall risk of bias (Evans 2014; Kandpal 2016; Kurdi 2019), and the others at low overall risk of bias. A sensitivity analysis of the studies at overall low risk of bias did not affect the results (Appendix 4) (Macours 2012; Maluccio 2005).

Prospective controlled studies

Three PCS reported on stunting (Lopez Arana 2016, Andersen 2015; Ferre 2014). Two reported unclear effects potentially favouring CCTs and one reported unclear effects potentially favouring the control (P = 0.047; Figure 6; Table 13). All studies were at high overall risk of bias.

Lopez Arana 2016 and Andersen 2015 reported unclear effects potentially favouring CCTs. Lopez Arana 2016 reported a reduction in stunting among 2874 children in the intervention group at four years but the CIs overlapped with the null effect (OR 0.92, 95% CI 0.82 to 1.05; P > 0.05). In Andersen 2015, there was a smaller proportion of stunted children in the intervention group, both among those receiving the intervention for less than two years (treatment effect: –7.98, 95% CI –22.3 to 6.34; 188 children; P = 0.27) as well as those receiving the intervention for longer than two years (treatment effect –18.3, 95% CI –38.3 to 1.59; 169 children; P = 0.07). Both of these studies were at high overall risk of bias.

Ferre 2014 reported unclear effects potentially favouring the control, with a higher proportion of stunted children in the CCT group by 3.4 pp at approximately one year (95% CI –6.4 to 13.2).

A meta-analysis of two of these studies indicated an unclear effect potentially favouring CCTs (MD –5.63, 95% CI –26.59 to 15.34; 1749 children; I^2 = 73%; Analysis 2.5) (Andersen 2015; Ferre 2014).

In addition to reporting the effects of CCTs on stunting, three PCS, all at high overall risk of bias, reported on mean HAZ (Andersen 2015; Leroy 2008 (PROGRESA); Lopez Arana 2016). The pooled analysis indicated that CCTs may or may not increase HAZ, as the effect could range from a small reduction to a significant increase in HAZ (MD 0.03, 95% CI –0.06 to 0.12; 3475 children, I^2 = 0%; Analysis 2.6).

2.5.2. Wasting: weight-for-height z-scores < –2SD (acute undernutrition)

Four cRCTs (Evans 2014; Kurdi 2019; Kusuma 2017a; Maluccio 2005) and three PCS (Ferre 2014; Leroy 2008 (PROGRESA); Lopez Arana 2016) reported measures related to wasting.

Cluster randomised controlled trials

Evidence from two cRCTs indicated that CCTs may make little or no difference to wasting (2 trials, 2116 children; low-certainty evidence; Summary of findings 2; Figure 6) (Maluccio 2005; Kusuma 2017a). A meta-analysis showed an unclear effect favouring CCTs (MD –2.50, 95% CI –8.04 to 3.04; I^2 = 70%; Analysis 2.7).

Two other trials reported on the effects of CCTs on mean WHZ (Evans 2014; Kurdi 2019). A meta-analysis indicated an unclear effect potentially favouring CCTs (MD 0.17, 95% CI –0.11 to 0.44; 1111 children; I^2 = 0%; Analysis 2.8).

Prospective controlled studies

Two PCS reported on the effects of CCTs on wasting (Lopez Arana 2016; Ferre 2014). One study reported clear effects favouring CCTs and one study unclear effects potentially favouring CCTs (P = 0.125) (Figure 6; Table 13). Data could not be pooled. Both studies were at high overall risk of bias.

Lopez Arana 2016 reported a clear effect favouring CCTs. In this study the odds of wasting were reduced by 75% among children in the CCT group at four years (OR 0.25, 95% CI 0.09 to 0.74; 2874 children).

Ferre 2014 reported an unclear effect potentially favouring CCTs. The proportion of wasted children was lower in the CCT group at 13 months, by 3.6 pp for those that were aged 22 to 46 months when enrolled (MD –0.04, 95% CI –0.11 to 0.04) and by 13 pp for those aged 10 to 22 months when enrolled (MD –0.13, 95% CI –0.26 to 0.01). However, effects ranged from potential benefit to potential harm.

In addition, one PCS, at high overall risk of bias, reported an unclear effect on WHZ potentially favouring CCTs (Leroy 2008 (PROGRESA)). The mean WHZ was higher by 0.085 SDs at two years (95% CI –0.11 to 0.28; 432 children; P = 0.2).

2.5.3 Underweight

2.5.3.1 Weight-for-age z-scores < –2SD)

Three cRCTs reported on the effects of CCTs on the proportion of children who were underweight (Kandpal 2016; Kusuma 2017a; Maluccio 2005). One study reported a clear effect favouring CCTs, and two studies reported unclear effects potentially favouring CCTs (Table 12). A meta-analysis of these studies indicated that CCTs can help reduce underweight (MD –4.87, 95% CI –8.65 to –1.09; 2506 children; I^2 = 0%; Analysis 2.9). The study clearly favouring CCTs was at low overall risk of bias. Two of these studies also reported the effects on severe stunting, showing the CCTs may not make a difference to this outcome (MD –1.08, 95% CI –4.73 to 2.57; 1784 children; I^2 = 0%; Analysis 2.10) (Kandpal 2016; Kusuma 2017a).

In addition, Evans 2014, Kandpal 2016, and Macours 2012 reported on the effects of CCTs on mean WAZ. The pooled analysis indicated that CCTs slightly increased WAZ by 0.04 SDs in a period ranging from nine months to three years after the intervention (MD 0.04, 95% CI –0.03 to 0.11; 3 trials, 3,548 children; I^2 = 0%; Analysis 2.11). Two of these studies were at high overall risk of bias (Evans 2014; Kandpal 2016).

Prospective controlled studies

One PCS, at high overall risk of bias, reported an unclear effect favouring the control (Ferre 2014). The proportion of children who were underweight increased by 4.6 pp at 13 months among those in the CCT group compared to the control group, but the effects ranged from a decrease to an increase (MD 0.05, 95% CI –0.05 to 0.14; 1638 children) (Table 13).

2.5.3.2 Body mass index-for-age z-score

Cluster randomised controlled trials

One cRCT at high overall risk of bias reported unclear effects on body mass index-for-age z-score (BMIZ) potentially favouring the control at 1.5 years (MD –1.55, 95% CI –4.43 to 1.33; P > 0.1; 64 children aged 0 to 4 years; Table 12) (Evans 2014).

Prospective controlled studies

Two PCS, both at high overall risk of bias, reported on BMIZ, with effects ranging from unclear potentially favouring CCTs to unclear potentially favouring the control (P = 0.125) (Table 13) (Andersen 2015; Lopez Arana 2016). Studies could not be pooled due to high heterogeneity (I^2 = 79%; Analysis 2.12). Both studies are at high overall risk of bias. In Lopez Arana 2016, some of the children also participated in a separate childcare supplementary nutrition programme, which could have influenced the effects of the cash transfer. This study included children aged from birth to 17 years, whereas Andersen 2015 included children aged six to 18 months only.

Lopez Arana 2016 reported unclear effects potentially favouring CCTs, with BMIZ increasing for children in the intervention group compared to those in the control group (MD 0.14, 95% CI 0.00 to 0.27; P < 0.05; Table 13).

Andersen 2015 reported unclear effects on BMIZ potentially favouring the control, both for those receiving the intervention for less than two years (MD –0.03, 95% CI –0.31 to 0.25, P = 0.84) and those receiving it for longer than two years (MD –0.36, 95% CI –0.79 to 0.06; P = 0.09) (Table 13).

2.6 Change in biochemical indicators

No included study addressing this comparison reported biochemical indicators.

2.7 Cognitive function and development

Two cRCTs (Baird 2013; Macours 2012) and one PCS (Andersen 2015) reported on cognitive function and development.

Cluster randomised controlled trials

Evidence from two cRCTs indicated that CCTs slightly improve cognitive function in children (2 RCTs, 5383 children; high-certainty evidence; Summary of findings 2; Figure 6) (Baird 2013; Macours 2012). Pooled effects indicated that CCTs slightly improve different measures of cognitive function compared to control (SMD 0.13, 95% CI 0.09 to 0.18; I^2 = 0%; Analysis 2.13). The measure used in Macours 2012 was a combined measure averaging the effect across two language tests, short- and long-term memory tests, and two behavioural tests. Baird 2013 used the Ravens Coloured Progressive Matrices test score, which is a measure of abstract reasons in children from the age of five years. For both of these, the higher the score, the more beneficial the effect.

Prospective controlled studies

Andersen 2015 reported small unclear effects potentially favouring the control on the TVIP score, which is the Spanish-speaking version of the Peabody Picture Vocabulary Test (PPVT), a test of receptive vocabulary that can be applied to children 36 months and older. The TVIP score was reduced by 0.15 SDs in the CCT group compared to the control group (MD –0.15, 95% CI –0.37 to 0.07; 243 children; P = 0.17; Table 13).

2.8 Change in proportion of anxiety or depression

One cRCT, at low overall risk of bias, reported on psychological distress, with effects ranging from clear effects favouring CCTs at one year to unclear effects potentially favouring CCTs at two years (Table 12) (Baird 2013). Psychological distress was assessed with the General Health Questionnaire 12, a tool used widely in clinical settings, in which psychological distress is a binary measure of psychological distress, anxiety and depression; social dysfunction; and loss of confidence. The study authors reported that the proportion of school girls with psychological distress reduced in the intervention group both at one year (pp –0.06; 2089 girls; P < 0.05) and at two years (pp –0.04; 2089 girls; P > 0.1). However, the change was very small and unlikely to be meaningful. This study was at low overall risk of bias.

2.9 Morbidity

Four cRCTs report on various morbidity measures (Table 12) (Evans 2014; Gertler 2000 (PROGRESA); Kandpal 2016; Macours 2012).

2.9.1 Illness

Three cRCTs reported the effects of CCTs on illness. A meta-analysis of three of these studies indicated that CCTs may not make a difference to the proportion of people reporting being ill or that reporting seeking care for illness in the past two to four weeks (MD –0.28, 95% CI –5.92 to 5.35; 38,587 participants; Analysis 2.14).

Macours 2012 reported a clear effect favouring CCTs on the number of days ill in bed, which was lower among children in the CCT group compared to the control by 0.357 SDs (MD –0.36, 95% CI –0.62 to –0.10; 3326 children; Table 12).

2.9.2 Anaemia

Gertler 2000 (PROGRESA) reported a clear effect favouring CCTs on anaemia. After 20 months of receiving the intervention, the odds of children being anaemic were 25.5% smaller in children receiving CCTs compared to those receiving no intervention (OR 0.75; 2010 children; P = 0.012). This study was at unclear overall risk of bias (Table 12).

2.10 Adverse outcomes (proportion of overweight/obesity)

A meta-analysis of two PCS, both at high overall risk of bias, showed that CCTs make no difference to the proportion of overweight children aged under 18 years at two to four years of the intervention (OR 1.00, 95% CI 0.59 to 1.71; 3042 children; I^2 = 60%; Analysis 2.15; Table 13) (Andersen 2015; Lopez Arana 2016).

Lopez Arana 2016 also reported on the effects of CCTs on obesity. This study reported an unclear effect favouring CCTs; the risk of obesity was reduced by 44% among children in the intervention group at four years (OR 0.56, 95% CI 0.20 to 1.53; 2874 children; P > 0.05). However, effects were uncertain as the CIs crossed the null effect.

Comparison 3: income-generation interventions

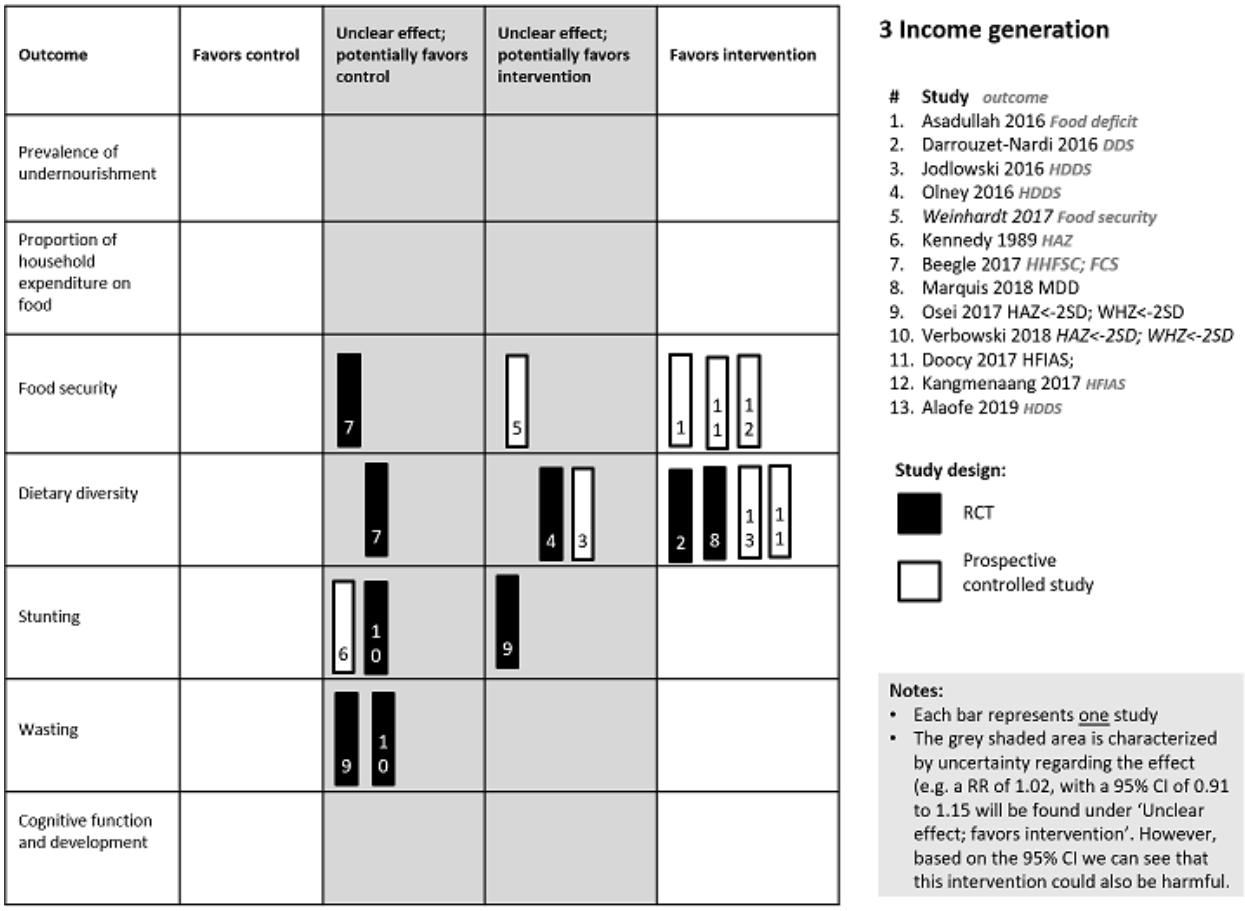
Six cRCTs and 11 PCS assessed a variety of interventions aimed at generating income as a means to improve food security through increased economic access to food. Interventions included broad community development programmes that comprised training on livestock management, citizen empowerment, poverty alleviation delivered to women or women's self-help groups (Darrouzet Nardi 2016; Doocy 2017; Osei 2017), training programmes to improve farming practices and sustainable agriculture (Doocy 2017; Kangmennaang 2017), and access to savings and investments and building capacity of local governance structures (Weinhardt 2017). Other interventions aimed to generate income through one-off transfers of livestock with ongoing training (Asadullah 2015;

Jodlowski 2016), and in some cases with additional intervention components such as health visits, access to community savings and technical advice (Asadullah 2015). Other studies focused on agriculture-related interventions as a means to generate income: through an integrated agriculture and nutrition programme including training and input provision for crop farming or animal rearing (Marquis 2018; Olney 2016), development of a sustainable integrated agriculture-aquaculture approaches (Murshed E Jahan 2011; Verbowski 2018), a sugarcane farmers scheme (Kennedy 1989), and implementation of a solar-powered irrigation systems (Alaofe 2016; Alaofe 2019). Three PCS evaluated employment interventions, including public works programmes (Porter 2016; Beegle 2017), and part-time employment for women (Katz 2001).

Four PCS assessed effects on food security outcomes (Asadullah 2015; Doocy 2017; Kangmennaang 2017; Weinhardt 2017). Three cRCTs (Beegle 2017; Darrouzet Nardi 2016; Olney 2016) and three PCS (Alaofe 2019; Doocy 2017; Jodlowski 2016) reported various measures of dietary diversity. Four cRCTs (Darrouzet Nardi 2016; Marquis 2018; Olney 2016; Verbowski 2018) and five PCS (Alaofe 2019; Doocy 2017; Katz 2001; Kennedy 1989; Weinhardt 2017) reported on various anthropometric measures. One cRCT (Verbowski 2018) and three PCS (Alaofe 2019; Asadullah 2015; Kennedy 1989) reported on morbidity outcomes.

Further details about the studies in this comparison are provided in Table 5. Results of individual trials included in this comparison are presented in Table 14 and PCS in Table 15. Summary of findings 3 and the harvest plot in Figure 7 summarise the effects on key outcomes.

Figure 7. Harvest plot: income-generation interventions.



Primary outcomes

3.1 Change in the prevalence of undernourishment

None of the included studies measured prevalence of undernourishment.

3.2 Proportion of household expenditure on food

We found no evidence about the effect of income-generation interventions on the proportion of household expenditure on food. Although two PCS mentioned this outcome in their manuscript, they did not report relevant numerical data or indicate clearly the direction of the effect (Alaofe 2016; Kennedy 1989). Four other PCS reported total expenditure on food, not in relation to income or total expenditure and these results are thus not reported here (Asadullah 2015; Jodlowski 2016; Katz 2001; Murshed E Jahan 2011).

3.3 Proportion of households who were food secure

Two cRCTs reported the effects on food security of interventions where households received training for activities such as

livestock management, aquaculture interventions and community development through women's self-help groups (Darrouzet Nardi 2016; Osei 2017), whereas two cRCTs assessed the effects of an integrated agriculture and nutrition programme (Olney 2016; Marquis 2018). In one cRCT, households participated in a public works programme in Malawi (Beegle 2017). Six PCS assessing different interventions reported different food security or dietary diversity measures (Alaofe 2019; Asadullah 2015; Doocy 2017; Jodlowski 2016; Kangmennaang 2017; Weinhardt 2017).

3.3.1 Food security

Cluster randomised controlled trials

Evidence from one cRCT suggested that income-generation interventions may result in little to no difference in food security of households who receive these interventions, compared to households who do not (MD −0.06, 95% CI −0.22 to 0.1; 2193 households; low-certainty evidence; Summary of findings 3). A cRCT from Malawi showed an unclear effect potentially favouring the control on household food security scores, after three to four months (Figure 7) (Beegle 2017). One RCT did not report an overall effect estimate for the proportion of households experiencing food security (based on HFIAS) after 2.5 years, following the implementation of an agricultural and nutrition training programme in women from rural villages In Nepal (Osei 2017).

Prospective controlled studies

Three PCS reported clear effects favouring the intervention on measures of food security and one PCS reported unclear effects favouring the intervention (P = 0.01) (Figure 7).

Asadullah 2015, Doocy 2017, and Kangmennaang 2017 reported a clear effect favouring the intervention. In Asadullah 2015, among participants receiving a multicomponent intervention including training and transfer of productive assets for an income-generation enterprise, the proportion of households that reported always experiencing a food deficit decreased compared to the control group over a period of nine years (at 3 years: pp −28.85; P < 0.01; at 6 years: pp −17.15; P < 0.0; at 9 years: pp −13.91; P < 0.01; all 4038 households). In Doocy 2017, the combined effect of both groups of the interventions (where farmer field schools and women empowerment groups in farming villages) showed a clear effect favouring the intervention, with a decrease in mean HFIAS compared to control villages not receiving any intervention (MD −4.23, 95% CI −4.96 to −3.49; 1119 households). In Kangmennaang 2017, the implementation of a training and development programme for farmers resulted in a clear effect favouring the intervention, with a decrease in mean HFIAS in intervention households compared to control households (MD −0.30; 1000 households; P < 0.01) (Table 15). These studies could not be pooled due to high heterogeneity (I^2 = 99%; Analysis 3.1). Both studies are at high overall risk of bias. The interventions differed. Doocy 2017 assessed a programme including women empowerment groups, where weekly meetings and training were provided regularly as well as start-up materials, and farmer field schools, where farmers received semi-monthly training in farming practices as well as business and administration. Kangmennaang 2017 assessed an intervention in which farmers experimented with agroecological innovations and which also included sharing knowledge and training on various aspects including leadership.

Weinhardt 2017 reported an unclear effect potentially favouring the intervention. This study assessed a multilevel health and development intervention including training on farming practices, and access to VSLs groups. The odds of being food secure (i.e. household that had zero months where there was insufficient food to meet their needs in the previous 12 months) increased by 36% at 1.5 years (OR 1.36, 95% CI 0.93 to 1.97; 827 participants; P = 0.108) and 12% at three years (OR 1.12, 95% CI 0.75 to 1.67; 827 participants; P = 0.585).

3.3.2 Dietary diversity

Four cRCTs (Beegle 2017; Darrouzet Nardi 2016; Marquis 2018; Olney 2016) and three PCS (Alaofe 2019; Doocy 2017; Jodlowski 2016) reported on seven different measures of dietary diversity. Definitions and explanations of dietary diversity measures reported here are provided in Table 6.

Cluster randomised controlled trials

Evidence from four RCTs suggests that income-generation interventions may improve dietary diversity in children and may result in little or no difference to household dietary diversity (4 cRCTs, 3677 households and 3790 children; low-certainty evidence; Summary of findings 3). Two cRCTs reported a clear effect favouring income-generation interventions (Darrouzet Nardi 2016; Marquis 2018), one reported an unclear effect favouring the intervention (Olney 2016), and one reported an unclear effect favouring the control group (Beegle 2017) (P = 0.047; Figure 7).

A meta-analysis of two of these trials, assessing a public works programme in Malawi and an integrated agriculture and nutrition programme including provision of inputs and training, showed that income-generation interventions make no difference to the HDDSs at three months to two years (SMD 0.02, 95% CI −0.09 to 0.13; 3677 households; I^2 = 63%; Analysis 3.2) (Beegle 2017; Olney 2016). Beegle 2017 was at high and Olney 2016 at unclear overall risk of bias. Beegle 2017 measured dietary diversity using the FCS (scale: 0 to 126) and Olney 2016 used the HDDS (scale: 0 to 11); for both, the higher the score, the higher the food diversity. Another meta-analysis of three of these cRCTs, assessing the implementation of women's groups, agricultural and nutritional training, and community development, showed that children in intervention households were 1.28 times more likely to achieve MDD, compared to children from control households, one to two years after the implementation of the interventions (OR 1.28, 95% CI 1.11 to 1.47; 3790 children; Analysis 3.3) (Darrouzet Nardi 2016; Marquis 2018; Olney 2016). Marquis 2018 was at low overall risk of bias and Darrouzet Nardi 2016 and Olney 2016 were at unclear overall risk of bias.

Prospective controlled studies

Two PCS reported a clear effect favouring income-generation interventions and one study reported an unclear effect potentially favouring income-generation interventions on dietary diversity (Figure 7). A meta-analysis of these studies indicated that income-generation interventions increase the HDDS (MD 0.67, 95% CI 0.29 to 1.05; 1571 households; I^2 = 67%; Analysis 3.4) (Alaofe 2019; Doocy 2017; Jodlowski 2016). Doocy 2017 assessed farmer field schools or women's empowerment groups at 3.5 years, Alaofe 2019 assessed the installation of a low-pressure drip irrigation system, combined with a solar-powered water pump in each intervention village, and

Jodlowski 2016 assessed a livestock transfer with training support. All studies were at high overall risk of bias.

Secondary outcomes

3.4 Change in adequacy of dietary intake

Prospective controlled studies

Although one PCS reported two measures of dietary intake adequacy among participants of an intervention where smallholder sugarcane growers were enrolled in a scheme to provide sugarcane to a new factory, the study authors did not report any effect measures (Kennedy 1989).

3.5 Change in anthropometric indicators

Four cRCTs (Darrouzet Nardi 2016; Olney 2016; Osei 2017; Verbowski 2018) and six PCS (Alaofe 2019; Asadullah 2015; Doocy 2017; Katz 2001; Kennedy 1989; Weinhardt 2017) reported nine different anthropometric measures in children and women.

3.5.1 Stunting: height-for-age z-scores < –2SD (chronic undernutrition)

Four cRCTs (Darrouzet Nardi 2016; Osei 2017; Marquis 2018; Verbowski 2018) and two PCS (Doocy 2017; Kennedy 1989) reported on stunting.

Cluster randomised controlled trials

Evidence from two trials indicated that income-generation interventions probably make little or no difference to wasting (2 trials, 3500 children; moderate-certainty evidence; Summary of findings 3) (Osei 2017; Verbowski 2018). A meta-analysis of these two studies showed no difference to stunting (OR 1.00, 95% CI 0.84 to 1.19; I^2 = 0%; Analysis 3.5).

In addition to reporting the proportion of children who are stunted, Marquis 2018, Darrouzet Nardi 2016, and Osei 2017 reported on the effect of income-generation interventions on mean HAZ. Data from these studies could not be pooled due to high heterogeneity (I^2 = 100%; Analysis 3.6). Marquis 2018 was at low overall risk of bias whereas Darrouzet Nardi 2016 and Osei 2017 were at unclear risk. All three studies assessed some form of training on agricultural practices or livestock management but, in all but one (Darrouzet Nardi 2016), nutrition and health education sessions were also provided, with which the most beneficial effects were observed. If this study was removed from the meta-analysis, heterogeneity reduced to 0%. All three studies reported a clear effect favouring income-generation interventions at 1 to 2.5 years of follow-up. In Marquis 2018, the mean HAZ increased by 0.22 SD with the intervention at 12 months (95% CI 0.10 to 0.34; 428 children); the study assessed an integrated package of agricultural inputs and training as well as education in nutrition, health care and child stimulation for participants. In Darrouzet Nardi 2016, it increased by 0.03 SD in the intervention group, which included training for poverty alleviation, citizen empowerment, community development and optimisation of livestock management as means to generate income (95% CI 0.02 to 0.04; 609 children). However, the effect was unclear potentially favouring the intervention at one year. In Osei 2017, which assessed an enhanced homestead food production (EHFP) programme encompassing training in improved gardening and poultry-rearing practices, among others, it increased by 0.22 SD at 2.5 years (95% CI 0.22 to 0.22; 2569 children) (Table 14).

Prospective controlled studies

Two PCS reported on stunting (Doocy 2017; Kennedy 1989). One study, assessing an income-generation intervention with women's groups and farmer field schools, reported an unclear effect potentially favouring the control, with an increase in the proportion of stunted children at 3.5 years (MD 1.4, 95% CI –10.7 to 13.6; P = 0.81, 471 children) (Table 15) (Doocy 2017). The other study did report any effect measures (Kennedy 1989).

3.5.2 Wasting: weight-for-height z-scores < –2SD (acute undernutrition)

Three cRCTs (Marquis 2018; Osei 2017; Verbowski 2018) and one PCS (Kennedy 1989) reported on wasting.

Cluster randomised controlled trials

Evidence indicated that income-generation interventions probably make little or no difference to wasting (2 cRCTs, 3500 children; moderate-certainty evidence; Summary of findings 3). A meta-analysis of these two cRCTs showed an unclear effect potentially favouring the control, with an increased risk of wasting in children in the intervention group at two years (OR 1.13 95% CI 0.92 to 1.40; I^2 = 0%; Analysis 3.7) (Osei 2017; Verbowski 2018).

In addition, Marquis 2018 and Osei 2017 reported on the effects of income-generation interventions on the mean WHZ. Data could not be pooled due to high heterogeneity (I^2 = 85%; Analysis 3.8). Marquis 2018 reported a clear effect favouring the control (MD 0.07, 95% CI –0.087 to 0.227; 429 children), and Osei 2017 reported an unclear effect favouring the income-generation intervention (MD –0.14, 95% CI –0.142 to –0.138; 2603 children) (Table 14).

3.5.3 Underweight

3.5.3.1 Weight-for-age z-scores < –2SD

Three cRCTs (Darrouzet Nardi 2016; Marquis 2018; Osei 2017) and three PCS (Doocy 2017; Kennedy 1989; Weinhardt 2017) reported on weight-for-age measures.

Cluster randomised controlled trials

A meta-analysis of two cRCTs showed that income-generation interventions make little or no difference to the percentage of children who are underweight in households that receive the intervention compared to households that did not, after two years follow-up (MD 1.06, 95% CI 0.89 to 1.26; 3808 children; I^2 = 4%; Analysis 3.9) (Osei 2017; Verbowski 2018).

In addition, three cRCTs reported on the effect of income-generation interventions on WAZ (Darrouzet Nardi 2016; Marquis 2018; Osei 2017). Data could not be pooled due to high heterogeneity (I^2 = 99%; Analysis 3.10). Two studies reported a clear effect favouring income-generation interventions and Osei 2017 reported no effect at 2.5 years (MD 0.00, 95% CI –0.00 to 0.00; 2613 children).

Prospective controlled studies

Two studies reported on the effects of income-generation interventions on the percentage of children who were underweight (Doocy 2017; Weinhardt 2017). A meta-analysis of these studies showed that these interventions make no difference to the percentage of children who are underweight (OR 0.83, 95% CI 0.61

to 1.12; 909 children; I^2 = 16%; Analysis 3.11). No effect measures could be calculated for Kennedy 1989.

3.5.3.2 Body mass index

Two cRCTs (Olney 2016; Osei 2017) and three PCS (Alaofe 2019; Asadullah 2015; Kennedy 1989) reported on BMI measures in women.

Cluster randomised controlled trials

Two cRCTs reported a clear effect favouring income-generation interventions on the proportion of women who were underweight (BMI< 18.5 kg/m^2) (Olney 2016; Osei 2017) and one study reported an unclear effect potentially favouring the control (Verbowski 2018) (P = 0.047). Data could not be pooled due to high heterogeneity (I^2 = 80%; Analysis 3.12). Heterogeneity seemed to be driven by Verbowski 2018, which was the only study with an aquaculture component in the intervention. All three studies were a variation of the EHFP intervention, so similar in other characteristics.

Olney 2016 and Osei 2017 reported a clear effect favouring income-generation interventions. Olney 2016 reported that the proportion of underweight women in the intervention group was 8.7 pp lower compared to the control group at two years (1297 women; P = 0.01). Osei 2017 reported reduced odds of underweight among women in the intervention group by 39% at two years (OR 0.61, 95% CI 0.46 to 0.82; 2614 mothers) (Table 14). Both studies were at unclear overall risk of bias.

Verbowski 2018 reported an unclear effect potentially favouring the control, with the proportion of underweight women being higher in the intervention group by 3.88 pp (95% CI −4.36 to 12.12; 911 women) (Table 14). This study was at unclear overall risk of bias.

In addition Olney 2016 and Osei 2017 reported on the mean BMI in women. A meta-analysis of these two cRCTs reported little or no effect on the mean BMI of women from households who received income-generation interventions, such as integrated agriculture and nutrition programmes or community development programmes, compared to women from households who did not, after two years of follow-up (MD −0.02, 95% CI −0.28 to 0.25; 2 RCTs, 3911 women; Analysis 3.13).

Prospective controlled studies

One PCS reported an unclear effect on the proportion of underweight women in the villages with the intervention, compared to women from villages who did not, after one year of follow-up (MD −0.22, 95% CI −0.75 to 0.31; 359 women) (Table 15) (Alaofe 2019).

Three studies reported on the effect on mean BMI in women. Effect measures for mean BMI could not be calculated for one PCS (Kennedy 1989). The other two studies reported an unclear effect potentially favouring the intervention (P = 0.063). Asadullah 2015 did not report the variance of effect for mean BMI of women (MD 0.14; P = 0.29). Alaofe 2019 reported an unclear effect on the mean BMI of women, favouring the intervention (the installation of solar-powered irrigation systems), compared to the mean BMI of women from households in villages where the technology was not available, after one year of follow-up (difference in differences (DID) 0.43, 95% CI −0.05 to 0.89; 359 women; P < 0.1).

3.5.4 Mid-upper arm circumference

One PCS reported no difference in the mean MUAC of women who were part of an employment intervention compared to women in the control group, in Nepal at two years; the mean change in the intervention group was −0.20 cm and in the control group was −0.25 cm (718 women; P = 0.67) (Katz 2001).

3.6 Change in biochemical indicators

Two cRCTs reported biochemical indicators, such as haemoglobin levels in women and children (Osei 2017; Verbowski 2018), and one PCS reported iron and vitamin A deficiency in women (Alaofe 2019).

Cluster randomised controlled trials

A meta-analysis of two cRCTs showed a clear effect on mean haemoglobin levels in children, favouring income-generation interventions (MD 3.49, 95% CI 3.25 to 3.72; 2 RCTs, 3808 children; Analysis 3.14) (Osei 2017; Verbowski 2018). We could not pool the data for women due to high heterogeneity (I^2 = 96%; Analysis 3.15). Osei 2017 reported a clear effect on haemoglobin levels favouring income-generation interventions at 2.5 years (MD 4.6, 95% CI 4.59 to 4.61; 2614 mothers), whereas Verbowski 2018 reported an unclear effect potentially favouring the control (MD −0.07, 95% CI −1.92 to 1.78; 811 women) (Table 14). Both studies were at unclear overall risk of bias.

Prospective controlled studies

Alaofe 2019 reported unclear effects favouring the intervention (the installation of solar-powered irrigation systems) for the proportion of women with iron deficiency (MD −0.11, 95% CI −0.94 to 0.72; 68 women; P > 0.05), and favouring the control for the proportion of women with vitamin A deficiency (MD 0.54, 95% CI −0.41 to 1.49; P > 0.05; 60 women) (Table 15).

3.7 Cognitive function and development

None of the studies included in this comparison reported cognitive function and development.

3.8 Change in proportion of anxiety or depression

None of the studies included in this comparison reported proportion of anxiety or depression.

3.9 Morbidity

Cluster randomised controlled trials

Two cRCTs report on morbidity measures, such as the prevalence of anaemia in women and children (Osei 2017; Verbowski 2018). A meta-analysis of these showed a clear effect favouring income-generation interventions on the proportion of children with anaemia, after two years of follow-up (OR 0.73, 95% CI 0.61 to 0.88; 2 RCTs, 3808 children; Analysis 3.16). However, in women, these interventions resulted in an unclear effect favouring the control after follow-up for two years (OR 1.06, 95% CI 0.82 to 1.38; 2 RCTs, 3696 women; Analysis 3.17).

Prospective controlled studies

Three PCS reported unclear effects different morbidity measures (Alaofe 2019; Asadullah 2015; Kennedy 1989).

Asadullah 2015 reported an unclear effect potentially favouring the intervention in the proportion of household members reporting

serious illness in the previous year, over nine years of the intervention, with this proportion reducing both in the intervention and the control group (3 years: pp −1.72, P > 0.1; 6 years: pp −0.78, P > 0.1; 9 years: pp −0.70, P > 0.1; 4038 households). This study is at high overall risk of bias. Kennedy 1989 reported a higher percentage of time being ill among those in the intervention group (sugarcane growers scheme) at two years; both for children (29.8% with intervention versus 31.2% with control; 1055 children) and for women (23.8 with intervention versus 24.3% with control; 420 women). In terms of the percent of time children were ill with diarrhoea, this was higher in the intervention group at two years (4.6 with intervention versus 4.0% with control; 1055 children). However, the study reported no baseline values or effect measures, which was at unclear overall risk of bias. Alaofe 2019 reported a clear effect favouring income-generation interventions on the prevalence of anaemia in women from intervention households, compared to control households (at 1 year: MD −1.25, 95% CI −1.83 to −0.67; 126 women; P = 0.05); the effect was unclear favouring the intervention for the prevalence of iron-deficiency anaemia in women from intervention households compared to control households (at 1 year: MD −0.99, 95% CI −2.39 to 0.41; 546 women; P > 0.05).

3.10 Adverse outcomes (proportion of overweight/obesity)

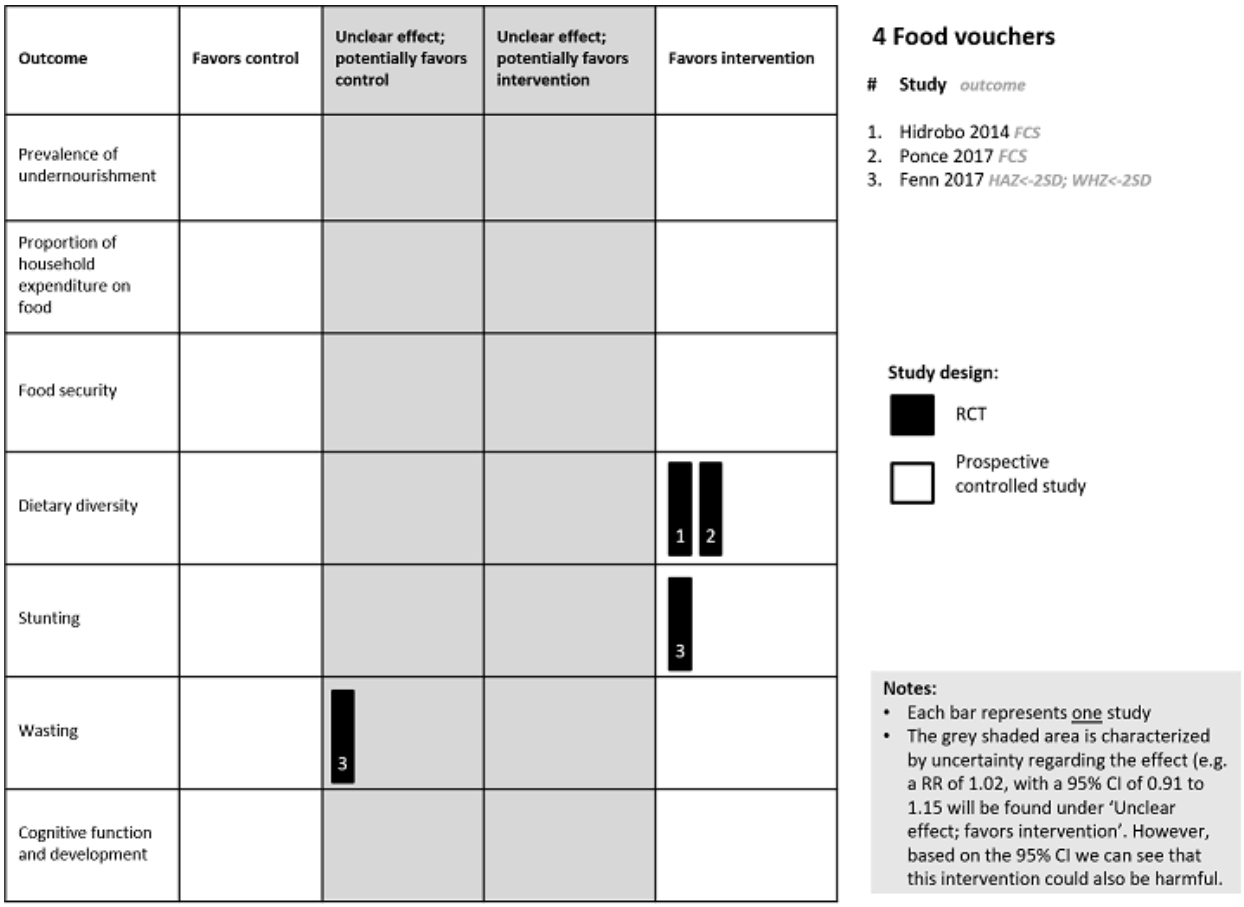
None of the studies included in this comparison reported proportion of overweight/obesity.

Comparison 4: food prices – food vouchers

Three cRCTs (Fenn 2015; Hidrobo 2014; Ponce 2017) and one RCT (Jensen 2011) reported the effects of food vouchers compared to no intervention. Food vouchers are provided to households or individuals for the purchase of food, which could be specific to particular foods or for any foods, and usually can be redeemed at specific vendors. Hidrobo 2014 provided vouchers to households, to the value of USD 40 per month, that could be redeemed at specific supermarkets in urban areas in Ecuador for nutritionally approved foods within 30 days of receiving the vouchers. Participants in this study also had to attend monthly nutrition sensitisation sessions. Fenn 2015 provided monthly fresh food vouchers with a cash value of 1500 PKR (approximately USD 14), which could be exchanged for specified fresh foods (fruits, vegetables, milk and meat) in nominated shops in Pakistan. Vouchers were distributed at specific distribution points either by mobile banks that travelled to a central location serving some of the participating villages or through central banks that served a number of villages. In Ponce 2017, households in Ecuador received a food voucher of USD 40 monthly. In Jensen 2011, a month's supply of vouchers entitled participants to a price reduction of the local staple food to the value of 750 g per person per day of that staple food. More details on these studies are available in Table 16 and in the Characteristics of included studies table.

Hidrobo 2014 and Ponce 2017 reported dietary diversity measures. Fenn 2015 reported anthropometric measures. Jensen 2011 reported adequacy of dietary intake measures. Results from individual studies are reported in Table 17 and the harvest plot is presented in Figure 8.

Figure 8. Harvest plot: food vouchers.



Primary outcomes

4.1 Change in the prevalence of undernourishment

None of the included trials reported prevalence of undernourishment.

4.2 Proportion of household expenditure on food

None of the included trials reported household expenditure on food.

4.3 Proportion of households who were food secure

4.3.1 Dietary diversity

Evidence from two trials reported that food vouchers may improve dietary diversity slightly (2 RCT, 2459 households; low-certainty evidence; Summary of findings 4) (Hidrobo 2014; Ponce 2017). Both studies reported clear effects favouring the intervention (P = 0.063; Figure 8).

In Hidrobo 2014, at seven months, among households in the food voucher group the FCS was higher by 9.4 points (out of maximum score of 112) (95% CI 6.6 to 12.2; 2087 households; P < 0.01). Other measures of dietary diversity reported in Hidrobo 2014 also indicate clear effects favouring food vouchers (Table 17). In Ponce 2017, the FCS increased by 0.39 points in the intervention group (95% CI 0.30 to 0.49). Pooled analysis was not possible because numbers per group were not reported for Hidrobo 2014 and thus SMD could not be calculated (Analysis 4.1). Both studies were at high overall risk of bias.

Secondary outcomes

4.4 Change in adequacy of dietary intake

Jensen 2011 reported an unclear effect potentially favouring the control on the mineral and vitamin sufficiency indices (Table 17). These indices reflect the mean intake per person relative to the Dietary Reference Intake (DRI). Among households in the intervention group, there was a reduction in the mineral sufficiency index compared to the control group (percentage change −0.06, 95% CI −0.22 to 0.10), and a reduction in the vitamin sufficiency index (percentage change −0.05, 95% CI −0.22 to 0.12) at five months. However, the CIs crossed the null. This study was at low overall risk of bias.

4.5 Change in anthropometric indicators

One cRCT reported on stunting, wasting and underweight (Fenn 2015). This study was at low overall risk of bias.

4.5.1 Stunting: height-for-age z-scores < −2SD

Fenn 2015 reported that food vouchers probably reduce stunting (1 trial; moderate-certainty evidence; Summary of findings 4). At 12 months' follow-up, the odds of stunting was 52% less in the food voucher group compared to control. This study reported a similar effect on other measures of stunting; it reported a reduction in the

proportion of children who are severely stunted (OR 0.51, 95% CI 0.33 to 0.79; 1633 children), and an increase in the mean HAZ at 12 months (MD 0.29, 95% CI 0.19 to 0.40; 1633 children; Table 17).

4.5.2 Wasting: weight-for-height z-scores < –2SD

Fenn 2015 reported that food vouchers may result in little to no difference in wasting (1 trial, 1633 children; low-certainty evidence; Summary of findings 4). At 12 months of follow-up, it reported an unclear effect potentially favouring the control (Figure 8); the odds of stunting were 17% higher in the food voucher group compared to the control; however, this effect ranged from 25% reduction to an 82% increased odds of stunting. Similar effects are reported for severe wasting at six months (OR 1.27, 95% CI 0.45 to 3.55; 1643 children); however, for mean WHZ they reported unclear effect favouring the food vouchers at 12 months (coefficient 0.02, 95% CI –0.1 to 0.14; 1633 children; Table 17).

4.5.3 Underweight

Fenn 2015 reported two different measures of underweight. In children, it reported an unclear effect on MUAC at six months (MD –0.05, 95% CI –0.14 to 0.04; 1643 children). In mothers, they reported a clear effect on BMI favouring food vouchers (MD 0.29 kg/m^2, 95% CI 0.03 to 0.54; 1204 mothers; Table 17).

4.6 Change in biochemical indicators

None of the included trials reported biochemical indicators.

4.7 Cognitive function and development

None of the included trials reported cognitive function and development.

4.8 Change in proportion of anxiety or depression

None of the included trials reported proportion of anxiety or depression.

4.9 Morbidity

None of the included trials reported morbidity.

4.10 Adverse outcomes (proportion of overweight/obesity)

None of the included trials reported proportion of overweight/obesity.

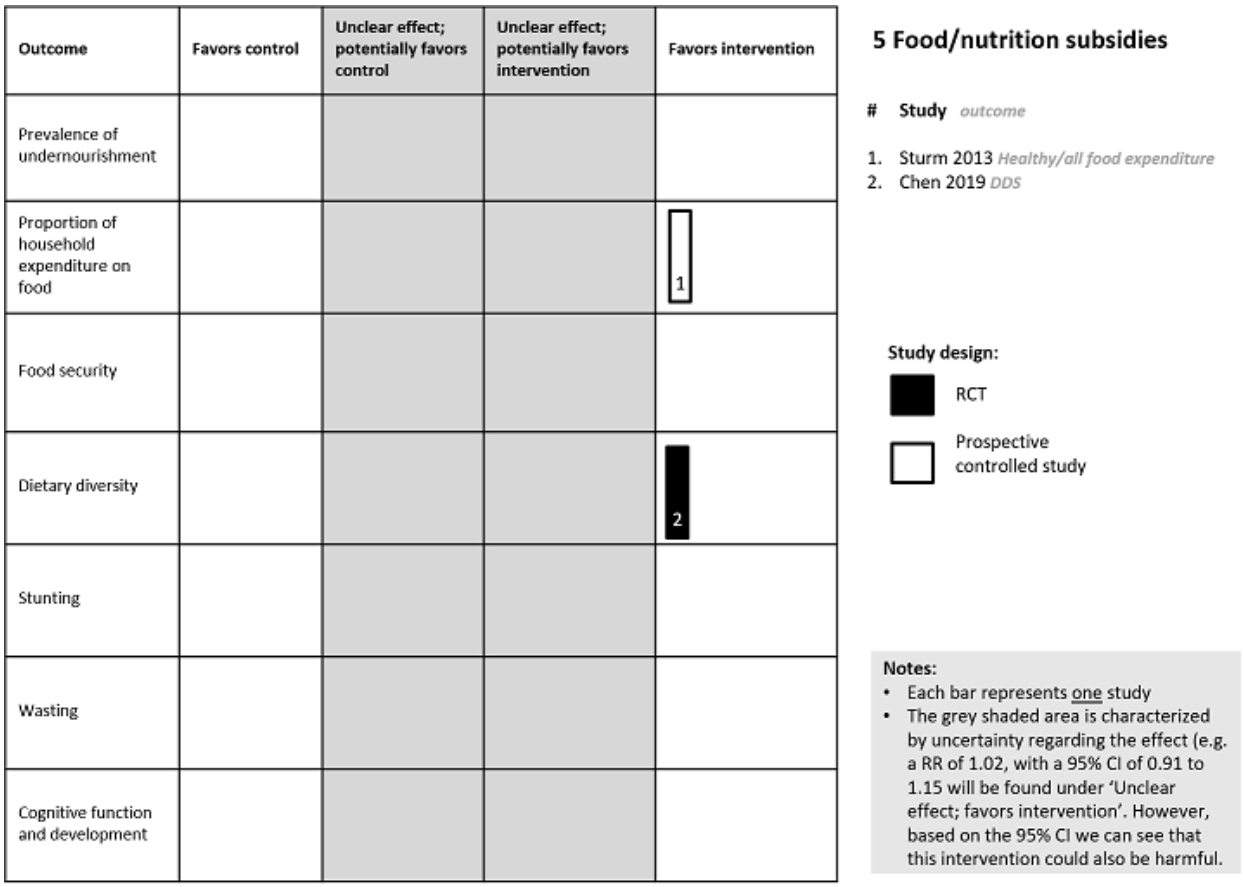
Comparison 5: food prices – food and nutrition subsidies

One cRCT (Chen 2019) and three PCS (Andaleeb 2016; Chakrabarti 2018; Sturm 2013) assessed the effects of food and nutrition subsidies. These interventions aim to address rising food prices by reducing the price of the foods for the consumer, and are usually provided by the government. Chen 2019 assessed the provision of a one-off nutrition subsidy with a monetary equivalent of CYN 225 (USD 33) per enrolled student to schools in China, which they could use for nutrition-related expenses (e.g. buying food). Schoolmasters received information about the proportion of enrolled students who were anaemic; elective methods for reducing iron-deficient anaemia; and details about anaemia's relation with school attendance, educational performance, and cognitive development. Andaleeb 2016 assessed the public distribution system (PDS) in India, in which households with a ration card were eligible for 25 kg of subsidised rice. A ration card was a document issued by the government which entitled an individual/family to purchase from the PDS, and which was also used as an identity card for other government schemes. Chakrabarti 2018 also assessed the PDS in India, but this study subsidised a variety of pulses in different districts as part of the PDS, in addition to the usual subsidising of rice, wheat, sugar and kerosene oil. Sturm 2013 assessed cash rebates on food purchases. It reports on the HealthyFood programme, which provides a rebate between 10% and 25% on healthy food purchases in designated supermarkets in South Africa for members of the Vitality programme of Discovery Health Insurance scheme. More details about this study are available in Table 11 and in the Characteristics of included studies table.

Chen 2019 reported on dietary diversity, anthropometric, biochemical and morbidity measures. Sturm 2013 reported on the proportion of household expenditure on food. Andaleeb 2016 reported on adequacy of dietary intake. Although Chakrabarti 2018 reported food security, dietary diversity and the proportion of household expenditure on food, it did not report any relevant measure under any of these outcome domains.

Further details of these studies are presented in Table 16. Results of included trials are presented in Table 18 and PCS in Table 19. The harvest plot is presented in Figure 9.

Figure 9. Harvest plot: food and nutrition subsidies.



Primary outcomes

5.1 Change in the prevalence of undernourishment

None of the included studies measured prevalence of undernourishment.

5.2 Proportion of household expenditure on food

Evidence from one study was very uncertain about the effects of food rebates on household expenditure on healthy foods (1 study, 169,485 households; very low-certainty evidence; Summary of findings 5) (Sturm 2013). This study reported clear effects favouring cash rebates on proportion of healthy to total household food expenditure (Figure 9). The study authors reported that food rebates increased the ratio of healthy to total food expenditure: the 10% rebated increased it by 6% at three years (95% CI 5.3 to 6.8; 169,485 households), and the 25% rebate increased it by 9.3% at two years and four months (95% CI 8.5 to 10.0; 136,484 households) (Table 19). This study was at high overall risk of bias due to high risk of selection bias.

5.3 Proportion of households who were food secure

One cRCT reported the effects of nutrition subsidies on dietary diversity (Chen 2019).

5.3.1 Dietary diversity

Evidence from one trial indicated that nutrition subsidies may improve dietary diversity among school children (1 RCT, 656 children; low-certainty evidence; Summary of findings 5) (Chen 2019). This study reported a clear effect favouring nutrition subsidies (Figure 9); at six months, the dietary diversity score of school children in the subsidy group increased 0.956 points more (almost one more food group) more than in the control group (MD 0.96, 95% CI 0.46 to 1.45). This study was at high overall risk of bias.

Secondary outcomes

5.4 Change in adequacy of dietary intake

Andaleeb 2016 reported on the adequacy of dietary intake for energy, protein and fat (Table 19). At seven years, it reported a clear effect favouring food subsidies for the ratio of protein intake to the recommended daily allowance (RDA) (DID 3.75, 95% CI 0.52 to 6.98; n = NR), an unclear effect potentially favouring food subsidies for the ratio of current caloric intake to the RDA (DID 2.55, 95% CI −0.02 to 5.12; n = NR), and unclear effects potentially favouring the control on the ratio of fat intake to the RDA (DID −0.1, SE 0.00; P > 0.1).

5.5 Change in anthropometric indicators

Chen 2019 reported on anthropometric indicators.

5.5.1 Underweight (body mass index z-score < −2SD)

Chen 2019 reported an unclear effect potentially favouring nutrition subsidies (Table 18). The proportion of underweight children reduced in the schools receiving the nutrition subsidy by 3.2 pp compared to the control schools; however, the CIs crossed the null (MD −0.03, 95% CI −0.08 to 0.02, 656 children). There was

a similar effect in mean BMIZ (Table 18). In the group where a monetary incentive was provided if the school achieved the desired targets, the effect was similar for the proportion of children who were underweight, but it clearly favoured nutrition subsidies for BMIZ. This study was at high overall risk of bias.

5.6 Change in biochemical indicators

5.6.1 Haemoglobin

Chen 2019 reported an unclear effect potentially favouring the intervention at six months on the mean concentration of haemoglobin in school children (MD 0.51, 95% CI −2.13 to 3.15; n = 656; Table 18). Adding a monetary incentive resulted in a clear effect favouring nutrition subsidies (MD 4.49, 95% CI 2.06 to 6.92).

5.7 Cognitive function and development

None of the included studies measured cognitive function and development.

5.8 Change in proportion of anxiety or depression

None of the included studies measured anxiety or depression.

5.9 Morbidity

5.9.1 Anaemia

Chen 2019 reported an unclear effect potentially favouring nutrition subsidies on the proportion of school children with anaemia at six months (MD −0.005, 95% CI −0.1 to 0.09). Adding a monetary incentive resulted in a clear effect favouring nutrition subsidies (Table 18). This study was at high overall risk of bias.

5.10 Adverse outcomes (proportion of overweight/obesity)

None of the included studies measured overweight/obesity.

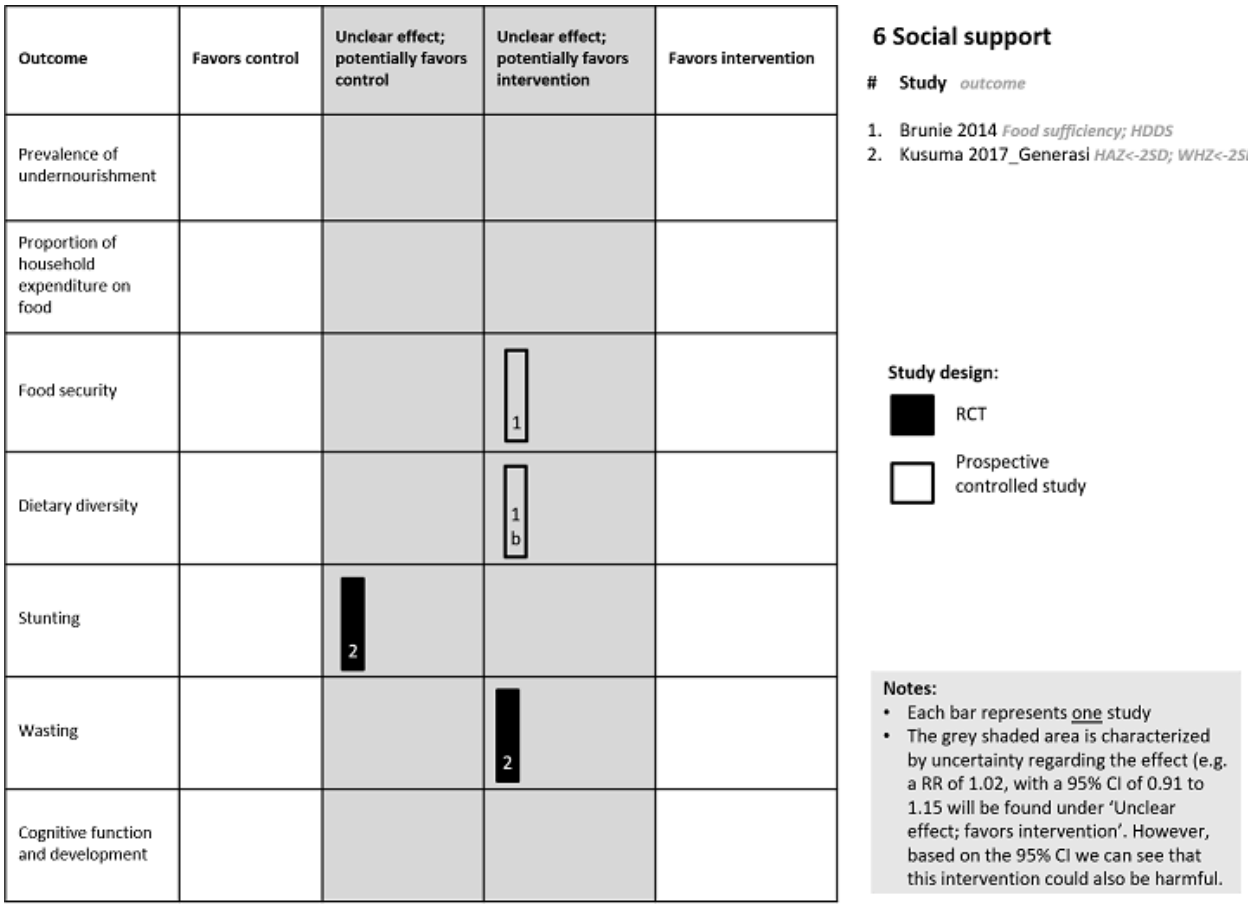
Comparison 6: social support

Two included studies assessed social support interventions. One cRCT in Indonesia randomised subdistricts to receive a community cash grant or to a control group, which were linked to health and education conditionalities (Kusuma 2017b). Two intervention groups were implemented, one with and one without a performance incentive, but the effect of both is reported together. One PCS randomised households either to a VSL group or to a VSL and Ajuda Mutua (AM) group, or to a control group (Brunie 2014). VSLs are self-managed and capitalised microfinance programmes where members pool savings and can borrow from the pool and repay with interest. AM is a rotating labour scheme, where groups of households work together on each family's land or enterprise on a rotational basis. A combined effect of both groups is reported.

Kusuma 2017b reported effects on anthropometric indicators, and Brunie 2014 reported effects on measures of food security, dietary diversity and anthropometry.

Further details about these studies are presented in Table 16 and in the Characteristics of included studies table. Results from these studies are presented in Table 20 and Table 21, and in the harvest plot in Figure 10.

Figure 10. Harvest plot: social support interventions.



Primary outcomes

6.1 Change in the prevalence of undernourishment

None of the included studies measured prevalence of undernourishment.

6.2 Proportion of household expenditure on food

None of the included studies measured household expenditure on food.

6.3 Proportion of households who were food secure

One PCS reported on food security and dietary diversity measures (Brunie 2014).

6.3.1 Food security

The evidence was very uncertain about the effects of VSLs on food security (MD 1.25, 95% CI −0.28 to 2.79; 851 households; very low-certainty evidence; Summary of findings 6; Figure 10). Brunie 2014 reported an unclear effect potentially favouring the VSL intervention on the number of self-reported months of food sufficiency in the previous year, with an increase by 1.25 months in the intervention group at three years (Table 21).

6.3.2 Dietary diversity

The evidence was very uncertain about the effects of VSLs on dietary diversity (1 study, 802 households; very low-certainty evidence; Summary of findings 6; Figure 10). Brunie 2014 reported an unclear effect on household dietary diversity favouring the control (MD −0.30, 95% CI −1.46 to 0.87; 1615 households) (Table 21).

Brunie 2014 also reported on Individual Dietary Diversity Scores (IDDS) among children: IDDS was slightly higher by 0.81 points (out of 12) in the VSL group (MD 0.52, 95% CI −0.18 to 1.23; 1121 children) (Table 21).

Secondary outcomes

6.4 Change in adequacy of dietary intake

None of the included studies measured adequacy of dietary intake.

6.5 Change in anthropometric indicators

One trial reported on stunting, wasting and underweight measures (Kusuma 2017b). One PCS reported on underweight measures (Brunie 2014).

6.5.1 Stunting (height-for-age z-scores < −2SD)

Community grants may make little or no difference to stunting (1 trial, 1481 children; low-certainty evidence; Summary of findings 6; Figure 10). Kusuma 2017b reported an unclear effect on stunting favouring the control (3.4 pp, 95% CI −7.4 to 14.2; 1481 children aged 24 to 36 months). The effect on severe stunting (HAZ < −3SD) was different: they reported an unclear effect favouring the community

cash grants (–6 pp, 95% CI –16.4 to 4.4; 1481 children aged 24 to 36 months; Table 20).

6.5.2 Wasting (weight-for-height z-scores < –2SD)

Community grants probably make little or no difference to wasting (1 RCT, 1481 children; moderate-certainty evidence; Summary of findings 6; Figure 10). Kusuma 2017b reported an unclear effect favouring the intervention at two years (–1.0 pp, 95% CI –7.9 to 5.9). The effect on severe wasting (WHZ < –3SD) was similar (–2.1 pp, 95% CI –7 to 2.8; Table 20).

6.5.3 Underweight: weight-for-age z-scores < –2SD

Randomised controlled trials

Kusuma 2017b reported an unclear effect on stunting favouring community cash grants (–2 pp, 95% CI –11.9 to 7.9; 1481 children). The effect on severe underweight (WAZ < –3SD) was similar (Table 20). This study was at unclear overall risk of bias.

Prospective controlled studies

Brunie 2014 reported an unclear effect on WAZ potentially favouring the VSL intervention (with or without a rotating labour scheme). Among children in the intervention group, the mean WAZ increased slightly by 0.05 SDs compared to the control group at three years (MD 0.05, 95% CI –0.37 to 0.48; 1053 children; Table 21).

6.6 Change in biochemical indicators

None of the included studies measured biochemical indicators.

6.7 Cognitive function and development

None of the included studies measured cognitive function and development.

6.8 Change in proportion of anxiety or depression

None of the included studies measured anxiety or depression.

6.9 Morbidity

None of the included studies measured morbidity.

6.10 Adverse outcomes (proportion of overweight/obesity)

None of the included studies measured proportion of overweight/obesity.

DISCUSSION

Summary of main results

Fifty-nine studies, addressing six intervention types, met the criteria for inclusion in this review. Some studies evaluated the same programme. None of the studies included assessed the primary outcome of prevalence of undernourishment.

Sixteen cRCTs, two parallel-group RCTs and three PCS assessed **UCTs**. Available evidence indicates that UCTs improve food security (six RCTs) and make little or no difference to cognitive function and development (three RCTs) (high-certainty evidence); UCTs may increase dietary diversity (10 RCTs) and may reduce stunting (four RCTs) (low-certainty evidence); and that the evidence regarding the effects of UCTs on the proportion of household expenditure on food (five RCTs) and wasting (four RCTs) is very uncertain (very low-certainty evidence). Regarding adverse outcomes, evidence from one trial indicates that UCTs reduce the proportion of infants who are overweight.

Nine cRCTs and five PCS assessed **CCTs**. None of these studies reported on food security measures. Available evidence indicates that CCTs result in little to no difference in the proportion of household expenditure on food (two RCTs) and that they slightly improve cognitive function in children (two RCTs) (high-certainty evidence); that CCTs probably slightly improve dietary diversity (two RCTs) (moderate-certainty evidence); and that they may make little to no difference to stunting (four RCTs) or wasting (two RCTs) (low-certainty evidence). Evidence on adverse outcomes (two PCS) shows that CCTs make no different to the proportion of overweight children.

Six cRCTs and 11 PCS assessed **income-generation interventions**. None of these studies reported on cognitive function and development, or the proportion of household expenditure on food. Available evidence indicates that income-generation interventions make little or no difference to stunting (two RCTs) or wasting (two RCTs) (moderate-certainty evidence); and that they may results in little to no difference to food security (two RCTs) and may improve dietary diversity in children but not for households (four RCTs) (low-certainty evidence).

Four trials reported on **food vouchers.** None reported on the proportion of households expenditure on food, food security, or cognitive function and development. Available evidence indicates that food vouchers probably reduce stunting (one RCT) (moderate-certainty evidence), and that they may improve dietary diversity slightly (two RCTs) and may result in little to no difference in wasting (one RCT) (low-certainty evidence).

One RCT and three PCS reported the effects of**food and nutrition subsidies**. None of these studies reported on food security, stunting, wasting, or cognitive function and development. Available evidence indicates that food and nutrition subsidies may improve dietary diversity among school children (one RCT) (low-certainty evidence), and the evidence is very uncertain about the effects on household expenditure on healthy foods as a proportion of total expenditure on food (very low-certainty evidence).

One RCT and one PCS reported on the effects of **social environment** interventions. None of the studies reported on the proportion of household expenditure on food, or on cognitive function and development. Available evidence indicates that community grants probably make little to no difference to wasting (one RCT) (moderate-certainty evidence) and that they make little or no difference to stunting (one RCT) (low-certainty evidence); and the evidence is very uncertain about the effects of VSLs on food security (one PCS) and dietary diversity (one PCS) (very low-certainty evidence).

Overall completeness and applicability of evidence

We considered the differences between the evidence identified and our prespecified eligibility criteria, including relevant gaps identified with the harvest plots regarding outcomes with no data, when assessing the completeness and applicability of the evidence.

Participants in included studies ranged from households to individuals, including adults and children. A few studies specifically targeted women as recipients of the intervention. Most studies targeted poor households, and mostly in rural areas, based

on specific criteria to identify poor and vulnerable households. Although we had planned to assess effects within specific disadvantaged subgroups, this was not possible because of unclear reporting about these types of characteristics in the included studies.

Our logic model showed that there is a wide range of interventions that could address access to food. Across all the possible interventions, we included mostly studies aiming to increase buying power, including UCTs, CCTs, and income-generation interventions. Fewer studies addressed food prices and only two assessed social environment interventions, namely a community cash grant programme, and a VSLs programme. We found no studies assessing infrastructure interventions that aimed to improve physical access to food. Some of the studies we excluded from this review assessed some of these relevant interventions, but they were conducted in high-income countries. For example, one before-after study that assessed the implementation of a fruit and vegetable market in low-income neighbourhoods (Gorham 2015), which addressed lack of infrastructure; a randomised trial that assessed financial incentives to increase fruit and vegetable intake among participants in the USA Food Stamp programme (Olsho 2016), which addresses high food prices. This illustrates, perhaps, a lack of such interventions being implemented in LMIC settings. Regarding the variation in type and intensity of interventions, particularly of CCTs and how the conditions and the enforcement of these components vary across interventions, we were unable to distinguish which specific conditionalities were linked to the outcome based on available data. In these interventions, conditionalities ranged from attending clinic visits, educational sessions and school attendance. For other interventions such as income-generation interventions, intervention components also varied significantly, and it is difficult to specify which intervention components are associated with the observed outcome.

In majority of studies, the intervention was not compared with another intervention. For some larger studies of government programmes, such as cash transfers, it was common for a delayed control to be used as a comparator. In this case, the control group also received the intervention, but at a later stage, as it would be unethical to randomise communities to no intervention in these types of programmes. One issue with this was that many long-term outcomes were not eligible for reporting in this review as, by that time, both the intervention and control groups were receiving the intervention.

In terms of outcomes, no included study reported on the primary outcome of prevalence of undernourishment. Prevalence of Undernourishment (PoU) is a national-level model-based indicator used to understand access to food in terms of dietary energy inadequacy and can be measured at national or household level (INDDEX Project 2018). It measures the percentage of the population whose dietary energy intake is below the MDER. In line with this, the adequacy of dietary intake at the individual level was also not reported in most studies, and only six studies reported this outcome. Most studies reported on actual energy intake (i.e. calories) or intake of specific nutrients (i.e. grams), without assessing this intake against some measure of adequacy, such as the DRIs. Besides these outcome categories, fewer studies reported on child cognitive function and development compared to other outcomes. We had intended to assess not only if adequacy of dietary intake improved, but also if diet quality increased. Included studies did not report on dietary quality (i.e. whether they were refined and high in saturated fat or healthier foods such as legumes, fruit and vegetables). However, many studies reported on dietary diversity, which is an approximate measure of diet quality. Greater dietary diversity should indicate better overall dietary quality, as it means that foods from more food groups are being consumed. For most outcomes, data were available at two and three years, so there is not much evidence on longer-term impact of included interventions. Only three studies reported on the adverse outcome of overweight and obesity.

Due to the lack of information in many included studies, we were unable to address our first secondary objective – to identify features of interventions that enable or impair the effective implementation. We believe this warrants a separate study assessing each intervention more in-depth and using different study designs, such as qualitative studies.

Quality of the evidence

We assessed the certainty of the evidence using the GRADE approach and presented our findings in a 'Summary of findings' table for each comparison. For all comparisons except comparison 6, the 'Summary of findings' tables included only data from RCTs, as there were data from at least one RCT for the key outcomes. The 'Summary of findings' tables for comparisons 5 and 6 include data from RCTs and PCS, as for specific outcomes there were no data from RCTs.

For UCTs, the certainty of the evidence ranged from very low to high across outcomes. Reasons for downgrading included inconsistency due to wide variance of point estimates, imprecision due to wide CIs and due to high overall risk of bias.

For CCTs, the certainty of the evidence ranged from low to high across outcomes. Reasons for downgrading included inconsistency due to wide variation in point estimates, high overall risk of bias and imprecision due to wide CIs.

For income-generation interventions, the certainty of the evidence ranged from low to moderate across outcomes. Reasons for downgrading included imprecision due to wide CIs, indirectness because the evidence was from a single study, high overall risk of bias and inconsistency due to wide variation in point estimates.

The certainty of the evidence on food voucher interventions ranged from low to moderate across outcomes. Reasons for downgrading included high overall risk of bias, inconsistency as CIs had minimal overlap, indirectness as findings were from one single study and imprecision due to findings ranging from an important harm to important benefit.

The certainty of the evidence on food and nutrition subsidies ranged from very low to low across outcomes. Reasons for downgrading included high overall risk bias and indirectness as the results were from a single study.

For VSLs, the certainty of the evidence ranged from very low to moderate. Reasons for downgrading included indirectness, as the results were from a single study, and imprecision, due to wide CIs.

All but one included study was funded by a for-profit organisation and 66.1% did not report on potential COI.

Potential biases in the review process

We followed Cochrane Review methodology to prevent potential biases from being introduced into the review process. Nevertheless, potential biases could have been introduced due to the nature of subjective decisions that had to be made while conducting the review and because the protocol was outdated and new methods had emerged since its publication (Durao 2015).

Multiple outcome measures concerning the same outcome category were reported across included studies. Since there is no guidance in the literature on what measures are considered as 'gold standard' for measuring food and nutrition security, we selected the most comprehensive or largest scale measure reported for the same outcome domain in the same study. For example, we reported changes in z-scores for height or weight but we did not report actual height (in centimetre) or weight (kilogram) measures. We judged changes in z-scores to be more useful and easier to interpret as they are assessing standardised height and weight attainment adjusted for age and sex. Still, multiplicity of outcome measures made it difficult to include all studies reporting the same outcome domain in meta-analyses.

We also could not include all studies in meta-analyses due to incomplete reporting of the required data (e.g. variance measures). Therefore, we made post-hoc decisions about synthesising the evidence using vote counting based on effect direction, using harvest plots to visually illustrate the results. We used the point estimates and the 95% CI to decide how to categorise the effects of the studies. However, data for these were sometimes not available or could not be calculated, and thus we had to base decisions regarding whether the effect was clear or unclear based on the P value.

As we had not prespecified the outcomes to be assessed using GRADE in the protocol (Durao 2015), we had to make this decision post-hoc. The author team discussed and agreed through consensus which outcomes we considered best for informing decision-making. However, it may be that another group could have made different decisions regarding which outcomes to highlight in the 'Summary of findings' tables. All outcomes are, however, reported in the review text and in the tables of individual results. We also had to prioritise outcome measures to report in the review as often there were multiple outcome measures reported in the same study for the same outcome domain. We attempted to prevent introduction of biases by selecting an approach that was independent of the effect measure reported (i.e. prioritising the most comprehensive outcome measure).

Our interpretation of the primary outcome 'proportion of household expenditure on food' was based on Engel's Law "… according to which the household decreases its budget share of food as its income increases". This is the interpretation used in one of the included studies (Brugh 2018). Not all included studies interpreted this outcome in the same way, with some interpreting an increase in this proportion as 'good' while others interpreting a decrease as 'good'. Furthermore, not all studies clearly interpreted their findings. This variability led us to interpret it based on Engel's law. While food expenditure is expected to increase with higher income, the proportion of expenditure on food in relation to other expenditure should decrease. The use of this approach may explain some of the diversity in effect measures observed for this outcome.

Due to our high search yield we were unable to complement the electronic database search with screening reference lists of included studies, reference lists of identified relevant systematic reviews or websites of specific organisations, as planned. Thus, we may have missed some relevant studies. However, since our search was very comprehensive, we believe that the chance of this was small.

One limitation of our review was that the synthesis was unable to draw conclusions about the mean effect size for many outcomes, due to limited availability of suitable data. However, we have tried to calculate all necessary information for meta-analysis where this was possible.

Agreements and disagreements with other studies or reviews

Other recent reviews on food access tend to focus on individual interventions rather than on a comprehensive review of the evidence base of interventions addressing access to food like ours.

We identified six published reviews among the results of the updated search for this review which addressed access to food or included similar interventions to those included in this review. Three reviews addressed cash transfers (Baird 2014; Hunter 2017; Melo 2016); two reviews evaluated interventions related to the income-generation category (Bird 2019; Pullar 2018); two reviews focused on interventions addressing food prices (Mizdrak 2015; Alagiyawanna 2015); and one review addressed interventions addressing infrastructure, for which we did not find any studies to include in our review (Hsiao 2019).

Of the reviews addressing cash transfers, two had a different focus to our review: one on the effect of cash transfers on educational outcomes (Baird 2014), and one on use and quality of maternity care services (Hunter 2017). The third review included 10 studies of cash transfer interventions in Latin America and reported a positive association of cash transfers with children's anthropometric status (Melo 2016). However, they also reported that improvements may differ by age and that the included studies, which varied in design, were of questionable methodological quality.

Other systematic reviews on cash transfers had a different focus than that of our review; they assessed the effects of such interventions on improving infant vaccination (Munk 2019), women economic empowerment (Leite 2019), clinical outcomes for pulmonary tuberculosis (Richterman 2018), or social determinants of health (Owusu-Addo 2018). Of those that had a similar focus, some reported positive effects or no effects. One review of cash transfer programmes including different types of literature assessed the evidence of the impact of cash transfers on a range of individual- or household-level outcomes in 201 included studies, of which 89 reported on health and nutrition outcomes, including the use of health services, dietary diversity and anthropometry (Bastagli 2016). They reported a greater proportion of significant results for dietary diversity than for anthropometric measures, but positive impacts in relation to the cash transfer interventions overall. Another review assessed universal and targeted UCTs and targeted CCTs and reported mostly positive effects of these interventions on birth weight, infant mortality, among other outcomes (Siddiqi 2018). Another review assessed the effects of CCTs on child health in LMICs (Owuso-Addo 2014), and included 16 studies predominantly from Latin America. The review authors

reported that programmes improved nutritional status of children in intervention compared to control groups in terms of, for example, growth in height and weight, decreased chance of being underweight, and improved dietary intake of protein and vegetables. However, some of the programmes did not always find an effect on anthropometric outcomes such as childhood wasting or stunting. Of note, these two reviews included the same studies as this Cochrane Review. Therefore, it is perhaps unsurprising that their findings were similar to ours. In one Cochrane Review of UCTs for reducing poverty and vulnerabilities and its effects on health services use and health outcomes in LMICs, the authors also reported that UCTs had beneficial effects on food security and dietary diversity, with evidence certainty ranging from low to moderate, and uncertain effects on stunting due to very low-certainty evidence (Pega 2017).

Of the two reviews addressing income-generation interventions, results were similar, with some potential positive effect on diet intake and diversity. Bird 2019 assessed agriculture interventions on nutrition outcomes in specific countries in South Asia (India, Bangladesh, Nepal, Pakistan and Afghanistan) where agriculture activities are major sources for the livelihoods of large sections of the population. They included six studies assessing interventions of provision of seeds, plants and training, or livestock and training, or both, and reported a positive impact on intermediate outcomes, such as diet quality and diversity, but mixed results regarding impact on nutritional outcomes, such as anthropometry and anaemia. No meta-analyses were carried out due to high heterogeneity. Pullar 2018 assessed the effects of poverty reduction and development interventions on non-communicable disease (NCD) prevalence and risk. They included 29 studies, mostly of agricultural interventions, and reported limited methodological quality in included studies and high heterogeneity of outcome measures, similarly to our review. Included studies failed to measure and report on NCD prevalence and risk, but they reported that intensive agricultural interventions were associated with improved calorie, vitamin, fruit and vegetable intake, with the effects being dependent on other factors such as land ownership and infection status. However, the findings had poor generalisability because of small sample sizes and use of convenience samples of population with the highest need.

Both reviews of interventions addressing food prices focused on obesity reduction and not on undernutrition. Alagiyawanna 2015 assessed the effects of fiscal interventions implemented at national or local levels to improve diets and reduce obesity, assessing effects on consumption and health outcomes in adults and children. They included 18 studies, mostly from high-income countries. Nine of these studies assessed the impact of taxes and these were all were from high-income countries. They reported that the effects of taxation of soft drinks and its consumption was mixed, as was the effect on BMI among children and adolescents. Existing taxation studies tend to be from high-income countries, which is likely the reason why we did not find any taxation-related studies to include in our review, which only focused on LMICs. Regarding subsidies, in high-income countries, Alagiyawanna 2015 reported positive associations with fruit and vegetable intake, maternal weight gain, increase in mean haemoglobin levels, consumption of healthy foods and height-for-age, but no association with BMI, low birthweight or fetal survival. One study in a low- to middle-income country reported a negative association of subsidies with increased obesity. The Mizdrak 2015 review assessed fiscal interventions, but its scope was to specifically assess which personal characteristics influence differential impact of fiscal interventions, as this is considered a barrier to implementation. They included eight studies from high-income countries, reporting high heterogeneity between studies and population groups concerning the effects of fiscal measures on healthy diets. Although they reported that the evidence pointed towards a differential impact depending on personal characteristics, the data were limited and underpowered to detect effects according to personal characteristics.

Hsiao 2019 assessed the barriers and facilitators of mobile produce markets in the US. This is a category of interventions for which we did not find studies to include in our review (i.e. infrastructure interventions), likely because these types of studies currently tend to be from high-income countries. They reported a positive association of mobile produce markets and fruit and vegetable intake, but noted that the quality of the evidence was problematic as the studies were found not to be rigorous in their design and had high potential for selection and other types of bias.

An important aspect about this review is that it included interventions addressing upstream factors affecting access to food, that do not only rely on individual agency. This has been globally recognised as the best approach to address over- and undernutrition, and cash transfers specifically are high on the agenda of many countries as they address the social determinants of health (Hawkes 2020; Owusu-Addo 2018). These types of interventions fall under the category of double duty actions that address both under- and overnutrition at the same time, especially if complemented by education and behaviour change communication and regular check-ups as part of the intervention (Hawkes 2020).

AUTHORS' CONCLUSIONS

Implications for practice

This review provides policy makers with a comprehensive evidence base, ranging from randomised controlled trials (RCTs) to prospective controlled studies, evaluating the effects of a wide range of community-level interventions to address access to food in low- and middle-income countries (LMICs).

The body of evidence indicates that unconditional cash transfers (UCTs) can improve food security, income-generation interventions do not seem to make a difference for food security, but the evidence is unclear for the other interventions. Conditional cash transfers (CCTs), UCTs, those that help generate income, and those that help minimise impact of food prices through food vouchers and subsidies can potentially improve dietary diversity. UCTs and food vouchers may have a potential impact on reducing stunting, but CCTs, income-generation interventions or social environment interventions do not seem to make a difference on wasting or stunting. CCTs seem to positively impact cognitive function and development but not UCTs. This may be due to the fact that in CCTs, beneficiaries are required to meet specific conditionalities such as attending school, visiting the health clinic regularly for growth monitoring or supplementation. None of the included studies reported on the primary outcome prevalence of undernourishment; in retrospect this was expected given that this is mostly used as a national-level indicator of food security.

We found no studies reporting specific adverse outcomes. Three studies, one assessing UCTs and two assessing CCTs, reported on increased risk of overweight and obesity, our predefined adverse outcome. The effects on this outcome are unclear and we should thus not discard overweight and obesity as potential harms of these interventions. This is particularly problematic because in LMIC populations, where these interventions are implemented, overweight and obesity are often already a problem. Hawkes 2020 reported that this was the case in cash or food transfers and voucher interventions in Mexico, Egypt and the US where the unintended negative outcomes of these programmes include poorer diet quality and obesity and diabetes-related NCDs, due to increased intake of foods high in energy, sugar, fat and salt, resulting from the programme itself, or from the income from the programme that enabled people to purchase these types of foods. In some cases, the targeted populations experienced both undernutrition and overnutrition, such as the existence of undernourished children and obese mothers in the same household or community. Thus it is possible that these programmes may exacerbate existing problems. Potential solutions to prevent this could be related to specifying which types of foods can be purchased with interventions such as vouchers, and accompanying health education with transfers.

As these interventions are often implemented at national level, direct implications for practitioners and the community are less clear. Organisations involved in the development and implementation of interventions to improve access to food may be able to better focus their time and resources by optimally designing or choosing programmes which maximise the intended outcome.

Implications for research

Here, we draw on the EPICOT framework – which stands for Evidence, Population, Intervention, Comparison, Outcomes, and Time stamp (Brown 2006) – to suggest gaps in the evidence base that future research could address. There is enough evidence from RCTs for CCTs and UCTs but not for the other intervention types assessed in this review (i.e. those addressing food prices (e.g. policies, discounts, vouchers and subsidies); addressing infrastructure and transport that affect physical access to food outlets; and those addressing the social environment and providing social support (e.g. social support from family, neighbours or government)).

In general, higher-quality RCTs and prospective controlled studies are required, particularly concerning methods to minimise the issues with selection and attrition bias.

The multiplicity of outcome measures made analysis for this review challenging. It is thus important for future studies to have a similar set of outcomes that we can usefully compare across studies, and that are most relevant for assessing food and nutrition security at the community or household level. If primary studies measured similar outcomes, it would have likely been possible to pool the majority of results across included studies for this review, resulting in clearer review findings.

None of the included studies clearly and specifically reported on adverse events. Although these types of interventions do not tend to have the same extent of harms as a clinical intervention, for example, it is still important to consider what the potential harms may be. Although overweight or obesity is a potential harm, the studies did not report on this as such.

Most studies reported results from one to two years of the intervention. Longer-term studies of interventions aimed to improve food access in vulnerable communities or households are required.

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REFERENCES

References to studies included in this review

Aguero 2006 *{published data only}*

Aguero J, Carter M, Woolard I. The impact of unconditional cash transfers on nutrition: the South African Child Support Grant. Cape Town: Southern Africa Labour and Development; 2006. Research Unit Working Paper Number 06/08.

Ahmed 2019a *{published data only}*

Ahmed A, Hoddinott J, Roy S, Sraboni, E. Transfers, nutrition programming, and economic well-being: experimental evidence from Bangladesh. Washington, DC: International Food Policy Research Institute; 2019. IFPRI discussion paper 1879. [DOI: 10.2499/p15738coll2.133450]

* Ahmed A, Hoddinott J, Roy S. Food transfers, cash transfers, behavior change communication and child nutrition. Evidence from Bangladesh. Washington, DC: International Food Policy Research Institute; 2019. IFPRI discussion paper 1868. [DOI: 10.2499/p15738coll2.133420]

Ahmed 2019b *{published data only}*

Ahmed A, Hoddinott J, Roy S, Sraboni, E. Transfers, nutrition programming, and economic well-being: experimental evidence from Bangladesh. Washington, DC: International Food Policy Research Institute; 2019. IFPRI discussion paper 1879. [DOI: 10.2499/p15738coll2.133450]

* Ahmed A, Hoddinott J, Roy S. Food transfers, cash transfers, behavior change communication and child nutrition. Evidence from Bangladesh. Washington, DC: International Food Policy Research Institute; 2019. IFPRI discussion paper 1868. [DOI: 10.2499/p15738coll2.133420]

Alaofe 2016 *{published data only}*

* Alaofe H, Burney J, Naylor R, Taren D. Solar-powered drip irrigation impacts on crops production diversity and dietary diversity in Northern Benin. *Food and Nutrition Bulletin* 2016;**37**(2):164-75. [DOI: 10.1177/0379572116639710]

Burney J, Woltering L, Burke M, Naylor R, Pasternak D. Solar-powered drip irrigation enhances food security in the Sudano–Sahel. *Proceedings of the National Academy of Sciences of the United States of America* 2010;**107**(5):1848-53.

Alaofe 2019 *{published data only}*

Alaofè H, Burney J, Naylor R, Taren D. The impact of a Solar Market Garden programme on dietary diversity, women's nutritional status and micronutrient levels in Kalalé district of northern Benin. *Public Health Nutrition* 2019;**22**(14):2670-81. [DOI: 10.1017/S1368980019001599]

Andaleeb 2016 *{published data only}*

Andaleeb R. Universal food security program and nutritional intake: evidence from the hunger prone KBK districts in Odisha. *Food Policy* 2016;**63**:73-86.

Andersen 2015 *{published data only}*

Andersen CT, Reynolds SA, Behrman JR, Crookston BT, Dearden KA, Escobal J, et al. Participation in the Juntos conditional cash transfer program in Peru is associated with changes in child anthropometric status but not language development or school achievement. *Journal of Nutrition* 2015;**145**(10):2396-405. [DOI: 10.3945/jn.115.213546]

Asadullah 2015 *{published data only}*

* Asadullah MN, Ara J. Evaluating the long-run impact of an innovative anti-poverty programme: evidence using household panel data. *Applied Economics* 2015;**48**(2):107-20. [DOI: 10.1080/00036846.2015.1073846]

Emran MS, Robano V, Smith SC. Assessing the frontiers of ultra poverty reduction: evidence from challenging the frontiers of poverty reduction/targeting the ultra-poor, an innovative program in Bangladesh. *Economic Development and Cultural Change* 2014;**62**(2):339-80.

Haseen F. Change in food and energy consumption among the ultra poor: is the poverty reduction programme making a difference? *Asia-Pacific Journal of Clinical Nutrition* 2007;**16**(Suppl 1):58-64.

Jalal CS, Frongillo EA. Effect of poverty reduction program on nutritional status of the extreme poor in Bangladesh. *Food and Nutrition Bulletin* 2013;**34**(4):402-11.

Rabbani M, Prakash VA, Sulaiman M. Impact assessment of CFPR/TUP: a descriptive analysis based on 2002-2005 panel data. Canada: BRAC Research and Evaluation Division and the Aga Khan Foundation; 2012. CFPR/TUP Working Paper Series No. 12.

Asfaw 2014 *{published data only}*

* Asfaw S, Davis B, Dewbre J, Handa S, Winters P. Cash transfer programme, productive activities and labour supply: evidence from randomized experiment in Kenya. *Journal of Development Studies* 2014;**50**(8):1172-96. [DOI: 10.1080/00220388.2014.919383]

Ayuku D, Embleton L, Koech J, Atwoli L, Hu L, Ayaya S, et al. The government of Kenya cash transfer for orphaned and vulnerable children: cross-sectional comparison of household and individual characteristics of those with and without. *BMC International Health and Human Rights* 2014;**14**(1):25.

Huang C, Singh K, Handa S, Halpern C, Pettifor A, Thirumurthy H. Investments in children's health and the Kenyan cash transfer for orphans and vulnerable children: evidence from an unconditional cash transfer scheme. *Health Policy and Planning* 2017;**32**:943-55.

The Kenya CT-OVC Evaluation Team. The impact of the Kenya cash transfer program for orphans and vulnerable children on household spending. *Journal of Development Effectiveness* 2012;**4**(1):9-37.

Ward P, Hurrell A, Visram A, Riemenschneider N, Pellerano L, O'Brien C, et al. Cash Transfer Programme for Orphans and Vulnerable Children (CT-OVC), Kenya: operational and impact evaluation, 2007–2009. Oxford Policy Management 2010.

Baird 2013 *{published data only}*

Baird S, De Hoop J, Özler B. Income shocks and adolescent mental health. *Journal of Human Resources* 2013;**48**(2):370-403.

Baird S, McIntosh C, Özler B. Cash or condition? Evidence from a cash transfer experiment. *The Quarterly Journal of Economics* 2011;**126**(4):1709-53.

* Baird SJ, Chirwa E, De Hoop J, Özler B. Girl power: cash transfers and adolescent welfare. Evidence from a cluster-randomized experiment in Malawi. Cambridge: National Bureau of Economic Research; 2013 September. Working Paper 19479.

Baird SJ, Garfein RS, McIntosh CT, Özler B. Effect of a cash transfer programme for schooling on prevalence of HIV and herpes simplex type 2 in Malawi: a cluster randomised trial. *Lancet* 2012;**379**(9823):1320-9.

Beegle 2017 *{published data only}*

Beegle K, Galasso E, Goldberg J. Direct and indirect effects of Malawi's public works program on food security. *Journal of Development Economics* 2017;**128**:1-23. [DOI: 10.1016/j.jdeveco.2017.04.004]

Breisinger 2018 *{published data only}*

* Breisinger C, Gilligan D, ElDidi H, El-Enbaby H, Karachiwalla N, Kassim Y, et al. Impact evaluation study for Egypt's Takaful and Karama cash transfer program. Synthesis report: summary of key findings from the quantitative and qualitative impact evaluation studies. Washington, DC: International Food Policy Research Institute; 2018. Regional program working paper 16.

Breisinger C, Gilligan D, Karachiwalla N, Kurdi S, El-Enbaby H, Jilani A, et al. Impact evaluation study for Egypt's Takaful and Karama cash transfer program: Part 1: Quantitative report. Washington, DC: International Food Policy Research Institute; 2018 October. Regional programme working paper 14.

Brugh 2018 *{published data only}*

Brugh K, Angeles G, Mvula P, Tsoka M, Handa S. Impacts of the Malawi social cash transfer program on household food and nutrition security. *Food Policy* 2018;**76**:19-32.

Brunie 2014 *{published data only}*

Brunie A, Fumagalli L, Martin T, Field S, Rutherford D. Can village savings and loan groups be a potential tool in the malnutrition fight? Mixed method findings from Mozambique. *Children and Youth Services Review* 2014;**47**:113-20. [DOI: 10.1016/j.childyouth.2014.07.010]

Chakrabarti 2018 *{published data only}*

Chakrabarti S, Kishore A, Roy D. Effectiveness of food subsidies in raising healthy food consumption: public distribution of pulses in India. *American Journal of Agricultural Economics* 2018;**100**(5):1427-49. [DOI: 10.1093/ajae/aay022]

Chen 2019 *{published data only}*

Chen Q, Pei C, Bai Y, Zhao Q. Impacts of nutrition subsidies on diet diversity and nutritional outcomes of primary school students in rural northwestern China - Do policy targets and incentives matter? *International Journal of Environmental Research and Public Health* 2019;**16**:2891. [DOI: 10.3390/ijerph16162891]

Daidone 2014 *{published data only}*

* Asfaw S, Carraro A, Davis B, Handa S, Seidenfeld D. Cash transfer programmes, weather shocks and household welfare: evidence from a randomised experiment in Zambia. *Journal of Development Effectiveness* 2017;**9**(4):419-42.

Daidone S, Davis B, Dewbre J, González-Flores M, Handa S, Seidenfeld D, et al. Zambia's Child Grant Programme: 24-month impact report on productive activities and labour allocation. Rome: Food and Agriculture Organization of the United Nations; 2014.

Seidenfeld D, Handa S, Davis B. Zambia's Child Grant Program: 24-month impact report. Washington, DC: American Institutes for Research (AIR); 2013.

Darrouzet Nardi 2016 *{published data only}*

Darrouzet-Nardi AF, Miller LC, Joshi N, Mahato S, Lohani M, Rogers BL. Child dietary quality in rural Nepal: effectiveness of a community-level development intervention. *Food Policy* 2016;**61**:185-97. [DOI: 10.1016/j.foodpol.2016.03.007]

Doocy 2017 *{published data only}*

* Doocy S, Cohen S, Emerson J, Menakuntuala J, Rocha JS. Food security and nutrition outcomes of farmer field schools in eastern Democratic Republic of the Congo. *Global Health: Science and Practice* 2017;**5**(4):630-43.

Doocy S, Emerson J, Colantouni E, Strong J, Mansen KA, Caulfield LE, et al. Improving household food security in eastern Democratic Republic of the Congo: a comparative analysis of four interventions. *Food Security* 2018;**10**(3):649-60.

Evans 2014 *{published data only}*

Evans D, Hausladen S, Kosec K, Reese N. Community-based conditional cash transfers in Tanzania: results from a randomized trial. Washington, DC: The World Bank; 2014.

Fenn 2015 *{published data only}*

* Fenn B, Colbourn T, Dolan C, Pietzsch S, Sangrasi M, Shoham J. Impact evaluation of different cash-based intervention modalities on child and maternal nutritional status in Sindh Province, Pakistan, at 6 mo and at 1 y: a cluster randomised controlled trial. *PLoS Medicine* 2017;**14**(5):e1002305-e1002305.

Fenn B, Sangrasi GM, Puett C, Trenouth L, Pietzsch S. The REFANI Pakistan study - a cluster randomised controlled trial of the effectiveness and cost-effectiveness of cash-based transfer programmes on child nutrition status: study protocol. *BMC Public Health* 2015;**15**:1044. [DOI: 10.1186/s12889-015-2380-3]

Fenn B. A cluster RCT to measure the effectiveness of cash-based interventions on nutrition status in Pakistan. Field Exchange 54. Available at www.ennonline.net/fex/refanirctpakistancash February 2017:61.

Shwirtz Z, Fenn B, Mioli R, Sangrasi GM, Gallagher M. The REFANI project in Pakistan: adapting research to a multi-sectoral programme for impact measurement. Field Exchange

51. Available at www.ennonline.net/fex/51/refanipakistan January 2016:100.

Fernald 2011 *{published data only}*

* Fernald LC, Hidrobo M. Effect of Ecuador's cash transfer program (Bono de Desarrollo Humano) on child development in infants and toddlers: a randomized effectiveness trial. *Social Science & Medicine* 2011;**72**(9):1437-46. [DOI: 10.1016/j.socscimed.2011.03.005]

Paxson C, Schady N. Does money matter? The effects of cash transfers on child development in rural Ecuador. *Economic Development and Cultural Change* 2010;**59**(1):187-229.

Ferre 2014 *{published data only}*

Ferré C, Sharif I. Can conditional cash transfers improve education and nutrition outcomes for poor children in Bangladesh? Evidence from a pilot project. World Bank Group; 2014 October. Policy Research Working Paper 7077.

Gangopadhyay 2015 *{published data only}*

Gangopadhyay S, Lensink R, Yadav B. Cash or In-kind transfers? Evidence from a randomised controlled trial in Delhi, India. *Journal of Developmental Studies* 2015;**51**(6):660-73. [DOI: 10.1080/00220388.2014.997219]

Gertler 2000 (PROGRESA) *{published data only}*

Behrman JR, Hoddinott J. Programme evaluation with unobserved heterogeneity and selective implementation: The Mexican PROGRESA impact on child nutrition. *Oxford Bulletin of Economics and Statistics* 2005;**67**(4):547-69.

Fernald LCH, Gertler PJ, Neufeld LM. 10-year effect of Oportunidades, Mexico's conditional cash transfer programme, on child growth, cognition, language, and behaviour: a longitudinal follow-up study. *Lancet* 2009;**374**(9706):1997-2005. [DOI: 10.1016/s0140-6736(09)61676-7]

Gertler P. Do conditional cash transfers improve child health: evidence from PROGRESA's control randomized experiment. *American Economic Review* 2004;**94**(2):336-41.

* Gertler P. The impact of PROGRESA on health. Final report. Washington, DC: International Food Policy Research Institute; 2000 November. Project paper.

Hoddinott J, Skoufias E. The impact of PROGRESA on food consumption. Washington, DC: International Food Policy Research Institute; 2003. FCND Discussion Paper No. 150.

Skoufias E. Poverty alleviation and consumption insurance: evidence from PROGRESA in Mexico. *Journal of Socio-economics* 2007;**36**(4):630-49. [DOI: 10.1016/j.socec.2006.12.020]

Haushofer 2013 *{published data only}*

* Haushofer J, Shapiro J. Household response to income changes: Evidence from an unconditional cash transfer program in Kenya. Massachusetts Institute of Technology; 2013 November.

Haushofer J, Shapiro J. The short-term impact of unconditional cash transfers to the poor: experimental evidence from Kenya. *The Quarterly Journal of Economics* 2016;**131**(4):1973–2042.

Hidrobo 2014 *{published data only}*

Hidrobo M, Hoddinott J, Peterman A, Margolies A, Moreira V. Cash, food, or vouchers? Evidence from a randomized experiment in northern Ecuador. *Journal of Development Economics* 2014;**107**:144-56.

Hjelm 2017 *{published data only}*

* Hjelm L, Handa S, de Hoop J, Palermo T. Poverty and perceived stress: evidence from two unconditional cash transfer programs in Zambia. *Social Science & Medicine* 2017;**177**:110-17.

Seidenfeld D, Handa S, Tembo G. Zambia's Multiple Category Targeting grant: 36-month impact report. American Institutes for Research; Washington, DC 2015.

Seidenfeld D, Prencipe L, Handa S. Zambia's Multiple Category Cash Transfer Program: baseline report. American Institutes for Research; Washington, DC 2012.

Hoddinott 2013 *{published data only}*

* Hoddinott J, Sandström S, Upton J. Impact evaluation of cash and food transfers in Zinder, Niger: analytical report. Rome: World Food Programme; 2013 May.

Hoddinott J, Sandstrom S, Upton J. The impact of cash and food transfers: evidence from a randomized intervention in Niger. *American Journal of Agricultural Economics* 2018;**100**(4):1032-49.

Huerta 2006 (PROGRESA) *{published data only}*

Behrman JR, Hoddinott J. An evaluation of the impact of PROGRESA on preschool child height. Washington, DC: International Food Policy Research Institute; 2001. PROGRESA report.

* Huerta MC. Child health in rural Mexico: has PROGRESA reduced children's morbidity risks? *Social Policy & Administration* 2006;**40**(6):652-77.

Rivera JA, Sotres-Alvarez D, Habicht J-P, Shamah T, Villalpando S. Impact of the Mexican program for education, health, and nutrition (PROGRESA) on rates of growth and anemia in infants and young children: a randomized effectiveness study. *JAMA* 2004;**291**(21):2563-70.

Jensen 2011 *{published data only}*

Jensen RT, Miller NH. Do consumer price subsidies really improve nutrition? *Review of Economics and Statistics* 2011;**93**(4):1205-23.

Jodlowski 2016 *{published data only}*

Jodlowski M, Winter-Nelson A, Baylis K, Goldsmith PD. Milk in the data: food security impacts from a livestock field experiment in Zambia. *World Development* 2016;**77**:99-114. [DOI: 10.1016/j.worlddev.2015.08.009]

Kandpal 2016 *{published data only}*

Kandpal E, Alderman H, Friedman J, Filmer D, Onishi J, Avalos J. A conditional cash transfer program in the Philippines reduces severe stunting. *Journal of Nutrition* 2016;**146**(9):1793-800. [DOI: 10.3945/jn.116.233684]

Kangmennaang 2017 *{published data only}*

Kangmennaang J, Kerr RB, Lupafya E, Dakishoni L, Katundu M, Luginaah I. Impact of a participatory agroecological development project on household wealth and food security in Malawi. *Food Security* 2017;**9**(3):561-76.

Katz 2001 *{published data only}*

Katz J, West KP, Pradhan EK, LeClerq SC, Shakya TR, Khatry SK, et al. Impact of providing a small income on women's nutritional status and household food expenditures in rural Nepal. *Food and Nutrition Bulletin* 2001;**22**(1):13-8.

Kennedy 1989 *{published data only}*

Kennedy E. The effects of sugarcane production on food security, health, and nutrition in Kenya: a longitudinal analysis. Washington, DC: International Food Policy Research Institute; 1989 December. Research report 78.

Kurdi 2019 *{published data only}*

Kurdi S, Ghorpade Y, Ibrahim H. The Cash for Nutrition intervention in Yemen: impact evaluation study. Washington, DC: International Food Policy Research Institute; 2019 April. Regional program working paper 19.

Kusuma 2017a *{published data only}*

Kusuma D, Cohen J, McConnell M, Berman P. Can cash transfers improve determinants of maternal mortality? Evidence from the household and community programs in Indonesia. *Social Science & Medicine* 2016;**163**:10-20.

* Kusuma D, McConnell M, Berman P, Cohen, J. The impact of household and community cash transfers on children's food consumption in Indonesia. *Preventive Medicine* 2017;**100**:152-8.

Kusuma 2017b *{published data only}*

Kusuma D, Cohen J, McConnell M, Berman P. Can cash transfers improve determinants of maternal mortality? Evidence from the household and community programs in Indonesia. *Social Science & Medicine* 2016;**163**:10-20.

* Kusuma D, McConnell M, Berman P, Cohen, J. The impact of household and community cash transfers on children's food consumption in Indonesia. *Preventive Medicine* 2017;**100**:152-58.

Leroy 2008 (PROGRESA) *{published data only}*

Leroy JL, García-Guerra A, García R, Dominguez C, Rivera J, Neufeld LM. The Oportunidades program increases the linear growth of children enrolled at young ages in urban Mexico. *Journal of Nutrition* 2008;**138**(4):793-8.

Lopez Arana 2016 *{published data only}*

Attanasio O, Gómez LC, Heredia P, Vera-Hernandez M. The short-term impact of a conditional cash subsidy on child health and nutrition in Colombia. Centre for the Evaluation of Development Policies; 2005 December. The Institute for Fiscal Studies report summary: Familias 03.

Attanasio O, Mesnard A. The impact of a conditional cash transfer programme on consumption in Colombia. *Fiscal Studies* 2006;**27**(4):421-42.

Forde I, Chandola T, Garcia S, Marmot MG, Attanasio O. The impact of cash transfers to poor women in Colombia on BMI and obesity: prospective cohort study. *International Journal of Obesity* 2012;**36**(9):1209-14. [DOI: 10.1038/ijo.2011.234]

* Lopez-Arana S, Avendano M, Forde I, Van Lenthe FJ, Burdorf, A. Conditional cash transfers and the double burden of malnutrition among children in Colombia: a quasi-experimental study. *British Journal of Nutrition* 2016;**115**(10):1780-9. [DOI: 10.1017/S0007114516000714]

Lopez-Arana S, Avendano M, van Lenthe FJ, Burdorf A. The impact of a conditional cash transfer programme on determinants of child health: evidence from Colombia. *Public Health Nutrition* 2016;**19**(14):2629-2642. [DOI: 10.1017/S1368980016000240]

Macours 2012 *{published data only}*

Macours K, Schady N, Vakis R. Cash transfers, behavioral changes, and cognitive development in early childhood: evidence from a randomized experiment. *American Economic Journal. Applied Economics* 2012;**4**(2):247-73. [DOI: 10.1257/app.4.2.247]

Maluccio 2005 *{published data only}*

Maluccio J, Flores R. Impact evaluation of a conditional cash transfer program: The Nicaraguan Red de Protección Social. Washington, DC: International Food Policy Research Institute; 2005. FCND discussion paper.

Marquis 2018 *{published data only}*

Marquis GS, Colecraft EK, Kanlisi R, Aidam BA, Atuobi-Yeboah A, Pinto C, et al. An agriculture-nutrition intervention improved children's diet and growth in a randomized trial in Ghana. *Maternal & Child Nutrition* 2018;**14**(s3):e12677.

Merttens 2013 *{published data only}*

Merttens F, Hurrell A, Marzi M, Attah R, Farhat M, Kardan A, et al. Kenya Hunger Safety Net Programme; monitoring and evaluation component: impact evaluation final report: 2009 to 2012. Oxford Policy Management; 2013.

Miller 2011 *{published data only}*

* Miller CM, Tsoka M, Reichert K. The impact of the Social Cash Transfer Scheme on food security in Malawi. *Food Policy* 2011;**36**(2):230-8.

Miller CM. Cash transfers and economic growth: a mixed methods analysis of transfer recipients and business owners in Malawi. *Poverty & Public Policy* 2011;**3**(3):1-36. [DOI: 10.2202/1944-2858.1147]

Strobbe F, Miller CM. Cash transfers in an epidemic context: the interaction of formal and informal support in rural Malawi. The World Bank; 2011 October. Policy research working paper 5824.

Murshed E Jahan 2011 *{published data only}*

Murshed-E-Jahan K, Pemsl DE. The impact of integrated aquaculture–agriculture on small-scale farm sustainability and farmers' livelihoods: experience from Bangladesh. *Agricultural Systems* 2011;**104**(5):392-402. [DOI: 10.1016/j.agsy.2011.01.003]

Olney 2016 *{published data only}*

Dillon A, Arsenault J, Olney D. Nutrient production and micronutrient gaps: evidence from agriculture-nutrition randomized control trial. *American Journal of Agricultural Economics* 2019;**101**:732-52.

Dillon A, Bliznashka L, Olney D. Experimental evidence on post-program effects and spillovers from an agriculture-nutrition program. *Econominc & Human Biology* 2020;**36**:1008.

Olney D, Bilnashka L, Pedehombga A, Dillon A, Ruel M, Heckert J. Women's nutrition and empowerment are improved through participation in an integrated agriculture and nutrition program in Burkina Faso. *The FASEB Journal* 2015;**29**(S1):abstract. [DOI: 10.1096/fasebj.29.1_supplement.898.25]

* Olney DK, Bliznashka L, Pedehombga A, Dillon A, Ruel MT, Heckert J. A 2-year integrated agriculture and nutrition program targeted to mothers of young children in Burkina Faso reduces underweight among mothers and increases their empowerment: a cluster-randomized controlled trial. *The Journal of Nutrition* 2016;**146**(5):1109-17. [DOI: 10.3945/jn.115.224261]

Olney DK, Pedehombga A, Ruel MT, Dillon A. A 2-year integrated agriculture and nutritionand health behavior change communication program targeted to women in Burkina Faso reduces anemia, wasting, and diarrhea in children 3–12.9 months of age at baseline: a cluster-randomized controlled trial. *The Journal of Nutrition* 2015;**145**:1317–24.

Osei 2017 *{published data only}*

Osei A, Pandey P, Nielsen J, Pries A, Spiro D, Davis D, et al. Combining home garden, poultry, and nutrition education program targeted to families with young children improved anemia among children and anemia and underweight among non pregnant women in Nepal. *Food and Nutrition Bulletin* 2017;**38**(1):49-64.

Pellerano 2014 *{published data only}*

Pellerano L, Moratti M, Jakobsen M, Bajgar M, Barca V. Child Grants Programme impact evaluation: follow-up report. Oxford: Oxford Policy Management; 2014 April.

Ponce 2017 *{published data only}*

Ponce J, Ramos-Martin J. Impact of two policy interventions on dietary diversity in Ecuador. *Public Health Nutrition* 2017;**20**(8):1473-80.

Porter 2016 *{published data only}*

Porter C, Goyal R. Social protection for all ages? Impacts of Ethiopia's Productive Safety Net Program on child nutrition. *Social Science & Medicine* 2016;**159**:92-9. [DOI: 10.1016/j.socscimed.2016.05.001]

Renzaho 2017 *{published data only}*

Renzaho AMN, Chitekwe S, Chen W, Rijal S, Dhakal T, Dahal P. The synergetic effect of cash transfers for families, child sensitive social protection programs, and capacity building for effective social protection on children's nutritional status in Nepal. *International Journal of Environmental Research and Public Health* 2017;**14**(12):1502.

Schwab 2013 *{published data only}*

Schwab B. In the form of bread? A randomized comparison of cash and food transfers in Yemen. Washington, DC: International Food Policy Research Institute; 2013. Conference paper.

Skoufias 2013 *{published data only}*

Avitabile C. Does information improve the health behavior of adults targeted by a conditional transfer program? *Journal of Human Resources* 2012;**47**(3):785-825.

Cunha JM. Testing paternalism: cash versus in-kind transfers. *American Economic Journal: Applied Economics* 2014;**6**(2):195-230. [DOI: 10.1257/app.6.2.195]

Ramirez-Luzuriaga MJ, Unar-Munguia M, Rodriguez-Ramirez S, Rivera JA, Gonzalez de Cosio T. A food transfer program without a formal education component modifies complementary feeding practices in poor rural Mexican communities. *The Journal of Nutrition* 2016;**146**(1):107-13. [DOI: 10.3945/jn.115.215962]

Skoufias E, Unar M, González-Cossío T. The impacts of cash and in-kind transfers on consumption and labor supply: Experimental evidence from rural Mexico. Washington, DC: International Food Policy Research Institute; 2008 November. Policy research working paper 4778.

* Skoufias E, Unar M, Gonzalez de Cossio T. The poverty impacts of cash and in-kind transfers: experimental evidence from rural Mexico. *Journal of Development Effectiveness* 2013;**5**(4):401-29.

Sturm 2013 *{published data only}*

An R, Sturm R. A cash-back rebate program for healthy food purchases in South Africa: selection and program effects in self-reported diet patterns. *American Journal of Health Behavior* 2017;**41**(2):152-62.

* Sturm R, An, R, Segal D, Patel D. A cash-back rebate program for healthy food purchases in South Africa: results from scanner data. *American Journal of Preventive Medicine* 2013;**44**(6):567-72. [DOI: 10.1016/j.amepre.2013.02.011]

Tonguet Papucci 2015 *{published data only}*

Houngbe F, Tonguet-Papucci A, Altare C, Ait-Aissa M, Huneau J, Huybregts L, et al. Unconditional cash transfers do not prevent children's undernutrition in the Moderate Acute Malnutrition Out (MAM'Out) cluster-randomized controlled trial in rural Burkina Faso. *The Journal of Nutrition* 2017;**147**:1410–7.

* Tonguet-Papucci A, Houngbe F, Huybregts L, Ait-Aissa M, Altare C, Kolsteren P, et al. Unconditional seasonal cash transfer increases intake of high-nutritional-value foods in young Burkinabe children: results of 24-hour dietary recall surveys within the Moderate Acute Malnutrition Out (MAM'Out) randomized controlled trial. *The Journal of Nutrition* 2017;**147**(7):1418-25.

Tonguet-Papucci A, Houngbe F, Lompo P, Yameogo WME, Huneau J, Ait Aissa M, et al. Beneficiaries' perceptions and

reported use of unconditional cash transfers intended to prevent acute malnutrition in children in poor rural communities in Burkina Faso: qualitative results from the MAM'Out randomized controlled trial. *BMC Public Health* 2017;**17**:527.

Tonguet-Papucci A, Huybregts L, Ait Aissa M, Huneau JF, Kolsteren P. The MAM'Out project: a randomized controlled trial to assess multiannual and seasonal cash transfers for the prevention of acute malnutrition in children under 36 months in Burkina Faso. *BMC Public Health* 2015;**15**:762. [DOI: 10.1186/s12889-015-2060-3]

Verbowski 2018 *{published data only}*

Michaux KD, Hou K, Karakochuk CD, Whitfield KC, Ly S, Verbowski V, et al. Effect of enhanced homestead food production on anaemia among Cambodian women and children: a cluster randomized controlled trial. *Maternal & Child Nutrition* 2019;**15**(S3):e12757.

* Verbowski V, Talukder Z, Hou K, Sok Hoing L, Michaux K, Anderson V, et al. Effect of enhanced homestead food production and aquaculture on dietary intakes of women and children in rural Cambodia: a cluster randomized controlled trial. *Maternal & Child Nutrition* 2018;**14**(3):e12581. [DOI: dx.doi.org/10.1111/mcn.12581]

Weinhardt 2017 *{published data only}*

Weinhardt LS, Galvao LW, Yan AF, Stevens P, Mwenyekonde TN, Ngui E, et al. Mixed-method quasi-experimental study of outcomes of a large-scale multilevel economic and food security intervention on HIV vulnerability in rural Malawi. *AIDS and Behavior* 2017;**21**(3):712-23.

References to studies excluded from this review

Abubakari 2014 *{published data only}*

Abubakari A, Sadik B Bgaha, Keisan Y. Impact of village savings and loans associations on the nutritional status of under-five children: a case study in the Sissala West district of Upper West Region. *Pakistan Journal of Nutrition* 2014;**13**(7):390.

ACTRN12611001170910 *{published data only}*

ACTRN12611001170910. Spend Study - a randomised controlled trial to examine the effect of providing additional money on food spending among low income households. www.anzctr.org.au/Trial/Registration/TrialReview.aspx?id=347678 (first submitted 4 November 2011).

Aker 2017 *{published data only}*

Aker JC. Comparing cash and voucher transfers in a humanitarian context: evidence from the Democratic Republic of Congo. *World Bank Economic Review* 2017;**31**(1):44-70.

Akresh 2016 *{published data only}*

Akresh R, de Walque D, Kazianga H. Alternative cash transfer delivery mechanisms: impacts on routine preventative health clinic visits in Burkina Faso. In: Edwards S, Johnson S, and Weil DN, editors(s). African Successes, Volume II: Human Capital. 1 edition. Cambridge, Massachusetts: National Bureau of Economic Research, 2016.

Alderman 2009 *{published data only}*

Alderman H, Ndiaye B, Linnemayr S, Ka A, Rokx C, Dieng K, et al. Effectiveness of a community-based intervention to improve nutrition in young children in Senegal: a difference in difference analysis. *Public Health Nutrition* 2009;**12**(5):667-73. [DOI: 10.1017/S1368980008002619]

Alvarez 2008 *{published data only}*

Álvarez C, Devoto F, Winters P. Why do beneficiaries leave the safety net in Mexico? A study of the effects of conditionality on dropouts. *World Development* 2008;**36**(4):641-58. [DOI: 10.1016/j.worlddev.2007.04.014]

Amarante 2016 *{published data only}*

Amarante V, Manacorda M, Miguel E, Vigorito A. Do cash transfers improve birth outcomes? Evidence from matched vital statistics, and program and social security data. *American Economic Journal: Economic Policy* 2016;**8**(2):1-43. [DOI: 10.1257/pol.20140344]

Attanasio 2014 *{published data only}*

Attanasio OP, Lechene V. Efficient responses to targeted cash transfers. *Journal of Political Economy* 2014;**122**(1):178-222.

Attanasio 2014a *{published data only}*

Attanasio OP, Fernández C, Fitzsimons EOA, Grantham-McGregor SM, Meghir C, Rubio-Codina, M. Using the infrastructure of a conditional cash transfer program to deliver a scalable integrated early child development program in Colombia: cluster randomized controlled trial. *BMJ* 2014;**349**(Sep 29):g5785. [DOI: 10.1136/bmj.g5785]

Ayala 2015 *{published data only}*

Ayala GX, Baquero B, Pickrel JL, Mayer J, Belch G, Rock CL, et al. A store-based intervention to increase fruit and vegetable consumption: The El Valor de Nuestra Salud cluster randomized controlled trial. *Contemporary Clinical Trials* 2015;**42**:228-38. [DOI: 10.1016/j.cct.2015.04.009]

Ayele 2003 *{published data only}*

Ayele Z, Peacock C. Improving access to and consumption of animal source foods in rural households: the experiences of a women-focused goat development program in the highlands of Ethiopia. *Journal of Nutrition* 2003;**133**(11):3981S-6S.

Barber 2008 *{published data only}*

Barber SL, Gertler PJ. The impact of Mexico's conditional cash transfer programme, Oportunidades, on birthweight. *Tropical Medicine & International Health* 2008;**13**(11):1405-14.

Bazzi 2012 *{published data only}*

Bazzi S, Sumarto S, Suryahadi A. Evaluating Indonesia's Unconditional Cash Transfer Program, 2005-6. International Initiative for Impact Evaluation; 2012 March.

Behrman 2009 *{published data only}*

Behrman JR, Parker SW, Todd PE. Schooling impacts of conditional cash transfers on young children: evidence from Mexico. *Economic Development and Cultural Change* 2009;**57**(3):439-77.

Bezu 2014 *{published data only}*

Bezu S, Kassie GT, Shiferaw B, Ricker-Gilbert J. Impact of improved maize adoption on welfare of farm households in Malawi: a panel data analysis. *World Development* 2014;**59**:120-31. [DOI: 10.1016/j.worlddev.2014.01.023]

Bihan 2010 *{published data only}*

Bihan H, Castetbon K, Mejean C, Peneau S, Pelabon L Jellouli F, et al. Sociodemographic factors and attitudes toward food affordability and health are associated with fruit and vegetable consumption in a low-income French population. *Journal of Nutrition* 2010;**140**(4):823-30. [DOI: 10.3945/jn.109.118273]

Bleich 2007 *{published data only}*

Bleich E, Guerne RZ, Mack S. The FAO special programme for food security: livestock diversification – a case study in Chad. *World's Poultry Science Journal* 2007;**61**(1):23-30. [DOI: 10.1079/wps200438]

Braido 2012 *{published data only}*

Braido LHB, Olinto P, Perrone H. Gender bias in intra-household allocation: evidence from an unintentional experiment. *Review of Economics and Statistics* 2012;**94**(2):552-65.

Broutin 2006 *{published data only}*

Broutin C, Bricas N. Agroalimentaire et lutte contre la pauvreté en Afrique subsaharienne. Paris: Editions du Gret; 2007. Etudes et travaux.

Buller 2016 *{published data only}*

Buller AM, Hidrobo M, Peterman A, Heise L. The way to a man's heart is through his stomach? a mixed methods study on causal mechanisms through which cash and in-kind food transfers decreased intimate partner violence. *BMC Public Health* 2016;**16**:488. [DOI: 10.1186/s12889-016-3129-3]

Cabral 2014 *{published data only}*

Cabral CS, Lopes AG, Lopes JM, Vianna RP. Food security, income, and the Bolsa Familia program: a cohort study of municipalities in Paraiba State, Brazil, 2005-2011. *Cadernos de Saude Publica / Ministerio da Saude, Fundacao Oswaldo Cruz, Escola Nacional de Saude Publica* 2014;**30**(2):393-402. [DOI: 10.1590/0102-311X00140112]

Cardenas 2015 *{published data only}*

Cardenas MK, Benziger CP, Pillay TD, Miranda J J. The effect of changes in visibility and price on fruit purchasing at a university cafeteria in Lima, Peru. *Public Health Nutrition* 2015;**18**(15):2742-9. [DOI: 10.1017/S1368980014002730]

Cluver 2018 *{published data only}*

Cluver L, Meinck F, Doubt J, Ward C, Lombard C, Shenderovich Y, et al. Cash+Care: parenting support and violence reduction programme associated with reductions in adolescent HIV-risks in South Africa: a cluster randomized trial of a DREAMS and 4Children-implemented programme 'Parenting for Lifelong Health'. Journal of the International AIDS Society 2018;**21**.

Cohen 2015 *{published data only}*

Cohen CR, Steinfeld RL, Weke E, Bukusi EA, Hatcher AM, Shiboski S, et al. Shamba Maisha: pilot agricultural intervention for food security and HIV health outcomes in Kenya: design, methods, baseline results and process evaluation of a cluster-randomized controlled trial. *Springerplus* 2015;**4**:122. [DOI: 10.1186/s40064-015-0886-x]

Dammert 2009 *{published data only}*

Dammert AC. Heterogeneous impacts of conditional cash transfers: evidence from Nicaragua. *Economic Development and Cultural Change* 2009;**58**(1):53-83.

Debela 2015 *{published data only}*

Debela BL, Shively G, Holden ST. Does Ethiopia's Productive Safety Net Program improve child nutrition? *Food Security* 2015;**7**(6):1273-89. [DOI: 10.1007/s12571-015-0499-9]

Downs 2017 *{published data only}*

Downs S, Fanzo J. Developing a voice messaging intervention to improve nutrition in a large scale horticulture intensification project in Senegal. *Annals of Nutrition & Metabolism* 2017;**71**:398.

ENN 2018 *{published data only}*

Emergency Nutrition Network (ENN). Impact evaluation of the Lebanon multipurpose cash assistance programme. Field Exchange 57, March 2018. Available at: www.ennonline.net/fex/57/lebanonmpcashassistanceprog:82.

Fenn 2015_Niger *{published data only}*

Fenn B, Noura G, Sibson V, Dolan C, Shoham J. The role of unconditional cash transfers during a nutritional emergency in Maradi region, Niger: a pre-post intervention observational study. *Public Health Nutrition* 2015;**18**(2):343-51. [DOI: 10.1017/S1368980014000378]

Fenn B, Trepel D, Dolan C, Shoham J, Sibson V. Seasonal unconditional cash transfers and wasting in Niger. *Annals of Nutrition & Metabolism* 2013;**63**:1002.

Fernald 2017 *{published data only}*

Fernald LC, Kagawa RM, Knauer HA, Schnaas L, Guerra AG, Neufeld LM. Promoting child development through group-based parent support within a cash transfer program: experimental effects on children's outcomes. *Developmental Psychology* 2017;**53**(2):222-36. [DOI: 10.1037/dev0000185]

Fortin 2016 *{published data only}*

Fortin S, Kameli Y, Ouattara A, CastanF, Perenze ML, Kankouan J, et al. Targeting vulnerable households in urban Burkina Faso: effectiveness of geographical criteria but not of proxy-means testing. *Health Policy Plan* 2016;**31**(5):573-81. [DOI: 10.1093/heapol/czv104]

Gelli 2017 *{published data only}*

Gelli A, Roschnik N. A cluster randomised control trial of an integrated agriculture-nutrition package to improve children's diets through community based childcare centres in Malawi. *Annals of Nutrition & Metabolism* 2017;**71**:685-86.

Gertler 2012 *{published data only}*

Gertler PJ, Martinez SW, Rubio-Codina M. Investing cash transfers to raise long-term living standards. *American Economic Journal. Applied Economics* 2012;**4**(1):164-92.

Gram 2019 *{published data only}*

Gram L, Morrison J, Saville N, Yadav SS, Shrestha B, Manandhar D, et al. Do participatory learning and action women's groups alone or combined with cash or food transfers expand women's agency in rural Nepal? *Journal of Development Studies* 2019;**55**(8):1670-86.

Grellety 2017 *{published data only}*

Grellety E, Babakazo P, Bangana A, Mwamba G, Lezama I, Zagre NM, et al. Effects of unconditional cash transfers on the outcome of treatment for severe acute malnutrition (SAM): a cluster-randomised trial in the Democratic Republic of the Congo. *BMC Medicine* 2017;**15**(1):87.

Gutiérrez 2019 *{published data only}*

Gutiérrez JP, Shamah-Levy T, Bertozzi SM, Rivera-Dommarco JA. Intergenerational social mobility based on the investments in human capital: evidence of the long-term results of PROSPERA in health. Washington, DC; The World Bank; 2019 September. Policy research working paper no. WPS9001.

Haghparast-Bidgoli 2019 *{published data only}*

Haghparast-Bidgoli H, Skordis J, Harris-Fry H, Krishnan S, O'Hearn M, Kumar A, et al. Protocol for the cost-consequence and equity impact analyses of a cluster randomised controlled trial comparing three variants of a nutrition-sensitive agricultural extension intervention to improve maternal and child dietary diversity and nutritional status in rural Odisha, India (UPAVAN trial). *Trials* 2019;**20**:287.

Haque 2017 *{published data only}*

Haque A, Dey MM. Impacts of community-based fish culture in seasonal flood plains on income, food security and employment in Bangladesh. *Food Security* 2017;**9**(1):25-38.

Hardin Fanning 2014 *{published data only}*

Hardin-Fanning F, Gokun Y. Gender and age are associated with healthy food purchases via grocery voucher redemption. *Rural and Remote Health* 2014;**14**(3):2830.

Huey 2019 *{published data only}*

Teo CH, Chin YS, Lim PY, Masrom SAH, Shariff ZM. Impact of a school nutrition program (SNP) in Malaysia. *Annals of Nutrition & Metabolism* 2019;**75**(3):1427.

Idiaye 2014 *{published data only}*

Idiaye CO, Omonona BT. National Special Programme for Food Security (NSPFS) and poverty among farming households in Oyo State, Nigeria. *Journal of Emerging Trends in Economics and Management Sciences* 2014;**5**(3):343.

ISRCTN10323949 *{published data only}*

ISRCTN10323949. Effectiveness of approaches to deliver integrated solutions for optimal child growth and development in Tanzania. www.who.int/trialsearch/Trial2.aspx?TrialID=ISRCTN10323949 (first posted 3 December 2017).

ISRCTN77820875 *{published data only}*

ISRCTN77820875. Cambodia integrated nutrition, hygiene, and sanitation impact evaluation – endline. www.who.int/trialsearch/Trial2.aspx?TrialID=ISRCTN77820875 (first posted 9 August 2019).

Issaley 2013 *{published data only}*

Issaley NA. Le cash transfer à Olléléwa: de la fabrique des" vulnérables" à la gestion locale de l'aide. www.lasdel.net/images/etudes_et_travaux/Le_cash_transfer_a_Ollelewa.pdf 2013.

Jharendu 2014 *{published data only}*

Pant J, Barman BK, Murshed-E-Jahan K, Belton B, Beveridge M. Can aquaculture benefit the extreme poor? A case study of landless and socially marginalized Adivasi (ethnic) communities in Bangladesh. *Aquaculture* 2014;**418/419**:1-10.

Kagawa 2017 *{published data only}*

Kagawa RM, Deardorff J, Garcia-Guerra A, Knauer HA, Schnaas L, Neufeld LM, et al. Effects of a parenting program among women who began childbearing as adolescents and young adults. *Journal of Adolescent Health* 2017;**61**(5):634-41. [DOI: 10.1016/j.jadohealth.2017.05.023]

Kakuhikire 2016 *{published data only}*

Kakuhikire B, Suquillo D, Atuhumuza E, Mushavi R, Perkins JM, Venkataramani AS, et al. A livelihood intervention to improve economic and psychosocial well-being in rural Uganda: longitudinal pilot study. *SAHARA J: Journal of Social Aspects of HIV/AIDS Research Alliance* 2016;**13**(1):162-9. [DOI: 10.1080/17290376.2016.1230072]

Kidoido 2015 *{published data only}*

Kidoido M, Korir L. Do low-income households in Tanzania derive income and nutrition benefits from dairy innovation and dairy production? *Food Security* 2015;**7**(3):681-92.

Kim 2012 *{published data only}*

Kim K, Hong SA, Yun SH, Ryou HJ, Lee SS, Kim MK. The effect of a healthy school tuck shop program on the access of students to healthy foods. *Nutrition Research and Practice* 2012;**6**(2):138-45. [DOI: 10.4162/nrp.2012.6.2.138]

Kimenju 2015 *{published data only}*

Kimenju SC, Rischke R, Klasen S, Qaim M. Do supermarkets contribute to the obesity pandemic in developing countries? *Public Health Nutrition* 2015;**18**(17):3224-33. [DOI: 10.1017/S1368980015000919]

Kronebusch 2019 *{published data only}*

Kronebusch N, Damon A. The impact of conditional cash transfers on nutrition outcomes: experimental evidence from Mexico. *Economics and Human Biology* 2019;**33**:169-80.

KumarGhosh 2011 *{published data only}*

Kumar Ghosh, D. Combating the menace of food insecurity: the experience of West Bengal. *Development in Practice* 2011;**21**(4-5):691-704.

Lopez 2018 *{published data only}*

Lopez BF, Creamer J. Cash, conditions and child development: experimental evidence from a cash transfer in Honduras. Washington, DC; Inter-American Development Bank; 2018 October. IDB working paper series No IDB-WP-952.

Loubser 2010 *{published data only}*

Loubser M. HealthyFood™ benefit: impact of financial incentives and rewards on health and purchasing behaviour of members of a private health insurance scheme in South Africa. *South African Journal of Clinical Nutrition* 2010;**23**(3):27-29.

Martins 2013 *{published data only}*

Martins APB. Impacto do Programa Bolsa Família sobre a aquisição de alimentos em famílias brasileiras de baixa renda [PhD Thesis]. Sao Paulo, Brazil: Universidade de São Paulo, 2013.

Mascie Taylor 2010 *{published data only}*

Mascie-Taylor CG, Marks MK, Goto R, Islam R. Impact of a cash-for-work programme on food consumption and nutrition among women and children facing food insecurity in rural Bangladesh. *Bulletin of the World Health Organization* 2010;**88**(11):854-60. [DOI: 10.2471/BLT.10.080994]

NCT02558660 *{published data only}*

NCT02558660. Evaluating use of a farmers market incentive program among low-income health center patients. clinicaltrials.gov/ct2/show/NCT02558660 (first posted 24 September 2015).

NCT02577705 *{published data only}*

NCT02577705. Building wealth and health network: a microfinance/TANF demonstration project. clinicaltrials.gov/ct2/show/NCT02577705 (first posted 16 October 2015).

NCT02843178 *{published data only}*

NCT02843178. Designing food voucher programs to reduce disparities in healthy diets [Coupons for Healthy Intake using Variable Economic Strategies (CHIVES)]. clinicaltrials.gov/ct2/show/NCT02843178 (first posted 25 July 2016).

NCT03311698 *{published data only}*

NCT03311698. Homestead agriculture and nutrition project. clinicaltrials.gov/ct2/show/NCT03311698 (first posted 17 October 2017).

NCT04135625 *{published data only}*

NCT04135625. Improving nutrition in children under two through increased egg consumption in Burkina Faso. clinicaltrials.gov/ct2/show/NCT04135625 (first posted 22 October 2019).

NCT04166370 *{published data only}*

NCT04166370. Bangladesh MSNP: social protection mixed methods study. clinicaltrials.gov/ct2/show/NCT04166370 (first posted 18 November 2019).

NCT04171999 *{published data only}*

NCT04171999. CommunityRx-Hunger (CRx-H) [CommunityRx-Hunger: a hospital-based intervention for primary caregivers of children admitted to the hospital]. clinicaltrials.gov/ct2/show/NCT04171999 (first posted 21 November 2019).

Nisbett 2016 *{published data only}*

Nisbett N, Longhurst R, Barnett I, Feruglio F, Gordon J, Hoddinott J, et al. Impact evaluation of the DFID programme to accelerate improved nutrition for the extreme poor in Bangladesh. Maximising the Quality of Scaling Up Nutrition (MQSUN); 2016 June.

Nsabuwera 2016 *{published data only}*

Nsabuwera V, Hedt-Gauthier B, Khogali M, Edginton M, Hinderaker SG, Nisingizwe MP, et al. Making progress towards food security: evidence from an intervention in three rural districts of Rwanda. *Public Health Nutrition* 2016;**19**(7):1296-304. [DOI: 10.1017/S1368980015002207]

Olajide-Taiwo 2011 *{published data only}*

Olajide-Taiwo LO. Effect of capacity building on production of safe and profitable leafy vegetables among farmers in Ibadan City of Nigeria. *Acta Horticulturae* 2011;**911**:427-32.

Pasdar 2016 *{published data only}*

Pasdar Y, Rezaei M, Darbandi M, Niazi P, Sharafi K. The effect of eliminating subsidies on food consumption of households in Kermanshah – Iran. *International Journal of Pharmacy and Technology* 2016;**8**:11141-50.

Pereko 2017 *{published data only}*

Pereko K. The impact of community volunteer actions on child nutrition. In: IUNS. 21st International Congress of Nutrition. Buenos Aires, Argentina, October 15-20, 2017: Abstracts. Annals of Nutrition & Metabolism 2017;**71**(Supplement 2):704-5. [DOI: 10.1159/000480486]

Perez Lu 2016 *{published data only}*

Perez-Lu JE, Carcamo C, Nandi A, Kaufman JS. Health effects of 'Juntos', a conditional cash transfer programme in Peru. *Maternal & Child Nutrition* 2016;**22**:22. [DOI: 10.1111/mcn.12348]

Prifti *{published data only}*

Prifti E, Daidone S, Pace N, Davis B. Stuck exchange: Can cash transfers push smallholders out of autarky? *Journal of International Trade & Economic Development* 2019;**29**(5):495-509. [DOI: 10.1080/09638199.2019.1702711]

Quiñones 2016 *{published data only}*

Quiñones EJ, Roy S. The impact of conditional cash transfer programs on indigenous households in Latin America: evidence from PROGRESA in Mexico. Washington, DC: International Food Policy Research Institute; 2016. IFPRI discussion paper.

Ragini 2017 *{published data only}*

Ragini R. Impact of nutri-garden on food security of rural families in Udaipur District. *Annals of Agri-bio Research* 2017;**22**(2):278-80.

Rahman 2015 *{published data only}*

Rahman AM, Abdel A, Samira M, Fadol IO. The role of Rural Women Schools (RWSs) on increasing income, improving nutrition and food security of rural families, Gezira State, Sudan.

Agricultural Science Digest - A Research Journal 2015;**35**(2):101. [DOI: 10.5958/0976-0547.2015.00036.1]

Ramirez-Silva 2013 *{published data only}*

Ramirez-Silva I. The Oportunidades program's fortified food supplement, but not improvements in the home diet, increased the intake of key micronutrients in rural Mexican children aged 12-59 months. *Journal of Nutrition* 2013;**143**(5):656-63.

Roschnik 2017 *{published data only}*

Roschnik N, Twalibu Al. Lessons learned from designing and implementing an integrated nutrition, livelihood and ECD project in Malawi. *Annals of Nutrition & Metabolism* 2017;**71**:63-4.

Roy 2019 *{published data only}*

Roy S, Hidrobo M, Hoddinott J, Koch B, Ahmed A. Can transfers and behavior change communication reduce intimate partner violence four years post-program? Experimental evidence from Bangladesh. Washington, DC; International Food Policy Research Institute; 2019 September. IFPRI Discussion Paper 01869.

Rutherford 2016 *{published data only}*

Rutherford DD, Burke HM, Cheung KK, Field, SH. Impact of an agricultural value chain project on smallholder farmers, households, and children in Liberia. *World Development* 2016;**83**:70-83. [DOI: 10.1016/j.worlddev.2016.03.004]

Schultz 2001 *{published data only}*

Schultz TP. School subsidies for the poor: evaluating a Mexican strategy for reducing poverty. Discussion paper 102. core.ac.uk/download/pdf/6289344.pdf.

Schwab 2019 *{published data only}*

Schwab B. Comparing the productive effects of cash and food transfers in a crisis setting: evidence from a randomised experiment in Yemen. *Journal of Development Studies* 2019;**55**(Suppl 1):29-54.

Sinharoy 2017 *{published data only}*

Sinharoy SS, Schmidt W-P, Wendt R, Mfura L, Crossett E, Grepin KA, et al. Impact of community health clubs on diarrhoea and anthropometry in western Rwanda: cluster-randomized controlled trial. *Lancet Global Health* 2017;**5**:e699-709.

Sudfeld 2019 *{published data only}*

Sudfeld CR, Bliznashka L, Ashery G, Yousafzai AK, Masanja H. Effect of a community health worker delivered health, nutrition and responsive stimulation package and conditional cash transfers on child development and growth in rural Tanzania: protocol for a cluster-randomized trial. *BMC Public Health* 2019;**19**(1):641.

TorresSalcido 2015 *{published data only}*

Torres Salcido G, del Roble Pensado Leglise M, Smolski A. Food distribution's socio-economic relationships and public policy: Mexico City's municipal public markets. *Development in Practice* 2015;**25**(3):293-305. [DOI: 10.1080/09614524.2015.1016481]

Wang 2012 *{published data only}*

Wang R, Shi L. Access to food outlets and children's nutritional intake in urban China: a difference-in-difference analysis. *Italian Journal of Pediatrics* 2012;**38**(1):30.

Young 2014 *{published data only}*

Young JR, O'Reilly RA, Ashley K, Suon S, Leoung IV, Windsor PA, et al. Impacts on rural livelihoods in Cambodia following adoption of best practice health and husbandry interventions by smallholder cattle farmers. *Transboundary and Emerging Diseases* 2014;**61**(S1):11-24.

Zhang 2018 *{published data only}*

Zhang Y, Ji M, Zou J, Yuan T, Deng J, Yang L, et al. Effect of a conditional cash transfer program on nutritional knowledge and food practices among caregivers of 3-5-year-old left-behind children in the rural Hunan province. *International Journal of Environmental Research and Public Health* 2018;**15**(3):525.

References to studies awaiting assessment

ACTRN12618001803280 *{published data only}*

ACTRN12618001803280. Impact of improved duck rearing on sale and consumption of ducks in rural households of flood-prone areas of Bangladesh [Impact of improved duck rearing on sale and consumption of ducks and dietary diversity of rural households in flood-prone areas of Bangladesh]. www.who.int/trialsearch/Trial2.aspx?TrialID=ACTRN12618001803280 (first posted 6 November 2018).

ACTRN12618001975280 *{published data only}*

ACTRN12618001975280. Effectiveness of unconditional Cash transfers and mobile behaviour change communications to reduce child under nutrition in rural Bangladesh [A community based cluster randomised controlled trial to determine the effectiveness of unconditional Cash transfers and mobile behaviour change communications to reduce child under nutrition in rural Bangladesh]. apps.who.int/trialsearch/Trial2.aspx?TrialID=ACTRN12618001975280 (first posted 7 December 2018).

Adubra 2017 *{published data only}*

Adubra L, Fortin S, Kameli Y, Le Port A, Kodjo NE, Savy M, et al. Can conditional cash transfer combined with nutritional supplementation play a role in reducing child stunting in rural Mali? *Annals of Nutrition & Metabolism* 2017;**71**:332.

Al-serhan 2010 *{published data only}*

Al-serhan M. Addressing poverty and improving livelihoods in Bedouin regions of Jordan [thesis]. Madison: University of Wisconsin, 2010.

Antwi 2013 *{published data only}*

Antwi MA, Oladele OI. Strategy, operation and effects of the Nguni Cattle Project in the North West Province, South Africa. *Asia Life Sciences* 2013:91-102.

Becquey 2017 *{published data only}*

Becquey E, Olney D, Golan J, Praygod G, Veryser S, Smith E, et al. Impacts of using an integrated homestead food production

and nutrition program platform to promote utilization of multiple micronutrient powders: a cluster-randomized controlled trial. *Annals of Nutrition & Metabolism* 2017;**71**:859.

Bezuneh 1989 *{published data only}*

Bezuneh M. Farm level impacts of food-for-work in a semi-arid region of Kenya. *Eastern Africa Economic Review* 5;**1**:1-8.

Bhandari 2019 *{published data only}*

Bhandari S, Butler L, Otieno P, Weiser S, Cohen C, Frongillo E. An agricultural and finance intervention improved dietary intake and nutritional status of children living in HIV-affected households in Western Kenya. Current Developments in Nutrition 2019;**3**(Suppl 1):P10-129-19.

Briaux 2017 *{published data only}*

Briaux J, Carles S, Kameli Y, Fortin S, Rollet P, Becquet R, et al. Impact of a cash transfer program targeting the "1000 days period" on low birth weight and growth retardation: a cluster randomized trial in Togo. *Annals of Nutrition & Metabolism* 2017;**71**:333-4.

Deji 2015 *{published data only}*

Deji SA, Onayade AA. A comparative study of food security sustainability among households in selected rural villages of Nigeria. *Annals of Nutrition & Metabolism* 2015;**67**:478-9.

Donato 2017 *{published data only}*

Donato K. Money or knowledge? Behavioral aspects of malnutrition. *Annals of Global Health* 2017;**83**(1):78.

Gahamanyi 2015a *{published data only}*

Gahamanyi V, Kettlewell A. Evaluating graduation: insights from the Vision 2020 Umurenge Programme in Rwanda. *IDS Bulletin* 2015;**46**(2):48-63.

Gauchan 1997 *{published data only}*

Gauchan D. Fruit tree integration: an option to improve household food security in Nepal's mountain region. In: Heidhues F, Fadani A, editors(s). Food Security and Innovations: Successes and Lessons Learned. New York (NY): Peter Lang Publishing Inc, 1997:221-230.

Ghattas 2019 *{published data only}*

Ghattas H, Jamaluddine Z, Choufani J, Masterson AR, Sahyoun NR. Improvements in economic, social, and food security outcomes of Palestinian refugee women and diet diversity of Palestinian schoolchildren in Lebanon: the Healthy Kitchens, Healthy Children intervention. *Lancet* 2019;**393**(Suppl 1):S25.

Ilham 2011 *{published data only}*

Ilham N. Effectiveness of food price policies on food security. *Indonesian Journal of Agriculture* 2011;**4**(1):58-66.

ISRCTN29521514 *{published data only}*

ISRCTN29521514. Assessing the role of cash transfer programmes in reducing the risk of acute malnutrition in Somalia. www.isrctn.com/ISRCTN29521514 (first applied 19 January 2016).

Kim 2009 *{published data only}*

Kim J. A study on the food security of Belo Horizonte, Brazil. *Journal of Rural Development* 2009;**32**(4):85-108.

Kroeun 2019 *{published data only}*

Kroeun H, Cotes G, Sokhoing L, Ngik R, Ridolfi R. Dietary diversity in Cambodian women and children in a cluster randomized control trial of enhanced homestead food production with and without gender components. Annals of Nutrition & Metabolism 2019;**75**(3):78.

Lukmanji 2017 *{published data only}*

Lukmanji Z, Mubarak M, Das L. The assessment of nutritional status of children below five years in households which participated in Food and Livelihood Security (FLS) project in Rajshahi Division-Bangladesh. *Annals of Nutrition & Metabolism* 2017;**71**:874.

Marsh 1994 *{published data only}*

Marsh RR, Talukder A. Effects of the introduction of home gardening on the production and consumption of target, interaction, and control groups: a case study from Bangladesh. Montpellier: Recherches-système en agriculture et développement rural 1994:425-30.

Miller 2017 *{published data only}*

Miller L, Joshi N, Lohani M, Rogers B, Mahato S, Neupane S, et al. Greater improvements in child growth and diet quality after a holistic community development intervention than after nutrition training alone. Annals of Nutrition & Metabolism 2017;**71**:412-3.

Morris 1999 *{published data only}*

Morris SS, Banegas JMM. Rural development, household food security, and nutrition in western Honduras [Desarrollo rural, seguridad alimentaria del hogar y nutrición en el oeste de Honduras]. *Archivos Latinoamericanos de Nutrición* 1999;**49**(3):244-52.

Mpiira 2019 *{published data only}*

Mpiira R, Olobo Okello P, Ali Z. A multisectoral approach to eradication of malnutrition in vulnerable groups: a cluster-randomised trial. *Lancet Global Health* 2019;**7**:S8.

NCT03336021 *{published data only}*

NCT03336021. Impact evaluation of agribusiness support and nutrition services projects in Upper Egypt. clinicaltrials.gov/ct2/show/NCT03336021 (first posted 8 November 2017).

NCT03847662 *{published data only}*

NCT03847662. Scaling up small-scale food processing to promote food security among women farmers in rural Vietnam. clinicaltrials.gov/ct2/show/NCT03847662 (first posted 20 February 2019).

PACTR201804003012418 *{published data only}*

PACTR201804003012418. Randomized controlled trial to study the effect of nutritional intervention from farm to feeding on gestational weight gain, anaemia and child nutrition. www.who.int/trialsearch/Trial2.aspx?

TrialID=PACTR201804003012418 (first registered 25 January 2018).

Park 2019 *{published data only}*

Park S, Han YE, Kim H. Knowledge, food vouchers, and child nutrition: evidence from a field experiment in Ethiopia. Current Developments in Nutrition 2019;**3**(Suppl 1):1091.

Pham Van 2004 *{published data only}*

Pham Van H. Study on the maternal – children nutritional status improve effects of an integrated food security project. *Journal of Vietnamese Medicine* 2004;**302**(9):1-6.

Raneri 2017 *{published data only}*

Raneri Je, Hoang K, Berti P, Kennedy G, Lachat C. Promotion of local agrobiodiversity improves diets of women and children in North West Vietnam: a cluster RCT. Annals of Nutrition & Metabolism 2017;**71**:408-9.

Raza 2018 *{published data only}*

Raza WA, Van de Poel E, Van Ourti T. Impact and spill-over effects of an asset transfer program on child undernutrition: evidence from a randomized control trial in Bangladesh. *Journal of Health Economics* 2018;**62**:105-20.

Rosas 2017 *{published data only}*

Rosas VM, Levy TS, Tapia BM, Gomez-Humaran IM. Impact of the National Crusade Against Hunger (CNCH) on anemia and dietary diversity among Mexican children. In: Special Issue: Experimental Biology 2017 Meeting Abstracts. *The FASEB Journal* 2017;**31**(S1):lb585.

Santoso 2019 *{published data only}*

Santoso M, Kerr RB, Kassim N, Martin H, Mtinda E, Mtei K, et al. Production diversity, men's help with household tasks, & lower women's depression mediate impact of an agriculture intervention on child's dietary diversity in Tanzania. *Current Developments in Nutrition* 2019;**3**(Suppl 1):FS01-06-19.

Shamah-Levy 2003 *{published data only}*

Shamah Levy T, Avila Curiel A, Cuevas Nasu L, Chavez Villasana A, Avila Arcos MA, Fernandez Mendoza C. The tortilla subsidy in Mexico: a nutritional or economic program? *Archivos Latinoamericanos de Nutrición* 2003;**53**(1):5-13.

Talukder 2017 *{published data only}*

Talukder A, Mundy G, Hou K, Stormer A, Michaux K, McLean J, et al. The role of small scale aquaculture and enhanced homestead food production in improving household food security and nutrition. Annals of Nutrition & Metabolism 2017;**71**:214-5.

Taren 2017 *{published data only}*

Taren D. The impact of solar market gardens on child growth, iron and vitamin a status in the Kalale District of Northern Benin. Annals of Nutrition & Metabolism 2017;**71**(Supplement 2):1308.

Tchale 2000 *{published data only}*

Tchale H, Edriss A. Production and marketing of smallholder tobacco: effect on household food security, nutritional status and intra-household labour allocation in Malawi. *UNISWA Research Journal of Agriculture, Science and Technology* 2000;**4**(1):83-92.

Teran Cadima *{published data only}*

Teran Cadima N. Evaluation of progress and impact of the intervention nutritional in infantils centers integrals of Ministry of Social Security and Public Health in the city of La Paz. n/a.

Vliegen 2000 *{published data only}*

Vliegen K. Report on a nutrition and household food security project in Viet Nam. *Food, Nutrition and Agriculture* 2000;**27**:40-6.

Wood *{published data only}*

Wood RP. Transfers for tots: A study of the heterogeneous effects of food and cash assistance on child anthropometry in Uganda [Master thesis]. Chapel Hill: University of North Carolina, 2014.

References to ongoing studies

Green 2016 *{published data only}*

Green T. Scale up of enhanced homestead food production in Cambodia. University of British Columbia, Helen Keller International and International Development Research Centre (Canada) 2016.

Hidrobo 2016 *{published data only}*

Hidrobo M, Roy S, Huybregts L, Gilligan D, Ruel M. The effect of a cash transfer program on household welfare and child nutritional status in Mali. Washington, DC; International Food Policy Research Institute; 2016.

ISRCTN24757827 2018 *{published data only}*

ISRCTN24757827. Cash for improved nutrition in Somalia. www.isrctn.com/ISRCTN24757827 (first posted 5 November 2018).

NCT03170986 2017 *{published data only}*

NCT03170986. Multi-sectoral agricultural intervention to improve nutrition, health and developmental outcomes of HIV-infected and affected children in Western Kenya. clinicaltrials.gov/show/NCT03170986 (first posted 31 May 2017).

NCT03299218 2017 *{published data only}*

NCT03299218. Effectiveness of SNF, Cash and BCC to prevent stunting among children 6-24 months in Rahim Yar Khan, Pakistan [Effectiveness of a programme comprised of SNF, cash-based transfers and BCC to prevent stunting among children 6-24 months in Rahim Yar Khan, Punjab, Pakistan]. clinicaltrials.gov/show/NCT03299218 (first posted 3 October 2017).

NCT03455257 2018 *{published data only}*

NCT03455257. Evaluation of a cash transfer program in low-income families in Guinea-Bissau. clinicaltrials.gov/show/NCT03455257 (first posted 6 March 2018).

NCT03518593 2018 *{published data only}*

NCT03518593. Evaluation of NICHE programme activities in Kenya [Evaluation of NICHE (Nutritional Improvements through Cash and Health Education) programme activities in Kitui and Machakos, Kenya]. clinicaltrials.gov/show/NCT03518593 (first posted 8 May 2018).

NCT03590717 2018 *{published data only}*

NCT03590717. Impact evaluation of WFP's fresh food voucher pilot programme in Ethiopia. clinicaltrials.gov/show/NCT03590717 (first posted 18 July 2018).

NCT03741634 2018 *{published data only}*

NCT03741634. Assessing the preliminary effects of a multisectoral agricultural intervention on adolescent girls' health [Shamba Maisha: assessing the preliminary effects of a multisectoral agricultural intervention on the sexual and reproductive health of HIV-affected adolescent girls in Western Kenya]. clinicaltrials.gov/show/NCT03741634 (first posted 15 November 2018).

NCT04101487 2019 *{published data only}*

NCT04101487. Cash transfers to increase dietary diversity in Grand Gedeh County, Liberia [A cluster randomized trial to study the effect of cash transfers and nutrition education on dietary diversity among children 6-23 months of age in Grand Gedeh County, Liberia: a pilot study]. clinicaltrials.gov/show/NCT04101487 (first posted 24 September 2019).

Wendt 2019 *{published data only}*

Wendt AS, Sparling TM, Waid JL, Mueller AA, Gabrysch S. Food and Agricultural Approaches to Reducing Malnutrition (FAARM): protocol for a cluster-randomised controlled trial to evaluate the impact of a homestead food production programme on undernutrition in rural Bangladesh. *BMJ Open* 2019;**9**:e031037.

Additional references

ACF-IN 2008

Action Contre la Faim International Network (ACF-IN). Introduction to food security: intervention principles. www.actionagainsthunger.org/sites/default/files/publications/Introduction_to_food_security_intervention_principles_01.2008.pdf 2008.

Alagiyawanna 2015

Alagiyawanna A, Townsend N, Mytton O, Scarborough P, Roberts N, Rayner M. Studying the consumption and health outcomes of fiscal interventions (taxes and subsidies) on food and beverages in countries of different income classifications; a systematic review. *BMC Public Health* 2015;**15**:887.

Arenas 2019

Arenas DJ, Thomas A, Wang J, DeLisser HM. A systematic review and meta-analysis of depression, anxiety, and sleep disorders in US adults with food insecurity. *Journal of General Internal Medicine* 2019;**34**(12):2874-82.

Baird 2014

Baird S, Ferreira FHG, Ozler B, Woolcock M. Conditional, unconditional and everything in between: a systematic review of the effects of cash transfer programmes on schooling outcomes. *Journal of Development Effectiveness* 2014;**6**(1):1-43.

Bastagli 2016

Bastagli F, Hagen-Zanker J, Harman L, Barca V, Sturge G, Schmidt T, et al. Cash transfers: what does the evidence say? A rigorous review of programme impact and of the role of design and implementation features. Overseas Development Institute 2016.

Basu 2013

Basu S, McKee M, Galea G, Stuckler D. Relationship of soft drink consumption to global overweight, obesity, and diabetes: a cross-national analysis of 75 countries. *American Journal of Public Health* 2013;**103**(11):2071-7.

Bhandari 2003

Bhandari N, Bahl R, Mazumdar S, Martines J, Black RE, Bhan MK, Infant Feeding Study Group. Effect of community-based promotion of exclusive breastfeeding on diarrhoeal illness and growth: a cluster randomised controlled trial. *Lancet* 2003;**361**(9367):1418-23. [DOI: 10.1016/S0140-6736(03)13134-0]

Bird 2019

Bird FA, Pradhan A, Bhavani RV, Dangour AD. Interventions in agriculture for nutrition outcomes: a systematic review focused on South Asia. *Food Policy* 2019;**82**:39-49.

Black 2008

Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, et al. Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet* 2008;**371**:243-60.

Black 2013

Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet* 2013;**382**:427-51.

Brown 2006

Brown P, Brunnhuber K, Chalkidou K, Chalmers I, Clarke M, Fenton M, et al. How to formulate research recommendations. *BMJ* 2006;**333**(7572):804-6.

Burns 2010

Burns C, Kristjansson B, Harris G, Armstrong R, Cummins S, Black A, et al. Community level interventions to improve food security in developed countries. *Cochrane Database of Systematic Reviews* 2010, Issue 12. Art. No: CD008913. [DOI: 10.1002/14651858.CD008913]

Carter 2011

Carter KN, Kruse K, Blakely T, Collings S. The association of food security with psychological distress in New Zealand and any gender differences. *Social Science & Medicine* 2011;**72**:1463-71.

Cole 2011

Cole SM, Tembo G. The effect of food insecurity on mental health: panel evidence from rural Zambia. *Social Science & Medicine* 2011;**73**:1071-9.

Cotta 2013

Cotta RMM, Machado JC. Programa Bolsa Família e segurança alimentar e nutricional no Brasil: revisão crítica da literatura. *Revista Panamericana de Salud Publica* 2013;**33**(1):54–60.

Covidence [Computer program]

Veritas Health Innovation Covidence. Version accessed 27 February 2019. Melbourne, Australia: Veritas Health Innovation.

Dechartres 2013

Dechartres A, Trinquart L, Boutron I, Ravaud P. Influence of trial sample size on treatment effect estimates: meta-epidemiological study. *BMJ* 2013;**346**:f2304.

Deeks 2019

Deeks JJ, Higgins JPT, Altman DG, editor(s) In: Cochrane, 2019. Chapter 10: Analysing data and undertaking meta-analyses. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, et al, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated July 2019). Cochrane. 2019. In: Available from www.training.cochrane.org/handbook.

Drewnowski 2005

Drewnowski A. Concept of nutritious food: toward a nutrient density score. *American Journal of Clinical Nutrition* 2005;**82**:721-32.

Ecker 2012

Ecker O, Breisinger C. The food security system. A new conceptual framework. Washington, DC; International Food Policy Research Institute; 2012. IFPRI discussion paper 01166.

EndNote X8 [Computer program]

EndNote. Version X8. Philadelphia, PA: Clarivate Analytics, 2016. Available at endnote.com/.

EPOC 2017

Cochrane Effective Practice and Organisation of Care (EPOC). Suggested risk of bias criteria for EPOC reviews. EPOC Resources for review authors, 2017. epoc.cochrane.org/resources/epoc-resources-review-author 2017.

FAO 2003

FAO and Sustainable Development Department (SDD). Chapter 2. Food security: concepts and measurement. In: Trade Reforms and Food Security. Conceptualizing the Linkages. Rome: Food and Agriculture Organization of the United Nations, 2003.

FAO 2012

FAO, World Food Programme (WFP) and International Fund for Agricultural Development (IFAD). The State of Food Insecurity in the World 2012. Economic Growth is Necessary but not Sufficient to Accelerate Reduction of Hunger and Malnutrition. Rome: Food and Agriculture Organization, 2012.

FAO 2013

FAO, IFAD, and WFP. The State of Food Insecurity in the World 2013. The Multiple Dimensions of Food Security. Rome: Food and Agriculture Organization, 2013.

FAO 2019

FAO, IFAD, UNICEF, WFP, and WHO. The State of Food Security and Nutrition in the World 2019. Safeguarding Against Economic Slowdowns and Downturns. Rome: Food and Agriculture Organization, 2019.

Garner 2016

Garner P, Hopewell S, Chandler J, MacLehose H, Akl Elie A, Beyene J, et al. When and how to update systematic reviews: consensus and checklist. *BMJ* 2016;**354**:i3507.

Gittelsohn 2003

Gittelsohn J, Vastine AE. Sociocultural and household factors impacting on the selection, allocation and consumption of animal source foods: current knowledge and application. *Journal of Nutrition* 2003;**133**:4036S-41S.

Gorham 2015

Gorham G, Dulin-Keita A, Risica PM, Mello J, Papandonatos G, Nunn A, et al. Effectiveness of Fresh to You, a discount fresh fruit and vegetable market in low-income neighborhoods, on children's fruit and vegetable consumption, Rhode Island 2010-2011. *Preventing Chronic Disease* 2015;**12**(10):E176-E.

Gross 2000

Gross R, Schoeneberger H, Pfeifer H, Preuss HA. The four dimensions of food and nutrition security: definitions and concepts. www.fao.org/elearning/course/fa/en/pdf/p-01_rg_concept.pdf 2000.

Guyatt 2010

Guyatt G, Oxman AD, Akl EA, Kunz R, Vist G, Brozek J, et al. GRADE guidelines: 1. Introduction. GRADE evidence profiles and summary of findings tables. *Journal of Clinical Epidemiology* 2011;**64**:383-94.

Hadley 2006

Hadley C, Patil CL. Food insecurity in rural Tanzania is associated with maternal anxiety and depression. *American Journal of Human Biology* 2006;**18**:359–68.

Hadley 2008

Hadley C, Tegegn A, Tessema F, Cowan JA, Asefa M, Galea S. Food insecurity, stressful life events and symptoms of anxiety and depression in east Africa: evidence from the Gilgel Gibe growth and development study. *Journal of Epidemiology and Community Health* 2008;**62**:980–6.

Hawkes 2020

Hawkes C, Ruel MT, Salm L, Sinclair B, Branca F. Double-duty actions: seizing programme and policy opportunities to address malnutrition in all its forms. *Lancet* 2020;**395**(10218):142-55.

Higgins 2011

Higgins JPT, Altman DG, Sterne JAC, on behalf of the Cochrane Statistical Methods Group and the Cochrane Bias Methods

Group. Chapter 8: Assessing risk of bias in included studies. In: Higgins JP, Green S, editor(s). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 (updated March 2011). The Cochrane Collaboration, 2011. Available from handbook.cochrane.org.

Hjelm 2013

Hjelm L, Dasori W. Ghana Comprehensive Food Security & Vulnerability Analysis, 2012. Rome: World Food Programme, 2013.

Hossain 2007

Hossain P, Kawar B, El Nahas M. Obesity and diabetes in the developing world—A growing challenge. *New England Journal of Medicine* 2007;**356**(3):213-5.

Hsiao 2019

Hsiao BS, Sibeko L, Troy LM. A systematic review of mobile produce markets: facilitators and barriers to use, and associations with reported fruit and vegetable intake. *Journal of the Academy of Nutrition and Dietetics* 2019;**119**(1):76.

Hunter 2017

Hunter BM, Harrison S, Portela A, Bick D. The effects of cash transfers and vouchers on the use and quality of maternity care services: a systematic review. *PLoS ONE* 2017;**12**(3):37.

INDDEX Project 2018

INDDEX Project. Data4Diets: building blocks for diet-related food security analysis. Tufts University, Boston, MA. inddex.nutrition.tufts.edu/data4diets Accessed prior to 27 July 2020.

Leite 2019

Leite TH, Moraes CL, Marques ES, Caetano R, Braga JU, Reichenheim ME. Women economic empowerment via cash transfer and microcredit programs is enough to decrease intimate partner violence? Evidence from a systematic review. *Cadernos de Saude Publica / Ministerio da Saude, Fundacao Oswaldo Cruz, Escola Nacional de Saude Publica* 2019;**35**(9):e00174818.

Lignani 2011

Lignani JB, Sichieri R, Burlandy L, Salles-Costa R. Changes in food consumption among the Programa Bolsa Familia participant families in Brazil. *Public Health Nutrition* 2011;**14**(5):785-92.

Liu 2012

Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet* 2012;**379**:2151-61.

MacQueen 2001

MacQueen KM, McLellan E, Metzger DS, Kegeles S, Strauss RP, Scotti R, et al. What is community? An evidence-based definition for participatory public health. *American Journal of Public Health* 2001;**91**(12):1929-38.

Masset 2011

Masset E, Haddad L, Cornelius A, Isaza-Castro J. A Systematic Review of Agricultural Interventions that aim to Improve Nutritional Status of Children. London: EPPI-Centre, Social Science Research Unit, Institute of Education, 2011.

Maynard 2018

Maynard M, Andrade L, Packull-McCormick S, Perlman CM, Leos-Toro C, Kirkpatrick SI. Food insecurity and mental health among females in high-income countries. *International Journal of Environmental Research and Public Health* 2018;**15**:1424.

McKenzie 2019

McKenzie JE, Brennan SE. Chapter 12: Synthesizing and presenting findings using other methods. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, et al, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated July 2019). Cochrane, 2019. Available from www.training.cochrane.org/handbook.

McLeroy 2003

McLeroy KR, Norton BA, Kegler MC, Burdine JN, Sumaya CV. Community-based interventions. *American Journal of Public Health* 2003;**93**(4):529-33.

Melo 2016

Melo L, da Costa Uchoa S, Cobucci R, Costa J, Costa A, de Gois I, et al. Conditional cash transfer program effects on anthropometric index from children in Latin America: a systematic review. *Health* 2016;**8**(7):664-71.

Microsoft Excel 2007 [Computer program]

Microsoft Office Excel. Redmond, WA: Microsoft Corporation, 2007. Available from www.microsoft.com/en-ca/microsoft/excel.

Ministry of Health of Brazil 2014

Ministry of Health of Brazil. Dietary guidelines for the Brazilian population. 2nd edition. Brasilia: Ministry of Health of Brazil, Secretariat of Health Care, Primary Health Care Department, 2014.

Mizdrak 2015

Mizdrak A, Scarborough P, Waterlander WE, Rayner M. Differential responses to food price changes by personal characteristic: a systematic review of experimental studies. *PloS One* 2015;**10**(7):e0130320.

Mohammadifard 2009

Mohammadifard N, Kelishadi R, Safavi M, Sarrafzadegan F, Sajadi F, Sadri GH, et al. Effect of a community-based intervention on nutritional behaviour in a developing country setting: the Isfahan Healthy Heart Programme. *Public Health Nutrition* 2009;**12**(9):1422-30.

MOHP 2012

Ministry of Health and Population (MOHP) Nepal, New ERA, ICF International Inc. Nepal Demographic and Health Survey 2011. Calverton, USA: Kathmandu, Nepal: Ministry of Health and Population, New ERA, and ICF International, 2012.

Munk 2019

Munk C, Portnoy A, Suharlim C, Clarke-Deelder E, Brenzel L, Resch SC, et al. Systematic review of the costs and effectiveness of interventions to increase infant vaccination coverage in low- and middle-income countries. *BMC Health Services Research* 2019;**19**(1):741.

Ng 2014

Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 2014;**384**:766-81.

Olsho 2016

Olsho LEW, Klerman JA, Wilde PE, Bartlett S. Financial incentives increase fruit and vegetable intake among Supplemental Nutrition Assistance Program participants: a randomized controlled trial of the USDA Healthy Incentives Pilot. *American Journal of Clinical Nutrition* 2016;**104**(2):423-35.

Owuso-Addo 2014

Owusu-Addo E, Cross R. The impact of conditional cash transfers on child health in low- and middle-income countries: a systematic review. *International Journal of Public Health* 2014;**59**:609-18.

Owusu-Addo 2018

Owusu-Addo E, Renzaho AMN, Smith BJ. The impact of cash transfers on social determinants of health and health inequalities in sub-Saharan Africa: a systematic review. *Health Policy Plan* 2018;**33**(5):675-96.

Pega 2017

Pega F, Liu SY, Walter S, Pabayo R, Saith R, Lhachimi SK. Unconditional cash transfers for reducing poverty and vulnerabilities: effect on use of health services and health outcomes in low- and middle-income countries. *Cochrane Database of Systematic Reviews* 2017, Issue 11. Art. No: CD011135. [DOI: 10.1002/14651858.CD011135.pub2]

Pennington 2007

Pennington J, Kandiah J, Nicklas T, Pitman S, Stitzel K. Practice paper of the American dietetic association: nutrient density: meeting nutrient goals within calorie needs. *Journal of the American Dietetic Association* 2007;**107**(5):860-9.

Pinstrup-Andersen 2009

Pinstrup-Andersen P. Food security: definition and measurement. *Food Security* 2009;**1**:5-7.

Popkin 2012

Popkin BM, Adair LS, Wen Ng S. Now and then: the global nutrition transition: the pandemic of obesity in developing countries. *Nutrition Reviews* 2012;**70**(1):3-21.

Pullar 2018

Pullar J, Allen L, Townsend N, Williams J, Foster C, Roberts N, et al. The impact of poverty reduction and development interventions on non-communicable diseases and their behavioural risk factors in low and lower-middle income countries: a systematic review. *PloS One* 2018;**13**(2):e0193378-e.

Rank 2003

Rank MR, Brown GW, Chonbuk HY, Hirschl TA. American poverty as a structural failing: evidence and arguments. *Journal of Sociology and Social Welfare* 2003;**30**(4):3-29.

Renzaho 2010

Renzaho AMN, Mellor D. Food security measurement in cultural pluralism: missing the point or conceptual misunderstanding? *Nutrition* 2010;**26**:1-9.

Review Manager 2014 [Computer program]

Nordic Cochrane Centre, The Cochrane Collaboration Review Manager 5 (RevMan 5). Version 5.3. Copenhagen: Nordic Cochrane Centre, The Cochrane Collaboration, 2014.

Richterman 2018

Richterman A, Steer-Massaro J, Jarolimova J, Luong Nguyen LB, Werdenberg J, Ivers LC. Cash interventions to improve clinical outcomes for pulmonary tuberculosis: systematic review and meta-analysis. *Bulletin of the World Health Organization* 2018;**96**(7):471-83.

Rohwer 2016

Rohwer A, Pfadenhauer L, Burns J, Brereton L, Gerhardus A, Booth A, et al. Logic models help make sense of complexity in systematic reviews and health technology assessments. *Journal of Clinical Epidemiology* 2016;**83**:37-47. [DOI: 10.1016/j.jclinepi.2016.06.012.]

Ruel 2013

Ruel MT, Alderman H, the Maternal and Child Nutrition Study Group. Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? *Lancet* 2013;**382**:536-51.

Schünemann 2019

Schünemann HJ, Cuello C, Akl EA, Mustafa RE, Meerpohl JJ, Thayer K, et al. GRADE Guidelines: 18. How ROBINS-I and other tools to assess risk of bias in non-randomized studies should be used to rate the certainty of a body of evidence. *Journal of Clinical Epidemiology* 2019;**111**:105-14.

Shea 2009

Shea BJ, Hamel C, Wells GA, Bouter LM, Kristjansson E, Grimshaw J, et al. AMSTAR is a reliable and valid measurement tool to assess the methodological quality of systematic reviews. *Journal of Clinical Epidemiology* 2009;**62**(10):1013-20.

Siddiqi 2018

Siddiqi A, Rajaram A, Miller SP. Do cash transfer programmes yield better health in the first year of life? A systematic review linking low-income/middle-income and high-income contexts. *Archives of Disease in Childhood* 2018;**103**(10):920-6.

Singh 2017

Singh S. How to conduct and interpret systematic reviews and meta-analyses. *Clinical Translational Gastroenterology* 2017;**8**(5):e93.

Smith 2006

Smith LC, Alderman H, Aduayom D. Washington, DC; International Food Policy Research Institute. 2006. Food insecurity in Sub-Saharan Africa. New estimates from household expenditure surveys.

SOWC 2019

UNICEF. New York; UNICEF. The state of the world's children 2019. Children, food and nutrition: growing well in a changing world. 2019.

Sterne 2019

Page MJ, Higgins JP, Sterne JA. Chapter 13: Assessing risk of bias due to missing results in a synthesis. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, et al, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated July 2019). Cochrane, 2019. Available from www.training.cochrane.org/handbook.

Subramanian 2011

Subramanian SV, Perkins JM, Özaltin E, Davey Smith G. Weight of nations: a socioeconomic analysis of women in low- to middle-income countries. *American Journal of Clinical Nutrition* 2011;**93**(2):413-21. [DOI: 10.3945/ajcn.110.004820]

Tugwell 2010

Tugwell P, Petticrew M, Kristjansson E, Welch V, Ueffing E, Waters E, et al. Assessing equity in systematic reviews: realising the recommendations of the Commission on Social Determinants of Health. *BMJ* 2010;**341**:c4739.

UN 2015

United Nations. Resolution adopted by the General Assembly on 25 September 2015. Transforming our world: the 2030 Agenda for Sustainable Development. www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf.

Victora 2008

Victora CG, Adair LF, Fall C, Hallal P, Martorell R, Richter L, et al. Maternal and child undernutrition: consequences for adult health and human capital. *Lancet* 2008;**371**:340-57.

WHO 2010

World Health Organization. Chapter 1. Burden: mortality, morbidity and risk factors. Report on Noncommunicable Diseases 2010. Description of the Global Burden of NCDs, their Risk Factors and Determinants 2010.

WHO 2013

World Health Organization. Food Security. Available at www.who.int/trade/glossary/story028/en/ Accessed prior to 27 July 2020.

World Bank 2020

World Bank. World Bank country and lending groups. www.datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups (accessed prior to 14 July 2020).

References to other published versions of this review

Durao 2015

Durao S, Schoonees A, Ramokolo V, Oliveira JMD, Kristjansson E. Community-level interventions for improving access to food in low- and middle-income countries. *Cochrane Database of Systematic Reviews* 2015, Issue 2. Art. No: CD011504. [DOI: 10.1002/14651858.CD011504]

* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Aguero 2006

Study characteristics

Methods	**Study design:** PCS **How were missing data handled?** NR **Randomisation ratio:** N/A **Recruitment method:** for the KIDS survey in 1998, the core people in each HH who participated in the 1993 PSLSD survey, were identified prior to starting fieldwork according to prespecified criteria. **Study period:** 1998–2004 **Sample size justification and outcome used:** NR **Sampling method:** sample of PSLSD survey in 1993 was obtained by a 2-stage self-weighting design. In the first stage, clusters were chosen with probability to size of census ESD. In the second stage, all HHs in each chosen cluster were enumerated and a random sample of HHs was then selected. For the KIDS

Aguero 2006 *(Continued)*

	survey in 1998, a subsample of HHs In Kwazulu-Natal from the 1993 sample was selected (included only African and Indian HHs) and followed up to 2004. **Study aim or objective:** the KIDS study "… aims to contribute to knowledge in this area by studying the impact of the South African Child Support Grant (CSG), which was first rolled out in 1998." **Unit of allocation or exposure:** individual children
Participants	**General description of participants (sex, place of residence, ethnicity):** children living in HHs eligible for Child Support Grant **Age:** NR **Occupation:** NR **Education:** NR **SES:** NR **Social capital:** NR **Nutritional status:** NR **Morbidities:** NR **Concomitant/previous care:** NR **Inclusion criteria:** HHs in KwaZulu-Natal that participated in the 1993 PSLSD survey, and where there is any of the following: a self-declared head of HH; a spouse/partner of a self-declared head of HH; lived in a 3-generation HH where there was a child, child-in-law, or niece/nephew of a self-declared head aged ≥ 30 years and had ≥ 1 child living in the HH. **Exclusion criteria:** HHs without children or grandchildren residing with core people who participated in the KIDS study. **Baseline differences:** NR **Total number completed and analysed:** 720 children (245 children who received CSG during birth to 3 years; 321 children who received CSG after they were aged 3 years; 154 children who applied for CSG support, but had applications rejected or not yet received benefits by the time of the survey) **Total number enrolled per relevant group:** NR **Total number randomised per relevant group:** N/A **Attrition:** overall, 84.1% of the African and Indian HHs surveyed in 1993 in KwaZulu-Natal (1171 HHs) agreed to take part in the 1998 survey. 71% of the original 1993 sample (988 HHs) took part in the 2004 survey. **Description of subgroups measured and reported:** children who received low vs high coverage of CSG during birth to 3 years
Interventions	**Intervention:** UCT (Child Support Grant) *Food access intervention category*: increase buying power *Description*: CSG implemented in 1998, initially covering children aged ≤ 7 years. Money paid over to the primary carer of the child, with no recording of what the carer used the money for. When the CSG started, it was intended for the 30% poorest children, and was means-tested (i.e. the income of the primary carer and partner must have been under a specific bracket). In April 2003, the age eligibility was raised to 9 years old and in 2004 to 11 years old. The initial monthly benefit was SAR 100 in 1998 and during the time of the 2004 survey it was SAR 170 (about USD 25 at that time). *Duration of intervention period*: 6 years (1998–2004)

Aguero 2006 *(Continued)*

	Frequency: monthly payments *Number of study contacts*: baseline PSLSD survey (July–December 1993); first follow-up KIDS survey (March–June 1998); second follow-up KIDS survey (2004) *Providers*: South African Government *Delivery*: payments to primary carer of the child/children (98% of primary carers were female). *Co-interventions*: NR *Resource requirements*: NR *Economic indicators*: NR **Control**: no intervention (HHs that did not receive the CSG; children "… that received child support grant only after they were 3 years old (321 children); those who had applied for CSG support, but who had their applications rejected or had not yet received benefits by the time of the survey (154 children)")
Outcomes	Anthropometry: HAZ
Identification	**Sponsorship source:** UK DfID and USAID **Country:** South Africa **Setting:** urban and non-urban HHs in the KwaZulu Natal province **Authors' names:** Jorge M Agüero and Julian May **Email:** jorge.aguero@ucr.edu **Declarations of interest:** not declared **Study or programme name and acronym:** KwaZulu Natal Income Dynamics Study (KIDS), about the South African Child Support grant CSG) **Type of record:** 2 research reports (on institution web sites) and 1 journal article **Trial registration:** N/A **Protocol availability:** no
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	This was a cohort study.
Allocation concealment (Selection bias)	High risk	This was a cohort study.
Baseline characteristics similar (Selection bias)	Unclear risk	Baseline data (1998 survey) between intervention and control groups were NR.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Baseline data (1998 survey) was collected but details regarding this were NR.

Aguero 2006 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	There was no blinding, but outcomes were objective (e.g. children anthropometrics) and thus not likely to have been influenced by a lack of blinding.
Blinding of outcome assessment (Detection bias)	Low risk	It is not stated whether outcome assessors were blinded; however, outcome measurements were objective (anthropometry)
Protection against contamination (Performance bias)	Unclear risk	Unclear whether HHs in the intervention and control groups were from the same community.
Incomplete outcome data (Attrition bias)	Unclear risk	The number of HHs with children providing nutrition outcomes at the 1998 and 2004 surveys were NR.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available, and outcomes were not pre-specified in the Methods section.
Other bias	Unclear risk	Misclassification bias: unclear risk as it was unclear whether Child Support Grant data reported by core people from each HH was verified. Measurement bias: low risk as they used trained field workers.

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Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** NR but based on Table 1 reporting baseline data for fewer number of participants than randomised we assume that missing data were excluded. **Randomisation ratio:** 1:1:1:1:1 (village-level randomisation) **Recruitment method:** NR **Sample size justification and outcome used:** sample size calculations undertaken to assess the number of clusters (villages) and HHs needed to detect changes in both HH- and child-level outcomes. Using data from an earlier study in Bangladesh (Ahmed et al. 2010), setting significance level at 0.05 and statistical power at 0.80, assuming attrition of 10% over duration of intervention, and using outcome-specific means, SDs and intracluster correlations, a sample based on 50 clusters per treatment and 10 HHs per cluster would provide sufficient statistical power to detect an increase of: 12% in HH per capita total expenditure per month; 7% in HH per capita calorie intake per day; 16% in child HAZ; and 8% in dietary diversity of children aged 12–60 months. **Sampling method:** same process followed for each region – North and South: in North, 5 upazilas (subdistricts) were selected using simple random sampling from a list of upazilas where in 2010 the proportion of HHs living below Bangladesh's lower poverty line was ≥ 25%. All villages within these 5 upazilas were listed. Villages classified as urban or with < 125 HHs were dropped. Using a random number generator, each village was assigned a random number. Villages were then sorted in ascending numerical order with the first 275 retained. Given that in each region, there were 4 treatment groups and a control group, the first 50 villages were assigned to treatment group 1, the second 50 to treatment group 2, the third 50 villages to treatment group 3, the fourth 50 villages to treatment group 4 and the fifth 50 villages to the control group. The remaining 25 villages were held as a reserve. A complete village census was carried out in each of the 250 selected villages, collecting information on HH demographics, a set of poverty indicators, and whether HHs participated in safety nets and other targeted interventions. Using these data, a list was compiled of HHs that: 1. were considered poor (i.e. based on the poverty indicators collected, they were estimated to have consumption below Bangladesh's lower poverty line);

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2. would have ≥ 1 child aged 0–24 months when the intervention began; and 3. were not receiving benefits from other safety net interventions. These HHs were eligible to participate in the study. Using simple random sampling, 10 eligible HHs were selected from each village. The total sample in the North included 250 clusters and 2500 HHs. An identical process was used in the South to select upazilas, villages and HHs.

Study aim or objective: to devise and implement 2 × 2-year RCTs in 2 poor rural areas of Bangladesh with both cash and food treatment groups. Building on the work of Black et al. (2013), the intervention also included 2 treatment groups that aimed to improve maternal knowledge and practices surrounding infant and young child nutrition – through BCC – thus making those treatment groups nutrition-sensitive. We designed survey instruments to capture impacts at the child level, both for the key outcome measure of child anthropometry and for individual-level mechanisms that plausibly underlie programme impacts. Using the RCT design, they estimated impacts of each treatment on child height-for-age. In the other paper, the authors assessed its implications for economic outcomes.

Study period: 24 months: baseline survey was carried out in March–April 2012, the endline survey was conducted in April 2014.

Unit of allocation or exposure: villages

Participants

Baseline characteristics

Cash only

- *Age*: child: months (mean): North: 13.1 (SD 6.8), South: 13.8 (SD 6.1); mothers: years (mean): North: 26.5 (SD 5.8), South: 27.1 (SD 5.9)
- *Place of residence*: rural area
- *Sex,* %: female: 47.4 (50.0)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades mean: North: 2.9 (SD 3.1), South: 3.5 (SD 3.3). Mean Head's years schooling: North: 1.49, South: 1.78
- *SES*: mean HH size: North: 3.7, South: 5.25. Mean total owned land in decimals: North: 14.11, South: 17.60
- *Social capital*: NR
- *Nutritional status*: mean food consumption per capita: North: 875.73, South: 1029.21; HAZ (mean): North: –1.86 (SD 1.54), South: –1.66 (SD 1.43); WHZ (mean): North –0.68 (SD 1.23), South –0.95 (SD 1.10)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: child: months (mean): North: 13.0 (SD 6.1), South: 13.1 (SD 6.2); mothers: years (mean): North: 26.4 (SD 5.7), South: 26.7 (SD 5.9)
- *Place of residence*: rural area
- *Sex*: % female: 48.1 (50.0)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades mean: North: 3.2 (SD 3.3), South: 4.1 (SD 3.2). Mean Head's years schooling: North: 1.43, South: 2.05
- *SES*: mean HH size: North: 4.83, South: 5.30. Mean total owned land in decimals: North: 15.45, South: 27.24
- *Social capital*: NR
- *Nutritional status*: mean food consumption per capita: North: 850.68, South: 1179.78; HAZ (mean): North: –1.78 (SD 1.44), South: –1.59 (SD 1.48); WHZ (mean): North –0.79 (SD 1.21), South: –0.88 (SD 1.27)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Cash and food

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- *Age*: child: months (mean): North: 13.4 (SD 6.5). South: 13.2 (SD 6.3); mothers: years (mean): North: 26.8 (SD 5.9), South: 26.2 (SD 5.6)
- *Place of residence*: rural area
- *Sex*: % female: 46.5 (49.9)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades mean: North: 2.7 (SD 3.2), South: 3.8 (SD 3.1). Mean Head's years schooling: North: 1.28, South: 1.97
- *SES*: mean HH size: North: 4.80, South: 5.06. Mean total owned land in decimals: North: 12.44, South: 27.17
- *Social capital*: NR
- *Nutritional status*: mean food consumption per capita: North: 808.54, South: 1164.27; HAZ (mean): North: −1.75 (SD 1.39), South: −1.64 (SD 1.42); WHZ (mean): North: −0.85 (SD 1.21), South: −0.84 (SD 1.19)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Cash and BCC

- *Age*: child: months (mean): North: 13.1 (SD 6.5), South: N/A; mothers: years (mean): North: 26.9 (6.0), South: N/A
- *Place of residence*: rural area
- *Sex*: % female: 49.6 (50.1)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades mean: North: 2.8 (SD 3.1); South: N/A. Mean Head's years schooling: North: 1.43, South: N/A
- *SES*: mean HH size: North 4.82, South: N/A. Mean total owned land in decimals: North: 13.76, South: N/A
- *Social capital*: NR
- *Nutritional status*: mean food consumption per capita: North: 898.40, South: N/A; HAZ (mean): North: −1.64 (SD 1.41); WHZ (mean): North: −0.80 (SD 1.24)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Food only

- *Age*: child: months (mean): North: 13.4 (SD 6.1), South: 12.5 (SD 6.4); mothers: years (mean): North: 26.8 (SD 5.9), South: 26.9 (SD 6.0)
- *Place of residence*: rural area
- *Sex*: % female: 46.1 (49.9)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades (mother) mean: North: 2.9 (SD 3.1), South 3.4 (SD 3.1). Head's years of schooling (mean): North: 1.23, South: 1.83
- *SES*: mean HH size: North: 4.68, South: 5.22
- *Social capital*: NR
- *Nutritional status*: HAZ (mean): North −1.85 (SD 1.50), South: −1.58 (SD 1.61); WHZ (mean): North: −0.85 (SD 1.21), South: −0.84 (SD 1.19)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: child: months (mean): North: 13.2 (SD 6.4), South: 13.2 (SD 6.3); mothers: years (mean): North: 26.7 (SD 5.9), South: 26.6 (SD 5.8)

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- *Place of residence*: rural area
- *Sex*: % female: 47.5 (49.9)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades (mother) (mean): North: 2.9 (SD 3.2), South: 3.7 (SD 3.2). Mean Head's years schooling: NR
- *SES*: NR
- *Social capital*: NR
- *Nutritional status*: HAZ (mean): North: −1.78 (SD 1.44), South: −1.63 (SD 1.47); WHZ (mean): North: −0.76 (SD 1.22), South: −0.86 (SD 1.20)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: subdistrict eligibility: proportion of HHs living below Bangladesh's lower poverty line ≥ 25%." Village eligibility: rural; HH eligibility: list compiled of 1. HHs that: were considered poor (i.e. based on the poverty indicators collected, they were estimated to have consumption below Bangladesh's lower poverty line); 2. would have ≥ 1 child aged 0–24 months when the intervention began and 3. were not receiving benefits from other safety net interventions. Target beneficiary was mother of an 'index child' aged 0–24 months in March 2012, residing in a poor rural HH.

Exclusion criteria: village level: villages classified as urban or villages with fewer than 125 HHs were dropped.

Pretreatment: outcome and control variables similar across the North and South and similar across treatment groups.

Attrition per relevant group: only overall: 4992 HHs interviewed at baseline, 2498 in North and 2494 in South. In North, 2,410 HHs were re-interviewed at endline, an attrition rate of 3.5%. 78 HHs were not surveyed at endline because they had migrated, another 10 dropped out of study, refused to be interviewed or could not be found. In South, 2438 HHs re-interviewed at endline, an attrition rate of 2.2%. 49 HHs were not surveyed at endline because they had migrated, another 7 dropped out of study, refused to be interviewed or could not be found. Using probit regressions, there was no evidence that attrition was related to treatment status or HH demographic, occupational or asset characteristics (Ahmed et al. 2016).

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: total number of HHs interviewed in North was 2410 and in South was 2438 at endline. For the outcomes related to children (due to restrictions related to age at baseline, biological children): this led to an estimation sample of 4399 children; 2218 in North and 2181 in South. Note that sample sizes differed per outcome as can be seen in the legends of the tables. Numbers per group NR.

Total number enrolled per relevant group: interviewed 4992 HHs at baseline, 2498 in North and 2494 in South. Table 1 presented number of mothers/children per group at baseline, but total was 2275 for North and 2288 for South. North: cash only group: 458; food only group: 454; cash and food group: 458; cash and BCC group: 455; control: 450. South: cash only group: 454; food only group: 462; cash and food group: 446; cash and BCC group: 462; control group: 464

Total number randomised per relevant group: North included 250 clusters and 2500 HHs. Similar in South.

Interventions	**Intervention characteristics** Cash only • *Food access intervention category*: increase buying power • *Intervention type*: unconditional cash transfers • *Description*: monthly payment of BDT 1500 (approximately USD 19) per HH, which was about 25% of the mean monthly HH consumption expenditures of poor rural HHs in Bangladesh as of 2012. Mothers

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who were randomly selected to be in cash treatment groups received monthly payments via mobile money.

- *Duration of intervention period*: 24 months, May 2012 to April 2014
- *Frequency*: monthly transfers; on second week of each month
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: programme designed and evaluated by IFPRI and implemented by the United Nations' WFP. WFP managed the procurement and delivery of transfers, as well as the nutrition BCC training, and routinely monitored the programme. An NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b)
- *Delivery*: delivered using a mobile phone cash transfer system, in which women collected cash from designated distribution sites using mobile verification of identity. To facilitate payments to cash recipients and maintain comparability across groups, a basic mobile phone was provided to target mother in all treatment and control groups. Both quantitative and qualitative data collected throughout the intervention indicated that implementation fidelity was high.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month per HH

Control: no intervention

Cash and food

- *Food access intervention category*: increase buying power and food availability
- *Intervention type*: cash (UCT) and food transfers
- *Description*: cash and food transfers provided half of each of 'Cash only' and 'Food only' (i.e. BDT 750, 15 kg of rice, 1 kg of mosoor pulse and 1 L of micronutrient-fortified cooking oil.
- *Duration of intervention period*: 24 months, May 2012 to April 2014.
- *Frequency*: monthly transfers; on second week of each month
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: designed and evaluated by IFPRI and implemented by the United Nations' WFP. WFP managed the procurement and delivery of transfers, as well as the nutrition BCC training, and routinely monitored the programme. An NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers and delivering the nutrition BCC (Ahmed 2019 b).
- *Delivery*: cash delivered using a mobile phone cash transfer system, in which women collected cash from designated distribution sites using mobile verification of identity. Food transfers handed to beneficiaries at designated FDPs. Both quantitative and qualitative data collected throughout the intervention indicates that implementation fidelity was high.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month per HH

Cash and BCC

- *Food access intervention category*: improve buying power
- *Intervention type*: cash transfers and BCC ('soft' condition for cash transfer)
- *Description*: monthly payment of BDT 1500 (about USD 19) per HH + suite of intensive nutrition BCC activities. BCC component that was included in the fourth treatment group in each region consisted of a suite of intensive nutrition BCC activities ('Cash and BCC'). The core activity was a weekly, 1-hour group session in each village with a trained CNW. These sessions covered a defined series of 6 topics: 1. importance of nutrition and diet diversity for health; 2. how handwashing and hygiene improve health; 3. diet diversity and micronutrients; 4. breastfeeding; 5. complementary foods for children aged 6–24 months; and 6. maternal nutrition. Several methods were used to deliver this information including presentations, question and answer, interactive call and answer songs and chants, practical demonstrations, and role playing. 1 of these sessions, with only beneficiaries participating, occurred on the day of the transfer distribution. For the remaining group, BCC training each month, other HH members – particularly mothers-in-law, husbands, and other pregnant or lactating women – were

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invited to attend along with beneficiaries, with the intention of creating a supportive HH atmosphere and behaviour change at the HH level. CNWs also made home visits to beneficiaries twice a month to follow-up on topics discussed during group sessions and to discuss specific concerns that mothers had.

- *Duration of intervention period*: 24 months, May 2012 to April 2014
- *Frequency*: monthly transfers; on second week of each month; BCC: main activity was weekly
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: designed and evaluated by the IFPRI and implemented by the United Nations' WFP. WFP managed the procurement and delivery of transfers, as well as the nutrition BCC training, and routinely monitored the programme. An NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b)
- *Delivery*: cash delivered using a mobile phone cash transfer system, in which women collected cash from designated distribution sites using mobile verification of identity. While attendance at these BCC sessions was a condition for receipt of transfers, this was a 'soft' condition. When a mother missed a session, the CNW followed up with a home visit to ascertain why the session had been missed, and there were no cases where a beneficiary was dropped from the study for failing to attend sessions. In addition, CNWs staff conducted community meetings and met with influential members (village leaders, imams, elders) of the villages in which the BCC took place to explain the purposes of the nutrition training and to provide them with the information being conveyed to study participants. CNWs received training prior to the start of the intervention. In localities where the same payment point was used for both the cash group and the cash + BCC group, cash beneficiaries were paid in the morning while cash + BCC beneficiaries were paid in the afternoon to minimise the likelihood of information from the BCC activities spilling over to the cash treatment group. Both quantitative and qualitative data collected throughout the intervention indicated that implementation fidelity was high.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month + BCC activities cost approximately USD 50 per year per beneficiary

Food only

- *Food access intervention category*: N/A
- *Intervention type*: food provision
- *Description*: consisted of a monthly food ration of 30 kg of rice, 2 kg of mosoor pulse (a type of lentil), and 2 L of micronutrient-fortified cooking oil. This ration was designed to provide a nutritious basket of foods familiar to beneficiaries. The quantities were chosen so that the value of the food ration was equal to the value of the cash provided in treatment groups that provided cash.
- *Duration of intervention period*: 24 months, from May 2012 to April 2014.
- *Frequency*: monthly
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: an NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b)
- *Delivery*: food transfers were handed to beneficiaries at designated FDPs.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month per HH

Food and BCC

- *Food access intervention category*: N/A
- *Intervention type*: food provision and BCC
- *Description*: food treatment group consisted of a monthly food ration of 30 kg of rice, 2 kg of mosoor pulse (a type of lentil), and 2 L of micronutrient-fortified cooking oil. This ration was designed to provide a nutritious basket of foods familiar to beneficiaries. The quantities were chosen so that the value of the food ration was equal to the value of the cash provided in treatment groups that provided cash. The BCC intervention involved 3 complementary activities: 1. weekly group BCC trainings – some with

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	beneficiaries only (i.e. the target women in the Food+BCC or Cash+BCC groups) and some that invited other family members to attend along with beneficiaries, 2. twice-a-month visits by CNWs to the beneficiaries' homes, and 3 monthly group meetings between programme staff and influential community leaders. BCC session attendance conditional for cash transfer, but 'soft condition' (no beneficiaries dropped for failing to attend sessions). About 9–15 beneficiaries were part of each group. The group training took place no further than 2 km from beneficiaries' homes and lasted approximately 1 hour, on average. • *Duration of intervention period*: 24 months, from May 2012 to April 2014. • *Frequency*: monthly (food), weekly (BCC) • *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014) • *Providers*: an NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b) • *Delivery*: food transfers were handed to beneficiaries at designated FDPs. BCC: CNW • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: USD 19 per month + BCC activities cost approximately USD 50 per year per beneficiary
Outcomes	Dietary diversity: FCS; percentage with low FCS (FCS < 35) Adequacy of dietary intake: percentage with per capita daily caloric intake < 2122 calories (food poverty) Anthropometry: WHZ; HAZ Morbidity: % of children with the following symptoms in the previous 2 weeks: fever, cough or cold, diarrhoea
Identification	Food security
Notes	Dietary diversity

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Authors reported that, "Using a random number generator, each village was assigned a random number." Comment: but this was to sort the villages in ascending numerical order. They did not report how the random sequence for allocation into each trial group was generated.
Allocation concealment (Selection bias)	Low risk	Allocation concealment NR; however, this was carried out at village level.
Baseline characteristics similar (Selection bias)	Low risk	Outcome and control variables were similar across the North and South and similar across treatment groups.
Baseline outcome measurements similar (Selection bias)	Low risk	Outcome and control variables were similar across the North and South and similar across treatment groups.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding was not possible, but it was unlikely that it influenced the intervention delivered.

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Blinding of outcome assessment (Detection bias)	Low risk	Core outcomes were anthropometric measures objectively measured, which lack of blinding was unlikely to influence.
Protection against contamination (Performance bias)	Low risk	Allocation was by village and it is unlikely that contamination occurred. Authors reported that in some localities the "… same payment point was used for both the cash arm and the cash plus BCC arm,…" and that "… cash beneficiaries were paid in the morning while cash plus BCC beneficiaries were paid in the afternoon to minimize the likelihood of information from the BCC activities spilling over to the cash treatment arm." According to authors, the implementation fidelity was high; therefore, contamination was likely avoided.
Incomplete outcome data (Attrition bias)	Low risk	Overall attrition was low; 3.5% in the North and 2.3% in the South, but attrition per treatment group was NR. Reasons for HHs not being surveyed at endline in the North included "… they had migrated, another 10 dropped out of study, refused to be interviewed, or could not be found." and in the South: "49 households were not surveyed at endline because they had migrated, another seven dropped out of study, refused to be interviewed, or could not be found." Authors reported that, "Using probit regressions, we found no evidence that attrition was related to treatment status or household demographic, occupational or asset characteristics (Ahmed et al. 2016)."
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol accessed.
Other bias	Low risk	Judgement comment: misclassification bias of exposure: low risk. Exposure determined by researchers. Measurement bias: low risk. Incorrect analysis: low risk. Study has taken into account the cluster design. We note that one might be concerned that BCC could lead to social desirability bias affecting the IYCDDS responses – i.e. after 2 years of nutrition training, mothers might respond to questions about child feeding by over-reporting foods commonly discussed during the group training sessions. The fact that there were differences between what mothers in the North described and what mothers in the South described – e.g. that mothers receiving BCC in the South did not report feeding their children dairy products more frequently than those in the control group – despite their receiving identical BCC gave us some confidence in these results.

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Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** NR but based on Table 1 reporting baseline data for fewer number of participants than randomised we assume that missing data were excluded. **Randomisation ratio:** 1:1:1:1:1 (village-level randomisation) **Recruitment method:** NR **Sample size justification and outcome used:** sample size calculations undertaken to assess the number of clusters (villages) and HHs needed to detect changes in both HH- and child-level outcomes. Using data from an earlier study in Bangladesh (Ahmed et al. 2010), setting significance level at 0.05 and statistical power at 0.80, assuming attrition of 10% over duration of intervention, and using outcome-specific means, SDs and intracluster correlations, a sample based on 50 clusters per treatment and 10 HHs per cluster would provide sufficient statistical power to detect an increase of: 12% in HH

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per capita total expenditure per month; 7% in HH per capita calorie intake per day; 16% in child HAZ; and 8% in dietary diversity of children aged 12–60 months.

Sampling method: same process followed for each region – North and South: in North, 5 upazilas (sub-districts) were selected using simple random sampling from a list of upazilas where in 2010 the proportion of HHs living below Bangladesh's lower poverty line was ≥ 25%. All villages within these 5 upazilas were listed. Villages classified as urban or with < 125 HHs were dropped. Using a random number generator, each village was assigned a random number. Villages were then sorted in ascending numerical order with the first 275 retained. Given that in each region, there were 4 treatment groups and a control group, the first 50 villages were assigned to treatment group 1, the second 50 to treatment group 2, the third 50 villages to treatment group 3, the fourth 50 villages to treatment group 4 and the fifth 50 villages to the control group. The remaining 25 villages were held as a reserve. A complete village census was carried out in each of the 250 selected villages, collecting information on HH demographics, a set of poverty indicators, and whether HHs participated in safety nets and other targeted interventions. Using these data, a list was compiled of HHs that: 1. were considered poor (i.e. based on the poverty indicators collected, they were estimated to have consumption below Bangladesh's lower poverty line); 2. would have ≥ 1 child aged 0–24 months when the intervention began; and 3. were not receiving benefits from other safety net interventions. These HHs were eligible to participate in the study. Using simple random sampling, 10 eligible HHs were selected from each village. The total sample in the North included 250 clusters and 2500 HHs. An identical process was used in the South to select upazilas, villages and HHs.

Study aim or objective: to devise and implement 2 × 2-year RCTs in 2 poor rural areas of Bangladesh with both cash and food treatment groups. Building on the work of Black et al. (2013), the intervention also included 2 treatment groups that aimed to improve maternal knowledge and practices surrounding infant and young child nutrition – through BCC – thus making those treatment groups nutrition-sensitive. We designed survey instruments to capture impacts at the child level, both for the key outcome measure of child anthropometry and for individual-level mechanisms that plausibly underlie programme impacts. Using the RCT design, they estimated impacts of each treatment on child height-for-age. In the other paper, the authors assessed its implications for economic outcomes.

Study period: 24 months: baseline survey was carried out in March–April 2012, the endline survey was conducted in April 2014.

Unit of allocation or exposure: villages

Participants

Baseline characteristics

Cash only

- *Age*: child: months (mean): North: 13.1 (SD 6.8), South: 13.8 (SD 6.1); mothers: years (mean): North: 26.5 (SD 5.8), South: 27.1 (SD 5.9)
- *Place of residence*: rural area
- *Sex*: % female: 54.6 (49.8)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades mean: North: 2.9 (SD 3.1), South: 3.5 (SD 3.3). Mean Head's years schooling: North: 1.49, South: 1.78
- *SES*: mean HH size: North: 3.7, South: 5.25. Mean total owned land in decimals: North: 14.11, South: 17.60
- *Social capital*: NR
- *Nutritional status*: mean food consumption per capita: North: 875.73, South: 1029.21; HAZ (mean): North: –1.86 (SD 1.54), South: –1.66 (SD 1.43); WHZ (mean) North –0.68 (SD 1.23), South –0.95 (SD 1.10)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: child: months (mean): North: 13.0 (SD 6.1), South: 13.1 (SD 6.2); mothers: years (mean): North: 26.4 (SD 5.7), South: 26.7 (SD 5.9)

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- *Place of residence*: rural area
- *Sex*: % female: 48.9 (50.0)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades mean: North: 3.2 (SD 3.3), South: 4.1 (SD 3.2). Mean Head's years schooling: North: 1.43, South: 2.05
- *SES*: mean HH size: North: 4.83, South: 5.30. Mean total owned land in decimals: North: 15.45, South: 27.24
- *Social capital*: NR
- *Nutritional status*: mean food consumption per capita: North: 850.68, South: 1179.78; HAZ (mean): North: –1.78 (SD 1.44), South: –1.59 (SD 1.48); WHZ (mean): North –0.79 (SD 1.21), South: –0.88 (SD 1.27)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Cash and food

- *Age*: child: months (mean): North: 13.4 (SD 6.5). South: 13.2 (SD 6.3); mothers: years (mean): North: 26.8 (SD 5.9), South: 26.2 (SD 5.6)
- *Place of residence*: rural area
- *Sex*: % female: 47.6 (50.0)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades mean: North: 2.7 (SD 3.2), South: 3.8 (SD 3.1). Mean Head's years schooling: North: 1.28, South: 1.97
- *SES*: mean HH size: North: 4.80, South: 5.06. Mean total owned land in decimals: North: 12.44, South: 27.17
- *Social capital*: NR
- *Nutritional status*: mean food consumption per capita: North: 808.54, South: 1164.27; HAZ (mean): North: –1.75 (SD 1.39), South: –1.64 (SD 1.42); WHZ (mean): North: –0.85 (SD 1.21), South: –0.84 (SD 1.19)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Food only

- *Age*: child: months (mean): North: 13.4 (SD 6.1), South: 12.5 (SD 6.4); mothers: years (mean): North: 26.8 (SD 5.9), South: 26.9 (SD 6.0)
- *Place of residence*: rural area
- *Sex*: % female: 47.5 (50.0)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades (mother) mean: North: 2.9 (SD 3.1), South 3.4 (SD 3.1). Head's years of schooling (mean): North: 1.23, South: 1.83
- *SES*: mean HH size: North: 4.68, South: 5.22
- *Social capital*: NR
- *Nutritional status*: HAZ (mean): North: –1.85 (SD 1.50), South: –1.58 (SD 1.61); WHZ (mean): North: –0.85 (SD 1.21), South: –0.84 (SD 1.19)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Food and BCC

- *Age*: child: months (mean): North: N/A, South: 13.2 (SD 6.5); mothers: years (mean): North: N/A, South: 26.1 (SD 5.4)
- *Place of residence*: rural areas
- *Sex*: % female: 47.6 (50.0)

Ahmed 2019b *(Continued)*

- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades (mother) (mean): North: N/A, South: 3.7 (SD 3.1). Head's years schooling (mean): North: N/A, South: 2.26
- *SES*: HH size (mean): North: N/A, South: 5.20
- *Social capital*: NR
- *Nutritional status*: HAZ (mean): North: N/A, South: –1.67 (SD 1.42); WHZ (mean): North: N/A, South: –0.80 (SD 1.19)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: child: months (mean): North: 13.2 (SD 6.4), South: 13.2 (SD 6.3); mothers: years (mean): North: 26.7 (SD 5.9), South: 26.6 (SD 5.8)
- *Place of residence*: rural area
- *Sex*: % female: 49.2 (50.0)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: schooling grades (mother) (mean): North: 2.9 (SD 3.2), South: 3.7 (SD 3.2). Mean Head's years schooling: NR
- *SES*: NR
- *Social capital*: NR
- *Nutritional status*: HAZ (mean): North: –1.78 (SD 1.44), South: –1.63 (SD 1.47); WHZ (mean): North: –0.76 (SD 1.22), South: –0.86 (SD 1.20)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: subdistrict eligibility: proportion of HHs living below Bangladesh's lower poverty line ≥ 25%." Village eligibility: rural; HH eligibility: list compiled of 1. HHs that: were considered poor (i.e. based on the poverty indicators collected, they were estimated to have consumption below Bangladesh's lower poverty line); 2. would have ≥ 1 child aged 0–24 months when the intervention began and 3. were not receiving benefits from other safety net interventions. Target beneficiary was mother of an 'index child' aged 0–24 months in March 2012, residing in a poor rural HH.

Exclusion criteria: village level: villages classified as urban or villages with fewer than 125 HHs were dropped.

Pretreatment: outcome and control variables similar across the North and South and similar across treatment groups.

Attrition per relevant group: only overall: 4992 HHs interviewed at baseline, 2498 in North and 2494 in South. In North, 2410 HHs were re-interviewed at endline, an attrition rate of 3.5%. 78 HHs were not surveyed at endline because they had migrated, another 10 dropped out of study, refused to be interviewed or could not be found. In South, 2438 HHs re-interviewed at endline, an attrition rate of 2.2%. 49 HHs were not surveyed at endline because they had migrated, another 7 dropped out of study, refused to be interviewed or could not be found. Using probit regressions, there was no evidence that attrition was related to treatment status or HH demographic, occupational or asset characteristics (Ahmed et al. 2016).

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: total number of HHs interviewed in North was 2410 and in South was 2438 at endline. For the outcomes related to children (due to restrictions related to age at baseline, biological children): this led to an estimation sample of 4399 children; 2218 in North and 2181 in South. Note that sample sizes differed per outcome as can be seen in the legends of the tables. Numbers per group NR.

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Total number enrolled per relevant group: interviewed 4992 HHs at baseline, 2498 in North and 2494 in South. Table 1 presented number of mothers/children per group at baseline, but total was 2275 for North and 2288 for South. North: cash only group: 458; food only group: 454; cash and food group: 458; cash and BCC group: 455; control: 450. South: cash only group: 454; food only group: 462; cash and food group: 446; cash and BCC group: 462; control group: 464

Total number randomised per relevant group: North included 250 clusters and 2500 HHs. Similar in South.

Interventions

Intervention characteristics

Cash only

- *Food access intervention category*: increase buying power
- *Intervention type*: UCTs
- *Description*: monthly payment of BDT 1500 (approximately USD 19) per HH, which was about 25% of the mean monthly HH consumption expenditures of poor rural HHs in Bangladesh as of 2012. Mothers who were randomly selected to be in cash treatment groups received monthly payments via mobile money.
- *Duration of intervention period*: 24 months, May 2012 to April 2014
- *Frequency*: monthly transfers; on second week of each month
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: programme designed and evaluated by IFPRI and implemented by the United Nations' WFP. WFP managed the procurement and delivery of transfers, as well as the nutrition BCC training, and routinely monitored the programme. An NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b)
- *Delivery*: delivered using a mobile phone cash transfer system, in which women collected cash from designated distribution sites using mobile verification of identity. To facilitate payments to cash recipients and maintain comparability across groups, a basic mobile phone was provided to target mother in all treatment and control groups. Both quantitative and qualitative data collected throughout the intervention indicated that implementation fidelity was high.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month per HH

Control: no intervention

Cash and food

- *Food access intervention category*: increase buying power and food availability
- *Intervention type*: cash (UCT) and food transfers
- *Description*: cash and food transfers provided half of each of 'Cash only' and 'Food only' (i.e. BDT 750, 15 kg of rice, 1 kg of mosoor pulse and 1 L of micronutrient-fortified cooking oil.
- *Duration of intervention period*: 24 months, May 2012 to April 2014.
- *Frequency*: monthly transfers; on second week of each month
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: designed and evaluated by IFPRI and implemented by the United Nations' WFP. WFP managed the procurement and delivery of transfers, as well as the nutrition BCC training, and routinely monitored the programme. An NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers and delivering the nutrition BCC (Ahmed 2019 b).
- *Delivery*: cash delivered using a mobile phone cash transfer system, in which women collected cash from designated distribution sites using mobile verification of identity. Food transfers handed to beneficiaries at designated FDPs. Both quantitative and qualitative data collected throughout the intervention indicates that implementation fidelity was high.
- *Co-interventions*: NR
- *Resource requirements*: NR

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- *Economic indicators*: USD 19 per month per HH

Cash and BCC

- *Food access intervention category*: improve buying power
- *Intervention type*: cash transfers and BCC ('soft' condition for cash transfer)
- *Description*: monthly payment of BDT 1500 (about USD 19) per HH + suite of intensive nutrition BCC activities. BCC component that was included in the fourth treatment group in each region consisted of a suite of intensive nutrition BCC activities ('Cash and BCC'). The core activity was a weekly, 1-hour group session in each village with a trained CNW. These sessions covered a defined series of 6 topics: 1. importance of nutrition and diet diversity for health; 2. how handwashing and hygiene improve health; 3. diet diversity and micronutrients; 4. breastfeeding; 5. complementary foods for children aged 6–24 months; and 6. maternal nutrition. Several methods were used to deliver this information including presentations, question and answer, interactive call and answer songs and chants, practical demonstrations, and role playing. 1 of these sessions, with only beneficiaries participating, occurred on the day of the transfer distribution. For the remaining group, BCC training each month, other HH members – particularly mothers-in-law, husbands, and other pregnant or lactating women – were invited to attend along with beneficiaries, with the intention of creating a supportive HH atmosphere and behaviour change at the HH level. CNWs also made home visits to beneficiaries twice a month to follow-up on topics discussed during group sessions and to discuss specific concerns that mothers had.
- *Duration of intervention period*: 24 months, May 2012 to April 2014
- *Frequency*: monthly transfers; on second week of each month; BCC: main activity was weekly
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: designed and evaluated by the IFPRI and implemented by the United Nations' WFP. WFP managed the procurement and delivery of transfers, as well as the nutrition BCC training, and routinely monitored the programme. An NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b)
- *Delivery*: cash delivered using a mobile phone cash transfer system, in which women collected cash from designated distribution sites using mobile verification of identity. While attendance at these BCC sessions was a condition for receipt of transfers, this was a 'soft' condition. When a mother missed a session, the CNW followed up with a home visit to ascertain why the session had been missed, and there were no cases where a beneficiary was dropped from the study for failing to attend sessions. In addition, CNWs staff conducted community meetings and met with influential members (village leaders, imams, elders) of the villages in which the BCC took place to explain the purposes of the nutrition training and to provide them with the information being conveyed to study participants. CNWs received training prior to the start of the intervention. In localities where the same payment point was used for both the cash group and the cash + BCC group, cash beneficiaries were paid in the morning while cash + BCC beneficiaries were paid in the afternoon to minimise the likelihood of information from the BCC activities spilling over to the cash treatment group. Both quantitative and qualitative data collected throughout the intervention indicated that implementation fidelity was high.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month + BCC activities cost approximately USD 50 per year per beneficiary

Food only

- *Food access intervention category*: N/A
- *Intervention type*: food provision
- *Description*: consisted of a monthly food ration of 30 kg of rice, 2 kg of mosoor pulse (a type of lentil), and 2 L of micronutrient-fortified cooking oil. This ration was designed to provide a nutritious basket of foods familiar to beneficiaries. The quantities were chosen so that the value of the food ration was equal to the value of the cash provided in treatment groups that provided cash.
- *Duration of intervention period*: 24 months, from May 2012 to April 2014.
- *Frequency*: monthly
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)

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- *Providers*: an NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b)
- *Delivery*: food transfers were handed to beneficiaries at designated FDPs.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month per HH

Food and BCC

- *Food access intervention category*: N/A
- *Intervention type*: food provision and BCC
- *Description*: food treatment group consisted of a monthly food ration of 30 kg of rice, 2 kg of mosoor pulse (a type of lentil), and 2 L of micronutrient-fortified cooking oil. This ration was designed to provide a nutritious basket of foods familiar to beneficiaries. The quantities were chosen so that the value of the food ration was equal to the value of the cash provided in treatment groups that provided cash. The BCC intervention involved 3 complementary activities: 1. weekly group BCC trainings – some with beneficiaries only (i.e. the target women in the Food+BCC or Cash+BCC groups) and some that invited other family members to attend along with beneficiaries, 2. twice-a-month visits by CNWs to the beneficiaries' homes, and 3 monthly group meetings between programme staff and influential community leaders. BCC session attendance conditional for cash transfer, but 'soft condition' (no beneficiaries dropped for failing to attend sessions). About 9–15 beneficiaries were part of each group. The group training took place no further than 2 km from beneficiaries' homes and lasted approximately 1 hour, on average.
- *Duration of intervention period*: 24 months, from May 2012 to April 2014.
- *Frequency*: monthly (food), weekly (BCC)
- *Number of study contacts*: 3: baseline (2012), midline (2013), endline (2014)
- *Providers*: an NGO contracted by WFP, the ESDO, was responsible for the field implementation of project activities, including distributing the monthly food and cash transfers, and delivering the nutrition BCC (Ahmed 2019 b)
- *Delivery*: food transfers were handed to beneficiaries at designated FDPs. BCC: CNW
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: USD 19 per month + BCC activities cost approximately USD 50 per year per beneficiary

Outcomes	Dietary diversity: FCS; percentage with low FCS (FCS < 35) Adequacy of dietary intake: percentage with per capita daily caloric intake < 2122 calories (food poverty) Anthropometry: WHZ; HAZ Morbidity: % of children with the following symptoms in the previous 2 weeks: fever, cough or cold, diarrhoea
Identification	**Sponsorship source:** funding support provided by the German Ministry for Economic Cooperation and Development, the UK's DfID, PIM, the Swiss Agency for Development and Cooperation, the United Nations Development Programme, and the USAID. **Country:** Bangladesh **Setting:** 1. rural areas of the northwest region (the 'North'), where poverty and food insecurity rates were high but where food markets functioned well; and 2. rural areas of the southern region (the 'South'), where food markets existed but were less accessible. **Comments:** ClinicalTrials.gov (study ID: NCT02237144) **Authors' names:** Akhter Ahmed. Contact author: John Hoddinott

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Institution: NR

Email: jfh246@cornell.edu

Address: NR

Declarations of interest: NR

Study or programme name and acronym: Transfer Modality Research Initiative (TMRI)

Type of record: report

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Quote: "Using a random number generator, each village was assigned a random number." Comment: this was to sort the villages in ascending numerical order. They dis not report how the random sequence for allocation into each trial group was generated.
Allocation concealment (Selection bias)	Low risk	Allocation concealment was NR; however, this was carried out at village level.
Baseline characteristics similar (Selection bias)	Low risk	Outcome and control variables were similar across the North and South and similar across treatment groups.
Baseline outcome measurements similar (Selection bias)	Low risk	Outcome and control variables were similar across the North and South and similar across treatment groups.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding was not possible but it was unlikely to have influenced the intervention delivered.
Blinding of outcome assessment (Detection bias)	Low risk	Core outcomes were anthropometric measures objectively reported, which lack of blinding is unlikely to influence.
Protection against contamination (Performance bias)	Low risk	Allocation was by village and it was unlikely that contamination occurred. Authors reported that in some localities the "… same payment point was used for both the cash group and the cash plus BCC arm,…" and that "… cash beneficiaries were paid in the morning while cash plus BCC beneficiaries were paid in the afternoon to minimize the likelihood of information from the BCC activities spilling over to the cash treatment arm." Comment: according to authors, the implementation fidelity was high, therefore, contamination was likely avoided.
Incomplete outcome data (Attrition bias)	Low risk	Overall attrition was low; 3.5% in North and 2.3% in South, but attrition per treatment group was NR. Reasons for HHs not being surveyed at endline in the North included "… they had migrated, another 10 dropped out of study, refused to be interviewed, or could not be found." and in the South: "49 households were not surveyed at endline because they had migrated, another seven dropped out of study, refused to be interviewed, or could not be found." Authors reported that "Using probit regressions, we found no evidence that attri-

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		tion was related to treatment status or household demographic, occupational or asset characteristics (Ahmed et al. 2016)."
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol accessed.
Other bias	Low risk	Judgement comment: misclassification bias of exposure: low risk. Exposure determined by researchers. Measurement bias: low risk. Incorrect analysis: low risk. Study accounted for the cluster design. We noted that 1 might be concerned that BCC could lead to social desirability bias affecting the IYCDDS responses – i.e. after 2 years of nutrition training, mothers might respond to questions about child feeding by over-reporting foods commonly discussed during the group training sessions. The fact that there are differences between what mothers in the North described and what mothers in the South described – e.g. that mothers receiving BCC in the South did not report feeding their children dairy products more frequently than those in the control group – despite their receiving identical BCC gave us some confidence in these results.

Alaofe 2016

Study characteristics

Methods	**Study design:** PCS **How were missing data handled?** in 2008, enumerators repeated surveys with each woman in the agricultural groups who had been interviewed the year before, if possible. For the village sample, enumerators returned to previously sampled HHs and interviewed the same respondent, wherever possible. If an original respondent was not present and another woman aged > 18 years in the HH could answer the questions, she was interviewed and this was noted. If a respondent's HH could not be found, a neighbouring HH was substituted and this was noted. **Randomisation ratio:** N/A **Recruitment method:** HH surveys conducted for each woman in the women's agricultural groups and for a random representative sample of HHs in each village, with women aged > 18 years as respondents. Surveys conducted following installation of the PVDI systems but before any harvest. Any women who were away from the district at the time of the survey were omitted. **Sample size justification and outcome used:** NR **Sampling method:** all HHs of women who were involved in local women's agricultural groups were sampled from 2 intervention villages and 2 matched-pair control villages (similar in terms of location along the same roads, administrative status and size). A random, representative sample of 30 HHs in each village was also selected from each village. **Study aim or objective:** to evaluate the impact of SMGs on crop production diversity and dietary diversity in the Kalale district of Northern Benin. **Study period:** November 2007 to November 2008 **Unit of allocation or exposure:** HHs
Participants	**Baseline characteristics** *Intervention or exposure group* (n = 116) • *Age*: WG, n: children aged 5 years: 30; children aged 5–17 years: 51; adults: 55; adults aged > 65 years: 11; NWG, n: children aged 5 years: 40; children aged 5–17 years: 55; adults: 60; adults aged > 65 years: 16 • *Place of residence*: NR

Alaofe 2016 *(Continued)*

- *Sex*: NR
- *Ethnicity and language*:
  - language, n (%): WG: Bariba 16 (28.6), Peulh 3 (5.4), Boko 34 (60.7), other 3 (3.6); NWG: Bariba 6 (10.0), Peulh 16 (26.7), Boko 31 (51.7), other 7 (11.7)
  - religion, n (%): WG: Muslim 49 (87.5); NWG: Muslim 56 (93.3)
- *Occupation*: WG, n: crop production 55, livestock production 9, small vendor 9, other trade/service 9, salaried job 2, housework 7, student 49, unemployed 12, retired 2; NWG, n: crop production 49, livestock production 15, small vendor 15, other trade/service 14, salaried job 8, housework 8, student 38, unemployed 13, retired 4
- *Education*: literacy, n (%): WG: 22 (39.2); NWG: 14 (23.3)
- *SES*: mean HH size: WG: 7.8 (SD 3.5), NWG: 8.0 (SD 4.5); median per capita consumption expenditure: WG: USD 173.29, NWG: USD 120.33
- *Social capital*: NR
- *Nutritional status*: median food consumption (% of total consumption expenditure): 62 (village A); 61 (village B)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control group (n = 98)

- E*thnicity and language*:
  - language, n (%): WG: Bariba 4 (10.5), Peulh 26 (68.4), Boko 7 (18.4), other 1 (2.6); NWG: Bariba 5 (8.3), Peulh 42 (70.0), Boko 6 (10.0), other 7 (11.7)
- *Religion*, n (%): WG: Muslim 37 (97.4); NWG: Muslim 51 (89.5)
- *Occupation*: WG, n: crop production 30, livestock production 9, small vendor 9, other trade/service 6, salaried job 1, housework 2, student 22, unemployed 5, retired 1; NWG, n: crop production 48, livestock production 19, small vendor 19, other trade/service 16, salaried job 2, housework 4, student 28, unemployed 12, retired 2
- *Education*: literacy, n (%): WG: 22 (57.9); NWG: 15 (25)
- *SES*: mean HH size: WG 5.9 (SD 2.7), NWG: 7.0 (SD 3.4); median per capita consumption expenditure: WG: USD 156.87, NWG: USD 131.28
- *Social capital*: NR
- *Nutritional status*: median food consumption (% of total consumption expenditure): 59 (village A); 62 (village B)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall group characteristics: NR

Inclusion criteria: HHs in 4 selected villages in the Kalale district

Exclusion criteria: none reported

Baseline differences: fewer literate women were in the intervention group than in the control group ($P < 0.05$). HH size was lower in control WG (mean 5.9 (SD 2.7)) than the intervention WG (mean 7.8 (SD 3.5)) ($P = 0.2$).

Total number completed and analysed: intervention group: WG: n = 56; NWG: n = 60; control group: WG: n = 38; NWG: n = 60.

Total number enrolled per relevant group: intervention group: WG: n = 56; NWG: n = 60; control group: WG: n = 38; NWG: n = 60

Total number randomised per relevant group: N/A

Attrition: NR

Alaofe 2016 *(Continued)*

	Description of subgroups measured and reported: for the intervention and control groups, there were 2 subgroups: HHs with women who participated in a local women's agricultural group (WG) and HHs where no-one belonged to a women's agricultural group (NWG).
Interventions	**Intervention/exposure group: income generation through SMGs** • *Food access intervention category*: increase buying power • *Intervention category:* income generation • *Description*: income generation through SMGs: a drip irrigation system combined with a solar-powered water pump. The water source was from a year-round stream in 2 villages and from a borehole in the other 2 villages. Each SMG was used jointly by the women in each village. • *Duration of intervention period*: 12 months • *Frequency*: ongoing • *Number of study contacts*: 2 (November 2007; November 2008) • *Providers*: Solar Electric Light Fund (SELF), an NGO • *Delivery*: system installation and training of local technicians took place in 2007 in time for the dry season beginning in November. Supported by funding from the World Bank Development Marketplace competition in 2006, with the expertise of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Niamey. A project team oversaw the installation and maintenance and provided continued training for farmers. • *Co-interventions*: none reported • *Resource requirements*: hiring of a project team (director, solar technician and agricultural technician) for each village for the training of local farmers and additional technicians such as masons and electricians. Purchasing or donation of PVDI systems. • *Economic indicators*: study authors provided an economic analysis of the PVDI system in terms of installation and operational costs, compared to a liquid-fuel pump drip irrigation system. **Control:** no intervention (usual circumstances of hand-watered irrigation)
Outcomes	HH food expenditure: proportion of income spent on food; foods purchased in dry season Dietary diversity: variety of fruits and vegetables consumed
Identification	**Sponsorship source:** quote: "We would like to acknowledge the Solar Electric Light Fund (SELF) for implementing the PVDI project, ICRISAT technicians for their extension work with project farmers, and l'Institut de Recherche Empirique en Economie Politique (IREEP, Cotonou, Benin) for their enumeration of the HH surveys. This project was supported by an Environmental Ventures Projects grant from the Woods Institute for the Environment at Stanford University." **Country:** Benin **Setting:** Kalale district in northern Benin, which is a rural setting without an electricity grid, no secondary school and "100 km from a paved road;" 85–90% of HHs totally depended on agriculture for livelihoods. Many women's agricultural groups were engaged in small-scale vegetable production before project implementation; as such, this PVDI project fit within social and cultural norms. **Authors' names:** Halimatou Alaofe; Jennifer Burney; Douglas Taren **Email:** halaofe@email.arizona.edu; burney@stanford.edu; taren@email.arizona.edu **Declarations of interest:** quote: "The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article." **Study or programme name and acronym:** Solar Market Gardens (SMGs) **Type of record:** 2 journal articles **Trial registration:** N/A
Notes	

Alaofe 2016 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA study. No randomisation of intervention.
Allocation concealment (Selection bias)	High risk	CBA study. No random allocation of intervention.
Baseline characteristics similar (Selection bias)	Low risk	Although there were some baseline differences between the intervention and control groups, the regression analysis was adjusted for variables such as age, education, local languages, occupation, HH size and consumption expenditures.
Baseline outcome measurements similar (Selection bias)	Low risk	Quote: "At baseline, there was no significant difference in the variety of fruits and vegetables produced and consumed between the 4 groups." "… there were no significant differences in food purchases during the dry season between the 4 groups at baseline."
Blinding of participants and personnel (Performance bias)	Low risk	Blinding not possible, but unlikely that a lack of blinding affected outcomes.
Blinding of outcome assessment (Detection bias)	High risk	NR by study authors but outcomes were self-reported and likely to be influenced by lack of blinding.
Protection against contamination (Performance bias)	Low risk	Allocation by village and contamination was unlikely.
Incomplete outcome data (Attrition bias)	Unclear risk	It is NR how many HH from the baseline survey per group were N/A for endpoint survey.
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A.
Other bias	Low risk	Misclassification bias: low risk. Measurement bias: low risk. Structured questionnaire on HH food consumption. Recall period of 1 month during dry season. Seasonality bias: low risk. Follow-up survey conducted during the same season.

Alaofe 2019

Study characteristics

Methods	**Study design:** PCS **How were missing data handled?** The analytic sample was restricted to HHs or mothers with complete data at baseline and endline for a given indicator. Pregnant women at baseline (n = 3) or endline (n = 8) excluded from analyses. ITT protocol used for analysis as 19 SMG WGs at baseline became SMG NWGs at follow-up and 2 SMG NWGs became SMG WGs. **Randomisation ratio:** N/A **Recruitment method:** villages: before the baseline evaluation, villages in the district of Kalalé were identified for possible inclusion in the SMG. WG HHs: only 1 mother or carer of childbearing age (15–

Alaofe 2019 *(Continued)*

	49 years) who had a child aged 6–59 months at time of baseline survey (January–March 2014) was invited to participate. NWG HHs: delegates/leaders of the selected villages were contacted to obtain a complete listing of all NWG HHs with a target mother–child. From that list, a single HH was selected as a starting point, using a random number between 1 and the required number of HHs in village. **Sample size justification and outcome used:** sample size based on available funds with expectation that it would be able to show differences in agricultural production and changes in food security when scaled up from the original pilot study. Sample size was not based on changes in nutritional status. **Sampling method:** purposive (villages) and random (control HHs): participating villages needed to have potential water sources (as determined by geophysical survey to map groundwater) to support production during dry season. 16 eligible villages identified. Delegates/leaders of selected villages were contacted to obtain a complete listing of all NWG HHs with a target mother–child. From that list, a single HH was selected as a starting point, using a random number between 1 and the required number of HHs in village. **Study aim or objective:** to examine the impact of a 1-year solar-powered drip irrigation SMG programme in Kalalé district of northern Benin on mothers' nutritional status and micronutrient levels. **Study period:** January–March 2014 to February–March 2015 **Unit of allocation or exposure:** cluster: villages (16 eligible villages identified, matched and assigned to 1 of 2 groups)
Participants	**Baseline characteristics** Intervention: WG • *Age*: mother/carer, years, mean: 31.92 (SD 7.73) • *Place of residence*: village in Kalale district, northern Benin • *Sex,* %: female: 100 • *Ethnicity and language,* %: Gondo 30.22; Boo 39.56; Peulh 17.58; Bariba 11.54; other: 1.1 • *Occupation*: mother, %: agricultural/other labour: 80.33; service/business: 18.03; other: 1.64 • *Education*: mother, %: no formal education 90.5; primary or less 4.47; secondary 5.03; university or more 0 • *SES,* %: low 17.79, middle 49.08, high 33.13. Electricity connection, %: 13.21. HH size, mean: 7.21 (SD 3.05) • *Social capital*: NR • *Nutritional status*: food insecurity, %: 17.32. HDDS, mean: 6.07 (SD 1.26). WDDS-10, mean: 4.06 (SD 1.06). BMI, mean: 21.89 (SD 2.93). Prevalence of underweight, %: 9.16. Iron deficiency, %: 15.32. Iron-deficiency anaemia, %: 6.56. Vitamin A deficiency, %: 14.29. • *Morbidities*: NR • *Concomitant or previous care*: NR Control: WG • *Age*: mother/carer, years (mean): 29.69 (SD 6.49) • *Place of residence*: village in Kalale district, northern Benin • *Sex*, %: female: 100 • *Ethnicity and language*, %: Gondo 34.4; Boo 35.2; Peulh 17.6; Bariba 9.6; other 3.2 • *Occupation*: mother, %: agricultural/other labour: 83.18; service/business: 13.64; other: 3.18 • *Education*: mother, %: no formal education 89.43, primary or less 7.32, secondary 3.25, university or more 0 • *SES*, %: low 24.11, middle 53.57, high 22.32. Electricity connection, %: 2.48; HH size, mean: 8.59 (SD 4.32) • *Social capital*: NR • *Nutritional status*: food insecurity, %: 16.00. HDDS, mean: 6.05 (SD 1.26). WDDS-10, mean: 4.87 (SD 0.98). BMI, mean: 21.72 (SD 2.94). Prevalence of underweight, %: 12.79. Anaemia, %: 49.0. Iron deficiency, %: 17.98. Iron-deficiency anaemia, %: 13.79. Vitamin A deficiency, %: 20.22.

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- *Morbidities*: anaemia, %: 49.0
- *Concomitant or previous care*: NR

Intervention: NWG

- *Age*: mother/carer, years (mean): 29.41 (SD 6.25)
- *Place of residence*: village in Kalale district, northern Benin
- *Sex*, %: *female*: 100
- *Ethnicity and language*, %: Gondo 32.39; Boo 35.68; Peulh 18.31; Bariba 8.92; other 4.692
- *Occupation*: mother, %: agricultural/other labour: 75.2; service/business 20.8; other: 4.0
- *Education*: mother's, %: no formal education 89.29, primary or less 5.36, secondary 5.36, university or more 0
- *SES*, %: low 21.57, middle 48.04, high 30.39. Electricity connection, %: 10.61
- *Social capital*: NR
- *Nutritional status*: food insecurity, %: 12.02. HDDS, mean: 6.62 (SD 1.17). WDDS-10, mean: 4.58 (SD 1.04). BMI, mean: 23.01 (SD 3.97). Prevalence of underweight, %: 4.88. Iron deficiency, %: 21.83. iron-deficiency anaemia, %: 12.23. Vitamin A deficiency, %: 16.67.
- *Morbidities*: anaemia, %: 44.23
- *Concomitant or previous care*: NR

Control: NWG

- *Age*: mother/carer, years (mean): 28.74 (SD 6.03)
- *Place of residence*: village in Kalale district, northern Benin
- *Sex*, %: *female*: 100
- *Ethnicity and language*, %: Gando 32.46, Boo 29.82, Peulh 16.23, Bariba 14.9 other 6.58
- *Occupation*: mother, %: agricultural/other labour: 80.52, service/business: 16.88, other: 2.60
- *Education*: mother, %: no formal education 89.61, primary or less 4.33, secondary 5.63, university or more 0.43
- *SES*, %: low 29.15, middle 54.27, high 16.58. Electricity connection, %: 2.23
- *Social capital*: NR
- *Nutritional status*: food insecurity, %: 20.09. HDDS, mean: 6.51 (SD 1.12). WDDS-10, mean: 4.83 (SD 0.97). BMI, mean: 22.03 (SD 3.14). Prevalence of underweight, %: 6.57. Iron deficiency, %: 16.56. Iron-deficiency anaemia, %: 7.91. Vitamin A deficiency, %: 25.17.
- *Morbidities*: anaemia, %: 45.73
- *Concomitant or previous care*: NR

Overall

- *Age*: NR
- *Place of residence*: NR
- *Sex*, %: *female*: 100
- *Ethnicity and language*: NR
- *Occupation*: mother, %: 80.3 agricultural/other labour (all 4 groups)
- *Education*: mother, %: no formal education 90.3 (all 4 groups)
- *SES*: NR
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: villages: participating villages needed to have potential water sources (as determined by geophysical survey to map groundwater) to support production during dry season. Control group: similarity along several variables, including pre-existing local WG, location along the same roads, administrative status and size. HH: women in an agricultural group, each of whom farmed her own 120 m^2 plot (SMG WG and control WG); women NOT in an agricultural group (SMG NWG and control

Alaofe 2019 *(Continued)*

NWG). Women: in each investigated HH, only 1 mother or carer of childbearing age (15–49 years) who had a child aged 6–59 months at time of baseline survey (January–March 2014) was invited to participate in the impact evaluation.

Exclusion criteria: NR

Pretreatment: at baseline, there was no significant difference in HH religion, ethnicity, access to an improved source of water, self-reported food insecurity, mothers' education level and occupation between SMG and control groups. However, a greater proportion of SMG WG HHs had older mothers, access to latrines, healthcare insecurity and high SES compared with the other 3 groups ($P < 0.05$). In addition, HH size in SMG NWG was lowest compared with the other 3 groups while the prevalence of access to electricity was greatest (Table 1).

Attrition per relevant group: outcome: BMI: intervention group: total 161/415 (38.8%) (WG women 56/187 (30.0%); NWG women 105/228 (46.1%)); control group: total 136/359 (37.9%) (WG women 40/126/(31.7%); NWG women 96/233 (41.2%)). Outcome: HDDS: intervention group: total 111/415 (26.7%) (WG women 39/187 (20.9%); NWG women 72/228 (31.6%)); control group: total 58/359 (16.1%) (WG women 14/126 (11.1%); NWG women 44/233 (18.9%). Outcome: Hb: intervention group: total 111/415 (26.7%) (WG women 39/187 (20.9%); NWG women 72/228 (31.6%)); control group: total 95/359 (26.5%) (WG women 26/126 (20.6%); NWG women 69/233 (29.6%)). Outcome: iron: intervention group: total 148/415 (35.7%) (WG women 62/187 (33.2%); NWG women 86/228 (37.7%)). Control group: total 119/359 (33.1%) (WG women 37/126 (29.4%); NWG women 82/233 (35.1%)). Outcome: Vitamin A: intervention group: total 145/415 (34.9%) (WG women 61/187 (32.6%); NWG women 84/228 (36.8%)); control group: total 119/359 (33.1%) (WG women 37/126 (29.4%); NWG women 82/233 (35.1%)).

There was some attrition from baseline to follow-up (4.3%) that was spread across villages, with no structural differences in terms of who was most likely to dropout. Most common reason was that mothers/carers were working on their land or moved/travelled out of village on day of data collection. In addition, some blood samples were unsuitable for further processing: 5.74% due to haemolysis, 0.47% were specimens without proper requisition slips and 3.23% had insufficient sample quantity.

Description of subgroups measured and reported: intervention villages: WG: HHs with women who participated in a local women's agricultural group and NWG: HHs where none of the women belonged to a women's agricultural group. Control villages: WG: HHs with women who participated in a local women's agricultural group and NWG: HHs where none of the women belonged to a women's agricultural group.

Total number completed and analysed per relevant group: depended on outcome. SMG WG: BMI, n = 131 (83.44%); HDDS, n = 148 (81.32%); Hb, n = 148 (86.05%); iron, n = 125 (79.625%); vitamin A, n = 126 (79.25%). SMG NWG: BMI, n = 123 (72.35%); HDDS, n = 156 (71.23%); Hb, n = 156 (77.61%); iron, n = 142 (78.45%); vitamin A, n = 144 (81.82%). Control WG: BMI, n = 86 (90.53%); HDDS, n = 112 (90.32%); Hb, n =100 (90.91%); iron, n = 89 (89.90%), vitamin A, n = 89 (78.76%). Control NWG women: BMI, n = 137 (84.05%); HDDS, n = 189 (81.82%); Hb, n = 164 (83.67%); iron, n = 151 (83.43%), vitamin A, n = 151 (75.50%)

Total number enrolled per relevant group: total: 771 women (intervention villages: 415 women (184 WG women; 228 NWG women); control villages: 359 women (126 WG women; 233 NWG women)

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention group: WG

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation
- *Description*: SMG system: installation of low-pressure drip irrigation system, combined with a solar-powered water pump in each village. Each SMG was used jointly by 30–35 women belonging to the local women's agriculture group (each woman farmed her own land of 120 m^2).
- *Duration of intervention period*: 1 year
- *Frequency*: continuous
- *Number of study contacts*: 2 (January–March 2014; February–March 2015)

Alaofe 2019 *(Continued)*

- *Providers*: Solar Electric Light Fund
- *Delivery*: study expanded the installation of SMG systems, from previous pilot study (Alaofe 2016)
- *Co-interventions*: women's agriculture group activities
- *Resource requirements*: see Alaofe 2016
- *Economic indicators*: see Alaofe 2016

Intervention group: NWG

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation
- *Description*: SMG system: installation of low-pressure drip irrigation system, combined with solar-powered water pump in each intervention village. Women who were not part of local women's agriculture groups did not have direct access to use of SMG.
- *Duration of intervention period*: 1 year
- *Frequency*: continuous
- *Number of study contacts*: 2: baseline (January–March 20140) and endline (February–March 2015)
- *Providers*: Solar Electric Light Fund
- *Delivery*: study expanded installation of SMG systems, from previous pilot study (Alaofe 2016)
- *Co-interventions*: no WG
- *Resource requirements*: see Alaofe 2016
- *Economic indicators*: see Alaofe 2016

Control group: no intervention

Outcomes	Dietary diversity: HDDS (0–12); Women's DDS (0–10) Anthropometry: BMI (mothers); prevalence of underweight (mothers) (BMI < 18.5 kg/m^2) Biochemical: iron deficiency; vitamin A deficiency Morbidity: anaemia; iron-deficiency anaemia
Identification	**Sponsorship source:** University of Stanford, the Hellman Fellows Programme at the University of California, San Diego and the University of Arizona. **Country:** Benin **Setting:** rural villages in Kalalé district, northern Benin with sufficient groundwater sources to sustain agricultural production during the dry season. **Comments:** none **Author's name:** Halimatou Alaofè **Institution:** NR **Email:** halaofe@email.arizona.edu **Address:** NR **Declarations of interest:** none **Study or programme name and acronym:** Solar Market Garden (SMG) **Type of record:** journal article
Notes	
Risk of bias	

Alaofe 2019 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	PCS; no randomisation done
Allocation concealment (Selection bias)	High risk	Quasi-experimental design; allocation not concealed.
Baseline characteristics similar (Selection bias)	Low risk	Groups were different in many characteristics, but these were adjusted for in the analyses.
Baseline outcome measurements similar (Selection bias)	Low risk	Groups were different in outcomes at baseline, but these were adjusted for in the analyses.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding, but no major impact expected on outcome measurement as only some outcomes were subjective.
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether the field workers who collected the dietary intake data were blinded; however, dietary recall data were self-reported and thus at high risk for reporting bias. Local health workers conducted the anthropometric measurements; and, therefore, there was a risk of detection bias.
Protection against contamination (Performance bias)	Low risk	SMG systems were only installed in intervention villages, in conjunction with local women's agriculture groups. In their analysis, the study authors reported that there was little evidence of a 'spillover' effect of these systems to NWG HHs in intervention villages, as well as to WG and NWG HHs in control villages. Note: 19 SMG WG at baseline became SMG NWG at follow-up and 2 SMG NWG became SMG WG.
Incomplete outcome data (Attrition bias)	Unclear risk	High percentages of incompleteness of outcome data (e.g. BMI (37.9–38.8%); HDDS (16.1–26.7%); Hb (26.5–26.7%); iron intake (33.1–35.7%) and Vitamin A intake (33.1–34.9%). However, the study authors reported no significant differences in BMI, anaemia, iron deficiency or vitamin A insufficiency between women who dropped out compared to those who were not (data not shown). They do not report whether there were any differences in HDDS between those who dropped out and those who did not. There was some attrition from baseline to follow-up (4.3%) that was spread across villages, with no structural differences in terms of who was most likely to dropout.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available. All the important outcomes in the methods section were reported in the results section.
Other bias	High risk	Measurement bias: high risk. Although standardised scores were calculated, dietary data consisted of 2 recalls of 1 day each (at baseline and endline). Seasonality bias: low risk. Baseline and endline surveys conducted during the same season.

Andaleeb 2016

Study characteristics	
Methods	**Study design:** CBA **How were missing data handled?** NR (only available survey data used)

Andaleeb 2016 *(Continued)*

Randomisation ratio: N/A

Recruitment method: ration cards issued to individuals or families based on their poverty status, and purchased from the PDS. In Odisha state, the KBK region, comprising 8 districts, has universal PDS access; whereas it was a targeted programme in the 22 non-KBK districts.

Sample size justification and outcome used: no sample size calculation. National-level surveys carried out to be nationally representative of consumer expenditure; conducted by the National Sample Survey Organization.

Sampling method: purposive programme placement by government as the decision to make PDS a universal programme in the KBK region based upon its history of poor nutritional outcome. Hence, the selection of districts into the programme was not random. Sample was restricted to rural areas of Odisha since the PDS revival was more effective in rural areas. KBK region – with a universal PDS – was the treatment group while the rest of Odisha was the control group. Non-KBK districts within the same states were control group. For further robustness checks, samples restricted to the KBK districts and considered HHs without any ration card as the alternative control group, with all other HHs with a ration card (AAY/BPL/APL) as the treatment group.

Study aim or objective: to determine the role of consumer food subsidies in improving nutritional intake and diet quality by evaluating the expansion of the government food assistance programme coverage in the hunger prone state of Odisha in India.

Study period: about 8 years. 2004–2005 survey was baseline and the 2011–2012 survey was postintervention information

Unit of allocation or exposure: cluster: districts 8 KBK districts with universal PDS (treatment) vs 22 non-KBK districts (control). Alternative: within KBK districts: no ration card (control) vs any ration card (treatment)

Participants

Baseline characteristics

Intervention or exposure

- *Age*: HH head, years: 42.5
- *Place of residence*: 8 KBK districts in Odisha state
- *Sex*, %: female HH heads: 10
- *Ethnicity and language*: religion, %: Hinduism 100
- *Occupation*, %: employed in non-agriculture: 20; other: 50
- *Education*: HH heads with no education or incomplete primary schooling, %: 100
- *SES*: not regularly salaried, %: 90; estimated MPCE (INR): 294.95; type of ration card, %: Antayodaya Anna Yojana 2.71, BPL 48.94, APL 7.41, no card 40.95
- *Social capital*: scheduled caste, %: 20, other backward classes, %: 30
- *Nutritional status*: monthly rice consumption from PDS (kg (% share of total)): Antayodaya Anna Yojana 24.8 (47.6), BPL 14.1 (30.9), APL 6.4 (11.6), no card 2.1 (4.5). Intake of calories: 1801.4.3; protein (g): 41.7; fat (g): 15.7. Sources of calories: cereals (1416.9); non-cereals (384.5); pulses (46.3); egg, fish and meat (9.6); dairy products (25.3); vegetables and fruit (70.5); edible oil (70.1); other food (162.8)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: HH head, years: 42.3
- *Place of residence*: 22 non-KBK districts in Odisha state
- *Sex*, %: female HH heads: 10
- *Ethnicity and language*: religion, %: Hinduism 100
- *Occupation*, %: employed in non-agriculture: 20; other: 50
- *Education*: HH heads with no education or incomplete primary schooling, %: 100
- *SES*: not regularly salaried, %: 90; estimated MPCE (INR): 415.32; type of ration card, %: Antayodaya Anna Yojana 1.85, BPL 41.29, APL 25.42, no card 31.43

Andaleeb 2016 *(Continued)*

- *Social capital*: scheduled caste, %: 20, other backward classes, %: 30
- *Nutritional status*: monthly rice consumption from PDS (kg (% share of total)): Antayodaya Anna Yojana 26.4 (45.2), BPL 6.5 (9.6), APL 0.6 (0.9), no card 0.1 (0.2). Intake of calories: 2159.3; protein (g): 51.4; fat (g): 21.3; sources of calories: cereals (1649.4); non-cereals (509.8); pulses (66.5); egg, fish and meat (17.7); dairy products (40.3); vegetables and fruit (145.0); edible oil (101.4); other food (139.0)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: NR
- *Place of residence*: Odisha state
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: NR
- *SES*: % based on ration card: 1.99 (poorest of the poor), 42.57 (BPL), 22.41 (APL), 33.02 (not targeted as poor wealthiest?)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: HHs in the Odisha state of India. Treatment: HHs in 8 KBK districts in the state (alternative: HHs with ration card in KBK districts). Control: HHs in 22 non-KBK districts in the state (alternative: HHs without a ration card in KBK districts)

Exclusion criteria: NR

Pretreatment: outcome variables related to macronutrient and calorie sources were all higher for the control group. Poverty levels: We estimate that the MPCE stood at INR 294.95 in the KBK districts as compared to INR 415.32 in the rest of Odisha at 2004–2005 constant prices. Mean HH consumption of rice from PDS: 8.9 kg per month KBK districts, 3.3 non-KBK districts. Share of monthly rice consumption from PDS to total: 19% KBK, 5.2% non-KBK.

Attrition per relevant group: N/A as they are 2 repeated cross-sectional HH surveys.

Description of subgroups measured and reported: besides KBK vs non-KBK districts, there are also analyses done comparing ration card vs no ration card HHs in the KBK districts.

Total number completed and analysed per relevant group: at follow-up, 2973 HHs were surveyed and contributed outcome data to the total group. Numbers NR for intervention and control separately.

Total number enrolled per relevant group: at baseline, 3819 HHs were surveyed. Numbers NR for intervention and control separately.

Total number randomised per relevant group: N/A

Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: food prices • *Intervention type*: universal food subsidy • *Description*: universal access to PDS, providing grains at extremely low prices to all ration card holders; whether they were AAY, BPL or APL. All HHs were eligible to 25 kg of subsidised rice • *Duration of intervention period*: about 4 years: universal PDS in Odisha started in 2008 • *Frequency*: ongoing • *Number of study contacts*: 2; 2004–2005 survey was baseline while 2011–2012 survey was postintervention information.

Andaleeb 2016 *(Continued)*

- *Providers*: state government
- *Delivery*: to be able to access the PDS, HHs needed to possess a ration card (document issued by government that entitles an individual/family to purchase from the PDS). Ration cards are also used as an identity card to avail many of the other government schemes, since it classifies HHs based upon their poverty status. Ration cards were of 3 types: AAY card for the poorest of the poor, BPL for the poor and APL for those HHs who were not identified as poor.
- *Co-interventions*: ration cards availed many people to other government schemes, since it classifies HHs based upon their poverty status.
- *Resource requirements*: NR
- *Economic indicators*: NR

Control

- *Food access intervention category*: food prices
- *Intervention type*: targeted food subsidy
- *Description*: poorer HHs: 25 or 35 kg of subsidised rice?
- *Duration of intervention period*: 1947 to present
- *Frequency*: ongoing
- *Number of study contacts*: 2; 2004–2005 survey was baseline while 2011–2012 survey was postintervention information.
- *Providers*: state government
- *Delivery*: to be able to access the PDS, HHs needed to possess a ration card (document issued by government that entitles an individual/family to purchase from the PDS). Ration cards are also used as an identity card to avail many of the other government schemes, since it classifies HHs based upon their poverty status. Ration cards were of 3 types: AAY card for the poorest of the poor, BPL for the poor and APL for those HHs who were not identified as poor.
- *Co-interventions*: ration cards availed many people to other government schemes, since it classifies HHs based upon their poverty status.
- *Resource requirements*: NR
- *Economic indicators*: NR

Outcomes	Dietary diversity: contribution of different types of food to caloric intake, e.g. cereals; non-cereals; pulses; milk; eggs, fish and meat; vegetables and fruits; edible oils; other foods Dietary intake: intake of protein; intake of fat; ratio of nutrient intake to the RDA, multiplied by 100, e.g. caloric; protein; fat
Identification	**Sponsorship source:** System of Promoting Appropriate National Dynamism for Agriculture and Nutrition (SPANDAN) initiative; housed in IGIDR and supported by Bill & Melinda Gates Foundation. **Country:** India **Setting:** rural HHs in Odisha, India **Author's name:** Andaleeb Rahman **Email:** arahman@iihs.ac.in **Declarations of interest:** NR **Study or programme name and acronym:** Public Distribution System (PDS) **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

Andaleeb 2016 *(Continued)*

Random sequence generation (Selection bias)	High risk	CBA. KBK regions were by definition poorer than non-KBK regions.
Allocation concealment (Selection bias)	High risk	CBA. Intervention was given to the poorest regions of the Odisha state, and control to less-poor regions.
Baseline characteristics similar (Selection bias)	Low risk	Although the HHs in the treatment groups are not comparable based on the fact that the allocation of the districts in the programme is based on the poverty level, this has been taken into account in the analysis. Quote: "The present case is of purposive program placement by the government as the decision of make PDS a universal program in the KBK region was based upon its history of poor nutritional outcome. Hence, the selection of districts into the program (here, PDS) is not random. We do a slew of robustness check to ensure that we control for this later in the paper." "Results from the DID regressions are presented in Table 6. Estimates as reported in column (1) were arrived at by controlling for the district fixed effects but not for the HH characteristics. In the column (2), both district fixed effects and the HH characteristics were controlled for."
Baseline outcome measurements similar (Selection bias)	Low risk	Outcome variables related to macronutrient intake and sources of calories were all significantly higher in the control group: calories; protein; fat as well as calories from cereals; non-cereals; pulses; egg, fish and meat; dairy products; vegetables and fruits and edible oil all $P < 0.01$. However, PSM was performed to account for the non-random allocation of the intervention and control: there were no significant group differences for the covariates used to perform the PSM.
Blinding of participants and personnel (Performance bias)	Low risk	Participants were not blinded to allocation as their subsidy status was determined by their residential district; however, it is unlikely that they would have known that the national survey (from which the data were obtained) would be comparing their nutritional intake with participants receiving another intervention. Implementation of the project by local state government seems totally separate from implementation of the surveys by the respective organisation.
Blinding of outcome assessment (Detection bias)	High risk	It is NR whether outcomes were assessed blindly. Outcomes were assessed by self-reported measures.
Protection against contamination (Performance bias)	Low risk	As intervention and control treatments were government-assigned according to state district, it is unlikely that meaningful contamination could have occurred. Any small spillover effect at the border between the 2 areas would be diluted by the large sample sizes and geographical area. NR, but although it is controlled who could and could not buy the rice (ration card), it did not control who actually used it.
Incomplete outcome data (Attrition bias)	High risk	Very little information provided about attrition, but 3819 HHs were surveyed at baseline and 2973 at follow-up, indicating a 87.8% 'response rate'. According to the supplementary data sheet, difference-in-difference estimates were performed on 6722 observations; roughly the sum of available baseline and follow-up data. Therefore, it would appear that missing values were not adjusted for or imputed.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available and the paper did not follow the usual journal format with a designated Methods section. The aim of the study was to assess unspecified 'nutrient intake indicators' as well as a variety of food items in the diet, according to 6 groups. The latter have all been reported on.

Andaleeb 2016 *(Continued)*

Other bias	Low risk	Selection bias was overcome by correction for HH variables. Since we were testing for the significance of a large number of dependent variables, it might lead to higher probability of Type I errors leading to false rejection of the null hypothesis. To control for this bias, we used the summary indices approach of Clingingsmith et al. (2009) and Kling et al. (2004).

Andersen 2015

Study characteristics

Methods

Study design: PCS

How were missing data handled: authors excluded participants without complete covariate and anthropometric outcome data from the analysis.

Randomisation ratio: N/A

Recruitment method: Peruvian sample recruited from 20 sampling sites selected to reflect diversity in region, ethnicity and religion; however, authors did not report how recruitment was done.

Sample size justification and outcome used: NR

Sampling method: within the study sites, children within the eligible age category (6–18 months) were randomly sampled for participation.

Study aim or objective: to estimate the association of participation in Peru's Juntos CCT with anthropometry, language development and school achievement among children aged 7–8 years.

Study period: initial recruitment of 6- to 18-month-old children started in 2002 with interim follow-up data collected in 2006 (children aged 4–6 years) and final follow-up data collected in 2009 (children aged 7–8 years).

Unit of allocation or exposure: HHs

Participants

Baseline characteristics

Intervention or exposure group (n = 374)

- *Age*: mean, months: intervention > 2 years: all (n = 169): 11.3 (SD 3.57); female (n = 84): 11.6 (SD 3.70); male (n = 85): 11.0 (SD 3.43). Participated in intervention ≤ 2 years: all (n = 188): 11.8 (SD 3.54); female (n = 100): 12.0 (SD 3.39); male (n = 88): 11.7 (SD 3.73). Mean percentage of HH aged 0–5 years: intervention ≤ 2 years: total group 30.7 (SD 12.6) people, females 31.3 (SD 12.0), males 30.1 (SD 13.4); intervention > 2 years: total group 32.6 (SD 13.2), females 32.3 (SD 13.7), males 32.9 (SD 12.6). Mean percentage of HH aged 6–14 years: intervention ≤ 2 years: total group 20.2 (SD 18.0), females 19.6 (SD 17.8), males 21.0 (SD 18.4); intervention > 2 years: total group 18.9 (SD 17.3), females 17.2 (SD 16.9), males 20.6 (SD 17.6).
- *Place of residence*: HH in rural area: intervention ≤ 2 years: total group 145/188 (77.1%), females 81/100 (81.0%), males 64/88 (72.7%); intervention > 2 years: total group 150/169 (88.8%), females 74/84 (88.1%), males 76/85 (89.4%).
- *Sex*: females, n (%): intervention ≤ 2 years: 100/188 (53.2); intervention > 2 years: 84/169 (49.7)
- *Ethnicity and language*: carer's first language was indigenous, n (%) – participating in Juntos > 2 years – all: 152 (89.9); females: 82 (97.6); males: 70 (82.4). participating in Juntos ≤ 2 years: all: 130 (69.1); females: 66 (66.0); males: 64 (72.7)
- *Occupation*: NR
- *Education*: carer completed primary education, n (%): intervention ≤ 2 years: total group 73/188 (38.8), females 40/100 (40.0), males 33/88 (37.5); intervention > 2 years: total group 36/169 (21.3), females 16/84 (19.0), males 20/85 (23.5). TVIP, mean (SD): total group –0.72 (SD 0.96), females –0.82 (SD 0.97), males –0.62 (SD 0.94).

Andersen 2015 *(Continued)*

- *SES*: mean HH wealth index: intervention ≤ 2 years: total group 0.28 (SD 0.10), females 0.27 (SD 0.10), males 0.29 (SD 0.10); intervention > 2 years: total group 0.23 (SD 0.10), females 0.23 (SD 0.10), males 0.23 (SD 0.09). Mean number of HH members: intervention ≤ 2 years: total group 6.06 (SD 2.41), females 5.97 (SD 2.43), males 6.17 (SD 2.40); intervention > 2 years: total group 5.91 (SD 2.23), females 5.92 (SD 2.32), males 5.89 (SD 2.16).
- *Social capital*: NR
- *Nutritional status*: stunting (HAZ < –2SD), n (%) – participating in Juntos > 2 years: all 101 (SD 59.8); females 47 (SD 56.0); males 54 (SD 63.5). Participating in Juntos ≤ 2 years: all 91 (SD 48.4); females 36 (SD 36.0); males 55 (SD 62.5). Overweight (BMIZ > 1), n (%) – participating in Juntos > 2 years: all 65 (38.5); females 38 (45.2); males 27 (31.8). Participating in Juntos ≤ 2 years: all 65 (34.6); females 33 (33.0); males 32 (36.4)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control (n = 586)

- *Age*: mean, months: total: 11.6 (SD 3.50); females 11.6 (SD 3.50); males 11.6 (SD 3.52). Mean percentage of HH aged 0–5 years: total group 30.1 (SD 12.8), females 30.7 (SD 13.2), males 29.6 (SD 12.3). Mean percentage of HH aged 6–14 years: total group 15.9 (SD 16.4), females 15.2 (SD 16.1), males 16.6 (SD 16.7).
- *Place of residence*: HH in rural area: total group 156/557 (28.0%), females 81/274 (29.6%), males 75/283 (26.5%).
- *Sex,* n (%) of females: participated in Juntos > 2 years: 84/169 (49.7); participated in Juntos ≤ 2 years: 100/188 (53.2)
- *Ethnicity and language*: carer's first language was indigenous, n (%): all 180/557 (32.3); females 90/274 (32.8); males 90/283 (31.8)
- *Occupation*: NR
- *Education*: carer completed primary education, n (%): all (n = 557) 408 (73.2); female 202 (73.7); male 206 (72.8). TVIP mean score (SD): total 0.031 (0.98), females 0.0039 (1.0), males 0.058 (0.96)
- *SES*: HH wealth index, mean: all 0.44 (SD 0.17); females 0.43 (SD 0.17); males 0.45 (SD 0.17). Mean number of HH members: total group 5.66 (SD 2.20), females 5.70 (SD 2.22), males 5.63 (SD 2.18).
- *Social capital*: NR
- *Nutritional status*: stunting (HAZ –2SD), n (%): all 170 (30.5); females 78 (28.5); males 92 (32.5). Overweight (BMIZ > 1), n (%). all 247 (44.3); females 127 (46.4); males 120 (42.4)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: children from the Peruvian section of the Young Lives study (poorer districts); from mountain regions only; with full Juntos participation data; from the younger cohort (aged 6–18 months at recruitment) of the Young Lives study; full covariate and anthropometric data for the 3 rounds; having had round 2 receptive vocabulary assessments completed before recruitment (if any) into the intervention; full covariate data as well as language development and school achievement outcomes at final follow-up.

Exclusion criteria: none reported

Baseline differences: significant differences between intervention recipients and non-recipients for nearly all covariates at round 1, all of which indicated an increased level of vulnerability and poverty among intervention participants; e.g. more likely to live in rural areas, have a lower wealth index, have a carer who spoke an indigenous language, and have a carer who did not complete primary education.

Total number enrolled per relevant group: anthropometric: intervention > 2 years = 179 children; intervention ≤ 2 years = 195 children; controls = 586 children. Language development/school achievement: intervention = 272; controls = 586.

Total number randomised per relevant group: N/A

Andersen 2015 *(Continued)*

Total number completed and analysed per relevant group: anthropometric outcomes: intervention > 2 years: 188; girls 100; boys 88. Intervention ≤ 2 years: 169; girls 84; boys 85. Language development/school achievement: intervention = 243 children, control = 521 children.

Attrition per relevant group: intervention (anthropometric outcomes) = 17 children (7/195 exposed for ≤ 2 years and 10/179 exposed for > 2 years); control (anthropometric outcomes) = 29/586 children; intervention (language development/school achievement outcomes) = 29/272 children; control (language development/school achievement) = 65/586 children. No reasons for attrition provided.

Description of subgroups measured and reported: intervention group divided into 2 subgroups for anthropometric analysis: intervention for ≤ 2 years and Intervention for > 2 years. Both groups were compared with unexposed controls. Results presented for girls and boys.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: CCT programme
- *Description*: eligible HHs received cash transfer from government; beneficiary HHs received transfers of PEN 100 (USD 30) each month regardless of HH composition, representing, about 15% of beneficiary HH spending. Conditionalities: members of HHs with children aged 5 years or with a pregnant or lactating woman were required to attend regular healthcare visits. Children aged 6–14 years who had not completed primary school were required to attend school 85% of the days.
- *Duration of intervention period*: up to 5 years (from Juntos inception in 2005 to Young Lives round 3 follow-up in 2009), distinguished as ≤ 2 years and > 2 years
- *Frequency*: monthly CCT
- *Number of study contacts*: baseline (2002) with 2 follow-ups (2006 and 2009)
- *Providers*: government
- *Delivery*: NR
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: intervention cost ≥ PEN 100 per month per HH

Control: no intervention

Outcomes

Anthropometry: HAZ, stunting, BMI-for-age

Cognitive function and development: language (TVIP) score, grade attainment

Adverse event: overweight

Identification

Sponsorship source: Bill Melinda Gates Foundation (Global Health grant OPP10327313), the Eunice Kennedy Shriver National Institute of Child Health and Development (grant R01 HD070993) and Grand Challenges Canada (grant 0072-03 to the grantee, the Trustees of the University of Pennsylvania). The Young Lives Study was core funded by the UK Aid from the DfID and cofunded from 2010 to 2014 by the Netherlands Ministry of Foreign Affairs.

Country: Peru

Setting: poor HHs in poor districts

Authors' names: Christopher T Andersen; Lia CH Fernald

Email: chrisandersen@berkeley.edu; fernald@berkeley.edu

Type of record: journal article

Declarations of interest: no conflicts of interest.

Andersen 2015 *(Continued)*

	Study or programme name and acronym: Young Lives Study; Juntos conditional cash transfer programme
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Cohort study and no randomisation performed.
Allocation concealment (Selection bias)	High risk	Cohort study and no allocation concealment performed.
Baseline characteristics similar (Selection bias)	Low risk	Baseline characteristics balanced by PSM.
Baseline outcome measurements similar (Selection bias)	High risk	Serious baseline imbalances for overweight, stunting and TVIP score outcomes that were not adjusted for when matching controls to participants. Overweight participants were significantly lower ($P < 0.05$); and stunting was significantly higher ($P < 0.01$) for intervention participants. TVIP scores were significantly lower ($P < 0.01$) among intervention participants.
Blinding of participants and personnel (Performance bias)	Low risk	Cohort study and no blinding performed. However, this was unlikely to affect objective outcomes of weight and height.
Blinding of outcome assessment (Detection bias)	Low risk	Unclear whether study staff assessing outcomes were aware of Juntos exposure during the assessment procedure; however, outcomes were objective.
Protection against contamination (Performance bias)	Unclear risk	Unclear whether control participants may have benefited indirectly from Juntos through eligible HHs in their community (e.g. a control child taking meals at his/her friend's participating home).
Incomplete outcome data (Attrition bias)	Low risk	Although children without complete outcomes data were excluded from the analysis, similar proportions were excluded from the control group (n = 29, 4.9%) and from intervention groups (n = 10, 5.5% and n = 7, 3.6%), and outcomes were frequent enough that it was unlikely that the small numbers missing would greatly change the effect observed. In the Young Lives sample less than (quote) "3% of children were completely lost to follow-up between rounds 1 and 3. Those lost to follow up were more likely to have a caretaker who spoke an indigenous language, but they were similar across all other covariates and baseline outcomes."
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available. All a priori stated outcomes in the Methods section were reported in the Results section.
Other bias	Low risk	None identified.

Asadullah 2015

Study characteristics

Methods	**Study design:** PCS

Asadullah 2015 *(Continued)*

How were missing data handled? disaggregated attrition analysis was done to identify significant differential attrition and found none. No mention made of ITT analysis, but the footnote to Table A3 indicated the intervention sample as 2098 and control sample as 1940 HHs, which suggests that only HHs that completed the entire follow-up (2002–2011) were included in analysis as these numbers + total attrition numbers add up to 5626 participants.

Randomisation ratio: N/A

Recruitment method: NR

Sample size justification and outcome used: NR

Sampling method: panel data from 4-round surveys conducted in the Rangpur, Kurigram and Nilphamari districts in Bangladesh used. Participants recruited from extremely poor, with intervention participants recruited through a first-order community-based participatory wealth ranking to identify the lowest 10% of the population for income distribution. Authors did not report how recruitment for the panel data survey was done.

Study aim or objective: to determine long-term effects of phase 1 of the CFPR-TUP programme, predominantly a one-off transfer of livestock assets, in terms of changes in food expenditure, HH assets, food security and microfinance participation of very poor women in Bangladesh.

Study period: panel data obtained at baseline in 2002, interim follow-up in 2005 and 2008, and final follow-up in 2011.

Unit of allocation or exposure: HHs

Participants

Baseline characteristics

Intervention or exposure group (n = 2098)

- *Age*: HH head: years (mean): 43
- *Place of residence*: NR
- *Sex*: female headed HHs, %: 41.3
- *Ethnicity and language*: NR
- *Occupation*: primary occupation of working-aged males, %: day labour 66.7; non-farm self-employed 16.1. Primary occupation of working-aged females, %: day labour 24.2; servant 13.6; HH chores 48.7
- *Education*: years of education of HHs head 0.32; Rabbani et al: HH cumulative schooling 1.62; literacy rate, % 7.45; HHs with ≥ 1 literate member, % 20.97; net enrolment of children aged 6–10 67.16; net enrolment of children aged 11–16 35.52
- *SES*: per capita per annum income (mean): BDT 37.27; roof made of tin, %: 43.2; HH size (mean): 3.64 members; Rabbani et al 2006: mean HH size 3.62; % of HH loans intended for regular consumption 67.29
- *Social capital*: NR
- *Nutritional status*: food security, %: always deficit 60.10; somewhat deficit 37.27; surplus 0.05. Always face food deficit, %: 66.8. Per capita food expenditure per day (mean): BDT 60.1; Rabbani et al 2006: % of HHs where people could not eat for 1 day 62.10
- *Morbidities*: Rabbani et al 2006: % of people ill in the last 15 days: 15.21
- *Concomitant or previous care*: NR

Control group (n = 1940)

- *Age*: HH head: years (mean?) 43; Rabbani et al 2006: mean HH age 28.00
- *Place of residence*: NR
- *Sex*: female headed HHs, %: 22.4
- *Ethnicity and language*: NR
- *Occupation*: primary occupation of working-aged males, %: day labour 59.6; non-farm self-employed 22.8. Primary occupation of working-aged females, %: day labour 13.3; servant 8.0; HH chores 67.6

Asadullah 2015 *(Continued)*

- *Education*: years of education of HH head: 0.65: Rabbani et al: HH cumulative schooling: 2.20; literacy rate, %: 13.16; HHs with ≥ 1 literate member, %: 32.88; net enrolment of children aged 6–10 years: 71.66; net enrolment of children aged 11–16 years: 43.74
- *SES*: per capita per annum income (mean): BDT(?) 49.23; roof made of tin, %: 54.4; HH size (mean) 3.99 members; Rabbani et al 2006: mean HH size 3.86; % of HH loans intended for regular consumption 50.3
- *Social capital*: NR
- *Nutritional status*: food security, %: always deficit 41.91; somewhat deficit 49.23; surplus 1.34. Always face food deficit, %: 39.6. Per capita food expenditure per day (mean): BDT(?) 41.91; Rabbani et al 2006: % of HHs where people could not eat for 1 day 45.13
- *Morbidities*: Rabbani et al 2006: % of people ill in the last 15 days 14.17
- *Concomitant or previous care*: NR

Overall group (n = 5626): NR

Inclusion criteria: ultra-poor woman who met ≥ 3 of the following 5 criteria: 1. HH dependent upon female domestic/seasonal work, e.g. begging, maid; 2. own < 10 decimals of land; 3. no active male adult member in HH; 4. no productive assets in HH; and 5. children of school age have to take paid work.

Exclusion criteria: no women should have any of the 3 exclusion criteria: 1. no adult woman in the HH who is able to work; 2. participating in microfinance and 3. beneficiary of government/NGO development project.

Baseline imbalance: HHs in treatment and control groups differed significantly in many baseline characteristics. Intervention group had fewer cash savings, poorer HH conditions, faced more food deficit, had a smaller number of assets, was more likely to be female headed and had fewer years of education of HH head. Male members from intervention HHs were also less likely be in non-farm self-employment, and more likely to be day labourers. Female members of intervention HHs were more likely to be day labourers and servants, and less likely to stay home for HH chores.

Attrition per relevant group: 1588 (28.2%) HHs lost to attrition over the total survey period. 895/2993 (20%) were intervention HHs and 693/2633 (26%) were control HHs. Attrition over short-run (2002–2005) and medium-run (2002–2008) impact times were NR per group, but total attrition was 398 (7.1%) HHs in 2005 and 1067 (19.0%) HHs in 2008.

Description of subgroups measured and reported: none reported

Total number completed and analysed per relevant group: footnote to Table A3 indicates the intervention sample as 2098 and control sample as 1940 HHs. This suggests that only HHs that completed the entire follow-up (2002–2011) were included in analysis.

Total number enrolled per relevant group: intervention 2993; control 2633

Total number randomised per relevant group: N/A

Interventions

Intervention: poverty-reduction programme with direct one-off transfer of livestock and livelihood training

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation
- *Description*: multicomponent programme including orientation training on the programme, selection of chosen income-generation microenterprise by female participants, transfer of productive assets worth BDT 10,000 to support the selected enterprise 1 month after orientation (90% of HHs chose livestock combination, other vegetable growing or non-farm enterprises), community savings, monthly visit by health workers, weekly follow-up sessions for technical advice, building of social capital (through village support networks and sponsorship of community leaders) and weekly stipends (BDT 70). Second round of support provided in case of loss of assets due to unforeseen shocks. Direct services include child health, immunisation, diarrhoeal disease control, vitamin A supplements for children aged < 5 years, tuberculosis control, and family services and pregnancy care.
- *Duration of intervention period*: one-off asset transfer with follow-up training from 2002 to 2011
- *Frequency*: one-off transfer of productive assets; weekly follow-ups for technical advice; monthly visits from health workers

Asadullah 2015 *(Continued)*

- *Number of study contacts*: baseline (2002) with 3 follow-ups (2005, 2008 and 2011)
- *Providers*: NGO (BRAC)
- *Delivery*: NGO workers deliver training and assets. Training and weekly follow-up with each HH.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: cost of intervention: BDT 10,000 (approximately USD 119) per HH

Control: no intervention

Outcomes	Per capita food expenditure (per day) Food security: proportion experiencing food deficit always/somewhat of a food deficit/neither experiencing food deficit nor having surplus/with surplus food Dietary intake: per capita daily energy intake, with intake < 1805 kcal/day below what is required Anthropometry: HAZ; WHZ; BMI (women) Morbidity: HH members seriously ill
Identification	**Sponsorship source:** Research and Evaluation Division (RED) of BRAC **Country:** Bangladesh **Setting:** ultra-poor HHs in poor communities **Author's name:** M Niaz Asadullah **Email:** m.niaz@um.edy.my **Declarations of interest:** yes; no potential conflicts of interest. **Study or programme name and acronym:** Challenging the Frontiers of Poverty Reduction – Targeting the Ultra Poor (CFPR-TUP) **Type of record:** journal article **Trial registration:** N/A **Protocol availability:** yes
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA, therefore, no randomisation performed.
Allocation concealment (Selection bias)	High risk	CBA, therefore, no allocation concealment.
Baseline characteristics similar (Selection bias)	High risk	There were significant differences in characteristics between the groups at baseline.
Baseline outcome measurements similar (Selection bias)	High risk	Serious baseline imbalance for ownership of natural and physical assets (all P < 0.01 with the exception of number of goat/sheep owned: P < 0.05); food security (all P < 0.01); per capita food expenditure and income (both P < 0.01); and financial market participation (all P < 0.01 with the exception of size of outstanding lending: P < 0.10; NS).

Asadullah 2015 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	There was no blinding as this was a CBA but this is unlikely to have influenced the performance of the participants.
Blinding of outcome assessment (Detection bias)	High risk	There was no blinding. Outcomes were measured with surveys, based on self-reports from participants. So knowledge of treatment allocation, and perceived benefit or not from this, could have influenced their reporting.
Protection against contamination (Performance bias)	Unclear risk	Nothing reported regarding how contamination was prevented. It is also unclear who the control groups were so it is difficult to assess potential contamination.
Incomplete outcome data (Attrition bias)	High risk	Attrition was relatively high for the total follow-up period; with higher attrition in the intervention compared to the control group (31.4% with intervention vs 25.5% with control). Although reasons for attrition were unrelated to treatment, the characteristics of those who were LTFU and those who remained in the study differed significantly, and the characteristics of people who were LTFU in the intervention and control group were also different.
Selective outcome reporting (Reporting bias)	Unclear risk	We could access the protocol. In the report of Rabbani et al 2006, some outcomes that are NR in the article were listed such as schooling, purpose of cash borrowing, legal awareness, social inclusion and Eid spending. Note: minor differences in baseline values between Asadullah and Rabbani.
Other bias	Low risk	None identified.

Asfaw 2014

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled:** data from HHs that were LTFU were excluded from the analysis (Ward 2010). For the HH spending study, a further 45 HHs were excluded due to very large values for total adjusted expenditure as well as missing values (The Kenya CT-OVC team 2012). **Randomisation ratio:** 1:1 **Recruitment method:** NR **Sample size justification and outcome used:** NR **Sampling method:** within 7 districts, 4 locations (clusters) were selected randomly after excluding those with particularly low poverty rates or an inadequate capacity to supply the relevant health and education services, or large existing orphans and vulnerable children support programmes. List of eligible HHs was compiled in the intervention locations according to standard programme operation guidelines. In control districts, programme targeting was 'simulated' in order to identify a sample of HHs that were comparable to eligible HHs in intervention areas. **Study aim or objective:** 1. to determine if the Kenya CT-OVC led to an increase in investment in agricultural and non-agricultural productive assets and activities; increased food consumption obtained from own production; resulted in a shift in adult labour towards own agricultural and non-agricultural activities and away from casual labour; resulted in heterogeneous impact by gender; and reduced the time children spend at work. 2. to investigate whether the CT-OVC had changed the preferences of HHs in terms of their consumption behaviour. **Study period:** 4 years (March–August 2007 to May–July 2011)

Asfaw 2014 *(Continued)*

Unit of allocation or exposure: location within eligible district

Participants

Baseline characteristics

Overall (n = 1783)

- *Age*: head of HH (years): 55.97
- *Place of residence*: NR
- *Sex*: proportion female-headed HHs: 0.64
- *Ethnicity and language*: Swahili, Luo and Somali
- *Occupation*: salaried employment: 0.04; casual labour: 0.57; self-employed: 0.32
- *Education (years)*: HH head: 3.37; spouse: 1.25
- *SES*: HH size: 5.62; proportion of elderly headed HHs: 0.42; number of orphaned or vulnerable children in the HH: 2.47; total cultivable land: 1.95 hectares; proportion of livestock owners: 0.76; HH expenditure per capita per month (n = 1783): KES 1285.98
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: proportion of HHs where head of HH was ill: 0.02
- *Concomitant or previous care*: NR

Intervention or exposure group (n = 1265)

- *Age*: HH head (years): 58.53; number of HH members aged < 11 years: 1.97; number of HH members aged 12–17 years: 1.31
- *Place of residence*: proportion of communities far away from local market: 0.21
- *Sex*: proportion female-headed HHs: 0.65
- *Ethnicity and language*: Swahili, Luo and Somali
- *Occupation*: proportion of individuals unemployed 0.64, in wage labour 0.01, casual work 0.09, off farm work 0.03
- *Education (years)*: HH head: 2.99; spouse: 1.10
- *SES*: AE total expenditure: KES 1441.89; AE monthly housing expenditure: KES 34.51; share of total expenditure spent on housing: 0.025; HH size: 5.55; proportion of HHs with transfers as main income: 0.07; monthly HH consumption (per capita): KES 1298.09; total cultivable land: 1.70 hectares; proportion of livestock owners (n = 1265): 0.75
- *Social capital*: NR
- *Nutritional status*: AE monthly expenditure per food group (KES): cereals 266.23, tubers 53.06, meat fish 119.28, dairy 47.68, fruit vegetables 186.04, other food 167.42, eating out 9.32; HDDS 7-day: 5.225; proportion of children aged < 5 years who were: stunted 0.415, underweight 0.206, wasted 0.06. Proportion of HH expenditure (n = 1289): 0.630. Mean HH expenditure on food (KES) (n = 1289): 4045.7 per month; proportion of HH expenditure on food (n = 1289): 0.63; AE monthly food expenditure: 849.04
- *Morbidities*: proportion of HHs where head of HH was ill (n = 1265): 0.01; proportion of children aged < 5 years who had been ill with a fever/cough/diarrhoea in last month (n = 668): 0.609
- *Concomitant or previous care*: none reported

Control group (n = 518)

- *Age*: HH head (years): 49.73; number of HH members aged < 11 years: 2.20; number of HH members aged 12–17 years: 1.32
- *Place of residence*: proportion of communities far away from local market: 0.27
- *Sex*: proportion female-headed HHs: 0.60
- *Ethnicity and language*: Swahili, Luo and Somali
- *Occupation*: proportion of individuals in occupations: unemployed 0.62, wage labour 0.01, casual work 0.07, off farm work 0.04
- *Education (years)*: HH head: 4.3; spouse: 1.63
- *SES*: AE total expenditure: KES 1448.73; AE monthly housing expenditure: KES 36.51; share of total expenditure spent on housing: 0.023; HH size: 5.79; proportion of HHs with transfers as main income:

Asfaw 2014 *(Continued)*

0.05; monthly HH consumption (per capita): KES 1256.40; total cultivable land: 2.56 hectares; proportion of livestock owners (n = 518): 0.79

- *Social capital*: NR
- *Nutritional status*: AE monthly expenditure per food group (KES): cereals 260.99, tubers 39.30, meat fish 118.68, dairy 51.72, fruit vegetables 170.17, other food 166.68, eating out 10.35; HDDS 7-day: 5.697; proportion of children aged < 5 years who were: stunted 0.44, underweight 0.196, wasted 0.094. Proportion of HH expenditure (n = 539): 0.61. Mean HH expenditure on food (KES) (n = 539): 3941.4 per month; proportion of HHs expenditure on food (n = 539): 0.61. AE monthly food expenditure: KES 817.90.
- *Morbidities*: proportion of HHs where head of HH was ill (n = 518): 0.04; proportion of children aged < 5 years who had been ill with a fever/cough/diarrhoea in the last month (n = 335): 0.69
- *Concomitant or previous care*: proportion of children aged < 5 years who had been weighed by a health worker within the last 6 months (n = 264): 0.246

Inclusion criteria: ultra-poor HHs and contain an OVC (defined as a HH resident aged 0–17 years with ≥ 1 deceased parent, or who was chronically ill, or whose main carer is chronically ill) in selected locations within 4 districts (Nyanza, Nairobi, Garissa, Kwale)

Exclusion criteria: NR

Baseline imbalance: in Asfaw et al 2014: intervention HHs had significantly older HH heads, more female- and elderly-headed HHs, smaller HH size, lower education of HH head and spouse, fewer number of young and middle-aged HH members and ill HH heads, and more elderly HH members. Intervention HHs were also less likely to use unprotected water sources, have various HH assets, but more HHs in which agriculture was the main source of income and less in which salaried employment was the main source of income. Intervention communities had more access to a road to the village and less distance to the local market, but a lower share of HHs which could make telephone calls. Intervention individuals were significantly older and more likely to be disabled, unemployed or in casual work; and had lower levels of education. For the HH spending paper (Kenya CT-OVC 2012): intervention HHs expended significantly more of their monthly budget on tubers.

Attrition per relevant group: at 24 months (Asfaw 2014): intervention group: 231/1542 (15%); control group: 184/571 (24.4%). Attrition by district (intervention clusters vs control clusters) Garissa (11.6% vs 31.6%); Homabay (14% vs 21.1%); Kisumu (15% vs 25.3%); Kwale (13.2% vs 16.1%); Migori (16.3% vs 18.7%); Nairobi 16.9% vs 47.6%); Suba (10.9% vs 20.8%) (Ward 2010). Study authors reported that the loss of HHs was partly due to postelection violence. At 48 months (Asfaw 2014): intervention group: 262/1542 (16.9%); control group: 224/755 (29.7%). The HH spending paper reported only total attrition, i.e. 16.9% (387/2294). Further post-hoc exclusion of 45 HHs due to large values for total adjusted expenditure and missing values leads to a total 'attrition' of 18.8%.

Description of subgroups measured and reported: HH size 5 vs ≥ 5; female-headed vs male-headed HHs

Total number completed and analysed per relevant group: in the HH spending paper (Kenya CT-OVC 2012) 1907 HHs completed baseline and 2-year (2009) follow-up, but only 1862 HHs were analysed due to post-hoc exclusions. In the food consumption paper (Asfaw et al 2014), 1280 intervention and 531 control HHs completed baseline and 4-year (2011) follow-up, but only 1265 intervention and 518 control HHs were included.

Total number enrolled per relevant group: intervention group: 1542 HHs; control group: 755 HHs

Total number randomised per relevant group: 4 locations within each of 7 districts randomised to either the intervention or control group. Intervention group: 14 locations (clusters); control group: 14 locations (clusters)

Interventions	**Intervention:** UCT

- *Food access intervention category*: increase buying power
- *Description*: KES 1500 (about USD 21) per month, irrespective of HH size. HHs in some districts were expected to meet certain conditions, which were intended to ensure that children received proper care. HHs were penalised with deductions from the subsequent payment for infringements.

Asfaw 2014 *(Continued)*

- *Duration of intervention period*: 2007–2011
- *Frequency*: every 2 months (lump sum equalling 2 months' transfer amount)
- *Number of study contacts*: baseline (2007) and follow-up at 2009 (HH spending) or 2011 (food consumption)
- *Providers*: government of Kenya
- *Delivery*: payments made through post offices
- *Co-interventions*: NR
- *Resource requirements*: post office staff for the processing of transfers, and government as well as development partner staff for administrative and monitoring requirements.
- *Economic indicators*: in 3 financial years (2006–2009) the programme spent KES 776.7 million. Of this, KES 383.3 million was spent on HHs; with the balance spent on operational costs, but administrative costs are said to be declining proportionally each year. In 2010, the cost of supporting a single HH for a year was KES 36,978 (transfer included).

Control: no intervention

Outcomes	Proportion of HH expenditure on food: total monthly consumption expenditure (per AE); proportion of HH monthly consumption expenditure on food; total monthly food expenditure (cereals, tubers, meat/fish, dairy, fruit/vegetables, other food, food eaten out) Dietary diversity: DDS; proportion of HHs that consumed individual food groups (e.g. cereal, fruit, etc.) in the preceding 7 days Anthropometry: HAZ; WAZ; WHZ; stunting; underweight; wasting Morbidity: number of children with reported symptoms of upper respiratory illness
Identification	**Sponsorship source:** UK DfID; US National Institute of Mental Health; Eunice Kennedy Shriver National Institute of Child Health and Development **Country:** Kenya **Setting:** ultra-poor HHs in rural areas with high prevalence of HIV/AIDS **Authors' names:** Solomon Asfaw; Tia Palermo; Patrick Ward **Email:** solomon.asfaw@fao.org; tiampalermo@gmail.com; patrick.ward@opml.co.uk **Declarations of interest:** no **Study or programme name and acronym:** Kenya CT-OVC (Cash Transfer Programme for Orphans and Vulnerable Children) **Type of record:** journal articles, operational and impact evaluation report **Trial registration:** none reported **Protocol availability:** no
Notes	**Population:** AE: children aged < 15 years were considered as 0.75 of an adult; children aged ≥ 15 years were considered a full adult.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Authors mentioned random selection of intervention and control locations within 7 districts, but did not report how the random sequence was generated.
Allocation concealment (Selection bias)	Unclear risk	No information provided on how the locations within districts were randomised; or how this randomisation sequence was protected.

Asfaw 2014 *(Continued)*

Baseline characteristics similar (Selection bias)	Low risk	Baseline differences reported between groups. The heads of treatment HHs were older (P ≤ 0.01), more likely to be male (P < 0.05) and to have less education (P < 0.01) than those in control HHs. Intervention HHs also had significantly fewer assets (99% CI). The proportion of control HHs that had agriculture as the main source of income was significantly lower (90% CI). The 24-month analyses adjusted for baseline HH demographic composition (Kenya CT-OVC team 2012), whereas the analysis after 4 years used estimated propensity scores to account for these baseline differences (Asfaw 2014).
Baseline outcome measurements similar (Selection bias)	Low risk	No baseline non-equivalence was detected for the HH spending (Kenya CT-OVC 2012) paper; with the exception of proportion AE monthly expenditure for tubers which was significantly higher in the intervention group (P = 0.005). Outcomes such as HH expenditure on food and proportion of children with underweight or stunting, or both (< –2SD z-scores) were similar between the groups. There was no baseline non-equivalence for the HH spending paper; with the exception of proportion AE monthly expenditure for tubers, which was significantly higher in the intervention group (P = 0.005). All outcomes for the food consumption paper were NR for the baseline survey.
Blinding of participants and personnel (Performance bias)	Low risk	Given the way in which the intervention was rolled out, it is not possible for participants to be blinded. However, it is unlikely that lack of blinding influenced behaviour of participants and personnel beyond that expected by the intervention.
Blinding of outcome assessment (Detection bias)	High risk	There was no blinding. As outcomes were predominantly self-reported it is likely that the lack of participant blinding would have affected the measurement of outcomes.
Protection against contamination (Performance bias)	High risk	Quote: "Taylor et al. (2012) simulated the local economy impact and revealed a minimal inflationary impact and real production value added multipliers of Ksh1.58 [KES] per shilling transferred, which suggests that the programme may have led to spillovers."
Incomplete outcome data (Attrition bias)	High risk	High attrition and no ITT analysis performed. Differential attrition between the 2 groups.
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A.
Other bias	High risk	Misclassification bias: high risk due to self-report of CCT receipt by HHs. Measurement bias: unlikely. Incorrect analysis: unlikely. Recruitment bias: high risk. Clusters were assigned before recruitment of HHs; which may have lead to a bias in participation, especially for control HHs. Other bias: the introduction of punitive conditionalities in some intervention clusters, but not others, may have lead to bias in attrition or bias in outcome measurement.

Baird 2013

Study characteristics	
Methods	**Study design:** cRCT **How were missing data handled:** for the analysis of the postintervention follow-up data, the study authors stated: "We conducted all analysis among those who were successfully interviewed in Round 4, which maximises sample size for the estimation of longer-term impacts." **Randomisation ratio:** 1:1

Baird 2013 *(Continued)*

Recruitment method: after the random selection of EAs and individuals into the treatment group, the local NGO implemented the cash transfers held meetings in each treatment EA between December 2007 and January 2008 to invite the selected individuals into the programme. At these meetings, the programme beneficiary and her parents/guardians were offered the monthly transfer amounts. This consisted of a transfer to the parents, a transfer directly to the girl and payment of school fees for girls attending secondary school. Transfer amounts to parents were varied randomly across EAs at USD 4, USD 6, USD 8 and USD 10 per month, so that each parent within an EA received the same offer. Within each EA, there was a lottery to determine the transfer amount to the programme beneficiaries, which was USD 1, USD 2, USD 3, USD 4 or USD 5 per month. The lottery was held publicly to ensure that the process was transparent. Secondary school fees were paid in full directly to schools.

Sample size justification and outcome used: NR

Sampling method: stratified random sampling. Zomba district contains 550 EAs (Zomba city 50; rural traditional authorities 500). 176 EAs were selected from 3 different geographical strata: urban (Zomba city, 29 EAs), near rural (16 km from Zomba city, 119 EAs) and far rural (≥ 16 km from Zomba city, 28 EAs). Of the 50 EAs in Zomba city, 21 were excluded on the basis of advice from local experts who deemed these areas too affluent for the proposed intervention. In each of the 2 rural strata, with the exception of 1 TA that was unsafe for field work, the study EAs were randomly selected. In the 176 sampled EAs, each dwelling was visited to take a census of all never-married girls aged 13–22 years (sample frame). Girls were grouped according to those enrolled in school at baseline (baseline schoolgirls), or those not enrolled in school at baseline (baseline dropouts). In the cohort of baseline schoolgirls, a subset of eligible girls was randomly selected for the study. The sampling percentages for this cohort differed by geographical stratum and age group and was 14–45% in urban areas and 70–100% in rural areas. All the girls who were not enrolled in school at baseline (baseline dropouts) were sampled to participate in the study This sampling procedure yielded a baseline study sample of 4051 girls of whom 3796 (94%) were enrolled and completed a baseline interview at the end of 2007. Of these, 889 were baseline dropouts and 2907 were baseline schoolgirls.

Study aim or objective: to examine whether a cash transfer programme targeted at adolescent girls in Malawi helped empower its recipients in the short-run, i.e. during and immediately after the 2-year intervention.

Study period: 2007–2012

Unit of allocation or exposure: females aged 13–22 years

Participants

Baseline characteristics

Overall group (n = 2706): NR

Intervention or exposure group (n = 1211)

- *Age (years)*: baseline school girls, means: CCT group 14.9 (SD 1.8); UCT group 15.4 (SD 1.9); girls not attending school at baseline: 16.8 (SD 2.4)
- *Place of residence*: urban HH, means: baseline school girls: CCT group 0.478 (SD 0.5); UCT group 0.418 (SD 0.494); girls not attending school at baseline: 0.129 (SD 0.335)
- *Sex*: female-headed HH: baseline school girls, n (%): CCT group 63 (26); UCT group 78 (24); girls not attending school at baseline, n (%): 90 (39)
- *Ethnicity and language*: NR
- *Occupation*: N/A
- *Education*: highest grade attended: baseline school girls, means: CCT group 7.1 (SD 1.7); UCT group 7.9 (SD 1.6); girls not attending school at baseline, means: 5.8 (SD 2.9)
- *SES*: HH size: baseline school girls, means: CCT group 6.341 (SD 2.1); UCT group 6.7 (SD 2.1); Girls not attending school at baseline, means: 6.1 (SD 2.6); electricity in dwelling: baseline school girls, n (%): CCT group 31 (28); UCT group 49 (24); girls not attending school at baseline, n (%): 24 (11); piped water in dwelling: baseline school girls, n (%): CCT group 48 (41); UCT group 135 (60); Girls not attending school at baseline, n (%): 63 (25)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR

Baird 2013 *(Continued)*

- *Concomitant or previous care*: NR

Control group (n = 1495)

- *Age*: years: Baseline school girls, means: 15.3 (SD 1.9); girls not attending school at baseline: 17.6 (SD 2.2)
- *Place of residence*: urban HH, means: Baseline school girls: 0.35 (SD 0.48); girls not attending school at baseline: 0.18 (SD 0.39)
- *Sex*: female-headed HH: baseline school girls, n (%): 275 (32); girls not attending school at baseline, n (%): 93 (42)
- *Ethnicity and language*: NR
- *Occupation*: N/A
- *Education*: highest grade attended: baseline school girls, means: 7.6 (SD 1.6); girls not attending school at baseline, means: 6.2 (SD 2.9)
- *SES*: HH size: baseline school girls, means: 6.375 (SD 2.262); girls not attending school at baseline, means: 6.12 (SD 2.388); electricity in dwelling: baseline school girls, n (%): 86 (20); girls not attending school at baseline, n (%): 16 (7); piped water in dwelling: Baseline school girls, n (%): 277 (47); girls not attending school at baseline, n (%): 64 (29)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: never-married girls aged 13–22 years enrolled in school at baseline (baseline schoolgirls), and those not enrolled in school at baseline (baseline dropouts) in selected 176 EAs.

Exclusion criteria: NR

Baseline imbalance: in the girls who attended school at baseline, those in the CCT group were younger than those in the UCT group, and, therefore, also a lower grade attained.

Attrition per relevant group: reported at postintervention follow-up (2 years after intervention): baseline school girls: control group: 10.7%; intervention group: NR. Baseline dropouts: control group: 15.7%; intervention group: NR. Reported at second postintervention follow-up (4 years after intervention): Baseline school girls: control group: 12.5%; intervention group: NR. Baseline dropouts: control group: 15.7%; intervention group: NR

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: NR

Total number enrolled per relevant group: baseline school girls: CCT intervention group: 685 girls from 27 intervention EAs; UCT intervention group: 526 girls from 46 intervention EAs. Control group: 1495 girls from 88 control EAs. Baseline dropouts: CCT intervention group: 436 girls from 88 intervention EAs. Control group: 453 girls from 88 control EAs

Total number randomised per relevant group: intervention group: 88 EAs; control group: 88 EAs

Interventions	**Intervention:** CCT and UCT • *Food access intervention category*: increase buying power • *Description*: *CCT group*: payment received if girl attended school for 80% of days that school was in session during previous month. *UCT group:* payment received if girl attended cash transfer points. Cash transfers were split between guardian and girl. HH amount varied randomly (using computer-generated random numbers) by EA, with monthly values of USD 4, USD 6, USD 8 or USD 10. Girl amount varied randomly, with monthly values of USD 1, USD 2, USD 3, USD 4 or USD 5, decided by drawing numbers from an envelope. The transfer amounts offered to the parents were randomised at the village level, and those offered to the girls were randomised at the individual level. • *Duration of intervention period*: January 2008–December 2009 (coincided with 2008 and 2009 school years) • *Frequency*: monthly cash transfers

Baird 2013 *(Continued)*

- *Number of study contacts*: October 2007–January 2008 (baseline); October 2008–February 2009 (follow-up during intervention period); February–June 2010 (postintervention follow-up) and 2012 (postintervention follow-up)
- *Providers*: 2 NGOs
- *Delivery*: local distribution points
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: NR

Control: no intervention

Outcomes	Dietary diversity: number of times respondents ate protein-rich food in past 7 days Cognitive function and development: cognitive test scores (Raven's Coloured Progressive Matrices) Anxiety and depression: psychological distress (GHQ-12 score)
Identification	**Sponsorship source:** Global Development Network, the Bill and Melinda Gates Foundation, NBER Africa Project, World Bank Research Support Budget Grant, 3ie Open Window (Round 2) as well as several trust funds at the World Bank: Knowledge for Change Trust Fund (TF090932), World Development Report 2007 Small Grants Fund (TF055926), Spanish Impact Evaluation Fund (TF092384) and Gender Action Plan Trust Fund (TF092029). **Country:** Malawi **Setting:** urban and rural HHs, Zomba district **Author's name:** Sarah J Baird **Email:** sbaird@gwu.edu; bozler@worldbank.org; ctmcintosh@ucsd.edu **Declarations of interest:** yes; no conflicts of interest **Study or programme name and acronym:** Schooling, Income, and Health Risks study (SIHR) **Type of record:** journal article, policy research working paper **Trial registration:** none reported **Protocol availability:** no
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Clusters (EAs) randomly assigned to intervention or control groups with computer-generated random numbers. Within intervention group, EAs were randomly assigned to 1 of 2 intervention groups (UCT or CCT groups). Girls in the intervention EAs were allocated to different cash transfers by drawing numbers from an envelope.
Allocation concealment (Selection bias)	Low risk	Allocation by EAs at start of study. Codes for randomisation of the EA into trial groups, and for random assignment of different cash transfer amounts, were written by 1 of the study investigators. The programme field manager then studied staff with EA identification numbers and individuals selected.
Baseline characteristics similar (Selection bias)	Low risk	For baseline school girls, those in CCT group were younger than those in UCT group, and, therefore, also attained a lower grade. The study authors controlled for this difference in their analysis of programme impacts.

Baird 2013 *(Continued)*

Baseline outcome measurements similar (Selection bias)	Unclear risk	Relevant baseline outcome measurements, e.g. food consumption not presented by study authors.
Blinding of participants and personnel (Performance bias)	Low risk	Quote: "study participants were not masked to their assignment, but did not know what the comparison groups were because they were assigned at the enumeration area level."
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether the outcome assessors were blinded but outcomes were self-reported and likely to be influenced by lack of blinding.
Protection against contamination (Performance bias)	Low risk	To reduce the possibility of crossover from intervention group to control group, participants were assigned to trial groups on basis of random assignment of EAs that they lived in.
Incomplete outcome data (Attrition bias)	Low risk	Loss of clusters: low risk. Study authors stated that none of the EAs had complete LTFU. Attrition rates at second postintervention follow-up were reported as 15.7% in control group of baseline dropouts. Study authors reported that girls in this group who received CCT and who were from urban areas, were more likely to be LTFU. In baseline school girls, attrition was 12.5%, with no differences in baseline characteristics of those who remained in the study, compared to those LTFU.
Selective outcome reporting (Reporting bias)	Low risk	Outcomes reported were in line with those prespecified in the trial registry preanalysis plan.
Other bias	Low risk	*Misclassification bias*: unclear. *Recruitment bias* (cRCT): low risk. A baseline survey was conducted among all eligible participants in all the EA before randomisation of EA. *Measurement bias*: low risk. Outcomes reported at baseline and follow-up included the number of times the respondent ate protein-rich food in the 7 days prior. Incorrect analysis: unlikely. *Seasonality bias*: unclear risk. Low risk of seasonality bias for follow-up during the intervention period; however, it was unclear whether the study authors adjusted for seasonality in the postintervention follow-up analysis.

Beegle 2017

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** NR **Randomisation ratio:** 1:1:1:1:1 (according to table 1) **Recruitment method:** village headmen together with the village committees select HHs to participate. Specific recruitment methods NR **Sample size justification and outcome used:** NR **Sampling method:** sampling for the trial: of 28 districts with the PWP programme, 12 districts randomly sampled, stratified by geographic region. Of these 12 districts, 182 villages (EAs) that had been sampled for the national survey in 2010–2011 AND preselected for PWP were selected. These were then randomised to the treatment groups. Villages in the sampling frame were randomly assigned to 1 of 5 groups. Group 0 was control group of villages that were not included in PWP programme in 2012–2013 Season. Groups 1–4 participated in the PWP in the planting season (cycle 1 of PWP). These 4 groups var-

Beegle 2017 *(Continued)*

	ied in terms of timing of the second cycle of programme and the schedule of payments in both cycles. At HH level: they choose 10 HHs from the 16 survey HHs in the village to be offered the programme. Sampling for MSFA programme covered all districts of Malawi through a 2-stage targeting approach. In the first stage, there was pro-poor geographic targeting and in the second there was a combination of community-based targeting and self-selection of beneficiaries. The amount of funds given to a district was proportional to the district's population and to the poverty rates as well as other measures of vulnerability. District officials then targeted a subset of EPAs based on poverty and vulnerability criteria. Traditional authorities in the EPAs then allocated funds to a subset of selected GVH who each oversaw 3–10 villages. The GVH determined how many HHs participated in each village based on available funding; the GVH then worked with the village committees in each village to select participating HHs. **Study aim or objective:** to determine the impact of these programmes by estimating the effect of Malawi's large-scale PWP, which operates under the MSAF to improve food security and increase the use of fertiliser and other agricultural inputs. The MASAF PWP has been operational since mid-1990s and aimed to provide short-term labour-intensive activities to poor, able-bodied HHs for the purpose of enhancing their food security, mainly through increased access to farm inputs during the planting period. Programme was designed to be interlinked with Malawi's large-scale FISP through the implementation of the PWP in the planting months of the main agricultural season when the FISP distribution also occurs. The premise behind this is that the PWP facilitates poor, credit-constrained HHs to access subsidised fertiliser. **Study period:** baseline: 2010–2011 (based on data collected during the national integrated HH survey. Endline: November 2013. Data come from 5 rounds of panel HH survey data. **Unit of allocation or exposure:** villages allocated to control or intervention. Within villages, HHs were randomly selected.
Participants	**Baseline characteristics** Intervention or exposure: NR Control: NR Overall: NR **Inclusion criteria:** project: poor, able-bodies HHs. **Exclusion criteria:** NR **Pretreatment:** 2 analysis carried out: for 23 villages included in sample but that had not been included in the national HH survey; and for 159 villages included that had been part of the national HH survey. For the former, analyses are based on round 1 of data collection, when interventions had not started in all but 3 villages but knowledge of PWP implementation existed and could have influenced behaviour. For the latter, they explored the balance between treatment and control villages in terms of pretreatment covariates and outcomes, they used the IHS3 data from 2010–2011. Using the first round of follow-up data, they found that HHs in the non-IHS3 sample were better off than the IHS3 sample, with better educated HH heads, smaller HH sizes and fewer children aged < 14. However, there was imbalance in preprogramme food security at both the village and HH levels in the 159 villages for which IHS3 data were available. The IHS sample was well balanced for a range of non food-security outcomes. **Attrition per relevant group:** NR **Description of subgroups measured and reported:** effects by geographic region **Total number completed and analysed per relevant group:** NR: only total number of observations reported. **Total number enrolled per relevant group:** 10 HHs in each village offered the programme **Total number randomised per relevant group:** group 0 (control): 38 communities; group 1 (cycle 1: planting season, cycle 2: harvest season; lump sum): 40 communities; group 2 (cycle 1: planting season, cycle 2: harvest season; split payment): 34 communities; group 3 (cycle 1: planting season, cycle 2: lean

Beegle 2017 *(Continued)*

season; lump sum): 35 communities; group 4 (cycle 1: planting season, cycle 2: lean season; split payment): 35 communities.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: income generation
- *Intervention type*: PWP
- *Description*: MASAF PWP has been operational since mid-1990s and aims to provide short-term labour-intensive activities to poor, able-bodied HHs for the purpose of enhancing their food security, mainly through increased access to farm inputs during planting period. Programme was designed to be interlinked with Malawi's FISP through implementation of PWP in planting months of the main agricultural season when the FISP distribution also occurs. The premise was that the PWP facilitates poor, credit-constrained HHs to access subsidised fertiliser. Projects were mostly road rehabilitation or construction, with some forestation and irrigation projects. Wage rate was MWK 300/day (USD 0.92/day) for a total payment of MWK 3600 for a 12-day wave. Cycle 1 of PWP was implemented during planting season (October–December) to align with the timing of the distribution of FISP. Cycle 2 of PWP was designed to take place after harvest in June and July.
- *Duration of intervention period*: November–December 2012 to November 2013 (1 year)
- *Frequency*: group 1: 4 payments in total (2 in cycle 1, 2 in cycle 2). Group 3: similar to group 1 only timing was different. Group 2 and 4: each payment in cycle 2 was split into 5 payments (so 12 payments in total). In 2012, as a response to a large currency devaluation, the programme was doubled in size and scaled up to cover about 500,000 HHs per year. Duration of project participation increased from 12 days to 48 days, split into 2 cycles of 24 days each; the cycles were further divided into 2 consecutive 12-day waves, and payments were generally made within 1 or 2 weeks of the end of each wave."
- *Number of study contacts*: data came from 5 rounds of panel HH survey data. Basis for panel was the IHS3 fielded in 2010–2011 by Malawi's National Statistics Office. The 16 IHS3 HHs were interviewed in 4 additional rounds: before the public works projects started during planting season (November 2012) after the first cycle, preharvest (February 2013), after the lean season cycle, postharvest (April–May 2013) and finally after the completion of the 2012–2013 season (November 2013).
- *Providers*: MASAF PWP is a government programme but the study was implemented by research team. Payments in the study districts were facilitated by the research team for the purposes of the evaluation. This was intended to ensure that payments were made without delay, on specific schedules. Administrative payment records confirmed that there were no differences in time lag between work and payment across the districts.
- *Delivery*: groups 1–4 participated in the PWP in the planting season (cycle 1 of PWP). These 4 groups varied in terms of timing of the second cycle of the programme and the schedule of payments in both cycles. However, the analysis grouped all these intervention groups into 1 to assess overall effect of having a PWP programme in place. Payments in the study districts were facilitated by the research team for the evaluation. This was intended to ensure that payments were made without delay, on specific schedules. Administrative payment records confirmed that there were no differences in time lag between work and payment across the districts. In addition to the HH survey data, in terms of monitoring the intervention, administrative records included the dates and amounts of payments and the identities of recipients. These were used to confirm that beneficiaries received payments in accordance with the days they worked. Payments in the study districts were facilitated by the research team for the purposes of the evaluation, with physical delivery of the cash in conjunction with the district officials. The split-payment variant slightly increased the cost of implementation. Epayments, which would entail a small marginal cost of delivery, were under consideration for future rounds of PWP.
- *Co-interventions*: in 3 study districts, fertiliser subsidy coupon distribution took place between the first and second 12-day waves of PWP activities, and, in the remaining 9 districts, fertiliser coupon distribution overlapped with PWP work and payment. The national fertiliser subsidy programme provided about half of HHs in the country with coupons that allowed 2 bags of fertiliser to be purchased for MWK 500 each. However, fertiliser coupons were more likely to be available to treated HHs in accordance with the designed linkage between PWP and the national fertiliser subsidy scheme.
- *Resource requirements*: NR
- *Economic indicators*: wage rate was MWK 300/day (USD 0.92/day) for a total payment of MWK 3600 for a 12-day wave. The split-payment variant slightly increased the cost of implementation.

Beegle 2017 *(Continued)*

	Control: no intervention
Outcomes	Food security: Food Security Score; Resilience Index; Principal Components Analysis Index Dietary diversity: FCS; number of food groups consumed in the last week for 7 main groups Dietary intake: log per capita food consumption for the last week; per AE calories of the food consumed
Identification	**Sponsorship source:** World Bank Research Committee, Knowledge for Change programme and GLM-LIC (grant number C2-RA2-211). **Country:** Malawi **Setting:** poor and able-bodied HHs in 3 regions of Malawi **Author's name:** Kathleen Beegle **Email:** kbeegle@worldbank.org (K Beegle); egalasso@worldbank.org (E Galasso); goldberg@econ.umd.edu (J Goldberg). **Declarations of interest:** NR **Study or programme name and acronym:** MASAF PWP (Malawi Social Action Fund's Public Works Programme) **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Quote: "Villages were randomly assigned (by computer) to one of the four treatment groups or a control condition; households within treatment villages were randomly selected to be offered the program."
Allocation concealment (Selection bias)	Low risk	Allocation to treatment group was done at village level. Quote: "Villages were randomly assigned (by computer) to one of the four treatment groups or a control condition; households within treatment villages were randomly selected to be offered the program."
Baseline characteristics similar (Selection bias)	High risk	Allocation to treatment group was done at village level. Quote: "Villages were randomly assigned (by computer) to one of the four treatment groups or a control condition; households within treatment villages were randomly selected to be offered the program."
Baseline outcome measurements similar (Selection bias)	High risk	Even though randomisation was conducted by computer, there was imbalance in preprogramme food security at both the village and HH levels in the 159 villages for which IHS3 data were available. Unclear how well these were adjusted for in the analyses.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding was not possible for this type of intervention; however, it was unlikely that lack of blinding would have influenced the delivery of the intended intervention.
Blinding of outcome assessment (Detection bias)	High risk	Outcome assessment was not blinded. Data were based on HH surveys, therefore, self-reported data. Knowledge of intervention allocation could have biased responses.

Beegle 2017 *(Continued)*

Protection against contamination (Performance bias)	Low risk	Authors only reported contamination in relation to untreated HHs in villages selected to receive the PWP intervention. Allocation was by village and it was unlikely that the control group received the intervention.
Incomplete outcome data (Attrition bias)	Unclear risk	Number of villages were reported but not number of HHs and individuals assessed at the start and endline. It was unclear if there was any attrition or not.
Selective outcome reporting (Reporting bias)	Unclear risk	2 outcome measures were omitted due to space constraints. A composite measure was compiled and included.
Other bias	Unclear risk	Misclassification bias of exposure: low risk. Treated and control assigned externally. Measurement bias: unclear risk. Authors did not report which tools were used to collect data, who did it and whether they were validated. They only reported and defined the food security outcomes assessed. Incorrect analysis: low risk. Analyses adjusted for clustering. Recruitment bias: low risk. HHs in allocated villages were randomly selected to participate.

Breisinger 2018

Study characteristics

Methods

Study design: controlled trial (using regression discontinuity for allocation)

How were missing data handled? It is assumed that missing data were excluded. The intended sample for the Takaful and Karama analysis components consisted of 7996 HHs. Of these, 1144 HHs could not be located based on the address data in the registration form. An additional 261 HHs were visited but no HH members could be located, and 70 HHs were not surveyed due to other reasons including declining to participate in the survey, no capable respondent being identified, being part of another HH already in the sample or the registrant having died. Considering only HHs for which there was no error in the location information, the overall response rate was 95.2%.

Randomisation ratio: N/A

Recruitment method: see sampling methodology. Sampled HHs were visited by an interviewer.

Sample size justification and outcome used: outcome used NR. Justification: based on power calculations that the evaluation team conducted to determine the sample size required for the TKP impact evaluation, the study required 8016 HHs spread across 501 clusters (villages), with 16 HHs per cluster. Authors purposefully selected more than the 16 HHs per cluster knowing that there was a risk of being unable to locate all the HHs in the registrant sample.

Sampling method: targeting for programme: to avoid inefficient targeting, the programme combined geographical targeting with a PMT mechanism. With respect to the geographical targeting, the programme was first launched in the poorest districts within the poorest governorates in Egypt. The PMT was used to identify the poor within the selected districts, based on selection criteria and a set cutoff score, based on the poverty line derived from Egypt's HH Income, Expenditure and Consumption Survey for 2012–2013. In addition to the PMT, both Takaful and Karama have other categorical selection criteria; Takaful requires that beneficiaries have children and Karama requires that beneficiaries be elderly or disabled (or both), or (added later) orphaned. PMT formula varies by region but the threshold is the same across all regions. Over time, since the programme started and across the 4 enrolment waves, the threshold has been changed. Sampling for the impact evaluation survey: "The sampling strategy for the TKP Impact evaluation was designed to provide a representative sample of Takaful and Karama HHs with Proxy Means Test scores near the thresholds for an RD [regression discontinuity] approach to impact analysis. Stratification for the sample selection was based primarily on region. For the Upper Rural region of Egypt, they stratified by governorate (9 governorates in Upper Rural). As such, they defined 14 strata: 5 for each region excluding Upper Rural and 9 strata for Upper Rural. They sampled VCs within the 14 region-governorate strata using simple random sampling, where the number of clusters per stratum was proportional to the share of registrants in each stratum, and restricted selection

Breisinger 2018 *(Continued)*

to clusters in which there was a sufficient number of registrants near the threshold. The clusters were defined as Takaful-only clusters (325) or mixed Takaful and Karama clusters (75). Within each village, 20 HHs were randomly selected for inclusion in the survey if they were within 600 points of the current Takaful threshold score of 4500 or 200 points of the Karama threshold of 7203. On average, they selected 10 eligible and 10 ineligible HHs, and for Takaful HHs, they weighted the probability of selection such that HHs within 200 points of the current threshold of 4500 were 2.5 times more likely, and HHs within 200–400 points of the cutoff were 1.5 times more likely to be selected than those that were 400–600 points from the cutoff. They selected more HHs than the 16 HHs per cluster that the power calculations suggested would be necessary, knowing that there was a risk of not being able to locate all the HHs in the registrant sample.

Study aim or objective: objective of programme: Takaful and Karama is a conditional 5 cash transfer programme that seeks to provide income support to poor families with children (under 18 years of age), poor elderly (aged ≥ 65 years) and people with severe disability. Objective of impact evaluation: to provide rigorous evidence on the impacts of the programme on HH consumption, poverty and other measures of well-being including child education, health and food security, and the prevalence of overweight and obesity in adult women.

Study period: approximately 28 months. Programme start: March 2015; impact evaluation survey: 15 July to 30 August 2017. Takaful beneficiaries were in programme for about 11 months on average.

Unit of allocation or exposure: HHs

Participants

Baseline characteristics

Intervention or exposure: NR

Control: NR

Overall: NR

Inclusion criteria: 1. Eligible governorates: those where the share of Takaful-eligible HHs (HH eligibility defined as having a PMT score ≤ 4500) in the governorate was ≥ 0.5%. Therefore, governorates that had a very small share of eligible HHs in TKP were excluded, in part to help manage survey costs. The only exception was governorates in the Frontier region, where the share of eligible HHs was < 0.5%. These governorates were kept so that the Frontier region, which may have had different sources of poverty and food insecurity, was represented in the evaluation sample. 2. Eligible VCs for Takaful: those that had ≥ 7 Takaful eligible HHs. 3. Eligible VCs for Karama: those that had ≥ 6 Karama eligible HHs with a PMT score 7000–7400 and had ≥ 1 elderly (aged ≥ 65 years) or disabled member.

Exclusion criteria: PMT-score-based targeting, if they met 1 of 6 exclusion criteria: owned a car, owned > 1 feddan of land, had a government job or pension, received transfers from abroad or had a formal private sector job with insurance. No children.

Pretreatment: Tables A2.1–A2.6 showed that of 20 HH characteristics all but 1 showed a statistically significant difference for beneficiaries vs non-beneficiaries. Therefore, the HHs on either side of the cutoff were similar and provided valid comparison groups. There were NO baseline data – the above related to (quote): "Finally, we check whether adding some HH characteristics to the specifications affects our impact estimates. Rather than include all of the variables in the PMT score (which would be endogenous and also highly correlated with the PMT score, which is a requirement for inclusion in the generalised IV and RD models), we include a subset of potentially exogenous HH characteristics (such as HH size, education level of the HH head) as controls in the specification."

Attrition per relevant group: as there was no baseline and follow-up of participants in this study, no attrition was reported. Authors reported that since only HHs for which there was no error in the location information were included, the overall response rate was 95.2%.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: total number of HHs surveyed: 6003; beneficiary 2190; non-beneficiary 3813

Breisinger 2018 *(Continued)*

Total number enrolled per relevant group: no baseline data. Total number of HHs surveyed: 6003; beneficiary 2190; non-beneficiary 3813 (however, there was a potential error in the data (numbers in 'details' column of table 3.3.2 do not equal the numbers in 'number of HHs column')

Total number randomised per relevant group: N/A

Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: 2 UCT programmes: Takaful and Karama. However, Karama ended up not being evaluated. • *Description*: Takaful (Solidarity) is a family income support scheme, conditioned on school attendance and health outcomes. Cash transfers are conditioned on attendance of ≥ 85% of the school days by children aged 6–18 years, and on conducting 2 visits per year to the health clinics by mothers and children aged < 6 years; in addition to maintaining child growth monitoring records, and attending nutrition awareness sessions. Takaful transfers start from a basic amount of EBP 325 per HH per month, which increases depending on the number of children in the HHs and their educational level. When the programme was first designed, each HH used to receive EBP 60 for each child in primary education, EBP 80 for each child in preparatory education and EBP 100 for each child in secondary education. HHs could receive benefits for up to 3 children. Conditionalities for school attendance and healthcare utilisation had yet to be implemented. Therefore, this was treated as a UCT. • *Duration of intervention period*: beneficiaries had been in programme for about 11 months on average. Maximum period: about 2 years and 4 months (28 months). First payments: March 2015 (but note that many HHs were included more recently). • *Frequency*: from start of programme to end of 2016, transfers were delivered on quarterly basis for Takaful. Starting in 2017, transfers for Takaful were monthly. • *Number of study contacts*: 1; no baseline data. Data for impact evaluation collected at survey conducted in 1. • *Providers*: implemented by the MoSS, and co-financed by the Government of Egypt and the World Bank. • *Delivery*: frequency of transfers changed over time. Some people had to travel to collect the money but this was not identified as a deterrent. The survey data showed that 63% of programme applicants did not face any challenges while applying. HHs that became beneficiaries had more challenges than HHs that did become beneficiaries, which may be because the non-beneficiaries were excluded or gave up early in the application process. Applicants who did not become beneficiaries, however, were more likely (about 8% of applicants) to say that there was insufficient explanation of the process. The programme experience in terms of transfers was also positive. There were almost no reports of problems with the transfers in the survey. About 93% of programme beneficiaries in the sample faced no challenges in receiving the transfers. • *Co-interventions*: none reported. • *Resource requirements*: NR • *Economic indicators*: NR Control • No intervention (registrant HHs just above the PMT Score threshold)
Outcomes	Dietary diversity: HH DDS (0–12); mother's DDS; child 6- to 23-month DDS; child 24- to 59-month DDS Anthropometry: HAZ; wasted Morbidity: % children aged < 5 years who had diarrhoea in past 4 weeks; % children aged < 5 years who had fever in past 4 weeks Adverse outcomes: overweight
Identification	**Sponsorship source:** UK Foreign and Commonwealth Office (UK FCO)

Breisinger 2018 *(Continued)*

Country: Egypt

Setting: poor HHs. Districts: the rollout phases were: first wave launched in the poorest 19 districts of 6 governorates in Upper Egypt (Suhag, Assiut, Luxor, Qena, Aswan and Giza); where poverty rate was ≥ 50%. Through the second wave, the programme expanded to districts where poverty rate was ≥ 30%. In the third wave, the programme was expanded further, covering districts where poverty rate was to ≥ 17.9%. Finally, fourth wave opened registration to all districts (MoSS biannual report, December 2016).

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Declarations of interest: NR

Study or programme name and acronym: Takaful cash transfer programme and Karama cash transfer programme

Type of record: report

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	No randomisation done. Study approximated a controlled trial, which used a regression discontinuity design to define allocation to study groups (i.e. according to a threshold for inclusion in the intervention).
Allocation concealment (Selection bias)	High risk	Allocation was not concealed. Study approximated a controlled trial, which used a regression discontinuity design to define allocation to study groups (i.e. according to a threshold for inclusion in the intervention).
Baseline characteristics similar (Selection bias)	Unclear risk	Although technically there were no baseline measurements, it was indicated that (quote) "Finally, a key assumption for our estimation strategy is that the households just above and just below the threshold are similar in household characteristics. Annex II Tables A2.1–A2.6 provide evidence that this is indeed the case."
Baseline outcome measurements similar (Selection bias)	High risk	No baseline data available. Although HH characteristics not related to the outcomes were the same, this might not be the case for the outcomes itself.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding was not possible but it is unlikely that lack of blinding caused a deviation in how the intervention was implemented.
Blinding of outcome assessment (Detection bias)	High risk	Unclear if interviewers were blinded. Blinding was not possible. Outcomes were assessed based on data self-reported by the participants. Participants were aware whether they had been approved to receive transfers or not, and this may have influenced their responses.
Protection against contamination (Performance bias)	Low risk	Assignment was at HH level, based on the PMT score threshold. The threshold varied over time, after the programme started, so different HHs were enrolled over the different enrolment waves, so that some HHs that did not qualify for the intervention in 1 wave could qualify in the subsequent wave. However, the analyses were based on instrumental variables model, which takes into account the different thresholds over time.
Incomplete outcome data (Attrition bias)	Low risk	All HHs surveyed were analysed.

Breisinger 2018 *(Continued)*

		Quote: "Considering only households for which there was no error in the location information, the overall response rate was 95.2 percent."
Selective outcome reporting (Reporting bias)	Unclear risk	Authors mentioned a protocol that was submitted to an ethics review board, but we were unable to access it.
Other bias	Low risk	Misclassification bias of the exposure: low risk. Exposure assigned externally and confirmed with administrative data. Measurement bias: low risk.

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Study characteristics

Methods

Study design: cRCT

Study grouping: parallel

How were missing data handled? 162 HHs (4.6%) LTFU and 70 HHs with missing data were excluded from the analysis.

Randomisation ratio: 1:1

Recruitment method: NR

Sample size justification and outcome used: evaluation team calculated number of VCs that would need to be visited based on the number of total eligible. HHs in VCs. Additionally, the statistical power of the study was based on having a minimum number of VCs included. There needed to be ≥ 29 VCs included in the study.

Sampling method: in the first sampling stage, 2 traditional authorities were randomly selected from each of the 2 study districts. The second sampling stage consisted of randomly selecting 14 VCs within the 2 traditional authorities in Mangochi and 15 VCs from Salima for a total of 29 study VCs. The final sampling stage was at the HH level; in Mangochi VCs, where the number of eligible HHs tended to be high, 125 eligible HHs were randomly selected in each of the 14 study VCs. All eligible HHs were selected for interview in Salima study VCs.

Study aim or objective: evaluation of the expansion of the Malawi's Social Cash Transfer Program on HH food insecurity and dietary diversity.

Study period: June–September 2013 to November 2014–January 2015

Unit of allocation or exposure: VCs

Participants

Baseline characteristics

Intervention or exposure

- *Age*: HH head, years, mean: 58.8 (SD 19.45); number of members in age group (mean): aged 0–5 years: 0.68 (SD 0.91); 6–11 years: 1.17 (SD 1.04); 12–17 years: 0.94 (SD 0.95); 18–64 years: 1.17 (SD 1.02); ≥ 65 years: 0.63 (SD 0.64)
- *Place of residence*: Salima district, mean: 0.36 (SD 0.47)
- *Sex*: female-headed HHs, mean: 0.83 (SD 0.37)
- *Ethnicity and language*: NR
- *Occupation*: engaged in wage employment, %: 4.8; engaged in ganyu labour, %: 55.5; non-farm enterprise, %: 23.8; selling any crops, %; 21.4
- *Education*: HH head, any schooling, mean: 0.29 (SD 0.45)
- *SES*: own any land, %: 90.0; own < 1 acre, %: 25.8; HH size, mean: 4.59 (SD 2.20)
- *Social capital*: received from non-HH members: cash, mean: 0.66 (SD 0.46); food/other consumables, mean: 0.90 (SD 0.29); labour or time, mean: 0.49 (SD 0.49); agricultural inputs, mean: 0.31 (SD 0.45)

Brugh 2018 *(Continued)*

- *Nutritional status*: food security: worried not enough food, mean: 0.84 (SD 0.36); > 1 meal a day, mean: 0.79 (SD 0.40); proportion of HH expenditure on food, mean: 0.77 (SD 0.11); kcal per capita, mean: 1831.03 (SD 1220.90); food energy deficient, mean: 0.62 (SD 0.48); depth of hunger, mean: 464.10 (SD 491.02); HDDS, mean: 5.63 (SD 1.78). Children aged 0–5 years: stunted, %: 49.8; wasted, %: 4.3; underweight, %: 18.0
- *Morbidities*: HH head: chronically ill, mean: 0.47 (SD 0.49). Children aged 6–59 months: diarrhoea past 2 weeks, %: 16.6; fever past 2 weeks, %: 24.0; cough past 2 weeks, %; 25.8. Adults, aged > 50 years: morbidity, %: 56.0;
- *Concomitant or previous care*: participation in other social programmes: food/cash programme, mean: 0.15 (SD 0.35); mother/child feeding programme, mean: 0.15 (SD 0.35)

Control

- *Age*: HH head, years, mean: 56.86 (SD 19.68). Number of members in age group: 0–5 years, mean: 0.68 (SD 0.90); 6–11 years, mean: 1.23 (SD 1.12); 12–17 years, mean: 0.93 (SD 0.97); 18–64 years, mean: 1.18 (SD 1.02); ≥ 65 years and older, mean: 0.56 (SD 0.65)
- *Place of residence*: Salima district, mean: 0.41 (SD 0.50)
- *Sex*: female-headed HHs, mean: 0.85 (SD 0.36)
- *Ethnicity and language*: NR
- *Occupation*: engaged in wage employment, %: 6.2; Engaged in ganyu labour, % 58.5; non-farm enterprise, %: 22; selling any crops, %: 24.05
- *Education*: HH head, any schooling, mean: 0.30 (SD 0.46)
- *SES*: own any land, %: 89.6; own < 1 acre, %: 23.7; HH size, mean: 4.58 (SD 2.28)
- *Social capital*: received from non-HH members: cash, mean: 0.71 (SD 0.46); food/other consumables, mean: 0.94 (SD 0.24); labour or time, mean: 0.55 (SD 0.51); agricultural inputs, mean: 0.34 (SD 0.48)
- *Nutritional status*: food security: worried not enough food, mean: 0.83 (SD 0.38); > 1 meal a day, mean: 0.82 (SD 0.39); proportion of HH expenditure on food, mean: 0.77 (SD 0.11); kcal per capita, mean: 1894.32 (SD 1224.05); food energy deficient, mean: 0.60 (SD 0.50); depth of hunger, mean: 420.75 (SD 490.88); HDDS, mean: 5.64 (SD 1.87). Children aged 0–5 years: stunted, %: 45.5; wasted, %: 3.5; underweight, % 17.3
- *Morbidities*: HH head, chronically ill, mean: 0.41 (SD 0.50). Children aged 6–59 months: diarrhoea past 2 weeks, %: 16.5; fever past 2 weeks, %: 28.2; cough past 2 weeks, %; 26.2. Adults, aged > 50 years: morbidity, %: 50.2
- *Concomitant or previous care*: participation in other social programmes: food/cash programme, mean: 0.20 (SD 0.41); mother/child feeding programme, mean: 0.16 (SD 0.37)

Overall

- *Age*: NR
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: engaged in wage employment, %: 5.5; engaged in ganyu labour, % 57.0; non-farm enterprise, %: 23.1; selling any crops, %; 22.7
- *Education*: NR
- *SES*: own any land, %: 89.8; own < 1 acre, %: 24.7
- *Social capital*: NR
- *Nutritional status*: children aged 0–5 years: stunted, %: 47.9; wasted, %: 3.9; underweight, % 17.6
- *Morbidities*: children aged 6–59 months: diarrhoea past 2 weeks, %: 16.6; fever past 2 weeks, %: 26.1; cough past 2 weeks, %; 26.0. Adults, aged > 50 years: morbidity, %: 53.2
- *Concomitant or previous care*: NR

Inclusion criteria: HHs in Mangochi and Salima districts that were either ultra-poor (unable to meet the most basic urgent needs, including food and essential non-food items, e.g. soap and clothing) or labour-constrained (HH had no 'fit to work' members or the ratio of 'unfit' to 'fit' > 3; HH members were 'unfit if aged < 18 years or > 64 years, or if they aged 18–64 but had chronic illness, disability or are otherwise unable to work). Beneficiary selection through a community-based approach with oversight provided by the local District Commissioner's Office and the District Social Welfare Office.

Brugh 2018 *(Continued)*

	Exclusion criteria: NR **Pretreatment:** no baseline differences. **Attrition per relevant group:** intervention group: 70 HHs LTFU (4.2%); missing outcome data (2.8%). Control group: 92 HHs LTFU (4.9%); missing outcome data 32 HHs (1.7%). HHs that were LTFU did not differ from HHs that remained in the study (analysis reported by Abdoulayi et al. 2015) **Description of subgroups measured and reported:** level of HH's transfer share (low vs high: > 30%; 20–30%; 15–20%; ≤ 15%) **Total number completed and analysed per relevant group:** intervention group: 1561 HHs; control group: 1729 HHs; total 3290 **Total number enrolled per relevant group:** intervention group: 1678 HHs; control group: 1853 HHs; total: 3511 **Total number randomised per relevant group:** intervention group: 14 VCs; control group: 15 VCs
Interventions	**Intervention** • *Food access intervention category*: increase buying power • *Intervention type*: UCT • *Description*: transfer amount based on HH size and number of children enrolled in primary and secondary school. A single-person HH received MWK 1000, a 2-person HH received MWK 1500, a 3-member HH received MWK 1950, and HHs with ≥ 4 members received MWK 2400. HHs received an additional MWK 300 for each member aged ≤ 21 years enrolled in primary school and MWK 600 for members aged ≤ 30 enrolled in secondary school. • *Duration of intervention period*: 1 year • *Frequency*: monthly. Since the first payments only started March/April 2014, bi-monthly payments were made in an attempt to interpret the study results as 1-year impact of the intervention. • *Number of study contacts*: baseline (June–September 2013); follow-up (November 2014–January 2015) • *Providers*: administered by the Malawi Ministry of Gender, Children, and Social Welfare with additional oversight provided by the Ministry of Economic Planning and Development and technical support from UNICEF Malawi (Abdoulayi et al. 2015). • *Delivery*: NR • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: NR **Control:** no intervention for the duration of the study; implementation of the cash transfers in the control group was delayed until study was completed.
Outcomes	Proportion of HH expenditure on food Food security: worried not enough food; having > 1 meal per day Dietary diversity: HDDS Adequacy of dietary intake: proportion food energy deficient; depth of hunger
Identification	**Sponsorship source:** The Malawi Social Cash Transfer Program Impact Evaluation was contracted to the University of North Carolina at Chapel Hill and the Center for Social Research at the University of Malawi. The baseline and first follow-up (midline) were funded by UNICEF, the German Government through KfW, Irish Aid and FAO; the International Initiative for Impact Evaluation (3ie) and the EU provided additional funding for the second follow-up (endline) survey. The Government of Malawi provided significant in-kind contributions and support to all 3 rounds. **Country:** Malawi

Brugh 2018 *(Continued)*

Setting: ultra-poor and labour constraint HHs, Mangochi and Salima districts

Comments: no trial registry number

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Declarations of interest: NR

Study or programme name and acronym: Malawi Social Cash Transfer Program

Type of record: journal article, study reports

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Coin tossing was conducted for each TA in each district whereby half of the VCs were allocated to the intervention or control group (baseline report p. 9; Appendix C1).
Allocation concealment (Selection bias)	Low risk	VCs in each of selected traditional authorities were selected (from a hat) and an ordered list of clusters was created. At 2 district meetings, the allocation of VCs to the intervention or control was conducted for each TA, according to the ordered list (baseline report page 7, 9, Appendix C1).
Baseline characteristics similar (Selection bias)	Low risk	HH baseline characteristics similar in both groups.
Baseline outcome measurements similar (Selection bias)	Low risk	HH outcome measurements (e.g. measures of food security and dietary diversity) were similar in both groups at baseline.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding of HHs or personnel was not possible; however, performance bias was unlikely as the intervention was implemented by government structures.
Blinding of outcome assessment (Detection bias)	High risk	Not stated whether the field teams collecting the outcome data at the end of the study were blinded. However, measurements of HH food security and dietary diversity were self-reported.
Protection against contamination (Performance bias)	Low risk	The geographical location of the VCs selected for the intervention or control groups were in the same district. However, a geographical map of the study villages suggest that the majority of the intervention villages were not close to any of the control villages (see Abdoulayi 2014 Baseline report).
Incomplete outcome data (Attrition bias)	Low risk	Low attrition due to LTFU and missing outcome data (intervention group: 117/1678 (7%) vs control group: 124/1853 (6.7%). No evidence of differential attrition between groups.
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A. Although the cash transfer programme had several aims, the paper by Burgh reported on the outcome domains of food security and dietary diversity. The study authors described 7 outcomes in their methods (e.g. consuming > 1 meal a day, per capita caloric availability, HDDS) and they provided outcome data for all of these variables.

Brugh 2018 *(Continued)*

Other bias	Unclear risk	Misclassification of exposure: low risk. Measurement bias: unclear risk. Detailed description of measurements NR. Incorrect analysis: low risk. Effects adjusted for clustering.

Brunie 2014

Study characteristics

Methods

Study design: PCS

Study grouping: parallel group

How were missing data handled? attrition between baseline and endline was 10.1% overall. Missing data were excluded from analyses. 38 HHs declared participating in activities that did not correspond to their group – these observations were excluded from analyses.

Randomisation ratio: 2:2:2:2 – VSL only; VSL + AM; AM only; control; authors mentioned factorial randomised design but it was not really randomised.

Recruitment method: districts were randomised to 1 of 2 intervention groups or a control group. Intervention HHs declared interest in participating and the control group comprised sample HHs taken from the general population.

Sample size justification and outcome used: sample size was calculated based on approximate estimates from past studies on food sufficiency, HDDS, IDDS and WAZ. These calculations indicated that 20 primary sampling units, comprising 14 HHs, per district was sufficient; resulting in 560(?) HHs per group.

Sampling method: 2-stage sampling approach employed. First, 8/18 districts purposefully selected, and each intervention group was allocated 2 districts. Sample of HHs that declared interest in participating in VSL/AM activities was drawn and a sample from general population was drawn for the control group. Then PSUs were selected: in intervention group, PSUs were VSL groups, and in the control group the PSUs were the EAs from the 2007 Census. Second, HHs were selected: eligible HHs within selected PSUs were enumerated and random sample drawn. HH participation was voluntary. PSUs were randomly selected with probability proportionate to size (in terms of number of HHs represented).

Study aim or objective: to evaluate the impact of participation in an economic-strengthening initiative, namely VSL groups, on HH and child nutritional outcomes, with an additional focus on identifying possible gaps and areas for complementary programming.

Study period: August 2009–August 2012

Unit of allocation or exposure: provincial districts allocated to intervention groups

Participants

Baseline characteristics

Intervention or exposure

- *Age*: mean number of children aged < 5 years: VSL: 0.84 (SE 0.87); VSL + AM: 1.04 (SE 0.87); mean age of HH head, years: VSL 43.19 (SE 14.28); VSL + AM: 38.77 (SE 11.43)
- *Place of residence*: NR
- *Sex*: male-headed HHs, %: VSL: 90.54; VSL + AM: 86.90
- *Ethnicity and language*: NR
- *Occupation*: agriculture primary occupation, %: VSL: 87.72: VSL + AM: 90.18
- *Education*: mean education of HH head, years: VSL: 3.28 (SE 3.00); VSL + AM: 3.90 (SE 2.92); mean education of spouse, years: VSL 1.83 (SE 2.04); VSL + AM 2.49 (SE 5.58)
- *SES*: mean HH size: VSL 4.70 (SE 2.03); VSL + AM: 5.47 (SE 1.97); annual HH income: VSL: MZM 9398 (SE 18,088); VSL + AM: 11,525 (SE 22,482)

Brunie 2014 *(Continued)*

- *Social capital*: NR
- *Nutritional status*: mean months of food sufficiency: VSL: 10.41; VSL + AM: 9.27; mean HDDS: VSL: 4.06; VSL + AM: 4.20; mean IDDS: VSL: 2.51; VSL + AM: 2.99; mean WAZ: VSL: –1.21; VSL + AM: –0.96
- *Morbidities*: NR
- *Concomitant or previous care*: SANA (Seguranca Alimentar de Nutricao e Agricultura) – number NR

Control

- *Age*: mean number of children aged < 5 years: 0.62 (SE 0.78); mean age of HH head, years: 43.34 (SE 13.93)
- *Place of residence*: NR
- *Sex*: male-headed HHs, %: 90.30
- *Ethnicity and language*: NR
- *Occupation*: agriculture primary occupation, %: 87.55
- *Education*: mean education of HH head, years: 3.33 (SE 3.21) years; mean education of spouse, years: 1.44 (SE 1.84)
- *SES*: mean annual HH income: MZM 8843 (20,354)
- *Social capital*: NR
- *Nutritional status*: VSL matched mean months of food sufficiency: 10.58; VSL + AM matched mean months of food sufficiency: 10.47; VSL matched mean HDDS: 3.73; VSL + AM matched mean HDDS: 3.82; VSL matched mean IDDS: 2.87; VSL + AM matched mean IDDS: 2.82; VSL matched mean WAZ: –1.25; VSL + AM matched mean WAZ: –1.15
- *Morbidities*: NR
- *Concomitant or previous care*: SANA (Seguranca Alimentar de Nutricao e Agricultura) – number NR

Overall

- *Age*: mean number of children aged < 5 years: 0.84 (SE 0.85); mean age of HH head, years: 41.85 (SE 13.46)
- *Place of residence*: NR
- *Sex*: % male-headed HHs: 89.3
- *Ethnicity and language*: NR
- *Occupation*: agriculture primary occupation, %: 88.43
- *Education*: mean education of HH head, years: 3.50 (SE 3.07); mean education of spouse, years: 2.03 (SE 5.18)
- *SES*: mean HH size: 4.94 (SE 2.02); mean annual HH income: MZM 9858 (SE 20,412).
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: SANA – number NR

Inclusion criteria: HHs expressing interest in participating in the activity their district was randomised to.

Exclusion criteria: NR.

Pretreatment: NR. From baseline characteristics table there seems to be differences across intervention groups regarding annual HH income, education of spouse, age of HH head and number of children aged < 5 years, but whether this was statistically significant was NR.

Attrition per relevant group: no attrition per group was reported, but total attrition was 10.1% and an additional 38 (2.7%) HHs did not participate in the intervention their district was randomised to.

Description of subgroups measured and reported: no subgroups were measured, but there were 3 intervention groups namely VSL alone, AM alone and VSL + AM. Only VSL alone and VSL + AM were analysed in this study.

Brunie 2014 *(Continued)*

	Total number completed and analysed per relevant group: 395 HHs in the VSL group, 401 in the VSL + AM group and 480 in the control group. Note: check numbers – estimated impact have higher HH numbers **Total number enrolled per relevant group:** VSL: 395 HHs; VSL + AM: 401 HHs; control: 480 HHs **Total number randomised per relevant group:** N/A
Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increase buying power (VSL) and social environment/support (AM) • *Intervention type*: VSL groups and rotating labour scheme (AM) • *Description*: VSLs were self-managed and capitalised microfinance programmes where members pool savings and can borrow from the pool and repay with interest. These programmes work in cycles which terminate in paying out the accumulated savings and interest to members proportional to their initial deposit. The AM rotating labour scheme operates with groups of HHs working together on each family's land or enterprise on a rotational basis. • *Duration of intervention period*: August 2009–August 2012 • *Frequency*: NR • *Number of study contacts*: baseline (August 2009) and 3-year follow-up (August 2012) • *Providers*: NGO – Save the Children • *Delivery*: NR • *Co-interventions*: SANA – Seguranca Alimentar de Nutricao e Agricultura – food security through nutrition and agriculture multiyear assistance programme targeting aspects of food utilisation. Communities mobilised to adopt good nutrition practices and taught pregnant women and cares to prevent malnutrition in young children. AM – rotating labor scheme; groups of HHs came together to work on each family's land or conduct another activity of their choice on a rotating basis. Build system of pooled labour that allows for greater advances in production or other tasks. • *Resource requirements*: NR • *Economic indicators*: NR Control: no intervention
Outcomes	Food security: months of food sufficiency Dietary diversity: HDDS, IDDS Anthropometry: WAZ (underweight)
Identification	**Sponsorship source:** US Agency for International Development (USAID) under the terms of associate agreement DFD-AA-00-07-00251-00, the Supporting Transformation by Reducing Insecurity and Vulnerability with Economic Strengthening (STRIVE) project. **Country:** Mozambique **Setting:** HHs in an area with high prevalence of stunted, wasted and underweight children. **Author's name:** Diana Rutherford **Email:** drutherford@fhi360.org **Declarations of interest:** NR **Study or programme name and acronym:** village savings and loan (VSL) or a combination of VSL and AM. **Type of record:** journal article
Notes	

Brunie 2014 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Although the paper described this as a randomised design, there was no randomisation of districts to intervention groups. Quote: "Eight of Nampula's 18 districts were purposefully selected for this study. Two districts were assigned to each intervention and control arms such that, once paired, they formed arms similar with respect to distance from the capital, economic performance, rainfalls, and market activities." CBA design, and randomisation was N/A.
Allocation concealment (Selection bias)	High risk	Allocation was not concealed; CBA study.
Baseline characteristics similar (Selection bias)	Low risk	Unclear if groups were significantly different at baseline but analyses were adjusted for these characteristics.
Baseline outcome measurements similar (Selection bias)	Low risk	Unclear if baseline outcome measurements were significantly different between the intervention and control groups but analyses were adjusted for covariates.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding of participants as this was a cohort study, but it was unlikely that this influenced participant performance.
Blinding of outcome assessment (Detection bias)	High risk	No blinding of participants as this was a cohort study. While some outcomes were objective measurements, others were self-reported, which could have been influenced by knowledge of treatment allocation.
Protection against contamination (Performance bias)	Unclear risk	No information given on how potential contamination was prevented. As groups were matched inter alia on proximity it is possible that districts may have influenced each other due to relational ties (sending of money to family in a neighbouring district) or migration.
Incomplete outcome data (Attrition bias)	Unclear risk	10% overall LTFU but attrition per group was NR and it was unknown whether attrition was greater in 1 of the groups or if it was equal. Certain observations were excluded from the analyses. These missing data could have influenced the observed effect.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available, but all a priori stated outcomes in the methods section were reported on in the results section.
Other bias	Low risk	None identified

Chakrabarti 2018

Study characteristics

Methods	**Study design:** CBA **Study grouping:** N/A **How were missing data handled?** NR.

Chakrabarti 2018 *(Continued)*

Randomisation ratio: N/A

Recruitment method: state governments identify families eligible for PDS support and issue ration cards to such HHs.

Sample size justification and outcome used: NR

Sampling method: the National Sample Survey Organization (NSSO) conducts a survey of 100,000–125,000 HHs representative of the state and national level.

Study aim or objective: to examine the impact of subsidies on pulses in select Indian states on HH consumption and protein intake.

Study period: 2007 (for Himachal Pradesh, Punjab and Tamil Nadu) or 2008 (Andhra Pradesh) to 2010

Unit of allocation or exposure: states

Participants

Baseline characteristics

Intervention or exposure

- *Age*: HH head, mean: 44.30 (SE 0.146)
- *Place of residence*: proportion of HHs with LPG, mean: 0.286 (SE 0.004); proportion of HHs with electricity, mean: 0.889 (SE 0.003)
- *Sex*: proportion of HHs with male head, mean: 0.867 (SE 0.003)
- *Ethnicity and language*: proportion of HHs, mean: Hindu 0.848 (SE 0.003); Islam 0.048 (SE 0.001); Christian 0.030 (SE 0.001)
- *Occupation*: proportion of HHs, mean: self-employed in non-agriculture 0.108 (SE 0.002); employed in agricultural labour 0.239 (SE 0.004); employed in casual labour in rural India 0.085 (SE 0.002); self-employed in agriculture 0.159 (SE 0.003); self-employed in urban areas 0.110 (SE 0.002); employed in labour in urban areas 0.040 (SE 0.001)
- *Education*: education level of HH head, mean: 1.780 (SE 0.017)
- *SES*: proportion of HHs which, mean: purchased subsidised rice from PDS: 0.521 (SE 0.004); purchased subsidised wheat from PDS: 0.047 (SE 0.001); purchased subsidised sugar from PDS: 0.414 (SE 0.004); purchased subsidised kerosene from PDS: 0.509 (SE 0.004). Land ownership quintiles, mean: 2.542 (SE 0.014)
- *Social capital*: proportion of HHs, mean: scheduled tribes 0.041 (SE 0.002); scheduled castes 0.222 (SE 0.004); other backward classes 0.517 (SE 0.004)
- *Nutritional status*: quantity of pulses, mean, kg/HH/day: 3.210 (SE 0.020); protein from pulses, mean: g/HH/day: 23.24 (SE 0.148); protein from all food, mean: g/HH/day: 191.6 (SE 1.037). Total number of meals, mean: consumed in the HH per day: 11.24 (SE 0.053); consumed on payment per HH: 2.604 (SE 0.174); consumed at home per HH per month: 321.5 (SE 1.623)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: HH head, mean: 44.70 (SE 0.070)
- *Place of residence*: proportion of HHs with LPG, mean: 0.203 (SE 0.002); proportion of HHs with electricity, mean: 0.596 (SE 0.002)
- *Sex*: proportion of HHs with male head, mean: 0.897 (SE 0.001)
- *Ethnicity and language*: proportion of HHs, mean: Hindu 0.830 (SE 0.001); Islam 0.127 (SE 0.001); Christian 0.022 (SE 0.000)
- *Occupation*: proportion of HHs, mean: self-employed in non-agriculture 0.114 (SE 0.001); employed in agricultural labour 0.183 (SE 0.002); employed in casual labour in rural India 0.075 (SE 0.001); self-employed in agriculture 0.281 (SE 0.002); self-employed in urban areas 0.102 (SE 0.001); employed in labour in urban areas 0.029 (SE 0.000)
- *Education*: level of HH head, mean: 1.883 (SE 0.009)
- *SES*: proportion of HHs which, mean: purchased subsidised rice from PDS: 0.139 (SE 0.001); purchased subsidised wheat from PDS: 0.107 (SE 0.001); purchased subsidised sugar from PDS: 0.083 (SE 0.001);

Chakrabarti 2018 *(Continued)*

purchased subsidised kerosene from PDS: 0.644 (SE 0.002). Land ownership quintiles, mean: 2.595 (SE 0.006)

- *Social capital*: proportion of HHs, mean: scheduled tribes 0.098 (SE 0.001); scheduled castes 0.191 (SE 0.002); other backward classes 0.374 (SE 0.002)
- *Nutritional status*: quantity of pulses, mean, kg/HH/day: 3.550 (SE 0.016); protein from pulses, mean, g/HH/day: 25.98 (SE 0.123); protein from all food, mean, g/HH/day: 270.5 (SE 0.933). Total number of meals, mean: consumed in the HH per day: 11.61 (SE 0.031); consumed on payment per HH: 1.354 (SE 0.042); consumed at home per HH per month: 336.5 (SE 0.921)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: HHs qualifying for PDS subsidies in selected Indian states. Details of eligibility criteria NR.

Exclusion criteria: NR

Pretreatment: none

Attrition per relevant group: total of 4872/23,558 (20.7%) fewer HHs in intervention and 18,917/101,086 (18.7%) fewer HHs in control states were included in the follow-up survey.

Description of subgroups measured and reported: poorest HHs, vegetarian HHs and HHs with different quantities of pulse consumption.

Total number completed and analysed per relevant group: 18,686 HHs in intervention and 82,169 HHs in control states.

Total number enrolled per relevant group: 23,558 HHs in intervention states and 101,086 HHs in control states.

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: address food prices
- *Intervention type*: food subsidies
- *Description*: subsidising of a variety of pulses (arhar daal in Andhra Pradesh; moong, urad daal and chana daal in Himachal Pradesh; various pulses in Punjab; arhar daal and urad daal in Tamil Nadu) as part of the PDS, in addition to the usual subsidising of rice, wheat, sugar and kerosene oil.
- *Duration of intervention period*: 2007 (Himachal Pradesh, Punjab and Tamil Nadu) or 2008 (Andhra Pradesh) to present
- *Frequency*: monthly subsidy of pulses: 1 kg of 1 pulse in Andhra Pradesh; 1 kg of 3 pulses in Himachal Pradesh; 0.5 kg of various pulses in Punjab and 1 kg of 2 pulses in Tamil Nadu.
- *Number of study contacts*: baseline (2004 and 2005) and follow-up (2009 and 2010).
- *Providers*: state governments (pulses) and central Indian government (rice, wheat, sugar and kerosene).
- *Delivery*: government-issued ration cards are given to poor HHs enabling them to purchase from fair-price shops 1 kg arhar daal for INR 50 in Andhra Pradesh; 1 kg moong for INR 49.99, 1 kg urad daal for INR 34.99 and chana daal for INR 25 in Himachal Pradesh; 0.5–2.5 kg per family of various pulses for INR 20/kg in Punjab; and 1 kg arhar daal for INR 30 as well as 1 kg urad daal for INR 30 in Tamil Nadu.
- *Co-interventions*: rural poor HHs may have had access to other welfare programmes, e.g. Mahatma Gandhi National Rural Employment Guarantee Scheme, implemented between 2004/2005 and 2007/2008 or 2009/2010.
- *Resource requirements*: NR
- *Economic indicators*: NR

Control

Chakrabarti 2018 *(Continued)*

- *Food access intervention category*: address food prices
- *Intervention type*: food subsidies
- *Description*: usual subsidy of rice, wheat, sugar and kerosene oil as part of the PDS.
- *Duration of intervention period*: 1947 to present
- *Frequency*: NR
- *Number of study contacts*: baseline (2004 and 2005) and follow-up (2009 and 2010)
- *Providers*: Central Indian government
- *Delivery*: Central government responsible for procurement, storage, transportation and the bulk allocation of food grains to the state governments. State governments responsible for identification of eligible families, issue of ration cards, distribution of subsidised goods and supervision of the programme. Fair-price shops spread throughout the country.
- *Co-interventions*: rural poor HHs may have had access to other welfare programmes, e.g. Mahatma Gandhi National Rural Employment Guarantee Scheme, implemented between 2004/2005 and 2007/2008 or 2009/2010
- *Resource requirements*: NR
- *Economic indicators*: NR

Outcomes	HH expenditure on food (excluding pulses) per month Dietary diversity: amount of different types of food consumed by HH per month Dietary intake: amount of protein from pulses/all foods consumed per HH per day
Identification	**Sponsorship source:** Indian Council of Agricultural Research (ICAR); Swiss Agency for Development and Cooperation. This work was also undertaken as part of the Consultative Group on International Agricultural Research (CGIAR) Research Program on Agriculture for Nutrition and Health (A4NH). **Country:** India **Setting:** rural and urban HHs in selected states (Andra Pradesh; Maharashtra) **Authors' names:** Suman Chakrabarti; D Roy **Email:** d.roy@cgiar.org **Declarations of interest:** NR **Study or programme name and acronym:** Public Distribution System (PDS) **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	No randomisation. CBA.
Allocation concealment (Selection bias)	High risk	No randomisation. CBA.
Baseline characteristics similar (Selection bias)	Low risk	No formal tests of hypotheses were done, but between-group baseline equivalence appeared to have been attained for baseline characteristics.
Baseline outcome measurements similar (Selection bias)	Low risk	No formal tests of hypotheses were done, but between-group baseline equivalence appeared to have been attained for quantity of pulses, protein from pulses and protein from all foods at baseline.

Chakrabarti 2018 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	Although the participants were not blinded, the intervention (introduction of pulses) was implemented as part of a central government programme. The programme was implemented in a similar way in both intervention and control villages.
Blinding of outcome assessment (Detection bias)	High risk	Not described by study authors.
Protection against contamination (Performance bias)	Low risk	As intervention and control treatments were assigned by state government, it was unlikely that meaningful contamination could have occurred. 2 intervention states in the north (Himachal Pradesh and Punjab) and 2 in the south (Tamil Nadu and Andhra Pradesh) border each other, while Maharashtra (a control state) does not border any of the intervention states; making contamination highly unlikely.
Incomplete outcome data (Attrition bias)	Unclear risk	Total attrition was fairly high (13.0%), but comparable between intervention (20.7%) and control (18.7%) groups.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol was available and the paper did not follow the usual journal format with a designated Methods section. The aim of the study was to assess the effect of pulse subsidy on pulse consumption and protein intake, both of which are reported on.
Other bias	Low risk	No other biases identified.

Chen 2019

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** data from non-boarding students and from boarding students who did not have Hb concentration, height and weight measurements were excluded from the analysis. **Randomisation ratio:** 1:1:2 (nutrition subsidy intervention:nutrition subsidy + monetary incentive intervention:control) **Recruitment method:** in each 1 of 30 townships, with the necessary permission from the Chinese government, schools were chosen if they offered fourth and fifth grade classes and accommodated ≥ 400 students. Once schools were selected, written assent was requested from students and their parents. Written consent was also requested from the students' legal guardians at school (schoolmasters and head teachers). **Sample size justification and outcome used:** NR **Sampling method:** 30 townships were randomly selected from 2 provincial-level administration units, Qinghai Province and Ningxia Autonomous Region. Schools were selected from these townships and all fourth and fifth graders from these schools with assent and consent were included. **Study aim or objective:** how does the provision of nutrition subsidies translate into observed nutritional and health outcomes? Will policy targets with different levels of specificity, e.g. general ones such as malnutrition prevention and specific ones such as anaemia reduction, lead to different behavioural responses and, thus, nutritional and health outcomes, partly through different incentives attached to these policy targets (since certain incentives are presumably needed to achieve any specific policy target)? **Study period:** October 2009–May 2010

Chen 2019 *(Continued)*

Unit of allocation or exposure: cluster: elementary schools

Participants

Baseline characteristics

Nutrition subsidy

- *Age*: NR
- *Place of residence*: NR
- *Sex*: entire group (analysed group): mean proportion of boys: 0.52 (0.49)
- *Ethnicity and language*: entire group (analysed group): mean proportion of ethnic-minority students: 0.62 (0.64); mean proportion with migrant father: 0.71 (0.80); mean proportion with migrant mother: 0.11 (0.12)
- *Occupation*: NR
- *Education*: entire group (analysed group): mean proportion of fifth graders: 0.49 (0.56); mean education of father, years: 6.12 (6.11); mean education of mother, years: 4.32 (4.32); mean proportion of senior-level teaching staff: 0.48 (0.48)
- *SES*: entire group (analysed group): mean number of siblings: 2.18 (2.19)
- *Social capital*: NR
- *Nutritional status*: entire group: mean BMI-for-age z-score: −0.78; mean Hb concentration (g/L): 128.06; mean proportion of underweight students: 0.07; mean proportion of anaemic students: 0.22; DDS (adapted from FAO guidelines): 5.12. Analysed group: mean Hb concentration: 128.51 (SD 12.63); mean proportion anaemic: 0.18 (SD 0.38); mean BMI-for-age z-scores: −0.70 (SD 0.91); mean proportion underweight: 0.07 (SD 0.25); mean DDS: 4.75 (SD 2.17).
- *Morbidities*: proportion anaemic 0.19
- *Concomitant or previous care*: NR

Nutrition subsidy + monetary incentive

- *Age*: NR
- *Place of residence*: NR
- *Sex*: entire group (analysed group): mean proportion of boys: 0.53 (0.53)
- *Ethnicity and language*: entire group (analysed group): mean proportion of ethnic-minority students: 0.73 (0.74); mean proportion with migrant father: 0.64 (0.69); mean proportion with migrant mother: 0.12 (0.09)
- *Occupation*: NR
- *Education*: entire group (analysed group): mean proportion of fifth graders: 0.51 (0.59); mean education of father, years: 6.16 (5.19); mean education of mother, years: 3.94 (3.25); mean proportion of senior-level teaching staff: 0.46 (0.46)
- *SES*: entire group (analysed group): mean number of siblings: 2.20 (2.19)
- *Social capital*: NR
- *Nutritional status*: entire group: mean BMI-for-age z-score: −0.77; mean Hb concentration (g/L): 127.21; mean proportion of underweight students: 0.09; mean proportion of anaemic students: 0.25; DDS (adapted from FAO guidelines): 5.05. Analysed group: mean Hb concentration: 127.84 (SD 12.80); mean proportion anaemic: 0.23 (SD 0.42); mean BMI-for-age z-scores: −0.63 (SD 0.91); mean proportion underweight: 0.06 (SD 0.24); mean DDS: 4.65 (SD 2.20).
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: NR
- *Place of residence*: NR
- *Sex*: entire group (analysed group): mean proportion of boys: 0.52 (0.54)
- *Ethnicity and language*: entire group (analysed group): mean proportion of ethnic-minority students: 0.64 (0.62); mean proportion with migrant father: 0.63 (0.67); mean proportion with migrant mother: 0.12 (0.11)
- *Occupation*: NR

Chen 2019 *(Continued)*

- *Education*: entire group (analysed group): mean proportion of fifth graders: 0.51 (0.51); mean education of father (years): 6.87 (6.72); mean education of mother (years): 4.10 (3.88); mean proportion of senior-level teaching staff: 0.40 (0.40)
- *SES*: entire group (analysed group): mean number of siblings: 2.35 (2.29)
- *Social capital*: NR
- *Nutritional status*: entire group: mean BMI-for-age z-score: –0.83; mean Hb concentration (g/L): 129.82; mean proportion of underweight students: 0.09; mean proportion of anaemic students: 0.19; DDS (adapted from FAO guidelines): 5.28. Analysed group: mean Hb concentration: 128.03 (SD 12.95); mean proportion anaemic: 0.22 (SD 0.42); mean BMI-for-age z-scores: –0.68 (SD 0.94); mean proportion underweight: 0.08 (SD 0.26); mean DDS: 5.33 (SD 2.32).
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: townships: located in Qinghai Province or Ningxia Autonomous Region. Schools: offering fourth and fifth grade classes; accommodating ≥ 400 students. Children: fourth or fifth grade students; written assent provided; consent from guardians provided; boarding (to be included in analysis).

Exclusion criteria: NR

Pretreatment: baseline characteristics and outcome variables presented in Table A1 and 2. Table A1: most variables were quite balanced across groups, with minor differences due to sampling errors, suggesting that the random group assignments were done reasonably well. However, due to the modest number (i.e. 59) of project schools, some student or school characteristics may have been balanced across the 3 groups (Appendix A Table A1), even under randomised group assignments. To address this issue, the authors modified the estimating equation. Quote: "Unless otherwise stated, all estimates presented below are obtained after controlling for the full set of covariates reported in Appendix A Table A1."

Attrition per relevant group: 61% of boarding students (who were considered in the analysis) were not analysed because they did not have health information collected due to budgetary reasons. Considering the full sample of 6994, attrition was 88%.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: to fully capture the impacts of the treatments, the authors' analysis focused only on the 2199 boarding students in the sample (of 6994 students). Due to budgetary reasons, while dietary information was collected from all (boarding) students, health information was collected only from about half of them: 1020 boarding students had information on Hb concentration level, 952 had height and weight information, and 866 had both sets of information. Thus, the final analytical sample comprised 866 boarding students with information available on all 3 dimensions. Students: 219/582 (38%) for nutrition subsidy; 210/563 (36%) for nutrition subsidy + monetary incentive; 437/1550 (28%) for control group.

Total number enrolled per relevant group: total sample 6994. Not clear per group, as only reported on those with Hb and height/weight information.

Total number randomised per relevant group: total of 15 schools for nutrition subsidy, 15 for nutrition subsidy + monetary incentive and 29 for control group.

Interventions	**Intervention characteristics** Nutrition subsidy (treatment group 1) • *Food access intervention category*: food prices • *Intervention type*: food subsidy • *Description*: nutrition subsidy with a general policy target of 'malnutrition reduction'. The monetary equivalent of the total amount of nutrition subsidy provided to each school in this group was CNY 225 (USD 33) per enrolled student (which cost CNY 1.5/day, enough for purchasing 60 g of red meat, for 150 days). The subsidy money was transferred to the bank account of each school and the schoolmasters were able to use this money for nutrition-related expenses (in any way they deemed reasonable). In

Chen 2019 *(Continued)*

addition, each schoolmaster in this treatment group was informed about the main aim of the intervention project (i.e. to reduce child malnutrition) and was given 3 pieces of additional information: 1. the proportion of enrolled students who were anaemic (not the specific individuals but the mean rate of the whole school), 2. descriptions of effective methods for reducing iron-deficient anaemia and 3. details about anaemia's relation with school attendance, educational performance and cognitive development. However, the project team did not provide any specific instructions or stipulate specific requirements on what foods the schools should purchase; schoolmasters were allowed to make their own decisions on how the subsidy money was spent to achieve the goal of malnutrition reduction.

- *Duration of intervention period*: 6 months: November 2009–May 2010, with a 1-month pause during the winter break in February 2010.
- *Frequency*: 1
- *Number of study contacts*: 2 contacts: baseline (October 2009) and follow-up (May 2010).
- *Providers*: project team and local government.
- *Delivery*: CNY 225 (equivalent to USD 33) per student, enough to purchase 60 g of red meat per day for 150 days, was transferred into the school's bank account.
- *Co-interventions*: NR
- *Resource requirements*: CNY 225 per student. Human resource requirements were minimal, as the money was transferred to the school bank account and administered by the schoolmasters.
- *Economic indicators*: NR

Nutrition subsidy + monetary incentive (treatment group 2)

- *Food access intervention category*: food prices
- *Intervention type*: food subsidy with additional incentive
- *Description*: nutrition subsidy identical to treatment group 1, + a specific policy target of 'anaemia reduction'. Involved an incentive in the form of a potential monetary bonus provided to schoolmasters; amount was tied to actual reductions in anaemia prevalence among students in their schools – more specifically, a schoolmaster would receive a CNY 150 (or USD 22) bonus for each of his other students whose status changed from being anaemic to being non-anaemic over the course of the intervention. As with schoolmasters in treatment group 1, those in treatment group 2 were informed about the main aim of the intervention project (i.e. to reduce child malnutrition) and were provided with the same 3 pieces of anaemia-related information. Similarly, they were allowed to make their own decisions on how the subsidy money was spent; no requirements were imposed by the project team or the local government.
- *Duration of intervention period*: November 2009–May 2010, with a pause of 1 month (February 2010) during the winter break.
- *Frequency*: 1
- *Number of study contacts*: 2 contacts: baseline (October 2009) and follow-up (May 2010).
- *Providers*: project team and local government.
- *Delivery*: CNY 225 (equivalent to USD 33) per student, enough to purchase 60 g of red meat per day for 150 days, was transferred into the school's bank account. Since the bonus provided to schoolmasters in treatment group 2 would not be realised until the end of the intervention period when the actual reductions in anaemia prevalence were revealed (note that it may not even be realised if there are no reductions in anaemia prevalence), the actual amount of subsidy per student received by the 2 treatment groups (i.e. the amount that could be used for food purchase per student terms) was identical during the intervention.
- *Co-interventions*: NR
- *Resource requirements*: CNY 225 per student, + CNY 150 for each anaemic student converted to non-anaemic. Human resource requirements were minimal, as the money was transferred to the school bank account and administered by the schoolmasters.
- *Economic indicators*: NR

Control: no intervention

Outcomes	DDS (0–10) Anthropometry: BMZ; proportion underweight (BMZ < –2SD)

Chen 2019 *(Continued)*

	Biochemical: Hb concentration Morbidity: proportion anaemic
Identification	**Sponsorship source:** National Natural Science Foundation of China [grant number 71603261]; Humanities and Social Science Fund of the Ministry of Education of China [grant numbers 16YJC880107, 18YJC790010]; The Fundamental Research Funds for the Central Universities [grant number 2019TC110]. **Country:** China **Setting:** fourth and fifth graders enrolled in elementary schools in rural Qinghai and Ningxia **Authors' names:** Qihui Chen; corresponding: Qiran Zhao **Email:** zhaoqiran@cau.edu.cn **Declarations of interest:** yes; no conflicts of interest. **Study or programme name and acronym:** NR **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	No information provided how the random sequence generation is done. Only (quote): "schools were randomly assigned into three groups."
Allocation concealment (Selection bias)	Low risk	Unit of allocation was by school; all assignments were done at start of study.
Baseline characteristics similar (Selection bias)	Unclear risk	Low for the analysed group, but no data available for the entire group. Quote: "Due to both randomisation plus taking this into account during the analysis. Baseline characteristics and outcome variables presented in Table A1 and 2. Table A1: Most of these variables are quite balanced across groups, with minor differences due to sampling errors, suggesting that the random group assignments were done reasonably well." "However, due to the modest number (i.e., 59) of project schools, some student or school characteristics may not be perfectly balanced across the three groups (Appendix A Table A1), even under randomized group assignments. To address this issue, we modify the estimating equation (1) in two ways." "Unless otherwise stated, all estimates presented below are obtained after controlling for the full set of covariates reported in Appendix A Table A1."
Baseline outcome measurements similar (Selection bias)	Unclear risk	Low for the analysed group, but no data available for the entire group. Quote: "Due to both randomisation plus taking this into account during the analysis. Baseline characteristics and outcome variables presented in Table A1 and 2. Table A1: Most of these variables are quite balanced across groups, with minor differences due to sampling errors, suggesting that the random group assignments were done reasonably well." "However, due to the modest number (i.e., 59) of project schools, some student or school characteristics may not be perfectly balanced across the three groups (Appendix A Table A1), even under randomized group assignments. To address this issue, we modify the estimating equation (1) in two ways." "Unless otherwise stated, all estimates presented below are obtained after controlling for the full set of covariates reported in Appendix A Table A1."

Chen 2019 *(Continued)*

Blinding of participants and personnel (Performance bias)	High risk	Not explicitly reported whether students and school staff were blinded to assignment. Given the integral role of the schoolmaster in administering the intervention and their access to information on anaemia; however, it is not possible that these people could be blinded. The lack of blinding may have resulted in considerable performance bias, specifically in the group of schoolmasters not receiving incentives.
Blinding of outcome assessment (Detection bias)	High risk	NR whether the medical professionals who assessed some outcomes were blinded. Most outcomes were objective and not prone to detection bias, but outcomes such as dietary diversity may have been affected by unblinded self-report from participants.
Protection against contamination (Performance bias)	Low risk	Since payment was made into the school account and information was provided to the headmasters, contamination at school level was not expected. Furthermore, only boarders were analysed: boarding arrangement ensures that almost all the food consumed by boarding students came from the intervention.
Incomplete outcome data (Attrition bias)	High risk	Very high levels of attrition among students: 363/582 (62%) for nutrition subsidy; 353/563 (64%) for nutrition subsidy + monetary incentive; 1113/1550 (72%) for control group. This is predominantly due to only including boarding students with Hb and anthropometric data, as well as the loss of 1 control cluster. Attrition appears to be differential for the control group versus the intervention groups.
Selective outcome reporting (Reporting bias)	Unclear risk	No study protocol available.
Other bias	Unclear risk	Recruitment bias: randomisation of schools occurred after students had been recruited; low risk. Incorrect analysis: adjustment for clustering NR, but robust SEs used; unclear risk.

Daidone 2014

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** investigated attrition at 24-month follow-up by testing for similarities at baseline between 1. treatment and control groups for all non-missing HHs (differential attrition) and 2. all HHs at baseline and the remaining HHs at the 24-month follow-up (overall attrition). Testing these groups on baseline characteristics can assess whether the benefits of randomisation are preserved at follow-up. There was no significant differential attrition at 24-month follow-up, meaning that benefits of randomisation were preserved. There were small differences between study population at baseline and those that remained at 24-month follow-up; the remaining HHs were less likely to have experienced a shock, especially flooding or drought at baseline, and they consumed a higher proportion of maize over cassava. The differences from overall attrition were primarily driven by the lower response rate in Kaputa district. **Randomisation ratio:** about 1:1 **Recruitment method:** 90/300 CWACs in the 3 districts were randomly selected and ranked through a lottery to be considered in the programme. In second phase, CWAC members and Ministry staff identified all eligible HHs with ≥ 1 child under the age of 3 years living in these 90 randomly selected communities. This resulted in > 100 eligible HHs in each of the CWACs.

Daidone 2014 *(Continued)*

Sample size justification and outcome used: power analysis completed to ensure study size was able to detect meaningful effects.

Sampling method: randomised phase-in method that included several levels of random selection. First, 90/300 CWACs in the 3 districts were randomly selected and ranked through a lottery to be considered in the programme. In second phase, CWAC members and Ministry staff identified all eligible HHs with ≥ 1 child under the age of 3 years living in these 90 randomly selected communities. This resulted in > 100 eligible HHs in each of the CWACs. After implementing a power analysis to ensure the study was able to detect meaningful effects, 28 HHs were randomly selected for inclusion in the evaluation from each of the 90 communities. This yielded a final study sample of > 2500 HHs. Baseline data collection carried out before CWACs were randomly assigned to treatment and control. Importantly, neither the HHs nor the enumerators knew who would benefit first and who would benefit later. Randomisation was concluded with the flip of a coin and was carried out in public with local officials, Ministry staff and community members.

Study aim or objective: CGP has 6 specific objectives: 1. supplement and not replace HH income; 2. increase the number of children enrolled in and attending school; 3. reduce the rate of mortality and morbidity among children aged < 5 years; 4. reduce stunting and wasting among children aged < 5 years; 5. increase the number of HHs owning assets such as livestock and 6. increase the number of HHs that have a second meal a day.

Study period: 3-year RCT; began in December 2010 and ended in 2013. Evaluation occurred at 24-month follow-up.

Unit of allocation or exposure: HHs

Participants

Baseline characteristics

Intervention or exposure

- *Age*: NR
- *Place of residence*: Kaputa 419; Kalabo 420; Shangombo 421
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: 'income sources', percent: HH farming 76.83; HH herding livestock 49.29; any HH member in wages labour 11.11; HH received any transfer 30.00. 'Production', mean: value of harvest 403.8; value of sales 73.4; value of own consumption 207.1
- *Education*: NR
- *SES*: 'savings and loans', %: HH saving money 18.33; HH making loan repayments 0.71. 'Livestock holdings', %: cows 4.68; cattle 9.13; chickens 40.56; goats 3.17; ducks 2.54; total 48.57.
- *Social capital*: NR
- *Nutritional status*: 'consumption per AE', mean: food 53.3; non-food 17.6; own-produced 21.0
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: NR
- *Place of residence*: Kaputa 420; Kalabo 420; Shangombo 419
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: NR
- *SES*: 'savings and loans', %: HH saving money 15.81; HH making loan repayments 1.53. 'Livestock holdings', %: cows 5.88; cattle 9.45; chickens 40.27; goats 1.9; ducks 3.57; total 47.10.
- *Social capital*: NR
- *Nutritional status*: 'consumption per AE', mean: food 50.4; non-food 16.8; own-produced 19.2
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Daidone 2014 *(Continued)*

Overall

- *Age*: HH head, mean, years: 29.85
- *Place of residence*: Kaputa 839; Kalabo 840; Shangombo 840
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: years of schooling of HH head, mean: 4.06
- *Education*: NR
- *SES*: NR
- *Social capital*: proportion HH heads: married 1813; never married 277; widowed 151; divorced 176
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: any HHs with a child aged < 5 years in 3 districts (Kalabo, Kaputa and Shangombo) that had not participated in a previous cash transfer programme.

Exclusion criteria: NR

Pretreatment: treatment HHs were slightly larger than the control group. HHs in Kaputa were bigger compared to the other 2 districts.

Attrition per relevant group: NR. Overall attrition rate 8.8% (Diadone 2014) and 9% (Seidenfeld 2013). Attrition rate for treatment 8.1%; attrition rate for control 0.9% (Seidenfeld 2013).

Description of subgroups measured and reported: subgroup analyses by districts (Kalabo, Kaputa and Shangombo).

Total number completed and analysed per relevant group: total 2519 HHs. Calculated based on response rate; intervention 1158 (91.9%); control 1141 (90.6%)

Total number enrolled per relevant group: treatment 1260 HHs (7254 individuals); control 1259 HHs (7091 individuals); total 2519 HHs (14,345 individuals)

Total number randomised per relevant group: NR

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: cash transfer
- *Intervention type*: unconditional social cash transfer programme
- *Description*: CGP targeted HHs with children aged 5 years living in programme districts and provided each HH with ZMW 60 (about USD 12) a month, regardless of HH size. Payments made every other month and there were no conditions to receive the money.
- *Duration of intervention period*: 2 years: December 2010–December 2012.
- *Frequency*: monthly
- *Number of study contacts*: 2 data collection points (HH survey at baseline and 24 months). Community questionnaire in every CWAC to a group of community leaders
- *Providers*: Ministry of Community Development, Mother and Child – Government of Zambia
- *Delivery*: Ministry of Community Development, Mother and Child health implements cash transfers. Transfers are made once per month through a local pay-point manager.
- *Co-interventions*: NR
- *Resource requirements*: resources to administer grant, research firm for data collection and entering, anthropometric measurement tools
- *Economic indicators*: same grant amount given to each HH and each month (ZMW 60)

Control: no intervention

Daidone 2014 *(Continued)*

Outcomes	Proportion of HH expenditure on food: HH monthly expenditure on food and expenditure on individual food groups Food security: proportion people eating > 1 meal/day; proportion not severely food insecure; proportion who ate meat/fish ≥ 5 times in last month HHFIAS Dietary diversity: HDDS (0–12) Anthropometry: WAZ; HAZ; WHZ Cognitive function and development: ECD Index Morbidity: proportion of children aged 0–60 months with ARI; proportion of children aged 0–60 months with diarrhoea
Identification	**Sponsorship source:** From Protection to Production (PtoP) programme, jointly with the UNICEF, is exploring the linkages and strengthening co-ordination between social protection, agriculture and rural development. The PtoP is funded principally by the UK DfID, the FAO of the UN and the EU. The programme is also part of the Transfer Project, a larger effort together with UNICEF, Save the Children and the University of North Carolina, to support the implementation of impact evaluations of cash transfer programmes in sub-Saharan Africa. **Country:** Zambia **Setting:** communities in the 3 poorest districts of Zambia: Shangombo, Kalabo and Kaputa **Comments:** both Daidone 2014 and Seidenfeld 2013 used for data extraction. Seidenfeld 2013 was the official programme impact report and more useful in the population and intervention extraction, while Diandone was more useful in the methods extraction. **Author's names:** Silvio Daidone, David Seidenfeld, Sudhanshu Handa, Benjamin Davis **Email:** dseidenfeld@air.org; shanda@email.unc.edu; benjamin.davis@fao.org **Declarations of interest:** NR **Study or programme name and acronym:** Zambian Child Grant Programme (CGP) **Type of record:** research report
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	The CGP impact evaluation was designed as an RCT using a randomised phase-in method (Duflo et al 2008) that included several levels of random selection. First, 90/300 CWACs in the 3 districts were randomly selected and ranked through a lottery to be considered in the programme. In second phase CWAC members and Ministry staff identified all eligible HHs with ≥ 1 child aged < 3 years living in these 90 randomly selected communities.
Allocation concealment (Selection bias)	Low risk	Allocation at CWAC level at start of study. Importantly, neither HHs nor enumerators knew who would benefit first and who would benefit later.
Baseline characteristics similar (Selection bias)	Low risk	Randomisation was successful, as mean characteristics were balanced across groups (Table 2).

Daidone 2014 *(Continued)*

Baseline outcome measurements similar (Selection bias)	Low risk	At baseline, majority of indicators were not statistically different at the conventional 5% significance level, with 10 exceptions out of 71 (Table 2). 4 indicators had standardised differences > 10, but they were all < 15.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding not done but unlikely to influence behaviour of personnel and participants.
Blinding of outcome assessment (Detection bias)	High risk	Neither HHs nor enumerators knew who would benefit first by receiving the case grant (treatment) and who would benefit later by receiving the case grant after the RCT (control) at baseline. However, blinding was not possible. Some outcomes were subjective and could have been influenced by knowledge of intervention allocation.
Protection against contamination (Performance bias)	Unclear risk	Possible that increases in treatment HHs agricultural productivity could have had a spillover effect on controls as they resided in the same community.
Incomplete outcome data (Attrition bias)	Low risk	Seidenfeld et al (2013) investigated in detail both differential and overall attrition. Differential attrition relates to baseline characteristics between treatment and control HHs that remain at follow-up. Overall attrition looked at similarities at baseline between the full sample of HHs and the non-attriters. They found no significant differential attrition after 24 months, meaning that the benefits of randomisation were preserved. The differences in overall attrition were primarily driven by the lower response rate in Kaputa district.
Selective outcome reporting (Reporting bias)	Unclear risk	Authors did not refer to a protocol.
Other bias	Low risk	None identified.

Darrouzet Nardi 2016

Study characteristics

Methods

Study design: cRCT

How were missing data handled? NR

Randomisation ratio: 1:1

Recruitment method: HHs were identified via 'Village Development Committees,' and all were invited to participate. A parent from each HH provided informed consent.

Sample size justification and outcome used: original trial sample size was calculated to detect a difference of > 0.25 in mean WAZ with a power of 87% and a 2-sided significance level of 0.05.

Sampling method: 3 pairs of comparable communities in each district were identified, based on geographic location (including altitude), size, local natural resources, employment opportunities, availability of health care, type of agriculture practiced and other demographic features. Paired communities were randomly assigned to receive Heifer development activities either first (intervention communities) or second (control communities).

Study aim or objective: to evaluate the effect of a holistic community-level nutrition-sensitive intervention on child dietary diversity and animal source food consumption in rural Nepal.

Study period: NR

Darrouzet Nardi 2016 *(Continued)*

Unit of allocation or exposure: communities

Participants	**Baseline characteristics** Intervention or exposure group: • *Age*: NR • *Place of residence*: HHs, n: Chitwan 59; Nuwakot 59; Nawalparasi 62 • *Sex*: female-headed HH, %: 13 • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: HH members, n, mean: 6.44 (SD 0.21); SES score, mean: 1.63 (SD 0.08); animal-ownership score, mean: 1.71 (SD 0.12); water source in HH, %: 23; treating drinking water, %: 4; annual income, mean: NPR 69,386 (SD 3365) • *Social capital*: NR • *Nutritional status*: had a kitchen garden, %: 42; HAZ, mean: –1.47 (SD 0.07); prevalence of stunting, %: 31; WAZ, mean: –2.04 (SD 0.07); prevalence of underweight, %: 49; WHZ, mean: –1.44 (SD 0.07); prevalence of wasting, %: 25; MUACZ, mean: –1.47 (SD 0.05) • *Morbidities*: diarrhoea in previous 2 weeks, %: 8.24; fever in previous 2 weeks, %: 27.6; respiratory illness in previous 2 weeks, %: 28.67; ill days in previous 2 weeks, n, mean: 0.36 (SD 0.21); 'Health score: (maximum 6), mean: 5.35 (SD 0.05) • *Concomitant or previous care*: NR Control • *Age*: NR • *Place of residence*: HHs, n: Chitwan 44; Nuwakot 72; Nawalparasi 68 • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: HH members, n, mean: 6.46 (SD NR); SES score, mean: 1.69 (SD 0.08); animal-ownership score, mean: 2.42 (SD 0.13); water source in HH, %: 15; treating drinking water, %: 2; annual income, mean: NPR 65,273 (SD 3310) • *Social capital*: NR • *Nutritional status*: had a kitchen garden, %: 48; HAZ, mean: –1.48 (SD 0.06); prevalence of stunting, %: 33; WAZ, mean: –1.94 (SD 0.06); prevalence of underweight, %: 45; WHZ, mean: –1.26 (SD 0.06); prevalence of wasting, %: 23; MUACZ: –1.51 (SD 0.05) • *Morbidities*: diarrhoea in previous 2 weeks, %: 10.38; fever in previous 2 weeks, %: 29.87; respiratory illness in previous 2 weeks, %: 29.56; ill days in previous 2 weeks, n, mean: 2.42 (SD 0.20); 'Health score' (maximum 6), mean: 5.30 (SD 0.04) • *Concomitant or previous care*: NR Overall • *Age*: newborn to 92 years • *Place of residence*: NA • *Sex*: 1469 males; 1508 females (NR for 17 participants) • *Ethnicity and language*: NR • *Occupation*: both areas largely populated by low-income subsistence farmers. • *Education*: NR • *SES*: NR • *Social capital*: NR • *Nutritional status*: NR • *Morbidities*: NR

Darrouzet Nardi 2016 *(Continued)*

- *Concomitant or previous care*: NR

Inclusion criteria: all members of each participating HH.

Exclusion criteria: children with physical or neurological disabilities that prevented ingestion of a normal diet for age or children with severe intercurrent illnesses at time of survey

Pretreatment: animal ownership was greater in control HHs (2.42 (SD 0.13) than in intervention HHs (1.71 (SD 0.12) at baseline (P = 0.0001).

Attrition per relevant group: unclear, as the participatory HHs increased over duration of study.

Description of subgroups measured and reported: gender; age (6–12 months; > 12 months); season (hungry vs harvest); region for dietary quality outcomes.

Total number completed and analysed per relevant group: for growth outcomes at 24 months: intervention group: 305 children aged 6–60 months; control group: 306 children aged 6–60 months. Number of HHs unclear. For dietary outcomes at 24 months: 533 children in total (unclear how many per group). Number of HHs unclear.

Total number enrolled per relevant group: intervention group: 201 HHs (including 283 children aged 6–60 months); control group: 214 HHs (including 324 children aged 6–60 months)

Total number randomised per relevant group: intervention group: 3 study sites; control group: 3 study sites

Interventions	**Intervention characteristics** Intervention or exposure group: multicomponent agriculture training • *Food access intervention category*: increase buying power • *Intervention type*: income generation • *Description*: agricultural-related interventions (livestock training); sharing resources; community development. The Heifer training curriculum focused on poverty alleviation, citizen empowerment and community development, with a strong emphasis on optimisation of livestock management as a means to income generation. Training was based on the '12 Cornerstones' for holistic community development. No emphasis on child health and nutrition. In each community, local leaders were invited to serve on an advisory panel and as liaisons to the population about the project activities. • *Duration of intervention period*: 12 months • *Frequency*: bi-weekly • *Number of study contacts*: 5 (baseline and follow-up after 6, 12, 18 and 24 months) • *Providers*: Heifer International trained staff provided the intervention. Data collection by a local field research NGO (the Nepal Technical Assistance Group), that was not connected to Heifer. • *Delivery*: women's self-help groups that met with a trained facilitator, supplemented by specific interactive instruction, workshops, guidance and training. • *Co-interventions*: NR • *Resource requirements*: trained staff, staff time, training material for participants, livestock • *Economic indicators*: NR Control group: no intervention
Outcomes	Dietary diversity: HH DDI, child MDD Dietary intake: % children consuming specific foods – oil, dal, milk, meat, eggs, vitamin A rich foods, other Anthropometry: HAZ, WAZ
Identification	**Sponsorship source:** Heifer International **Country:** Nepal

Darrouzet Nardi 2016 *(Continued)*

Setting: HHs of communities mainly populated by low-income subsistence farmers. 2 regions involved: Hills region is conducive to livestock production; Terai region is conducive to crop production.

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Declarations of interest: yes; no conflicts of interest.

Study or programme name and acronym: Heifer International Intervention

Type of record: journal articles

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Method of randomisation NR.
Allocation concealment (Selection bias)	Unclear risk	NR.
Baseline characteristics similar (Selection bias)	Low risk	The mean HH size was larger in 1 control community compared to the intervention community. Animal ownership was greater in 1 control community. The study authors controlled for baseline HH characteristics in their analysis.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Study authors reported no differences in growth parameters or morbidity of children aged 6–60 months between the intervention and control groups at baseline (Miller 2014). DDSs, e.g. DDS, MDD at baseline between the intervention and control groups were NR (Darrouzet-Nardi 2016).
Blinding of participants and personnel (Performance bias)	Low risk	Although blinding was not possible, it was likely that a lack of blinding influenced the children's nutritional outcomes.
Blinding of outcome assessment (Detection bias)	High risk	The enumerators who collected baseline data were blinded to the allocation of the intervention but not those collecting data during the subsequent 12 months. Outcomes were based on self-report, which could have been influenced by participant's knowledge of treatment allocation.
Protection against contamination (Performance bias)	Low risk	The intervention and control communities were not adjacent to each other to minimise spillover effects.
Incomplete outcome data (Attrition bias)	Unclear risk	NR how many HHs and participants dropped out per group; and it seems that HHs were added after randomisation and initial enrolment. It is also unclear how missing data were handled. No clusters were lost.
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: low risk. Single 24-hour dietary recall at baseline and repeated during follow-up. Bias between intervention clusters due to level of participation in intervention. Quote: "Villages were randomly assigned to either Group 1 or Group 2, but within villages, HHs could choose their level of participation in the intervention, creating the potential for selection bias." Incorrect analysis: high risk. Study authors did not adjust

Darrouzet Nardi 2016 *(Continued)*

for clustering in their analysis. Recruitment bias: unclear. Unclear whether HHs were recruited before or after randomisation.

Doocy 2017

Study characteristics

Methods

Study design: PCS

Study grouping: N/A

How were missing data handled? With exception of imputation procedures for child anthropometric data, analysis did not consider interim measures of each indicator because after exploratory analysis, it became clear that inclusion of interim data points did not change results and conclusions, and thus eliminating analysis of interim measures would facilitate the interpretation of findings. Used a multiple imputation approach for anthropometric outcomes, where missing values were replaced by values sampled from a distribution defined by the fit of a linear regression model at a given follow-up as a function of previous outcomes, as well as of child age and sex. Missing values for maternal age was assigned the mean and education the mode of those variables, so they could be included in the analysis.

Randomisation ratio: N/A

Recruitment method: at enrolment, a full description of study was read to prospective participants and they had the opportunity to ask questions about participation; those who agreed to participate gave oral consent due to high levels of illiteracy. At each subsequent survey, the respondent was read an abbreviated consent statement and asked to re-affirm their willingness to participate prior to the interview (Doocy 2018). Study enrolment occurred between August and October 2012 following identification of beneficiaries for each intervention. 1820 beneficiaries and their HHs were enrolled and followed over 3.5 years during February/March 2016; study HHs were followed for the entire period, regardless of whether they graduated or dropped out of intervention.

Sample size justification and outcome used: primary outcome measure was reduction in HH food insecurity, and authors conducted calculations for varying levels of reduction, assuming 80% power and a significance level of 0.05. With a minimum sample size of 325 HHs per group (or 1625 HHs in total for the parent study), study was powered to detect a 10% or greater reduction in prevalence of food insecurity indicators within each comparison group compared to baseline levels.

Sampling method: The Jenga Jamaa II parent study used a quasi-experimental matched design in which communities planned to receive 1 intervention (vs multiple interventions) selected for participation so that the effect of individual interventions could be assessed. Authors analysed 2 of the 5 comparison groups recruited for the parent study of Jenga Jamaa II: the FFS intervention group (388 participants) and the control group (324 participants). Participating communities within each territory (Fizi and Uvira) were matched by livelihood zone (mountains, plains or lakeside) and proximity into sets of villages with each type of intervention. The final sample had 13 sets of 3 villages; within each set of villages, 1 village received agricultural interventions, 1 received PM2A, and 1 received WEGs. In each set of villages, intervention groups were formed (i.e. 1 intervention per village) and all beneficiaries in the group were enrolled in the study. In agricultural intervention villages, the entire FFS group of approximately 30 beneficiaries was enrolled in the study. Controls were selected from WEG villages, where each beneficiary was matched with a female neighbour not participating in Jenga Jamaa II interventions, and that woman's HH was enrolled as a control. Villages were assigned to an intervention based on agreement with local leaders and availability programme resources; intervention participants were identified based on programme targeting criteria and community selection processes. Once intervention groups were formed, all group members were invited to participate in the research. In agriculture villages, 1 FFS with approximately 30 participants was enrolled; 1 of 3 farmer-to-farmer trainees of each FFS participant was randomly selected to comprise the F2F group. In WEG villages, 1 WEG group of 25 participants was selected. Members of the control group were also selected from WEG villages because the WEG intervention had lower coverage than FFS/farmer-to-farmer and PM2A interventions (i.e. there was only 1 WEG group per village compared to multiple PM2A and agricultural intervention groups), which lessened the likelihood of spillover effects on control HHs.

Doocy 2017 *(Continued)*

Study aim or objective: to examine the changes in agricultural production practices, HH food security and child nutritional status that are associated with participation in FFS programmes. Study derived from a subset of data from the parent study of Jenga Jamaa II which sought to address HH food insecurity and child undernutrition through 1. increasing incomes among farming HHs through FFS and farmer-to-farmer training interventions, 2. improving the health and nutritional status of children aged < 5 years through the PM2A, and 3. empowering women via WEGs.

Study period: HHs were followed for 3.5 years, from enrolment in autumn of 2012 (baseline) to February or March 2016 (endline).

Unit of allocation or exposure: villages

Participants

Baseline characteristics

FFSs

- *Age*: n, mean, years: 37.9 (SD 13.4); children aged < 2 years, n, mean: 0.5 (SD 0.5); children aged 2–4 years, n, mean: 1.5 (SD 1.1)
- *Place of residence, %*: proportion in Fizi territory: 46.2; proportion in Uvira territory: 53.8
- *Sex*: female, %: 69.4
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: mean years of education: 3.4 (SD 3.6)
- *SES*: number of income sources, mean: 2.0 (SD 1.0); proportion with land ownership, %: 69.5; HH size, mean: 6.2 (SD 2.4)
- *Social capital*: NR
- *Nutritional status*: HDDS, mean: 3.4 (SD 1.4); proportion moderately and severely food insecure (HFIAS), %: 97.8
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: children aged < 2 years, n, mean: 0.7 (SD 0.5); children aged 2–4 years, n, mean: 1.8 (SD 1.1)
- *Place of residence*: proportion in Fizi territory, %: 46.2; proportion in Uvira territory, %: 53.8
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: NR
- *SES*: mean number of income sources: 1.8 (SD 0.9); proportion with land ownership, %: 68.6; HH size, mean: 6.3 (SD 2.4)
- *Social capital*: NR
- *Nutritional status*: mean HDDS: 3.4 (SD 1.5); proportion moderately and severely food insecure (HFIAS), %: 98.4
- *Morbidities*: NR
- *Concomitant or previous care*: NR

WEGs

- *Age*: mean, years: 34.0 (SD 8.8)
- *Place of residence*: proportion in Fizi territory, %: 46.2; proportion in Uvira territory, %: 53.8
- *Sex*: female, %: 100
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: mean years of education: 2.8 (SD 3.1)
- *SES*: mean number of income sources: 1.9 (SD 0.9); proportion with land ownership, %: 70.2; HH size, mean: 6.6 (SD 2.3)

Doocy 2017 *(Continued)*

- *Social capital*: NR
- *Nutritional status*: mean HDDS: 3.4 (SD 1.7); proportion moderately and severely food insecure (HFIAS), %: 99
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall (all intervention groups; including those irrelevant to the review)

- *Age*: mean, years: 33.4 (SD 11.4)
- *Place of residence*: proportion in Fizi territory, %: 46.2; proportion in Uvira territory, %: 53.8
- *Sex*: female, %: 86.1
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: mean years of education: 3.1 (SD 3.5)
- *SES*: mean number of income sources: 1.9 (SD 0.9); proportion with land ownership, %: 69.7
- *Social capital*: NR
- *Nutritional status*: mean HDSS: 3.4 (SD 1.5); proportion moderately and severely food insecure (HFIAS), %: 98.5
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: intervention participants identified based on programme targeting criteria and community selection processes. For the control group, enrolled primary carer of children, and 100% were women. No other details.

Exclusion criteria: NR

Pretreatment: more women in control group (as control group selected was women only – from the village where women empowerment intervention was implemented, whereas the interventions included all FFS beneficiaries (men and women). Intervention group participants were significantly older; control group participants had higher proportion completing any formal education control; group had higher mean number of younger children (aged 0–4 years); higher proportion of farmers in intervention group; mean HH size differed significantly between the groups; smaller for FFS groups and larger for WEG groups; number of income sources (highest in FFS group and lowest in control group).

Attrition per relevant group: results included only 82% of participants who were present for both baseline and endline surveys (both conducted in February/March). Village of Kibirizi, which included 1 FFS group, was not included in endline survey (and thus was excluded from the final evaluation) due to security concerns. 1820 HHs were enrolled in study and 1481 (81%) participated in the endline survey; follow-up ranged from 74% to 90% in different intervention groups and was lowest among the control group: FFS baseline 390; endline participation rate 81%; WEG baseline 325; endline participation rate 90%; control baseline 325; endline participation rate 78%.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: for food security outcomes: intervention group: 317 FFS beneficiaries; control group: 254 non-FFS participants. For child anthropometric outcomes: intervention group: 265 children of FFS beneficiaries; control group: 206 children of non-FFS participants.

Total number enrolled per relevant group: FFS programme: study enrolled 388 FFS beneficiaries and their HHs in the intervention group and 324 non-FFS adults and their HHs in the control group. WEG group: 390 HHs.

Total number randomised per relevant group: N/A

Interventions	**Intervention characteristics** FFSs • *Food access intervention category*: increase buying power

Doocy 2017 *(Continued)*

- *Intervention type*: income generation: FFSs
- *Description*: FFS intervention provided farmers with experience-based education on farming practices, postharvest handling, and business and natural resource management skills. Each FFS group received semimonthly training from ADRA field agents for 2 years. Each FFS group had a community demonstration plot, and group members also received starter packages of seeds and tools for use on individual farms. The FFS programmes focused on a variety of common crops in the region, including cassava, maize, rice, beans, banana and peanuts. The first year of training focused on knowledge of production systems and technologies; second year focused on adoption of techniques and technologies, and behaviour change. Content was designed to be crop-specific and seasonally appropriate. After completing the FFS intervention, many beneficiaries transitioned to farmer business associations, which were intended to improve access to credit and marketing opportunities.
- *Duration of intervention period*: 3.5 years
- *Frequency*: every 2 weeks
- *Number of study contacts*: 8 (August/September 2012; February/March 2013; August/September 2013; February/March 2014; August/September 2014; February/March 2015; August/September 2015; February/March 2016)
- *Providers*: implemented by ADRA.
- *Delivery*: training sessions on agriculture techniques and other content by field agents, with a community demonstration plot; provision of starter packages of seeds and tools; some reports of delayed seed arrival and inefficient tools that delayed processes. Insecurity complicated both programme delivery and data collection in some communities. Possible that spillover from the intervention areas affected the control areas.
- *Co-interventions*: some FFS participants trained 3 farmers from their community in FFS techniques (F2F programme). This was supposed to be a scalable and less resource intensive intervention to increase agricultural input. After FFS intervention, some transitioned to farmer business associations, which were intended to improve access to credit and marketing opportunities.
- *Resource requirements*: small incentive – which was most often soap and worth approximately USD 1 – for participation in each survey.
- *Economic indicators*: NR

Control

- *Food access intervention category*: no intervention
- *Intervention type*: no intervention
- *Description*: no intervention
- *Duration of intervention period*: no intervention
- *Frequency*: no intervention
- *Number of study contacts*: study HHs followed for 3.5 years, from enrolment autumn 2012 (baseline) to February or March 2016 (endline), graduated or dropped out of intervention. Data collected in 8 semiannual surveys (August/September and February/March) to account for seasonal variations in food security. Both data collection periods were at beginning of local rainy seasons.
- *Providers*: no intervention
- *Delivery*: no intervention
- *Co-interventions*: no intervention
- *Resource requirements*: participants received a small incentive – which was most often soap and worth approximately USD 1 – for participation in each survey.
- *Economic indicators*: no intervention

WEGs

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation: WEGs
- *Description*: WEGs met weekly and served as a delivery mechanism for a variety of interventions including literacy and numeracy, business and marketing training and income-generation activities, primarily soap-making, bread-making and fish-drying. Beneficiaries were provided with a starter kit of basic materials for their income-generation activity and savings and credit groups were started in each WEG; many WEG participants also received goats and energy-efficient stoves.

Doocy 2017 *(Continued)*

- *Duration of intervention period*: 3.5 years
- *Frequency*: weekly meetings; one-off starter kit of materials for income-generation activities.
- *Number of study contacts*: study HHs were followed for 3.5 years, from enrolment in autumn 2012 (baseline) to February or March 2016 (endline), graduated or dropped out of intervention. Data collected in 8 semiannual surveys (August/September and February/March) to account for seasonal variations in food security. Both data collection periods were at beginning of local rainy seasons.
- *Providers*: implemented by ADRA.
- *Delivery*: beneficiaries were provided with a starter kit of basic materials for their income-generation activity and savings and credit groups were started in each WEG; many WEG participants also received goats and energy-efficient stoves.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: NR

Outcomes	Food security: HFIAS; proportion of HHs improving in a HFIAS category from baseline to endline; proportion of HHs food secure and mildly/moderately/severely food insecure Dietary diversity: HDDS; HHs achieving target dietary diversity Anthropometry: stunting, underweight
Identification	**Sponsorship source:** USAID Office of Food for Peace Cooperative Agreement (AID-FFP-A-11-00006). **Country:** Democratic Republic of the Congo **Setting:** 2 farming villages in South Kivu province in the Congo **Author's name:** Shannon Doocy **Email:** doocy1@jhu.edu **Declarations of interest:** none declared. **Study or programme name and acronym:** Farmer Field Schools programme, subset of interventions implemented as part of the Jenga Jamaa II project **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	PCS
Allocation concealment (Selection bias)	High risk	PCS; therefore, no allocation concealment carried out.
Baseline characteristics similar (Selection bias)	Low risk	Some imbalances in gender, age, number of younger children, proportion who were farmers between the intervention and control groups. These characteristics were adjusted for in the analysis and authors also carried out PSM.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Study authors reported differences in food security outcomes at baseline, although the statistical analysis of these outcome variables was not provided. Analyses regarding food security outcomes was adjusted for baseline HDDS values. However, for child anthropometric outcomes, there were no baseline values reported, thus it is unclear whether there were imbalances or not.

Doocy 2017 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	No blinding of participants and personnel was done. However, in this type of intervention, it is unlikely that lack of blinding would have affected experience or treatment of participants.
Blinding of outcome assessment (Detection bias)	High risk	Although blinding was not possible, interviews were carried out by staff that did not regularly interact with the participants. However, outcomes such as dietary diversity and food insecurity, that are based on respondents recall, may be susceptible to lack of blinding.
Protection against contamination (Performance bias)	High risk	Control HHs were sampled from villages that received 1 of the intervention types (WEG), thus the risk for contamination was high. Authors also reported that, "It is also possible that spillover from the intervention areas affected the control areas."
Incomplete outcome data (Attrition bias)	High risk	Differential attrition observed between groups: 10% for WEGs, 19% for FFS and 22% for control group. Reasons for missing/excluded data not provided. 1 entire village (Kibirizi) was excluded from the analyses (due to conflicts in the country). For child anthropometric data, missing values were inputted using a multiple imputation approach, where missing values were replaced by values sampled from a distribution defined by the fit of a linear regression model at a given follow-up as a function of previous outcomes, as well as of child age and sex.
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A; however, the primary outcome, namely HH food security (as prespecified in the Methods section of the citation by Doocy 2017), was reported in the text.
Other bias	Low risk	Misclassification bias of exposure: low risk. Measurement bias: low risk; scales used were validated and widely used, as was anthropometric measurement; and staff were trained in data collection. Seasonality: low risk; study collected data over different seasons over 3.5 years. Random sequence generation (selection bias).

Evans 2014

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** Authors carried out both ETT and ITT regressions. However, in ETT analyses, treated HHs were those assigned to the intervention and actually received the intervention, whereas in an ITT analysis 'treated' HHs were those that were assigned to intervention, regardless of whether they actually received it. It appears as data not collected was excluded from the analysis. **Randomisation ratio:** 1:1; 40 intervention and 40 control communities **Recruitment method:** HHs were invited to enrol in the pilot. Enrolment of beneficiaries carried out in each community, with the enrolment process lasting 1–3 days, depending on total number of beneficiary HHs in the community. The enrolment team identified who would receive payments in each HH (usually the mother of the children in the HH if present), updated family information, linked children and the elderly with schools and health centres, provided an orientation session about the programme, and provided identity cards. **Sample size justification and outcome used:** once all communities were assigned into groups, power calculations identified the need to interview a mean of 25 HHs per community. With a total of 80 participating communities (40 treatment and 40 control) and a standardised effect size of 0.20, it was ex-

Evans 2014 *(Continued)*

pected to need to interview 20 HHs per community to achieve 80% power. 25 HHs per community were then interviewed since not every HH would have vulnerable children: some few HHs would only have vulnerable elderly people. Calculation assumed 95% CIs for statistical significance and an intracluster correlation of 0.05.

Sampling method: pilot study implemented in districts and communities targeted under TASAF I, which targeted the poorest and most vulnerable districts of Tanzania using a rigorous selection process. Regions were ranked using several indicators (poverty level, food insecurity, primary school gross enrolment ratio, access to safe water, access to health facilities, AIDS case rates and road accessibility). Districts were then prioritised within the regions using an index of relative poverty and deprivation constructed using data from Tanzania's 1992 Income and Expenditure Survey. Targeting done using screening forms designed to identify vulnerable children and elderly people based on specific criteria, which were defined by the communities themselves. The CMCs used these poverty indicators to identify the poorest (approximately) half of HHs in the community. Validation of the list of eligible HHs was done by the village assembly, allowing for community validation. They ranked HHs by priority. Random selection of control and treatment communities was done after identification of vulnerable HHs in all 80 communities.

Study aim or objective: pilot project aiming to develop operational modalities for the community-driven delivery of a CCT programme through a social fund operation; and test the effectiveness of the community-based CCT model and ensure that lessons from the pilot informed government policy on support for vulnerable families.

Study period: 31–34 months: January 2010 (when first payments were made) to October 2012 (endline survey).

Unit of allocation or exposure: communities (with random selection of HHs within communities allocated to each intervention group)

Participants

Baseline characteristics

Intervention or exposure

- *Age*: adults aged 18–59 years, n: 1.08; children, n: 1.69; elderly people, n: 1.91
- *Place of residence*: villages in Tanzania
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: HHs in agricultural self-employment, %: about 72
- *Education*: child ever in school (% children): 78.36; child (aged 6–17 years) now in school: 86.98; repeated a grade (% children in school); taken a national examination (% children in school): 98.09; own exercise books (% children in school): 94.48
- *SES, % HH*: bank account: 1.6; borrowed part year: 19.3; improved roof: 33.0; improved floor: 3.0; improved toilet: 69.1; piped water: 30.2; electricity: 0.0
- *Social capital*: contributed labour to a community development project, % HHs: 36.25. Can trust people in community, % respondents: 58.68. Can trust community leaders, % respondents: 80.87
- *Nutritional status*: NR
- *Morbidities*: disabled, n in HH): 0.42; hospitalised, n in HH last month): 0.05; ill past month, % individuals: 31.3; taken medication, % individuals with health problem: 87.9; ill in past year, % individuals: 65.3
- *Concomitant or previous care*: NR

Control

- *Age*: adults aged 18–59 years, n: 1.04; children, n: 1.61; elderly people, n: 1.32
- *Place of residence*: villages in Tanzania
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: HHs in agricultural self-employment, %: about 72%
- *Education*: child ever in school, %: 83.28; child (aged 6–17) now in school, %: 89.23; repeated a grade, % children in school; taken a national examination, % children: 98.10; own exercise books, % children in school: 95.56

Evans 2014 *(Continued)*

- *SES, % HHs*: bank account: 2.1; borrowed part year: 18.2; improved roof: 37.2; improved floor: 8.7; improved toilet: 31; piped water: 31.6; electricity: 1.3
- *Social capital*: contributed labour to a community development project, % HHs: 35.27. Can trust people in community, % respondents: 52.58. Can trust community leaders, % respondents: 80.07
- *Nutritional status*: NR
- *Morbidities*: disabled, n in HH: 0.44; hospitalised, n in HH last month: 0.04; ill past month, % individuals: 29.5; taken medication, % individuals with health problem: 90.1; ill in past year, % individuals: 63.8%
- *Concomitant or previous care*: NR

Overall

- *Age*: NR
- *Place of residence*: villages in Tanzania
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: HHs in agricultural self-employment, %: about 72%
- *Education*: NR
- *SES*: improved floor (concrete/wood/tiles), %: 6, mud floor, %: 94; almost always use pit latrine, %: 71; access to piped water, %: 31; lack access to electricity, %: 99.0.
- *Social capital*: trust in community leaders, %: 80
- *Nutritional status*: NR
- *Morbidities*: HH members reported being ill in the last month, %: about 30.
- *Concomitant or previous care*: HHs receiving ≥ TZS 5000 from Government/TASAF, %: 3.8; from NGO/religious organisation, %: 4.9

Inclusion criteria: HHs with vulnerable children (1 parent or both parents deceased; abandoned children; having 1 or 2 chronically ill parents (e.g. HIV/AIDS); chronically ill children, despite having 2 parents alive. Vulnerable elderly people defined as: elderly with no carers, poor health, very poor. Communities in the selected 3 districts.

Exclusion criteria: none specifically reported.

Pretreatment: HHs in treatment communities were less likely to have houses with improved floors or electricity. Control communities had slightly more elderly people, HHs electricity and improved roofs, floors and toilets, children ever in school, children with own textbooks, than treatment communities. Treatment communities had slightly more acres farmed, children than missed school in the previous week and participants that could trust other people on the community, than control communities.

Attrition per relevant group: total attrition: 13% at endline. Per group attrition NR.

Description of subgroups measured and reported: women vs men (or girls vs boys). Poorest half vs the less poor half of HHs (on an asset index constructed using principal components analysis). HHs in Kibaha vs Bagamoyo vs Chamwino districts. Age groups: all ages, age 0–1 year; 0–2 years; 0–4 years; 0–18 years; 7–14 years; 15–18 years; ≥ 60 years.

Total number completed and analysed per relevant group: 13% (n = 325) of the 2500 recruited HHs were LTFU at endline; therefore, 2175 were analysed. Numbers per group NT.

Total number enrolled per relevant group: 1764 HHs and 6918 individual beneficiaries in total at baseline. Numbers per group NR.

Total number randomised per relevant group: 40 villages in treatment group and 40 villages in control group.

Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increasing buying power • *Intervention type*: CCT

Evans 2014 *(Continued)*

- *Description*: payments to beneficiary HHs are made bimonthly (every 2 months), USD 12–36 maximum depending on number of people in HH. USD 3 per month for orphans and vulnerable children aged ≤ 15 years (about 50% of food poverty line). Initially TZS 3600, but later revised to TZS 5100 to account for inflation. USD 6 per month for elderly people aged ≥ 60 years (100% of food poverty line). Initially this was TZS 7200 but was later revised to TZS 10,500. No HH received < USD 6 per month, and no HH received > USD 18 per month. Funds routed to communities through the local government authorities. Payments disbursed by TASAF to a bank account managed by the LGA, which disbursed the funds directly to the community-managed accounts. If the local government was not qualified to receive capital development grants, TASAF disbursed the funds directly to the community-managed accounts. CMCs were then responsible for making payments to beneficiary HHs. Education conditions: enrolment in primary school and individual attendance for children aged 7–15 years. Health conditions: visit to health facility for growth monitoring 6 times a year for children aged 0–5 years; vaccination and growth monitoring for children aged 0–2 years; yearly visit to health facility for routine check and orientation for elderly people (aged ≥ 60 years). A module on community score cards was used as part of the intervention itself to enhance the accountability and process monitoring of the CCT roll out.
- *Duration of intervention period*: 31–34 months: January 2010 to August–October 2012
- *Frequency*: cash transfers every 2 months
- *Number of study contacts*: 3: baseline: January–May 2009; Midline: July–September 2011; endline: August–October 2012
- *Providers*: Tanzania Social Action Fund, World Bank, community management communities, village assembly, village council, local government authorities
- *Delivery*: funds routed to communities through the local government authorities. In districts where the local government was certified compliant via Tanzania's Local Government Development Capital Grant programme, TASAF disbursed 5 payments to a bank account managed by the LGA, which disbursed the funds directly to the community-managed accounts. If the local government was not qualified to receive capital development grants, TASAF disbursed the funds directly to the community-managed accounts. The CMCs were then responsible for making payments to beneficiary HHs. Monitoring of conditions began after the first payment was disbursed to beneficiaries in January 2010, and then was done every 4 months. The monitoring process was conducted by TASAF and the CMCs, with support from schools, health centres and district staff. If beneficiaries failed to comply with the conditions, a warning was issued to them by the CMCs. If, after the next monitoring period (8 months after the first payment), beneficiaries still failed to comply with conditions, payments were reduced by 25% and a second warning was sent. After 2 warnings, beneficiaries who failed to comply were suspended indefinitely, but allowed to return to the programme after review and approval by the communities and TASAF. CMCs were responsible for monitoring and also visited beneficiary HHs regularly to keep abreast of any developments. HHs could also leave or be asked to leave the programme for the following reasons: if they chose to opt out, and had informed the CMC, if the HH no longer had an elderly person or a child age < 15 years who was in primary school, if HH members failed to comply with conditions after a warning had been issued 3 consecutive times for children and 2 consecutive times for elderly people.
- *Co-interventions*: transfers from government/TASAF or from NGOs/religious organisation
- *Resource requirements*: 'staff' involved in delivering intervention: CMCs village council, village assembly. No other resources reported.
- *Economic indicators*: payments: per child USD 6; per elderly person USD 12; maximum payment USD 36; mean payment USD 1450 (Figure ES.2)

Control: no intervention

Outcomes	Value of flour/rice purchased Anthropometry: weight; height; MUAC; HAZ; WAZ; WHZ; BMIZ Morbidity: proportion reported being ill in the past 4 weeks; number of days too ill for normal activities in the past 4 weeks
Identification	**Sponsorship source:** Japan Social Development Fund (JSDF); Trust Fund for Environmentally and Socially Sustainable Development (TFESSD); Spanish Impact Evaluation Fund (SIEF), International Initiative for Impact Evaluation (3ie), and the Consultative Group on International Agricultural Research (CGIAR) Research Program on PIM.

Evans 2014 *(Continued)*

Country: Tanzania

Setting: communities in 3 poorest and most vulnerable districts (Bagamoyo, Chamwino and Kibaha)

Author's name: David K Evans

Email: devans2@worldbank.org; pubrights@worldbank.org

Declarations of interest: NR

Study or programme name and acronym: Community-Based Conditional Cash Transfers in Tanzania

Type of record: report

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Authors mentioned that villages were randomly selected for intervention and control groups but did not describe any method of random sequence generation.
Allocation concealment (Selection bias)	High risk	No allocation concealment and HH selection was done after villages had been allocated to each intervention group. Unclear how this was done and whether knowledge of the group to which the village had been allocated influenced the process.
Baseline characteristics similar (Selection bias)	Low risk	Baseline differences between groups were reported and adjusted for in the difference-in-difference analysis.
Baseline outcome measurements similar (Selection bias)	Unclear risk	NR
Blinding of participants and personnel (Performance bias)	Low risk	No blinding but this was unlikely to affect participant and personnel behaviour.
Blinding of outcome assessment (Detection bias)	High risk	No blinding and some outcomes were self-reported or subjective outcomes that could have been influenced by knowledge of treatment allocation.
Protection against contamination (Performance bias)	Low risk	Allocation to intervention group by village so there was no risk of contamination.
Incomplete outcome data (Attrition bias)	Low risk	Comment: overall, there were no data for 13% of HHs at baseline. Samples varied for different outcomes reported and it seemed that data were excluded from analysis. However, authors indicated that (quote) "Overall, these balanced rates of attrition across treatment and comparison suggest that the impact evaluation results are unlikely to be affected by attrition."
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available for this study/report.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: unclear. Validated tool NR for measuring food consumption and it was only measured 3 times in an almost 3-year period, which may be insufficient. Incorrect analysis: high. Authors adjusted for intracluster correlation.

Fenn 2015

Study characteristics

Methods

Study design: cRCT

Study grouping: N/A

How were missing data handled? WHZ data coded as missing if WHZ > +5 or WHZ < –5; HAZ data coded as missing if HAZ > +5 or HAZ < –6. A child's data were excluded from the analysis if the child was deemed to be a different child to the child enrolled at baseline. While checks were in place to ensure that the same child was measured every month, in some cases these were not followed. Used criteria for exclusion a decrease in height or length > 1 cm (measurement error) or an increase > 15 cm (considered the maximum height a child could grow in 6 months). All effect analyses were ITT.

Randomisation ratio: 1:1:1:1

Recruitment method: Action Against Hunger provided the initial HH lists, and these were further verified and updated by the study research team. HHs defined as poor and very poor were selected. Field officers then visited identified HHs to share details of study and get informed consent before collecting baseline data. Study participants were enrolled by data collection team and were unaware which intervention they would be getting at enrolment. However, blinding of participants was not possible due to nature of intervention. Data collection team was different to cash and voucher disbursement team. Data collection team was responsible for collection of data and sensitisation of the study recipients to use of cash and vouchers. Data collection team was accompanied by local research mobilisers who facilitated the data collectors (e.g. in locating HHs), and were responsible for delivering key BCC messages.

Sample size justification and outcome used: target sample size (about 632 HHs per group) was calculated to measure a detectable difference of prevalence of being wasted of 7% between the intervention and the control groups postintervention. Sample size was powered to detect a 0.19 WHZ difference between the intervention and the control groups. Sample size was reached for the standard cash transfer, food voucher and control groups. However, for the double cash transfer group, the sample size was 600 due to the different funding amounts given for this group, which did not allow for an equivalent number of HHs to be included compared to the other 3 groups. Target sample size was calculated using an estimated ICC of 0.02 for prevalence of being wasted from an Action Against Hunger nutrition survey in Dadu District. ICC for prevalence of being wasted was 0.01 (Fenn 2017).

Sampling method: it was not possible to carry out a public randomisation, therefore, randomisation was done by the principal investigator using a random number table to generate the randomisation sequence and then drawing village names from a box. Block randomisation was done, allowing equal distribution of the villages to each group for small (< 40 HHs), medium (40 (SD 85) HHs) and large (> 85 HHs) villages. The investigator had no knowledge of the villages involved and was not involved in the intervention implementation or any data collection. HHs were selected from villages from 3 agricultural areas sharing similar livelihoods, geography and access to the same elements of the standard WINS programme. Action Against Hunger provided the initial HH lists, and these were further verified and updated by the study research team. HHs defined as poor or very poor using eligibility criteria decided by research team with village participation, and based on ownership of cultivated land and number of goats and with ≥ 1 children aged 6±48 months were selected. The study was a closed cohort and followed all children in the same eligible HHs regardless of their baseline anthropometric status.

Study aim or objective: to evaluate 3 cash-based transfer modalities on nutritional outcomes in children aged < 5 years from poor and very poor HHs in Dadu District, Sindh Province, Pakistan. Aimed to 1. compare the nutrition status of children receiving either a seasonal UCTs or a fresh food voucher with those with access to Action Against Hunger care only, after 6 months and 1 year; 2. assess the costs and cost-effectiveness of the different interventions; 3. understand the factors that determined the ways in which HHs used the different transfers and 4. explore the role of the different processes involved in the study outcomes and how they interact with the context (Fenn 2015).

Study period: data for the main impact analysis and findings reported here involved 3 periods: baseline (May–July 2015), 6 months after baseline (December 2015), and 1 year after baseline (June/July 2016).

Fenn 2015 *(Continued)*

Unit of allocation or exposure: villages

Participants

Baseline characteristics

Standard cash transfer

- *Age*: child, months, mean: 25.6 (SD 12.3)
- *Place of residence*: NR
- *Sex*: girls, n/N (%): 433/905 (47.9)
- *Ethnicity and language*: ethnicity, n (%): Sindhi 587 (94.2), Balochi 36 (5.8), Punjabi 0 (0). Muslim religion, n (%): 622 (99.8)
- *Occupation*: NR
- *Education*: father primary education or more, n (%): 249 (40.0); mother primary education or more, n (%): 63 (10.1)
- *SES*: wealth category, n (%): most poor 112 (18.0); more poor 137 (22.0); poor 114 (18.3); less poor 134 (21.5); least poor 126 (20.2). Access to safe water, n (%): 49 (7.9)
- *Social capital*: NR
- *Nutritional status*: child dietary diversity, median: 7 (IQR 6–8); child wasted (WHZ < –2SD), n (%): 196 (22.0); child severe acute malnutrition (WHZ < –3SD), n (%): 69 (7.7); child stunted (HAZ < –2SD), n (%): 457 (50.9); child Hb, g/L, mean: 89 (SD 17).
- *Morbidities*: child diarrhoea, n (%): 228 (25.2); child ARI, n (%): 310 (34.3)
- *Concomitant or previous care*: child deworming, n (%): 125 (13.8); BISP (Benazir Income Support Programme) participation n (%): 46 (7.4)

Double cash transfer

- *Age*: child, months, mean: 25.9 (SD 12.0)
- *Place of residence*: NR
- *Sex*: girls, n/N (%): 429/839 (51.1)
- *Ethnicity and language*: ethnicity, n (%): Sindhi 523 (87.8), Balochi 59 (9.9), Punjabi 14 (2.4)
- *Occupation*: NR
- *Education*: father primary education or more, n (%): 198 (33.2); mother primary education or more, n (%): 66 (11.1)
- *SES*: wealth category, n (%): most poor 129 (21.6); more poor 123 (20.6); poor 90 (15.1); less poor 128 (21.5); least poor 126 (21.1). Access to safe water, n (%): 92 (15.4)
- *Social capital*: NR
- *Nutritional status*: child dietary diversity, median: 7 (IQR 6–9); child wasted (WHZ < –2SD), n (%): 198 (24.0); child severe acute malnutrition (WHZ < –3SD), n (%): 74 (9.0); child stunted (HAZ < –2SD), n (%): 389 (46.5); child Hb, g/L, mean: 90 (SD 16).
- *Morbidities*: child diarrhoea, n (%): 229 (27.3); child ARI, n (%): 332 (39.6); child fever/malaria, n (%): 517 (61.7).
- *Concomitant or previous care*: child deworming, n (%): 93 (11.1); BISP participation n (%): 68 (11.5)

Food voucher

- *Age*: child, months, mean: 26.2 (SD 11.9)
- *Place of residence*: NR
- *Sex*: girls, n/N (%): 417/866 (48.2)
- *Ethnicity and language*: ethnicity, n (%): Sindhi 612 (97.3), Balochi 17 (2.7), Punjabi 0 (0)
- *Occupation*: NR
- *Education*: father primary education or more, n (%): 241 (38.3); mother primary education or more, n (%): 80 (12.7)
- *SES*: wealth category, n (%): most poor 143 (22.7); more poor 145 (23.1); poor 91 (14.5); less poor 113 (18.0); least poor 137 (21.8). Access to safe water, n (%): 49 (7.8)
- *Social capital*: NR

Fenn 2015 *(Continued)*

- *Nutritional status*: child dietary diversity, median: 8 (IQR 6–8); child wasted (WHZ < –2SD), n (%): 165 (19.3); child severe acute malnutrition (WHZ < –3SD), n (%): 46 (5.4); child stunted (HAZ < –2SD), n (%): 473 (54.9)
- *Morbidities*: child diarrhoea, n (%): 236 (27.3); child ARI, n (%): 265 (30.6).
- *Concomitant or previous care*: child deworming, n (%): 111 (12.8); BISP participation n (%): 59 (9.4)

Control

- *Age*: child, months, mean: 23.4 (SD 11.3)
- *Place of residence*: NR
- *Sex*: girls, n/N (%): 431/852 (50.6)
- *Ethnicity and language*: ethnicity, n (%): Sindhi 515 (82.9), Balochi 105 (16.9), Punjabi 1 (0.2)
- *Occupation*: NR
- *Education*: father primary education or more, n (%): 197 (31.7); mother primary education or more, n (%): 28 (4.5)
- *SES*: wealth category, n (%): most poor 154 (24.8); more poor 130 (20.9); poor 106 (17.1); less poor 132 (21.3); least poor 99 (15.9). Access to safe water, n (%): 57 (9.2)
- *Social capital*: NR
- *Nutritional status*: child dietary diversity, median: 8 (IQR 6–9); child wasted (WHZ < –2SD), n (%): 184 (21.9); child severe acute malnutrition (WHZ < –3SD), n (%): 62 (7.4); child stunted (HAZ < –2SD), n (%): 437 (51.7)
- *Morbidities*: child diarrhoea, n (%): 298 (35.0); child ARI, n (%): 273 (32.2)
- *Concomitant or previous care*: child deworming, n (%): 38 (4.5); BISP participation n (%): 104 (16.8)

Overall: NR

Inclusion criteria: HHs selected from villages from 3 agricultural areas sharing similar livelihoods, geography and access to the same elements of the standard WINS programme. HHs defined as poor or very poor using eligibility criteria decided upon by the research team with village participation, and based on ownership of cultivated land and number of goats and with ≥ 1 children aged 6 (SD 48) months were selected.

Exclusion criteria: NR

Pretreatment: baseline characteristics of clusters and participants between the different intervention and control groups were well balanced for mothers and their children, apart from the proportion of children who had received deworming treatment, which was lower in the control group. There were a few potential imbalances at the HH level and between villages due to the clustered nature of the study design. These included village size, ethnicity, access to safe water and distance to nearest health service. In the control group, there was a higher proportion of HHs of Balochi ethnicity. There also appeared to be differences in the SES and educational status of mothers and fathers (both lower) and a higher number of HHs participating in the BISP in control group (Fenn 2017).

Attrition per relevant group: no evaluation clusters LTFU; response rates for HHs were 95.6% and children were 98.3% within clusters at 6 months and for HHs were 95.0% and children were 96.8% at 1 year. 109 (1.6%) children missing (WHZ outliers, excluded children, missing data at either time point): control 31, double cash 32, food voucher 24 standard cash 22. From Figure 1: excluded/missing HH data: control 3.9%; double cash 5.3%; food voucher 4.7%; standard cash: 5.9%; children missing/excluded: control 4.3%; double cash 5.1%; food voucher 5.5%; standard cash 6.2%; mothers BMI outcomes: 1307 (26.9%) mothers with missing data: control 308; double cash 315; food voucher 334; single cash 350. For MUAC, Hb and anaemia, missing data were ≤ 5%.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: at 12 months: control: HH and carer 607; children 815; double cash: HH and carer 568; children 796; food voucher: HH and carer 602; children 818; standard cash: HH and carer 595; children 849. At 6 months: control: HH and carer 601; children 809; double cash: HH and carer 573; children 809; food voucher: HH and carer 603; children 834; standard cash: HH and carer 607; children 874.

Fenn 2015 *(Continued)*

Total number enrolled per relevant group: cluster allocations: total 114 eligible clusters randomised to: control 28; double cash 24; standard cash 31; food voucher 31. HH allocations: HHs assessed for eligibility 5128. Total HHs eligible to participate 2494. Baseline allocation 2494. HHs to the study groups: control 632; double cash 600; standard cash 632; food voucher 632. Total HH number receiving intervention (after dropped out due to relocation at baseline): control: HH 621; children 852; double cash: HHs 596; children 839; standard cash: HHs 623; children 905; food vouchers: HHs 629; children 866.

Total number randomised per relevant group: 114 clusters (villages) randomised to: control 28; double cash 24; food voucher 31; standard cash 31. HH allocations 2494: control 632; double cash 600; food voucher 632; standard cash 632.

Interventions

Intervention characteristics

Standard cash transfer

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT – standard cash
- *Description*: standard cash amount of PKR 1500 (approximately USD 14) disbursed at same time every month for 6 consecutive months (Fenn 2017)
- *Duration of intervention period*: 6 months (July 2015 to December 2015)
- *Frequency*: monthly
- *Number of study contacts*: baseline; 6 months; 12 months
- *Providers*: the EU.
- *Delivery*: cash disbursed at distribution points on a monthly basis either by mobile banks that travelled to a central location serving some of the participating villages or through central banks that served several villages. Delivered with verbal messaging from Action Against Hunger field staff, who were present at all distributions, that children should benefit from the transfers. Disbursement of cash and vouchers was done by different organisations, and the cash participants had further to travel to their distribution point, which may have added to the opportunity costs to HHs and reduced the actual transfer value.
- *Co-interventions*: all villages had access to the WINS programme, which provided outpatient treatment for children aged 6 (SD 59) months with severe acute malnutrition, micronutrient supplementation (children and pregnant and lactating women) and BCC. Key BCC messages on the causes of undernutrition, the benefits of exclusive breastfeeding, improved complementary feeding practices, food and water hygiene, handwashing and sanitation were targeted at mothers. These messages were delivered monthly to all study participants in group sessions by the research mobilisers who also facilitated data collection activities, such as locating HHs and setting up times to be available, but were not involved in the data collection itself.
- *Resource requirements*: disbursement of cash and vouchers was done by different organisations, and cash participants had further to travel to their distribution point, which may have added to the opportunity costs to HHs and reduced the actual transfer value.
- *Economic indicators*: authors mentioned cost-effectiveness analysis (to be published elsewhere).

Double cash transfer

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT – double cash
- *Description*: UCT of double cash amount of PKR 3000 (about USD 28) disbursed at same time every month for 6 consecutive months.
- *Duration of intervention period*: 6 months (July 2015 to December 2015)
- *Frequency*: monthly
- *Number of study contacts*: baseline; 6 months; 12 months
- *Providers*: funded by DG EU Humanitarian Aid and Civil Protection Action Against Hunger field staff
- *Delivery*: cash disbursed at distribution points on a monthly basis either by mobile banks that travelled to a central location serving some of the participating villages or through central banks that served several villages. Delivered with verbal messaging from Action Against Hunger field staff, who were present at all distributions, that children should benefit from transfers. Disbursement of cash and vouchers was done by different organisations, and the cash participants had further to travel to

Fenn 2015 *(Continued)*

their distribution point, which may have added to the opportunity costs to HHs and reduced the actual transfer value.

- *Co-interventions*: all villages had access to the WINS programme, which provided outpatient treatment for children aged 6 (SD 59) months with severe acute malnutrition, micronutrient supplementation (children and pregnant and lactating women) and BCC. Key BCC messages on the causes of undernutrition, the benefits of exclusive breastfeeding, improved complementary feeding practices, food and water hygiene, handwashing and sanitation were targeted at mothers. These messages were delivered monthly to all study participants in group sessions by the research mobilisers who also facilitated data collection activities, such as locating HHs and setting up times to be available, but were not involved in the data collection itself.
- *Resource requirements*: disbursement of cash and vouchers was done by different organisations, and the cash participants had further to travel to their distribution point, which may well have added to the opportunity costs to HHs and reduced the actual transfer value.
- *Economic indicators*: authors mentioned cost-effectiveness analysis (to be published elsewhere).

Food voucher

- *Food access intervention category*: food prices
- *Intervention type*: fresh food vouchers
- *Description*: food vouchers with a cash value of PKR 1500 (about USD 14), which could be exchanged for specified fresh foods (fruits, vegetables, milk and meat) in nominated shops. Action Against Hunger ensured that all food voucher villages had good access to these shops, by nominating shops in, or nearby, these villages. All villages were served by ≥ 1 nominated shop. Vouchers were disbursed at same time every month for 6 consecutive months.
- *Duration of intervention period*: 6 months (July 2015 to December 2015)
- *Frequency*: monthly
- *Number of study contacts*: baseline; 6 months; 12 months
- *Providers*: funded by the EU.
- *Delivery*: food vouchers disbursed to participating HHs at the village level. Disbursement of cash and vouchers was done by different organisations. The food voucher group had more direct contact with Action Against Hunger field staff during voucher disbursement, which could have affected the results through greater exposure to key messages. It is also possible that the vouchers themselves were too restricted. They were designed to purchase fresh fruit, vegetables, and fresh meat and were, therefore, dependent on what the vendors stocked, such as chicken being the only available meat. There were also many anecdotal reports regarding vendors overcharging for food items redeemed against the vouchers as a way to cover their own administration fees in recovering the voucher costs. In this respect, the actual transfer value given may have been lower than the face value.
- *Co-interventions*: all villages had access to the WINS programme, which provided outpatient treatment for children aged 6 (SD 59) months with severe acute malnutrition, micronutrient supplementation (children and pregnant and lactating women) and BCC. Key BCC messages on the causes of undernutrition, the benefits of exclusive breastfeeding, improved complementary feeding practices, food and water hygiene, handwashing and sanitation were targeted at mothers. These messages were delivered monthly to all study participants in group sessions by the research mobilisers who also facilitated data collection activities, such as locating HHs and setting up times to be available, but were not involved in the data collection itself.
- *Resource requirements*: NR
- *Economic indicators*: authors mentioned cost-effectiveness analysis (to be published elsewhere).

Control

- *Food access intervention category*: no intervention (WINS programme)
- *Intervention type*: no intervention (WINS programme)
- *Description*: no additional intervention beyond the basic WINS (Women and Children/Infants Improved Nutrition in Sindh) programme activities that were provided to all groups. A pure control group was not feasible given WINS programme coverage across Dadu District (Fenn 2017). All villages had access to the WINS programme, which provided outpatient treatment for children aged 6 (SD 59) months with severe acute malnutrition, micronutrient supplementation (children and pregnant and lactating women) and BCC. Key BCC messages on the causes of undernutrition, the benefits of exclusive breastfeeding, improved complementary feeding practices, food and water hygiene, handwashing and san-

Fenn 2015 *(Continued)*

itation were targeted at mothers (Fenn 2017). The key WINS programme messages were delivered to all study participants in group sessions by REFANI-P research mobilisers each month. The key messages were targeted at the mother/carers of the eligible children, although other HH members are not excluded from access to key messages (Fenn 2015)

- *Duration of intervention period*: 6 consecutive months (July–December 2015).
- *Frequency*: WINS programme – monthly BCC messages
- *Number of study contacts*: baseline; 6 months; 12 months
- *Providers*: no intervention except for WINS programme
- *Delivery*: no intervention except for WINS programme
- *Co-interventions*: all villages had access to the WINS programme, which provided outpatient treatment for children aged 6 (SD 59) months with severe acute malnutrition, micronutrient supplementation (children and pregnant and lactating women) and BCC. Key BCC messages on the causes of undernutrition, benefits of exclusive breastfeeding, improved complementary feeding practices, food and water hygiene, handwashing and sanitation were targeted at mothers. Messages delivered monthly to all study participants in group sessions by the research mobilisers who also facilitated data collection activities, such as locating HHs and setting up times to be available, but were not involved in the data collection itself.
- *Resource requirements*: NR
- *Economic indicators*: NR

Outcomes	Anthropometry: WHZ; wasting (WHZ ≤ –2SD); severe wasting (WHZ ≤ –3SD); BMI; MUAC; HAZ; stunting (HAZ ≤ –2SD); severe stunting (HAZ ≤ –3SD) Biochemical: Hb Morbidity: prevalence of anaemia; incidence of diarrhoea, ARI and fever/malaria
Identification	**Sponsorship source:** 6 study authors received funding from the DfID (DFiD PO 6433). 2 study authors received funding from the Directorate-General for European Civil Protection and Humanitarian Aid Operations of the European Union (ECHO/ERC/BUD/2015/91001). The funders had no role in study design, data collection and analysis, decision to publish or preparation of manuscript. Standard cash and food voucher groups were funded by the EU. Double cash group funded by EU Humanitarian Aid and Civil Protection. **Country:** Pakistan **Setting:** poor and very poor HHs in Agrarian district **Comments:** ISRCTN registry ISRCTN10761532 **Author's name:** Bridget Fenn **Email:** bridget@ennonline.net **Declarations of interest:** yes; no competing interests (Fenn 2017). **Study or programme name and acronym:** REFANI Pakistan **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Randomisation by principal investigator using a random number table to generate randomisation sequence and then drawing village names from a box. Block randomisation was done, allowing equal distribution of the villages to each group for small, medium and large villages.

Fenn 2015 *(Continued)*

Allocation concealment (Selection bias)	Low risk	Allocation at village level.
Baseline characteristics similar (Selection bias)	Low risk	Village-level characteristics were balanced at baseline but not all HH or child-level characteristics. However, these were adjusted for in the analyses (child age at baseline, child sex; and for mother's analyses adjusted also for SES and baseline values of the outcome variables).
Baseline outcome measurements similar (Selection bias)	Low risk	There were some imbalances but these were adjusted for in the analyses.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding in this type of study is not possible. It is unlikely that lack of blinding would influence participant or personnel behaviour or experience, beyond changes expected due to the intervention.
Blinding of outcome assessment (Detection bias)	High risk	Quote: "masking of the interventions to both participants and data collectors was not possible in this setting and for this type of study. Precautions were taken at the start of the study to try to mask the different interventions to participants, e.g., through incorporating buffer zones and training data collectors to keep the information to themselves, but it soon became clear that participants were aware of the other interventions." Comment: some outcomes were self-reported and could have been susceptible to lack of blinding.
Protection against contamination (Performance bias)	Low risk	Cash transfers/food vouchers were only distributed to specific HHs, and all HHs in the same village were allocated to the same intervention. Therefore, contamination was unlikely.
Incomplete outcome data (Attrition bias)	Low risk	Children were excluded from the analyses if they had outlying data. In general, attrition was low (response rate for HHs was 95.6% and children was 98.3% within clusters at 6 months and for HHs was 95.0% and children was 96.8% at 1 year. For child outcomes, missing data were low (mostly < 5%). For maternal outcomes, only BMI had high missing data (26.9%) but ≤ 5% for other outcomes. No clusters were LTFU.
Selective outcome reporting (Reporting bias)	Low risk	All outcomes reported as specified in the protocol.
Other bias	Low risk	Misclassification bias of exposure: low risk; allocation by investigators. Measurement bias: low risk; appropriate instruments used and field workers trained in data collection. Incorrect analyses: low risk; clustering was taken into account in analyses.

Fernald 2011

Study characteristics	
Methods	**Study design:** cRCT **How were missing data handled?** missing data excluded from analysis **Randomisation ratio:** 2:1 (79 parishes in intervention: 39 parishes in control) **Recruitment method:** NR **Sample size justification and outcome used:** NR

Fernald 2011 *(Continued)*

Sampling method: stratified random sampling. Parishes stratified into rural and urban groups and from each group, treatment and comparison parishes were randomly selected.

Study aim or objective: to analyse the impact of a programme that transfers cash to women in rural Ecuador on measures of ECD (Paxson 2010). First objective was to use a randomised effectiveness trial in Ecuador to address the question of whether very young children (aged 12–35 months) benefit in terms of health outcomes or language development if their families receive a cash transfer (Fernald 2011; study included a subset of younger children only).

Study period: duration of intervention during which participants received transfers was unclear. Rural families in treatment group were eligible for the transfer for 17 months prior to the follow-up survey. Rural families became eligible for transfer from June 2004, and urban families in November 2006 and follow-up survey was conducted between September 2005 and January 2006.

Unit of allocation or exposure: parishes allocated to intervention and control groups but certain HHs only selected for inclusion in study.

Participants

Baseline characteristics

Intervention or exposure

- *Age*: mother, years, mean: 26.51 (SE 7.22); child, months, mean: 38.82 (SE 13.13)
- *Place of residence*: urban: 46% (365)
- *Sex*: child male, mean: 0.494 (SE 0.5)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: mother's education, years, mean: 6.88 (SE 2.94).
- *SES*: number of family members, mean: 4.78 (SE 2.19)
- *Social capital*: mother living with husband, mean: 0.696 (SE 0.460)
- *Nutritional status*: mother's elevation-adjusted Hb, mean: 11.64 (SE 1.44). Child HAZ (US norms), mean: −1.22 (SE 1.51). Child's elevation-adjusted Hb (g/dL), mean: 10.38 (SE 1.46). Child TVIP standardised score, mean: 82.45 (SE 13.63)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: mother, years, mean: 26.47 (SE 7.19); child, months, mean: 35.38 (SE 12.63)
- *Place of residence*: rural Ecuador
- *Sex*: child male, mean: 0.540 (SE 0.499)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: mother's education, years, mean: 6.78 (SE 2.68)
- *SES*: number of family members, mean: 4.72 (SE 2.12)
- *Social capital*: mother living with husband, mean: 0.695 (SE 0.461)
- *Nutritional status*: mother's elevation adjusted Hb, mean: 11.53 (SE 1.59). Child HAZ (US norms), mean: −1.20 (SE 1.68). Child's elevation-adjusted Hb (g/dL), mean: 10.30 (SE 1.52). Child TVIP standardised score, mean: 84.27 (SE 13.86)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: 1196 mothers; 697 children. Mother's age, years, mean: 22.6 (SD 3.8); child's age, months, mean: 6.6 (SD 4.2)
- *Place of residence*: urban: 45% (542)
- *Sex*: child male: 52% (361)
- *Ethnicity and language*: mother speaks indigenous language: 3% (30)

Fernald 2011 *(Continued)*

- *Occupation*: NR
- *Education*: mother's completed schooling (grades), mean: 6.9 (SD 2.9)
- *SES*: Asset Index, mean: 0 (SD 2.3)
- *Social capital*: NR
- *Nutritional status*: mother's adjusted Hb level, mean: 11.3 (SD 1.5). Child's HAZ, mean: 0.6 (SD 2.1). Child's adjusted Hb, mean: 9.6 (SD 1.3)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: primary sample of HHs drawn for this study included only families in the first or second Selben quintiles who had children aged 0–6 at baseline, had no older siblings and had not received the Bono Solidario programme

Exclusion criteria: NR

Pretreatment: no significant difference between intervention and control parishes. Differences in baseline characteristics between HHs in the treatment and control groups were small and are never significant at conventional levels. This was true for the sample as a whole, as well as for families and children in the poorest quartile of per capita expenditures."

Attrition per relevant group: total: 163/2748 children were LTFU (belonging to 77/1642 HHs). Attrition per group NR.

Description of subgroups measured and reported: baseline expenditure (bottom quartile, top 3 quartile); age (young vs old); gender (boys vs girls)

Total number completed and analysed per relevant group: total completed: 2585 children, 1565 HHs. Total number of children per group NR. Total number parishes analysed: varied per outcome due to missing data.

Total number enrolled per relevant group: 77 parishes enrolled: 51 treatment; 26 control. Total enrolled: either 2748 or 2069 children (numbers in table A2 and 2 differed). Total HHs enrolled: 1642; 1388 children in intervention; 681 children in control. Total sample at baseline consisted of 3426 HHs and 5547 children aged < 72 months. Fernald 2011 focused only on children aged < 36 months at follow-up (included children in urban and rural areas whereas Paxson 2010 only reported results for rural areas).

Total number randomised per relevant group: 77 parishes randomised: 51 treatment; 26 control. Total enrolled: either 2748 or 2069 children (numbers in table A2 and 2 differed); 1388 children in intervention; 681 children in control.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT
- *Description*: beginning in mid-2003, Bono Solidario was gradually replaced with a new programme, the BDH. Eligible families received USD 15 per month. They were not required to withdraw their USD 15 on a monthly basis but could allow transfers to accumulate for up to 4 months.
- *Duration of intervention period*: HHs were eligible for 17 months before follow-up, but it was unclear whether they were receiving transfers during the entire period.
- *Frequency*: monthly
- *Number of study contacts*: 2: baseline (October 2003–March 2004) and follow-up (September 2005–January 2006)
- *Providers*: transfers administered by the Government of Ecuador and distributed through a large network of private banks (Banred) and the National Agricultural Bank (Banco Nacional de Fomento) (Schady Araujo, 2006) (Fernald 2011). Baseline and follow-up surveys were conducted by the World Bank and the Government of Ecuador (Fernald 2011)
- *Delivery*: transfers were given to mothers rather than fathers and were distributed through the banking system, although beneficiaries did not need to have a bank account to receive them. The fraction

Fernald 2011 *(Continued)*

	of rural families that received transfers among families randomised into the BDH treatment group climbed quickly once the programme became available, reaching 56% by January 2005 and 60% by January 2006. Overall, 75% of sampled families in the treatment parishes received a transfer in ≥ 1 month since June 2004. Mean monthly transfer across all treatment-group families, between January 2005 and November 2006, was USD 10.51. This was less than amount planned. According to survey response data, there was very little contamination of intervention: take-up of the BDH programme was 73% for the treatment group and 3% for the comparison group. • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: NR Control: no intervention
Outcomes	Anthropometry: HAZ; height Biochemical: Hb Cognitive function and development: language (TVIP score and IDHC-B score); long-term memory; short-term memory; visual integration Anxiety and depression: mother's depression score (CES-D); mother's PSS
Identification	**Sponsorship source:** Center for Economic and Policy Studies at Princeton University, the government of Ecuador, and the World Bank **Country:** Ecuador **Setting:** rural and urban parishes **Author's name:** Lia Fernald **Email:** fernald@berkeley.edu **Declarations of interest:** NR **Study or programme name and acronym:** Bono de Desarrollo Humano (BDH) programme **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Study was randomised but authors did not report how random sequence was generated.
Allocation concealment (Selection bias)	Low risk	Allocation was at parish level at beginning of study, and all eligible HHs that were in these parishes were either in intervention or control group. For inclusion in study, HHs had to meet specific criteria and then eligible HHs were randomly selected.
Baseline characteristics similar (Selection bias)	Low risk	Quote: "there is no evidence of significant differences between treatment and control parishes." "The table shows that differences in baseline characteristics between HHs in the treatment and control groups are small in magnitude and are never significant at conventional levels. This is true for the sample as a whole, as well as for families and children in the poorest quartile of per capita expenditures."

Fernald 2011 *(Continued)*

Baseline outcome measurements similar (Selection bias)	Low risk	Baseline outcome measurements (HAZ and TVIP score) were similar between children in intervention and control groups.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding was not possible due to the nature of the intervention, but it is unlikely to have influenced participant or personnel behaviour.
Blinding of outcome assessment (Detection bias)	Low risk	Blinding was not possible due to nature of intervention. However, objective outcomes were measured and, thus, it is unlikely that lack of blinding affected outcome assessment.
Protection against contamination (Performance bias)	Low risk	Quote: "According to survey response data, there was very little contamination of the intervention: take-up of the BDH program was 73% for the treatment group and 3% for the comparison group."
Incomplete outcome data (Attrition bias)	Unclear risk	The numbers varied per outcome reported which indicates that missing data were excluded from the analysis. Total attrition was reported in 1 table as 163/2748 (5.9%) children; however, the total number of children enrolled/randomised was reported as 2069 in another table. Given the unclear reporting of numbers, it is unclear how much missing data there was and how it differed between the intervention and control groups.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol was available for this study.
Other bias	Low risk	Misclassification bias: unlikely as allocation was not self-reported. Measurement bias: unlikely; standardised processes and tools used to assess outcomes. Incorrect analysis: SEs were clustered at parish level, therefore, clustering was adjusted for. No other bias identified.

Ferre 2014

Study characteristics

Methods

Study design: PCS

Study grouping: N/A

How were missing data handled? exclusions: the high attrition rate in Narayanganj, while not unusual given the high frequency of in and out migration among the residents of urban slums, was clearly a challenge for any social programme targeted towards the urban slum population. Due to this high attrition rate in Narayanganj, the impact evaluation was restricted to the Jaldhaka sample.

Randomisation ratio: N/A

Recruitment method: project: following a public information campaign on the project objectives and duration, the targeting and enrolment processes were carried out. Shombhob set up an open registration process where interested HHs with ≥ 1 child aged 0–36 months or at ≥ 1 primary school-aged child (or both) were invited to apply for selection. Out of the 37,801 families who applied, the poorest 15,952 families were selected based on their PMT scores. The list of eligible beneficiaries was validated by community leaders, and verified by UP chairmen, and the Mayor's office in case of Narayanganj City Corporation.

Sample size justification and outcome used: NR, but eligible families were requested to enrol, and this process was completed in April 2012. The final number of enrolled HHs was 14,125.

Ferre 2014 *(Continued)*

Sampling method: random: 1. random sample of 3000 HHs drawn from the census list (all HHs in the 5 project unions of Jaldhaka) and interviewed. 2. HHs were randomly selected within each of the 4 demographic groups and within each of 2 PMT score groups (below 25th percentile and between 25th and 50th percentiles). (Note: HHs were assigned to the treatment group by a non-random assignment rule based on the assignment variable. The eligibility for becoming beneficiaries of a programme was solely determined by whether they were below or above the unique cut-off point.)

Study aim or objective: 1. to test the delivery of CCTs to the poorest HHs through local governments to reduce their HH poverty levels; 2. increase school attendance of beneficiary children going to primary school, and 3. improve the nutritional status of beneficiary children aged 0–36 months.

Study period: baseline (survey conducted): May/June 2011. Implementation: April 2012–December 2013 (although transfers only provided for 13 months). Follow-up: May/June 2013.

Unit of allocation or exposure: cluster: HHs

Participants

Baseline characteristics

Intervention or exposure

- *Age*: NR
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: table 4: school enrolment (aged 6–15 years), %: 88.7; school attendance, mean, years: 5.4
- *SES*: table 4: based on total HH consumption: BDT 5548/month
- *Social capital*: NR
- *Nutritional status*: table 4: stunting (aged 0–3 years), %: 47.2; underweight, %: 47.1; wasting, %: 27.8; dietary diversity, %: 12.1
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: NR
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: table 4: school enrolment (aged 6–15 years), %: 87.3%; school attendance, mean, years: 5.8
- *SES*: table 4: based on total HH consumption: BDT 5780/month
- *Social capital*: NR
- *Nutritional status*: table 4: stunting (aged 0–3 years), %: 43.3; underweight, %: 42.9; wasting, %: 22.9; dietary diversity, %: 12.5
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: table B2: HH head, years: 40.5
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: table B2: agri Labourer, 44.5
- *Education*: table B2: proportion of HH head with no education, %: 74.6

Ferre 2014 *(Continued)*

- *SES*: table B2: total monthly consumption BDT 6066/month (?), proportion of HHs with bamboo wall, %: 48.8; proportion of HHs with tin roof, %: 97.7; proportion of HHs with pit latrines, %: 44; proportion of HH with access to electricity, %: 8.4; proportion of HH who own house, %: 80.5.
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: project used PMT scores to determine HH eligibility. Of the 37,801 families who applied for the programme, the poorest 15,952 were selected based on their PMT scores. This meant the cut-off thresholds for selection was a PMT score of 660 for the 2 rural Upazilas. Eligible families had scores below the treatment cut-off (treatment group) and ineligible families with had scores above the cut-off (control group).

Exclusion criteria: PMT score above the cut-off.

Pretreatment: most of the differences between the treatment and control HHs were nutrition outcomes. Treatment HHs appeared to be worse off compared to the control HHs in the incidence of stunting, wasting, underweight, knowledge of breastfeeding and dietary diversity. The same is true in terms of HH consumption. However, school attendance (defined as the number of classes missed in the last 2 weeks) and enrolment rates were almost identical. The DiD estimator assumes that the mean change in the control group represents the counterfactual change in the treatment group if there was no treatment. This allows a reliable inference of programme impact by comparing the pre- to postintervention change in the outcome of interest for the treated group relative to a control group.

Attrition per relevant group: Jaldhaka (rural): 114

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: Jaldhaka (rural) analysed only. Total 2287; treatment: 700; control: 1587

Total number enrolled per relevant group: 2401: 700 treatment and 1587 control (and 114 that were lost during follow-up – unclear to which group these belonged).

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: improve buying power
- *Intervention type*: CCT
- *Description*: table 2: HHs with children aged 0–36 months: nutrition allowance of BDT 400/month. Condition: monthly attendance at growth monitoring of children aged 0–36 months, and nutrition session for mother/carer. HHs with children going to primary school (aged 6–15 years): education allowance of BDT 400/month. Condition: regular school attendance (≥ 80% every month) for enrolled children in primary school.
- *Duration of intervention period*: due to start up delays, implementation began in February 2012, allowing transfers to be provided for 21 months (from April 2012 to December 2013). In addition, the project faced additional implementation challenges due to the annual floods that hit the project locations during August and September. School closures due to these floods constituted the most serious implementation challenge given focus of the transfers on regular school attendance. These implementation challenges coupled with the fact that the impact evaluation only covered 13 months of cash transfers were likely to affect the impact of the intervention on some indicators.
- *Frequency*: bi-monthly cash transfers
- *Number of study contacts*: 2
- *Providers*: local governments
- *Delivery*: innovative electronic payments system developed with the BPO, which provided cash cards to beneficiary mothers to make transfers electronically to their accounts with the Post Office. Payments were made using point-of-sales machines with the option of accessing the cash either at the vil-

Ferre 2014 *(Continued)*

	lage level using a mobile payments team or at the Upazila level BPO branch office. The BPO arranged for a mobile team to travel with the machines and cash to the village centres on a designated day during each payment cycle. Alternatively, the beneficiary had the option to withdraw cash at any point from the Upazila BPO branch office. • *Co-interventions*: NR • *Resource requirements*: mobile team BPO; point-of-sales machines • *Economic indicators*: Shombhob was able to deliver USD 1.78 million in cash transfers to 14,125 families and monitoring growth and school attendance of 22,778 children. The administrative cost associated with the delivery of the services under the pilot intervention, including the development of an automated MIS was about USD 641,000. This meant that the cost to deliver the transfer was USD 1.4 per child per month, or about 28% of the monthly transfer amount of USD 5. Control: no intervention
Outcomes	Proportion of HH expenditure on food Diet diversity: proportion of children aged ≥ 6 months fed from ≥ 4 food groups Anthropometry: stunting (HAZ < –2SD); wasting (WHZ < –2SD); underweight (WAZ < –2SD)
Identification	**Sponsorship source:** South Asia Food and Nutrition Security Initiative (SAFANSI) and the Rapid Social Response (RSR) MDTF of the World Bank **Country:** Bangladesh **Setting:** rural only. Due to the high attrition rate in Narayanganj, the impact evaluation was restricted to the Jaldhaka sample. 10 Unions from 2 rural Upazilas (Jaldhaka and Hatibandha). **Authors' names:** Céline Ferré and Iffath Sharif **Email:** isharif@worldbank.org **Declarations of interest:** quote: "The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organisations, or those of the Executive Directors of the World Bank or the governments they represent." **Study or programme name and acronym:** Shombhob project **Type of record:** report
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Quote: "One way to deal with possible selection bias is to use a Regression Discontinuity Design (RDD) technique that exploits the targeting design itself. RDD is a quasi-experimental design and makes use of discontinuities generated by program eligibility criteria such that program assignment is based on a cut-off point of some assignment variable. Households are assigned to the treatment group by a non-random assignment rule based on the assignment variable. The eligibility for becoming beneficiaries of a program is solely determined by whether they are below or above the unique value of a cut-off point."
Allocation concealment (Selection bias)	High risk	Prospective cohort study

Ferre 2014 *(Continued)*

Baseline characteristics similar (Selection bias)	Low risk	Table B3 in Annexe II provides descriptive statistics of other HH level characteristics of both groups. The data suggest the groups are quite similar in terms of their observable characteristics, but treatment HHs are slightly bigger despite having the same number of young children (aged 0–3 years). Asset ownership is similar across the 2 groups (land, cattle, tube well, fan, television, bicycle, number of rooms) except for house ownership (slightly higher for the control group). Control houses have fewer children on average (0.74 vs 1.27 for treatment families), leading to slightly smaller HHs (4.5 members on average vs 5 for treatment families).
Baseline outcome measurements similar (Selection bias)	Low risk	Treatment HHs appeared worse off compared to control HHs in incidence of stunting, wasting, underweight, knowledge of breastfeeding, dietary diversity and HH consumption. However, this seemed to be addressed in the analysis. Quote: "Instead of computing this double difference in means, we run a set of DiD regressions, allowing controlling for differences in observable characteristics."
Blinding of participants and personnel (Performance bias)	Low risk	Participants knew if they received a cash transfer or not. It is unlikely that lack of blinding influenced intervention received.
Blinding of outcome assessment (Detection bias)	High risk	Unclear if the interviewers were blinded. School enrolment, attendance, nutritional status (stunting, wasting, underweight), semi-solid food intake and MDD are all objective outcomes. However, knowledge on infant feeding and consumption outcomes were self-reported outcomes.
Protection against contamination (Performance bias)	High risk	If not enrolled for a cash transfer, a HH would not be able to receive it. There may be other bias. Quote: "The results on knowledge however are not able to take into account potential 'spillover effects' since nutrition sessions were delivered via classes held out in the open. In some villages, the growth monitoring was also conducted in courtyards. This modality of conducting the nutrition and growth monitoring sessions allowed non-beneficiary mothers to have access nutrition-related knowledge that this analysis is not able to capture." (page 33)
Incomplete outcome data (Attrition bias)	Unclear risk	Unclear how the 114 attrition cases were distributed over treatment and control. It is also unclear if the numbers that do not have a certain outcome (which could be because the outcome was not relevant or missing) were distributed evenly over the groups.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available.
Other bias	Low risk	None identified.

Gangopadhyay 2015

Study characteristics	
Methods	**Study design:** RCT **Study grouping:** parallel group

Gangopadhyay 2015 *(Continued)*

How were missing data handled? Midline survey results indicated that only 4 HHs that received the cash transfer (4%) did not want to continue, so dropped out of the analysis. Missing data were excluded from the analyses.

Randomisation ratio: 1:1:1 – bank account and UCT (100 HHs); bank account and no UCT (100 HHs); no bank account or UCT (100 HHs)

Recruitment method: study authors collaborated with the Self-Employment Women's Association to explain the experiment to a 12-block community of Raghubir Nagar. Awareness campaign ran for 2 weeks (first week of August 2010 to 13 August 2010). It initially targeted groups of 15–20 people, but, because ration shop owners tried to influence people to avoid participation in experiment, group sizes were reduced to 5 or 6 people at a time, to make their participation less noticeable.

Sample size justification and outcome used: NR

Sampling method: random selection of 350 HHs that had agreed to participate, of which 50 dropped out. These 300 HHs were selected for treatment group and control groups 1 and 2. Random selection of 150 HHs that did not want to participate were selected for control group 3.

Study aim or objective: to compare effects of replacing welfare transfers in-kind with a UCT on food security (measured as food consumption) to determine the impact of the cash transfer and the bank account.

Study period: January 2011 to December 2011

Unit of allocation or exposure: HHs

Participants

Baseline characteristics

Intervention: bank account + UCT

- *Age*: NR
- *Place of residence*: poor community in Delhi
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation, %*: HHs self-employed: 44; regular salary employed: 34; casual labour: 15; other: 7
- *Education*: education level of HH head, %: primary: 78; secondary: 19; above secondary: 3
- *SES*: poor HHs BPL
- *Social capital*: NR
- *Nutritional status*: data reported were unclear; per capita Kcal consumption, mean: 47,480 (SD 23,004)
- *Morbidities*: NR
- *Concomitant or previous care*: previous care: PDS BPL card – in-kind food transfer

Control 1: bank account and no cash transfer

- *Age*: NR
- *Place of residence*: poor community in Delhi
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation, %*: HHs self-employed: 36; regular salary employed: 39; casual labour: 22; other: 3
- *Education*: education level of HH head, %: primary: 62; secondary: 36; above secondary: 2
- *SES*: poor HHs BPL
- *Social capital*: NR
- *Nutritional status*: per capita Kcal consumption, mean: 43,954 (SD 13,446).
- *Morbidities*: NR
- *Concomitant or previous care*: previous care: PDS BPL card – in-kind food transfer

Control 2: no bank account + cash transfer

- *Age*: NR

Gangopadhyay 2015 *(Continued)*

- *Place of residence*: poor community in Delhi
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation, %*: HHs self-employed: 43; regular salary employed: 30; casual labour: 23; other: 4
- *Education*: education level of HH head, %: primary: 68; secondary: 30; above secondary: 2
- *SES*: poor HHs BPL
- *Social capital*: NR
- *Nutritional status*: per capita Kcal consumption, mean: 47,398 (SD 21,908)
- *Morbidities*: NR
- *Concomitant or previous care*: previous care: PDS BPL card – in-kind food transfers

Control 3: random selection of 150 HHs that did not want to participate. Not included in analyses.

Overall

- *Age*: NR
- *Place of residence*: poor community in Delhi
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: NR
- *SES*: poor HHs BPL
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: previous care: PDS BPL card – in-kind food transfers

Inclusion criteria: community in Delhi that received Government's BPL card (part of PDS programme; in-kind transfer programme)

Exclusion criteria: participants who were not BPL cardholders and lived outside of Raghubir Nagar

Pretreatment: groups of self-selected HHs were similar, such that randomisation apparently resulted in balanced groups (according to Table 3). Per capita expenditure on non-food items was significantly different between the control groups 1 and 2; which was linked to differences in personal care expenditures between men and women.

Attrition per relevant group: attrition in treatment group: 6 (6%); control group 1: 3 (3%); control group 2: 9 (9%); control group 3: 14 (9.3%)

Description of subgroups measured and reported: N/A

Total number completed and analysed per relevant group: total number completed and analysed in treatment group 94; control group 1: 97; control group 2: 91; control group 3: 136

Total number enrolled per relevant group: total number enrolled to participate 300 HHs. 100 HHs per group (intervention group, control group 1 and control group 2)

Total number randomised per relevant group: 100 HHs per group (intervention group, control group 1 and control group 2)

Interventions

Intervention characteristics

Intervention: bank account and UCT

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT
- *Description*: bank accounts opened in name of women in the HH and UCTs started. Government stamps on ration cards indicated that they could not use their rations for 1 year; instead, they received

Gangopadhyay 2015 *(Continued)*

a monthly cash transfer of INR 1000 (about USD 18), with no conditions on how to spend it, Deposited every month, from January 2011 and ending in December 2011.

- *Duration of intervention period*: 12 months: January–December 2011
- *Frequency*: monthly
- *Number of study contacts*: 3: baseline, midline (July 2011) and endline (December 2011)
- *Providers*: researchers
- *Delivery*: bank accounts created for cash transfers. UCT included an exit option for all recipients after 6 months, which was important because the UCT replaced a public programme to which HHs already had access. Therefore, given option to go back to the PDS (4% did, but 96% wanted to continue UCTs and not in-kind transfers). According to author analyses, it appeared that money transferred was used to buy food, as they showed that after initiating UCTs there were no changes to non-food items or alcohol.
- *Co-interventions*: none
- *Resource requirements*: NR
- *Economic indicators*: monthly cash transfer of INR 1000

Control 1: bank account and no cash transfer

- *Food access intervention category*: increase buying power
- *Intervention type*: bank account opened
- *Description*: bank accounts opened in the name of the women in HHs but no cash transfers done.
- *Duration of intervention period*: 12 months: January 2011 to December 2011
- *Frequency*: once
- *Number of study contacts*: 3: baseline, midline (July 2011) and endline (December 2011)
- *Providers*: researchers
- *Delivery*: other than creation of bank accounts nothing else reported
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: NR

Control 2: no bank account or cash transfer

Control 3: 150 HHs that did not want to participate, therefore no bank account or cash transfer. Not included in analyses.

Outcomes	Per capita expenditure on non-cereal food items (pulses, milk, eggs, fish and meat, fruits and vegetables) Per capita calories consumed from cereals
Identification	**Sponsorship source:** NR **Country:** India **Setting:** poor communities in Raghubir Nagar (West Delhi) **Author's name:** Robert Lensink **Email:** b.w.lensink@rug.nl **Declarations of interest:** yes; no potential conflict of interests **Study or programme name and acronym:** N/A **Type of record:** journal article
Notes	

Risk of bias

Gangopadhyay 2015 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Authors mentioned this was an RCT but did not describe how the random sequence was generated.
Allocation concealment (Selection bias)	High risk	Unit of allocation were HHs and HHs self-selected into intervention group.
Baseline characteristics similar (Selection bias)	Unclear risk	Although authors stated that characteristics of HHs were similar, percentages were reported with no CIs.
Baseline outcome measurements similar (Selection bias)	Low risk	No important differences in outcomes were present at baseline according to author's analyses.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding done, but it was unlikely to have influenced participant's and personnel behaviour during trial.
Blinding of outcome assessment (Detection bias)	High risk	No blinding was done and outcomes were based on self-reports, which may have been influenced due to knowledge of treatment allocation.
Protection against contamination (Performance bias)	Low risk	Intervention was delivered as planned in intervention and control groups, and no-one in control group received the intervention, aside from those that chose to be excluded from the study after it started (4 HHs).
Incomplete outcome data (Attrition bias)	Low risk	Comment: there was little attrition in all groups. Authors tested whether attrition was random through (quote) "… estimating a logit model that explained attrition using a vector of baseline variables …" and concluded that "… there is little reason to anticipate that our statistical results might be compromised by non-random attrition biases."
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available. Outcomes were not explicitly stated in the Methods section of the paper
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: high risk. Measurement of outcomes was through a questionnaire; it was unclear which specific tools were used to ascertain dietary intake and HH expenditure and whether these had been validated.

Gertler 2000 (PROGRESA)

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** missing data or potentially invalid data were excluded from the analysis (see footnote Table 3; Hoddinott 2003) **Randomisation ratio:** 60:40 (Gertler 2000) **Recruitment method:** using door-to-door methods to inform HHs about eligibility; PROGESSA achieved a take-up rate of 97% (Gertler 2000) **Sample size justification and outcome used:** NR

Gertler 2000 (PROGRESA) *(Continued)*

Sampling method: 506 communities randomly sampled from 50,000 eligible PROGRESA communities (matched on initial index level of community poverty) were chosen to participate, with each community randomly assigned to a treatment (n = 320) or control (n = 185) group.

Study aim or objective: PROGRESA aimed to improve the nutritional status of poor children in rural Mexico in addition to improving education and health attainments while also reducing consumption poverty.

Study period: about 2 years. Summer 1998 to summer 2000 (Gertler 2000). Some studies report < 2 years: from April 1998 (start of benefits) to October 1999 (when control HHs started receiving benefits). Intervention currently ongoing.

Unit of allocation or exposure: communities

Participants

Baseline characteristics

Intervention or exposure

- *Age*: children aged 0–5 years, mean: 2.753 (SD 1.667) (Gertler 2000)
- *Place of residence*: poor rural communities
- *Sex*: Gertler 2000: % boys aged 0–5 years: 0.394 (SD 0.489)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: Gertler 2000: father's schooling, mean, years: 1.111 (SD 1.093); mother's schooling, mean, years: 1.047 (SD 1.056)
- *SES*: Hoddinott 2003: HH size, mean(?): 5.81. Gertler 2000: labour and non-labour income, mean: 4.939 (SD 0.896)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: Gertler 2000: children aged 0–5 years ill last month, mean, n: 0.306 (SD 0.461)
- *Concomitant or previous care*: Skoufias 2007: 1 additional requirement of the PROGRESA programme was that HHs benefiting from PROGRESA were to stop receiving benefits from other pre-existing programmes such as Ninos de Solidaridad, Abasto Social de Leche, de Tortilla and the National Institute of Indigenous people.

Control

- *Age*: Gertler 2000: children aged 0–5 years, mean: 2.746 (SD 1.701)
- *Place of residence*: poor rural communities
- *Sex*: Gertler 2000: % boys aged 0–5 years: 0.376 (SD 0.484)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: Gertler 2000: father's schooling, mean, years: 1.050 (SD 1.086); mother's schooling, mean, years: 1.016 (SD 1.079)
- *SES*: Hoddinott 2003: HH size, mean(?): 5.47. Gertler 2000: labour and non-labour income, mean: 5.094 (SD 0.814)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: Gertler 2000: children aged 0–5 years ill last month, mean, n: 0.298 (SD 0.458)
- *Concomitant or previous care*: unclear whether they were still receiving other social support.

Overall: NR

Inclusion criteria: poor HHs within 506 poor communities with schooling and health infrastructure identified by PMT. List of beneficiary HHs presented to a community assembly for review and discussion and list was changed according to established criteria for the selection of beneficiary families (process called densification). No other criteria reported.

Exclusion criteria: NR

Gertler 2000 (PROGRESA) *(Continued)*

Pretreatment: overall, communities were comparable but this was not the case at HH or individual level. HHs in the intervention group were bigger, had more children but fewer adults aged > 55 years compared to control group (Hoddinott 2003). No difference in illness rates or number of visits to clinics for nutrition monitoring between control and treatment groups (Gertler 2000).

Attrition per relevant group: overall attrition varied between papers and there was no report of attrition per group. 3350/12,291 (27%) intervention HHs did not receive the intervention by March 2000. Of these, 2872 HHs were not incorporated into programme; 478 HHs chose not to participate (no official records) or moved out of locality (Skoufias 2005). Attrition per group NR. In total, 221 HHs excluded as reported no food was consumed within the home, and 7165 HHs excluded with caloric availability per person per day < 875 kcal or > 4.768 kcal (Hoddinott 2003).

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: total 16,614 HHs, which excluded 7386 HHs that were excluded because of inadequate data. Number analysed per group NR and also varied depending on report.

Total number enrolled per relevant group: 320 communities allocated to intervention and 186 to control groups, out of 506 communities. 24,000 HHs overall in sample at beginning of study (Hoddinott 2003). 97% of HHs enrolled in programme (Gertler 2000). Baseline sample included 112,319 individuals from 18,795 HHs in 506 experimental communities. Approximately, 60% of sample came from treatment areas and 40% from control (Gertler 2000).

Total number randomised per relevant group: intervention group: 320 communities; control group: 186 communities

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: CCT
- *Description*: cash transfers to families every 2 months (food and education transfers) if: 1. every family member accepted preventive health services; 2. children aged 0–5 years and lactating mothers attended nutrition monitoring clinics where their growth was measured (every 2 months for children under 24 months), immunisation, obtained nutrition supplements and they received education on nutrition and hygiene; and 3. pregnant women visited clinics to obtain antenatal care (5 visits), nutritional supplements and health education. Linked to children's school enrolment and regular school attendance and clinic attendance. Included in-kind health benefits; nutritional supplements for children aged ≤ 5 years, and pregnant and lactating women; and instructional meetings on health and nutritional issues. Transfers were targeted to mothers of the families (female head of HH). 3 types of monetary transfers: 1. scholarships tied to children's school attendance; 2. money for school supplies and 3. transfers for food. Amount of food transfer was 20% of HH monthly consumption expenditure preintervention. Scholarship transfers occur monthly (?), and varied depending on age and sex of the child, with maximum scholarship cap of MXN 490 pesos per HH (January–June 98) and MXN 625 per HH (July–December 1999). Food transfer also occur monthly(?) and depended on age and sex of children in HH and compliance with PROGRESA requirements.
- *Duration of intervention period*: about 2 years: April/May 1998 (benefits started) to November 1999/ March 2000 (control HHs start receiving benefits)
- *Frequency*: cash transfers every 2 months
- *Number of study contacts*: 4: baseline data (survey March 1998) was unusable; October 1998; June 1999; November 1999
- *Providers*: Mexico Government. Health care component administered by Ministry of Health and IMSS-Solidaridad, a branch of the Mexican Social Security Institute, which provides benefits to uninsured individuals in rural areas.
- *Delivery*: every second month. Verification of school attendance relied on completion of forms, which had to be completed and returned to PROGRESA before the initiation of payment. This often led to lags in payments. Every 2 months, confirmation of whether children of beneficiary families attend school > 85% of time was submitted to PROGRESA by school teachers and directors, and this triggered receipt of bi-monthly cash transfer for school attendance. Receipt of monetary transfers and nutrition-

Gertler 2000 (PROGRESA) *(Continued)*

	al supplements were tied to mandatory healthcare visits to public clinics. Healthcare professionals submitted certification of beneficiary visits to PROGRESA every 2 months, which triggered receipt of cash transfer for food support. About 65% of HHs received the PROGRESA cash transfers, due to administrative errors and delays in the final registration of beneficiary HHs (for more details see Skoufias 2005). Another unique feature was that the cash transfers were given to mother of HH, a strategy designed to target the funds within the HH to improve the children's education and nutrition. Fernald 2009: compliance verified by clinics and schools, and about 1% of HHs were denied cash transfers for non-compliance. • *Co-interventions*: none reported. 1 additional requirement of the PROGRESA programme was that HHs benefiting from PROGRESA were to stop receiving benefits from other pre-existing programmes such as Ninos de Solidaridad, Abasto Social de Leche, de Tortilla and the National Institute of Indigenous people. • *Resource requirements*: community health and education facilities • *Economic indicators*: programme's budget was USD 777 million for 1999 (0.2% of GDP). Cost of intervention: mean monthly payments of MXN 197 per beneficiary HH (November 1998); mean of MXN 99 for food and MXN 91 for school attendance. The programme operated in almost 50,000 rural villages in 31 states. PROGRESA's budget was about USD 800 million or 0.2% of GDP (Gertler 2000). Control: no intervention (started receiving benefits 2 years later) • Co-*interventions*: none reported. Unclear if these HHs were receiving benefits from other pre-existing programmes
Outcomes	Total HH expenditure; HH expenditure on food Diet intake: HH caloric availability per month per day – all food/individual food groups Anthropometry: height; HAZ, stunting, BMIZ Biochemical indicators: anaemia Cognitive function and development: cognitive test scores (verbal, cognitive, behavioural) Morbidity: child illness rates
Identification	**Sponsorship source:** Gertler 2000 NR. Gertler 2004 – Mexican government and Mexican Institute of Public Health funded data collection and initial data analysis, US National Institute of Child and Human Development provided research support **Country:** Mexico **Setting:** poor rural communities **Authors' names:** Paul J Gertler; Jere R Behrman; Lia CH Fernald; John Hoddinott; Emmanuel Skoufias **Email:** Gertler@haas.berkeley.edu; jbehrman@pop.upenn.edu; fernald@berkeley.edu; j.hoddinott@cgiar.org; eskoufias@worldbank.org **Declarations of interest:** NR **Study or programme name and acronym:** PROGRESA (Programa de Educacion Salud y Alimentacion)/ Oportunidades (PROGRESA was the original name and currently called Oportunidades) **Type of record:** IFPRI reports; journal articles
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

Gertler 2000 (PROGRESA) *(Continued)*

Random sequence generation (Selection bias)	Low risk	Random assignment generated without weighting with randomisation commands in STATA version 2.0 (Fernald 2009).
Allocation concealment (Selection bias)	Low risk	Allocation done at community level.
Baseline characteristics similar (Selection bias)	Low risk	Study authors reported no baseline differences between groups at community level in terms of age, education, income and access to health care, but there were differences at HH level. They adjusted for HH demographic characteristics (e.g. HH size; proportions of children; and age, gender, education, occupation, ethnicity and marital status of the HH head) in their analyses.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Outcome measurements such as food consumption and child's anthropometry NR by study authors at baseline.
Blinding of participants and personnel (Performance bias)	Low risk	Quote: "No sites were told that they would be participating in the programme, and information about timing of programme roll-out was not made publicly available." Comment: blinding not possible in this type of intervention but researchers aimed to ensure that participants were not aware of the intervention evaluation. Lack of blinding is unlikely to influence participant or personnel behaviour in this type of intervention.
Blinding of outcome assessment (Detection bias)	High risk	There was no blinding and outcomes were subjective, which could have been influenced by lack of blinding.
Protection against contamination (Performance bias)	Unclear risk	Intervention communities were randomly selected from a set of rural communities in the same geographic region. In a baseline report, the study authors stated that it would be important to monitor individuals leaving or entering the localities in order to assess contamination bias (Behrman 2005), but no further data were provided in the later study report.
Incomplete outcome data (Attrition bias)	Unclear risk	Attrition not clearly reported by study authors. Loss of clusters: NR.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available but outcomes outlined in methods section were reported in results section.
Other bias	High risk	Misclassification bias: low risk. Receipt of the programme was verified by examination of PROGRESA records. Measurement bias: unlikely. Incorrect analysis: unclear. Not all papers reported adjusting for clustering. Seasonality bias: unclear. Not controlled for in the analysis. Recruitment bias: high risk. List of beneficiary HHs within a community presented to a community assembly for review and discussion.

Haushofer 2013

Study characteristics	
Methods	**Study design:** RCT **Study grouping:** parallel **How were missing data handled?** missing data due to attrition excluded from analysis. Analyses were based on total 1372 HHs, which is the sum of HHs at baseline only.

Haushofer 2013 *(Continued)*

Randomisation ratio: 1:1 (503:505)

Recruitment method: after HHs and members identified, in private conversation, members were asked questions about demographics, and informed that they had been chosen to receive a cash transfer of KES 25,200 (USD 404). The recipient was informed that this transfer was unconditional, that they were free to spend it however they chose, and that it was a one-time transfer and would not be repeated.

Sample size justification and outcome used: sample size 500 individuals in each of the treatment, control and pure control group was chosen based on a power calculation, which showed that a sample of 1000 individuals was sufficient to detect effect sizes of 0.2 SD for all treatment vs pure control HHs with 89% power. Different treatment groups within the treatment groups (male vs female recipient, lump-sum vs monthly, large vs small transfers) could be compared with 60% power (from registry record).

Sampling method: purposive sampling of villages and HHs followed by random selection of HHs into treatment or control groups. GiveDirectly selected poor HHs by identifying poor regions of Kenya according to census data. Region chosen was Rarieda, a peninsula in Lake Victoria west of Kisumu in Western Kenya. GiveDirectly identified target villages through a rough estimation of the population of villages and the proportion of HHs lacking a metal roof, which is GiveDirectly's targeting criterion. Identified 126 villages. 63 of these villages were randomly chosen to be treatment villages. Control villages were only surveyed at endline; in these villages, authors sampled 432 HHs referred to as 'pure control' HHs. In treatment villages, second stage of randomisation assigned 50% of HHs to treatment condition, and 50% to control condition. Process resulted in 503 treatment HHs and 505 control HHs in treatment villages at baseline. Note: numbers were different between reports.

Study aim or objective: to assess the relative welfare impacts of 3 design features of UCTs: gender of transfer recipient; temporal structure of transfers (monthly vs lump-sum); and magnitude of transfer.

Study period: transfers between June 2011 and January 2013

Unit of allocation or exposure: HHs

Participants

Baseline characteristics

Intervention or exposure

- *Age*: treatment effect vs control, coefficient: −1.15 (SE 0.86). Number of children vs control, coefficient: 0.04 (SE 1.12)
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: wage labour primary income vs control, coefficient: 0.02 (SE 0.03). Own farm primary income vs control, coefficient: −0.02 (SE 0.03)
- *Education*: years of education completed (of respondent) vs control, coefficient: 0.27 (SE 0.18)
- *SES*: HH size vs control, coefficient: 0.02 (SE 0.13). Value of non-land assets (USD) vs control, coefficient: −1.15 (SE 24.74)
- *Social capital*: NR
- *Nutritional status*: FSI vs control, coefficient: 0.00 (SE 0.06)
- *Morbidities*: Health Index vs control, coefficient: 0.03 (SE 0.06). Psychological well-being Index vs control, coefficient: 0.03 (SE 0.05)
- *Concomitant or previous care*: NR

Control

- *Age*: respondent, mean, years: 35.35 (SD 14.13). Number of children, mean: 2.88 (SD 1.91)
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR

Haushofer 2013 *(Continued)*

- *Occupation*: wage labour primary income, mean: 0.25 (SD 0.43). Own farm primary income, mean: 0.37 (SD 0.48)
- *Education*: years of education completed (of respondent), mean: 8.56 (SD 2.95)
- *SES*: HH size, mean: 4.94 (SD 2.16). Value of non-land assets (USD), mean: 383.36 (SD 374.15)
- *Social capital*: NR
- *Nutritional status*: FSI, mean: 0.00 (SD 1.00)
- *Morbidities*: Health Index, mean: 0.01 (SD 1.02). Psychological well-being Index, mean: 0.00 (SD 1.00)
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: HHs lacking metal roof (indicator of poverty)

Exclusion criteria: none reported

Pretreatment: results were largely insignificant, suggesting that the treatment and control groups did not differ at baseline.

Attrition per relevant group: overall: 68 (6.7%) (940/1008 surveyed at endline). Treatment: 32 (6.4%); LTFU (471/503 surveyed at endline); control: 36 (7.1%); LTFU (469/505 surveyed at endline)

Description of subgroups measured and reported: male vs female recipients of transfers; monthly vs lump-sum transfers; large vs small transfers

Total number completed and analysed per relevant group: treatment: 471 HHs; control: 469 HHs

Total number enrolled per relevant group: treatment: 503 HHs; control: 505 HHs

Total number randomised per relevant group: treatment: 503 HHs; control: 505 HHs

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT
- *Description*: monthly transfers: first instalment transferred on first of month following initial visit, and continued for 8 months thereafter. Lump-sum transfers: a month was randomly chosen among the 9 months following the date of the initial visit. For receipt of transfer, recipients were provided with a SIM card by Kenya's largest mobile service provider, Safaricom, and asked to activate it and register for Safaricom's mobile money service M-Pesa. HHs with both a primary female and primary male member stratified on recipient gender and randomly assigned the woman or the man to be the transfer recipient in an equal number of HHs. 258/503 treatment HHs were assigned to monthly group, and 245 to the lump-sum group. Total amount of each type of transfer was KES 25,200 (USD 404). Amount included an initial transfer of KES 1200 (USD 19) to incentivise M-Pesa registration, followed by either a lump-sum payment of KES 24,000 (USD 384) lump-sum group, or 9 monthly transfers of KES 2800 (USD 45) each in the monthly group. 137 HHs in the treatment group were randomly chosen and informed in January 2012 that they would receive an additional transfer of KES 70,000 (USD 1112), paid in 7 monthly instalments of KES 10,000 (USD 160), beginning in February 2012. Thus, the transfers previously assigned to these HHs, whether monthly or lump-sum, were augmented by KES 10,000 from February 2012 to August 2012, and, therefore, the total transfer amount received by these HHs was KES 95,200 (USD 1525). The remaining 366 treatment HHs constituted the 'small' transfer group, and received transfers totalling KES 25,200 (USD 404) per HH.
- *Duration of intervention period*: 20 months. Transfers were made between June 2011 and January 2013.
- *Frequency*: lump sum or monthly transfers. 258/503 treatment HHs assigned monthly group, and 245 to lump-sum group. Total amount of each type of transfer was KES 25,200 (USD 404), which included an initial transfer of KES 1200 (USD 19) to incentivise M-Pesa registration, followed by either a lump-sum payment of KES 24,000 (USD 384) in the lump-sum group, or 9 monthly transfers of KES 2800 (USD 45) each in the monthly condition. In both the monthly and the lump-sum groups, recipients received the initial transfer of KES 1200 immediately following the announcement visit by GiveDirectly. In the

Haushofer 2013 *(Continued)*

	monthly group, recipients received the first transfer of KES 2800 on the first of the month following M-Pesa registration, and the remaining 8 transfers of KES 2800 on the first of the 8 following months. In the lump-sum group, recipients received the lump-sum transfer of KES 24,000 on the first of a month chosen randomly among the 9 months following enrolment. • *Number of study contacts*: 2 (baseline and endline) • *Providers*: GiveDirectly NGO • *Delivery*: for lump-sum group, a small initial transfer of KES 1200 was sent on the first of the month following the initial GiveDirectly visit as an incentive for prompt registration. Registration had to occur in the name of the designated transfer recipient, rather than any other person. To facilitate easier communication with recipients and reliable transfer delivery, GiveDirectly offered to sell mobile phones to recipient HHs that did not own 1 (by reducing the future transfer by the cost of the phone). In a few additional cases, delays in registration occurred due to delays in obtaining an official identification card, which was a prerequisite for registering with M-Pesa. Withdrawals and deposits could be made at any M-Pesa agent (about 11,000 throughout Kenya). GiveDirectly reported that recipients typically withdrew the entire balance of the transfer upon receipt. Due primarily to registration issues with M-Pesa, 18 treatment HHs had not received transfers at endline, thus, only 485 of the treatment HHs had received transfers. • *Co-interventions*: NR • *Resource requirements*: GiveDirectly estimated the mean travel time from recipient HHs to the nearest M-Pesa agent was 42 minutes. • *Economic indicators*: GiveDirectly estimated the mean cost from recipient HHs to the nearest M-Pesa agent at USD 0.64. Withdrawals incur costs between 27% for USD 2 withdrawals and 0.06% for USD 800 withdrawals, with a gradual decrease of the percentage for intermediate amounts. The sender also incurred costs for M-Pesa transfers; according to GiveDirectly's estimates, the costs of transferring money to recipients in this was amount to 1.5% of the transfer amount for foreign exchange fees, and 1.6% for M-Pesa fees. Together with 4.8% of transfers spent on recipient identification and staff costs, GiveDirectly estimated that 92.1% of the donations it received were transferred to recipients' M-Pesa accounts. Control: no intervention
Outcomes	Proportion of HH expenditure on food: Total monthly HH food expenditure (cereals, tubers, meat/fish, dairy, fruit/vegetables, other food, food eaten out, Food security: FSI (based on weighted mean of measures of food security and hunger based on 17 outcome measures) Anthropometry: MUAC; height; weight Anxiety and depression: psychological well-being index (standardised weighted mean of 6 psychological and neurobiological measures); log cortisol; CES-D; Cohen PSS
Identification	**Sponsorship source:** NIH Grant R01AG039297 and Cogito Foundation Grant R-116/10 to Johannes Haushofer. **Country:** Kenya **Setting:** poor rural villages in Kenya **Comments:** additional documentation: online Appendix. RCT ID (trial registry): AEARCTR-0000019 (www.socialscienceregistry.org/trials/19) **Author's name:** Johannes Haushofer **Email:** joha@mit.edu **Declarations of interest:** NR either authors. Quote: "Shapiro is a co-founder and former director of GiveDirectly, Inc. (2009–2012). This paper does not necessarily represent the views of GiveDirectly, Inc" **Study or programme name and acronym:** N/A

Haushofer 2013 *(Continued)*

Type of record: report

Notes		
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (Selection bias)	Unclear risk	Randomisation method NR.
Allocation concealment (Selection bias)	Unclear risk	Concealment of allocation was not described, and HHs in the same cluster (village) were randomised to either receive the intervention or not.
Baseline characteristics similar (Selection bias)	Low risk	Quote: "The only significant difference between treatment and control households appears in income from self-employment, where treatment households have a $33 PPP [purchasing power parity] lower income relative to the control mean of $85 PPP (39%) at baseline. This difference is significant at the 10% level, but does not survive FWER [familywise error rate] correction for multiple inference"
Baseline outcome measurements similar (Selection bias)	Low risk	Quote: "Online Appendix Table 35 shows only minor differences in the estimates of the treatment effects when baseline controls are included; none of the significant results become non significant or vice versa. Thus, baseline covariates do not affect our results strongly." "The only significant difference between treatment and control households appears in income from self-employment, where treatment household shave a $33 PPP lower income relative to the control mean of $85 PPP (39%) at baseline. This difference is significant at the 10% level, but does not survive FWER correction for multiple inference."
Blinding of participants and personnel (Performance bias)	Low risk	No blinding. Unlikely to influence behaviour or experience of participants.
Blinding of outcome assessment (Detection bias)	High risk	No blinding, which may have affected self-reported outcomes of participants who did not receive the cash transfers.
Protection against contamination (Performance bias)	Low risk	Quote: "First, we find no spillovers in consumption. This is surprising, given that we might have expected some informal insurance among households: in effect, the transfer is a temporary lottery gain, and theory predicts that households should have been sharing it with their insurance network."
Incomplete outcome data (Attrition bias)	Low risk	Few and balanced missing data – approximately 6% in each group. This was unlikely to introduce bias.
Selective outcome reporting (Reporting bias)	Low risk	No study protocol available but all outcomes outlined in registry were reported.
Other bias	Unclear risk	Misclassification bias: low. Measurement bias: unclear. Potential bias as information on dietary intake only captured at baseline and after 1 year. Incorrect analysis: unclear. Although there was a cluster randomisation, the analysis used for this review were at HH level and not cluster level. Comparison of intervention and control HHs in villages allocated to intervention group.

Hidrobo 2014

Study characteristics

Methods	**Study design:** cRCT **Study grouping:** parallel **How were missing data handled?** Overall attrition 10%. Authors excluded data from HHs LTFU and with missing data but they constructed worse-case scenarios to assess effects of excluding missing data. Construct worst-case scenarios by assuming those HHs who select into the sample because of treatment (marginal HHs) were at the very top or very bottom of the outcome distribution. No differences in estimates observed in these analyses. **Randomisation ratio:** neighbourhoods and clusters randomised into 4 treatment groups using percentages of 20/20 for the control and food groups, and 30/30 for the cash and food voucher groups. 80 neighbourhoods and 145 clusters were randomised. **Recruitment method:** each HH in the selected neighbourhood was visited, mapped and administered a 1-page questionnaire with basic demographic and socioeconomic questions. **Sample size justification and outcome used:** NR **Sampling method:** Neighbourhoods within urban centres were chosen for the intervention by WFP in consultation with the United Nations High Commissioner for Refugees (UNHCR) as areas that had large numbers of Colombian refugees and relatively high levels of poverty. Each HH was visited, mapped and administered a 1-page questionnaire that consisted of basic demographic and socioeconomic questions designed to develop a PMT to define programme eligibility. However, based on point scores by nationality, the decision was made to automatically enrol all Colombian and mixed-nationality HHs. First, neighbourhoods were randomised to either treatment or control group; second, all treatment clusters (geographical units within neighbourhoods) were randomised to cash, food voucher or food transfer. 1 unexpected complication in study design was change in beneficiary criteria implemented during baseline survey data collection. In process of surveying HHs, it was concluded that the targeting for transfers was too broad, resulting in the inclusion of HHs who were relatively well off. This led to a retargeting process where HHs who were relatively well off were dropped from the programme. Since there were not enough HHs in existing neighbourhoods to replace those that had been excluded and still reach programme enrolment targets, the decision was made to expand coverage to additional neighbourhoods on the outer circle of urban areas. These areas were subsequently rerandomised into treatment groups according to the approximate percentage lost. **Study aim or objective:** to compare the impact and cost-effectiveness of cash, food vouchers and food transfers on the quantity and quality of food consumed. Objectives were 3-fold: 1. to improve food consumption by facilitating access to more nutritious foods, 2. to increase the role of women in HH decision-making related to food consumption and 3. to reduce tensions between Colombian refugees and host Ecuadorian populations. **Study period:** May 2011 to October 2011 **Unit of allocation or exposure:** neighbourhoods and clusters (geographical units within neighbourhoods)
Participants	**Baseline characteristics** Control • *Age*: mean, years: 41.71. Number of children aged 0–5 years, mean: 0.59. Number of children aged 6–15 years, mean: 1.02 • *Place of residence*: 7 urban centres in Carchi and Sucumbíos • *Sex, %*: female 0.26 • *Ethnicity and language*: Colombian, %: 0.37 • *Occupation*: NR • *Education*: had secondary education or higher, %: 0.32 • *SES*: HH size: 4.12. Floor type dirt, %: 0.06. See others in table 1.

Hidrobo 2014 *(Continued)*

- *Social capital*: NR
- *Nutritional status*: DDI: 17.02. HDDS: 9.11. FCS: 59.05
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Food transfer

- *Age*: mean, years: 41.13. Number of children aged 0–5 years, mean: 0.66. Number of children aged 6–15 years, mean: 0.90
- *Place of residence*: 7 urban centres in Carchi and Sucumbíos
- *Sex, %*: female 0.25
- *Ethnicity and language*: Colombian, %: 0.28
- *Occupation*: NR
- *Education*: had secondary education or higher, %: 0.35
- *SES*: HH size: 3.91. Floor type dirt, %: 0.04. See others in table 1.
- *Social capital*: NR
- *Nutritional status*: DDI: 17.44. HDDS: 9.22. FCS: 60.93
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Cash

- *Age*: mean, years: 41.42. Number of children aged 0–5 years, mean: 0.59. Number of children aged 6–15 years, mean: 0.89
- *Place of residence*: 7 urban centres in Carchi and Sucumbíos
- *Sex, %*: female 0.28
- *Ethnicity and language*: Colombian, %: 0.24
- *Occupation*: NR
- *Education*: had secondary education or higher, %: 0.35
- *SES*: HH size: 3.82. Floor type dirt, %: 0.03. See others in table 1.
- *Social capital*: NR
- *Nutritional status*: DDI: 17.41. HDDS: 9.23. FCS: 60.00
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Food voucher

- *Age*: mean, years: 42.21. Number of children aged 0–5 years, mean: 0.62. Number of children aged 6–15 years, mean: 0.83
- *Place of residence*: 7 urban centres in Carchi and Sucumbíos
- *Sex, %*: female 0.29
- *Ethnicity and language*: Colombian, %: 0.26
- *Occupation*: NR
- *Education*: had secondary education or higher, %: 0.38
- *SES*: HH size: 3.75. Floor type dirt, %: 0.04. See others in table 1.
- *Social capital*: NR
- *Nutritional status*: DDI: 17.28. HDDS: 9.19. FCS: 59.75
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: HHs residing in the selected neighbourhoods with low SES as measured by the PMT. All Colombian and mixed-nationality HHs.

Exclusion criteria: all HHs who reported receiving the government's social safety net transfer programme, the BDH.

Hidrobo 2014 *(Continued)*

Pretreatment: higher proportion of Colombian heads in HHs in control vs cash group (P = 0.01). Larger HH size and number of children aged 6–15 years in HHs in control vs voucher group. Across 132 (22 × 6) difference-in-means tests between the treatment and control groups, only 4 were statistically different at the 5% level, which revealed that randomisation was, mostly, effective at balancing baseline characteristics.

Attrition per relevant group: overall attrition 11.5% (235 HHs did not complete follow-up survey and an additional 35 HHs did not have complete food consumption data and were excluded from analysis). Attrition rates: 11% in control group, 8% in food group, 9% in cash group and 11% in voucher group.

Description of subgroups measured and reported: N/A

Total number completed and analysed per relevant group: conducted analysis on the 2087 HHs that were in the baseline and follow-up surveys and had complete data on food consumption. Number per group NR.

Total number enrolled per relevant group: NR

Total number randomised per relevant group: in total, 80 neighbourhoods and 145 clusters were randomised into the 4 intervention groups: control, cash, vouchers and food. Total number of HHs randomised = 2357. Number per group NR.

Interventions

Intervention characteristics

Food transfer

- *Food access intervention category*: food prices
- *Intervention type*: conditional food transfer
- *Description*: valued according to regional market prices at USD 40 and included rice (24 kg), vegetable oil (4 L), lentils (8 kg) and canned sardines (8 cans of 0.425 kg). Although USD 40 was less than most HH's total monthly food consumption at baseline, the quantity of food received for each item was higher than what the median HH in the sample consumed at baseline, which suggests that for many HHs the items from the food transfer would be extra-marginal. Nutrition sensitisation was a key component of the programme, aimed at influencing behaviour change and increasing knowledge of recipient HHs, especially in regard to dietary diversity. To ensure a consistent approach to knowledge transfer, a curriculum was developed by WFP to be covered during each monthly training session. Topics included: 1. programme sensitisation and information, 2. family nutrition, 3. food and nutrition for pregnant and lactating women, 4. nutrition for children aged 0–12 months and 5. nutrition for children aged 12–24 months. All participants regardless of transfer modality participated in training, and transfers were conditional on attendance. In addition to monthly meetings, posters and flyers on nutrition were developed and posted at distribution sites, including supermarkets, banks, food warehouses and community centres to further expose participants across all 3 modalities to messaging. Flyers covered topics such as recommended food groups, daily nutritional requirements, proper sanitation and food preparation processes.
- *Duration of intervention period*: May 2011 to October 2011
- *Frequency*: monthly food transfer per HH
- *Number of study contacts*: 2: March–April 2011 (baseline) and October–November 2011 (follow-up)
- *Providers*: WFP (NPO)
- *Delivery*: food transfer was valued according to regional market prices at USD 40 and included rice (24 kg), vegetable oil (4 L), lentils (8 kg) and canned sardines (8 cans of 0.425 kg). Although USD 40 was less than most HH's total monthly food consumption at baseline, the quantity of food received for each item was higher than what the median HH in the sample consumed at baseline, which suggested that for many HHs the items from the food transfer would be extramarginal. Transfers were conditional on attending nutrition sensitisation training. Across all modalities, beneficiaries reported extremely high rates of satisfaction with both the programme and programme transparency, believed that the programme was fair, and reported that programme employees treated them with respect. On average, 99% of beneficiaries reported receiving their transfers in totality and 97% reported that they received all information needed to understand how the programme worked. Across the 3 modalities, a minimum of 88% of beneficiaries stated that they received their scheduled payments on time and that they knew how many transfers they would receive. Knowledge gained from the nutrition sensitisation sessions, as measured by a set of questions at baseline and follow-up, was also similar across modali-

Hidrobo 2014 *(Continued)*

ties. < 1% of voucher and food beneficiaries reported selling their food or voucher. Food HHs reported that the remainder was saved for later use (29.4%) and shared with others outside the HH (6.8%).

- *Co-interventions*: NR
- *Resource requirements*: food transfer was significantly more expensive due to the cost of transport to distribution sites and rental of storage facilities. Repackaging bulk items for distribution was also costly, accounting for approximately 30% of the cost of food distribution. Moreover, costs of food did not tend to decrease with economies of scale because much of the modality-specific costs were physical resource costs such as transport and re-packaging. In terms of opportunity costs from time spent travelling to the distribution point and waiting to receive their transfers, food beneficiaries spent on average 93 minute.
- *Economic indicators*: costs in per-transfer terms: cost to provide a food transfer was USD 11.46 (Appendix Table B.8). It was considerably less expensive to provide cash (USD 42.99 per transfer) or vouchers (USD 43.27 per transfer) than food (USD 58.22 per transfer). Food recipients spend slightly more, USD 2.12, as many had to use taxis to carry home the heavy loads of food given at the distribution points.

Cash transfer

- *Food access intervention category*: increase buying power
- *Intervention type*: CCT
- *Description*: USD 40 transferred monthly onto preprogrammed debit cards. Cash transfer HHs were able to retrieve the cash any time; however, it had to be taken out in bundles of USD 10. Nutrition sensitisation was a key component of the programme, aimed at influencing behaviour change and increasing knowledge of recipient HHs, especially in regard to dietary diversity. To ensure a consistent approach to knowledge transfer, a curriculum was developed by WFP to be covered during each monthly training session. Topics included: 1. programme sensitisation and information, 2. family nutrition, 3. food and nutrition for pregnant and lactating women, 4. nutrition for children aged 0–12 months and 5. nutrition for children aged 12–24 months. All participants regardless of transfer modality participated in training, and transfers were conditional on attendance. In addition to monthly meetings, posters and flyers on nutrition were developed and posted at distribution sites, including supermarkets, banks, food warehouses and community centres to further expose participants across all 3 modalities to messaging. Flyers covered topics such as recommended food groups, daily nutritional requirements, proper sanitation and food preparation processes.
- *Duration of intervention period*: May 2011 to October 2011
- *Frequency*: monthly transfer to preprogrammed debit card. Recipients could withdraw money at any time but only in USD 10 bundles.
- *Number of study contacts*: 2: March–April 2011 (baseline) and October–November 2011 (follow-up)
- *Providers*: WFP (NPO)
- *Delivery*: transfers were conditional on attending nutrition sensitisation training. Across all modalities, beneficiaries reported extremely high rates of satisfaction with both the programme and programme transparency, believed that the programme was fair and reported that programme employees treated them with respect. On average, 99% of beneficiaries reported receiving their transfers in totality and 97% reported that they received all information needed to understand how the programme worked. Across the 3 modalities, a minimum of 88% of beneficiaries stated that they received their scheduled payments on time and that they knew how many transfers they would receive. Knowledge gained from the nutrition sensitisation sessions, as measured by a set of questions at baseline and follow-up, was also similar across modalities. Cash HHs reported that the remainder was spent on non-food expenditures (6.3%), shared with others outside the HH (2.4%) and saved for later use (8.3%).
- *Co-interventions*: NR
- *Resource requirements*: principal cost associated with the cash transfer was the production of debit cards. In terms of opportunity costs from time spent travelling to the distribution point and waiting to receive their transfers, cash recipients spent 45 minutes travelling and waiting.
- *Economic indicators*: costs in per-transfer terms: the cost to provide cash transfer, USD 2.99 (Appendix Table B.8). It is considerably less expensive to provide cash (USD 42.99 per transfer) or vouchers (USD 43.27 per transfer) than food (USD 58.22 per transfer). Cash and recipients spend an average of USD 1.46 per month on transportation and other out-of-pocket expenses to retrieve transfers.

Food voucher

- *Food access intervention category*: food prices

Hidrobo 2014 *(Continued)*

- *Intervention type*: conditional food voucher
- *Description*: food vouchers valued at USD 40 and given in denominations of USD 20, redeemable for a list of nutritionally approved foods at central supermarkets in each urban centre. List consisted of cereals, tubers, fruits, vegetables, legumes, meats, fish, milk products and eggs. Food vouchers could be used over a series of 2 visits per month and had to be redeemed within 30 days of receipt. Vouchers were serialised and printed centrally, and were non-transferable. Nutrition sensitisation was a key component of the programme, aimed at influencing behaviour change and increasing knowledge of recipient HHs, especially in regard to dietary diversity. To ensure a consistent approach to knowledge transfer, a curriculum was developed by the WFP to be covered during each monthly training session. Topics included: 1. programme sensitisation and information, 2. family nutrition, 3. food and nutrition for pregnant and lactating women, 4. nutrition for children aged 0–12 months and 5. nutrition for children aged 12–24 months. All participants regardless of transfer modality participated in training, and transfers were conditional on attendance. In addition to monthly meetings, posters and flyers on nutrition were developed and posted at distribution sites, including supermarkets, banks, food warehouses and community centres to further expose participants across all 3 modalities to messaging. Flyers covered topics such as recommended food groups, daily nutritional requirements, proper sanitation and food preparation processes.
- *Duration of intervention period*: May 2011 to October 2011
- *Frequency*: food vouchers provided monthly, which could be used over a series of 2 visits per month and had to be redeemed within 30 days of initial receipt of voucher
- *Number of study contacts*: 2: March–April 2011 (baseline) and October–November 2011 (follow-up)
- *Providers*: WFP (NPO)
- *Delivery*: vouchers were serialised and printed centrally, and were non-transferable. Transfers were conditional on attending nutrition sensitisation training. Beneficiaries were asked about how they used their most recent transfer. Voucher HHs reported using 98.8% on food consumption, compared to 83% for cash HHs and 63.2% for food HHs. < 1% of voucher and food beneficiaries reported selling their food or voucher. Across all modalities, beneficiaries reported extremely high rates of satisfaction with both the programme and programme transparency, believed that the programme was fair and reported that programme employees treated them with respect. On average, 99% of beneficiaries reported receiving their transfers in totality and 97% reported that they received all information needed to understand how the programme worked. Across the 3 modalities, a minimum of 88% of beneficiaries stated that they received their scheduled payments on time and that they knew how many transfers they would receive. Knowledge gained from the nutrition sensitisation sessions, as measured by a set of questions at baseline and follow-up, was also similar across modalities.
- *Co-interventions*: NR
- *Resource requirements*: significant staff costs were associated with supermarket selection and negotiation of contracts, and voucher reconciliation and payment. These staff costs accounted for nearly 90% of the cost of implementing the voucher component of the intervention. In terms of opportunity costs from time spent travelling to the distribution point and waiting to receive their transfers, voucher beneficiaries spent on average 92 minutes.
- *Economic indicators*: costs in per-transfer terms: cost to provide a voucher, USD 3.27 (Appendix Table B.8). It was considerably less expensive to provide cash (USD 42.99 per transfer) or vouchers (USD 43.27 per transfer) than food (USD 58.22 per transfer) Voucher recipients spent an average of USD 1.65 per month on transportation and other out-of-pocket expenses to retrieve vouchers.

Control: no intervention

Outcomes	Food expenditure per capita per month (log values) Dietary diversity: DDI; HDDS; FCS; proportion with poor food consumption; number of days a HH consumed foods from each individual food group Diet intake: log per capita caloric intake per person per day – total and per food group/item
Identification	**Sponsorship source:** Government of Spain received through the WFP and funding provided by the CGIAR's Policy, Institutions and Markets research programme to IFPRI. **Country:** Ecuador **Setting:** poor neighbourhoods within 7 urban centres in the provinces of Carchi and Sucumbíos

Hidrobo 2014 *(Continued)*

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Declarations of interest: NR

Study or programme name and acronym: N/A

Type of record: journal article

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Authors stated that neighbourhoods and clusters were randomised to either intervention groups but there was no description of how the random sequence was generated.
Allocation concealment (Selection bias)	High risk	The unit of allocation was neighbourhoods. After the baseline survey there was (quote) "a retargeting process where households who were relatively well off were dropped from the programme. Since there were not enough households in existing barrios to replace those that had been excluded and still reach programme enrolment targets, the decision was made to expand coverage to additional barrios on the outer circle of urban areas. These areas were subsequently re-randomised into treatment groups according to the approximate percentage lost." This rerandomisation of households was done after neighbourhoods had already been allocated to intervention groups, which could have introduced bias.
Baseline characteristics similar (Selection bias)	Low risk	Most baseline characteristics were comparable. Quote: "Across 132 (22 × 6) difference-in-means tests between the treatment and control groups, only four are statistically different at the 5% level, which reveals that randomisation was, for the most part, effective at balancing baseline characteristics." Although authors did not adjust for baseline characteristics in the analyses, they assessed the robustness of estimations in additional analyses, which provided similar effect measures.
Baseline outcome measurements similar (Selection bias)	Low risk	Quote: "… estimate the treatment effect using Analysis of Covariance (ANCOVA) which controls for the lagged outcome variable."
Blinding of participants and personnel (Performance bias)	Low risk	Blinding of participants and personnel was not done. Knowledge of intervention allocation was unlikely to have affected participants' experience of the intervention. Authors reported that most participants used the interventions as they were supposed to.
Blinding of outcome assessment (Detection bias)	High risk	No blinding was possible. Outcomes were based on self-reports from recipients; if they were not satisfied with intervention received, this could have biased their reporting of food consumed.
Protection against contamination (Performance bias)	Low risk	Allocation was by neighbourhood and cluster and it was unlikely that interventions were implemented in the wrong group.
Incomplete outcome data (Attrition bias)	Low risk	Quote: "Table B.1 in the appendix reveals that across 126 difference in means test for those who attrited, only 3 are significant at the 5% level. Those who left

Hidrobo 2014 *(Continued)*

		the food and cash arm are significantly younger than those who left the control arm; and those who left the food arm are less likely than the voucher arm to have a dirt floor. However, baseline analysis across treatment and control groups for households that remained in the study (Table 1) reveals that differences in age and dirt floor are not significant; therefore, the bias due to the differential attrition of these variables is likely to be very small."
Selective outcome reporting (Reporting bias)	Unclear risk	All relevant outcomes seemed to be reported but no protocol available.
Other bias	Unclear risk	Misclassification bias: unlikely. Researchers knew who had been allocated to each group. Measurement bias: unclear. Authors reported different valid measures of food security and dietary diversity; however, this is based on information only measured once at baseline and once at follow-up, which may not be sufficient for representative sample of food consumption. Incorrect analysis: unlikely.

Hjelm 2017

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** subsample of HHs with female carers. No systematic difference in treatment group, age, education or marital status between women who responded and those with missing values. Due to their relatively small number, these observations were dropped from the analysis. **Randomisation ratio:** 1:1 **Recruitment method:** CWACs were randomly selected from 2 districts by the Zambian Ministry of Community Development Mother and Child Health. Each CWAC identified eligible HHs meeting ≥ 1 inclusion criterion, and 33 HHs were approached from these. **Sample size justification and outcome used:** reported that a power analysis was conducted to determine a sample size large enough to detect meaningful effects, also among subgroups. Outcomes used in their calculation NR. **Sampling method:** total sample: 46 CWACs out of approximately 100 CWACs from each district (Luwinga, Serenje districts) were included through a lottery held at Ministry headquarters in June 2010. Thereafter, 33 HHs per CWAC were randomly selected (out of approximately 100 eligible HHs per CWAC), resulting in 3077 HHs (15,630 people). Subsample: 2490 HHs with female carers were included in the secondary analysis of the outcome perceived stress. **Study aim or objective:** impact evaluation of programme related to changes in 5 primary areas: income, education, health, food security and livelihoods. **Study period:** December 2011 to December 2014 **Unit of allocation or exposure:** communities through CWACs
Participants	**Baseline characteristics** Intervention or exposure • *Age*: total sample: children, mean, years: 14.88 (SD 1.50); subsample of HHs with female carer: carer mean, years: 51.98

Hjelm 2017 *(Continued)*

- *Place of residence*: HH distance to food market, mean: 34.15 (SD 31.77); HH distance to health facility mean: 13.02 (SD 17.55)
- *Sex*: adolescents in HH, dichotomised to male = 1, female = 0, mean: 0.54 (SD 0.50)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: subsample of HHs with female carers: ever attended school, proportion: 0.60; highest grade completed, mean: 2.98
- *SES*: total sample: HH size, mean: 4.98 (SD 2.47); total HH expenditure per person per month, mean (SD): ZMW 50,832.42 (47,438.87); subsample of HHs with female carer: HH size, mean: 5.14; children aged 0–5 years, proportion, n: 0.77; assets owned (clock, watch, mobile phone, radio, sofa, table, mattress), proportion: 0.51
- *Social capital*: NR
- *Nutritional status*: total sample: HFIAS, mean: 14.78 (SD 5.49); expenditure on food per person per month, mean: ZMW 38,641.75 (SD 36,237.80); share of total expenditure on food per capita, mean: ZMW 0.74 (SD 0.16); subsample of HHs with female carer: HFIAS, mean: 14.75
- *Morbidities*: NR
- *Concomitant or previous care*: total sample: whether HH received a food security pack, mean: 0.01 (SD 0.09)

Control

- *Age*: total sample: children, mean, years: 14.86 (SD 1.44); subsample of HHs with female carer: age of carer, mean, years: 51.26
- *Place of residence*: HH distance to food market, mean: 27.51 (SD 30.67); HH distance to health facility mean: 11.91 (SD 15.55)
- *Sex*: adolescents in HH, dichotomised to male = 1 female = 0, mean: 0.53 (SD 0.50)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: subsample of HHs with female carers: ever attended school, proportion: 0.63; highest grade completed, mean: 3.09
- *SES*: total sample: HH size, mean: 5.01 (SD 2.50); total HH expenditure per person per month, mean: ZMW 51,843.45 (SD 42,876.01); subsample of HHs with female carer: HH size, mean: 5.18; people aged 0–5 years, proportion, n: 0.73; assets owned (clock, watch, mobile phone, radio, sofa, table, mattress), proportion: 0.58
- *Social capital*: NR
- *Nutritional status*: total sample: HFIAS, mean: 14.68 (SD 5.71); expenditure on food per person per month, mean: ZMW 40,367.87 (SD 35,290.74); share of total expenditure on food per capita, mean: ZMW 0.77 (SD 0.15); subsample of HHs with female carer: HFIAS, mean: 14.61
- *Morbidities*: NR
- *Concomitant or previous care*: total sample: whether HH received a food security pack, mean: 0.01 (SD 0.10)

Overall

- *Age*: subsample of HHs with female carer: years, mean: 51.62
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: subsample of HHs with female carers: ever attended school, proportion: 0.61; highest grade completed, mean: 3.03
- *SES*: total sample: per capita share of expenditure on food: 0.754; subsample of HHs with female carer: HH size, mean: 5.16; people aged 0–5 years, proportion, n: 0.75; assets owned (0–7), proportion: 0.54
- *Social capital*: total sample: any NGOs operating in community, % (n/N): 32.6 (30/92)
- *Nutritional status*: subsample of HHs with female carer: HFIAS, mean: 14.68

Hjelm 2017 *(Continued)*

- *Morbidities*: CES-D short form mean score, for adolescents only: 17.89; mean proportion of adolescents depressed (CES-D score ≥ 20): 0.33
- *Concomitant or previous care*: NR

Inclusion criteria: HHs that are female-headed and caring for orphans, had a disabled member, were elderly headed (> 60 years) and caring for orphans, or are special cases (cases that are critical, but did not qualify under other categories; e.g. 2 elderly people unable to care for themselves).

Exclusion criteria: NR

Pretreatment: no differences reported between the groups in the total sample (3077 HHs), or those in the subsample of HHs with female carers (2490 HHs).

Attrition per relevant group: overall attrition was 106/3076 (3.4%) HHs. Per-group attrition was 70/1561 (4.5%) HHs (4.2% in Serenje district and 4.9% in Luwingu district) in the intervention, and 35/1515 (2.3%) (2.3% in Serenje district and 2.4% in Luwingu district) in the control group.

Description of subgroups measured and reported: HHs caring for orphans, female-headed HHs and HHs with adolescents.

Total number completed and analysed per relevant group: 2970/3076 (96.6%) HHs overall, with 1490/1561 (95.5%) in intervention group and 1480/1515 (97.7%) in control group.

Total number enrolled per relevant group: 3076 HHs; 1561 in intervention group and 1515 in control group. Subsample of HHs with female carers: NR.

Total number randomised per relevant group: 3076 HHs in 92 CWACs; 1561 from 46 CWACs in intervention group and 1515 from 46 CWACs in control group. Subsample of HHs with female carers: NR.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT
- *Description*: monthly transfer of ZMW 55,000 (USD 11) irrespective of size of HH. This amount was chosen as it is considered sufficient to provide 1 meal a day for each HH member over the course of 1 month.
- *Duration of intervention period*: 36 months (December 2011 to December 2014); for as long as criteria were met.
- *Frequency*: monthly transfer
- *Number of study contacts*: 3 contacts: baseline: November/December 2011, follow-up: November/December 2013 and final follow-up: November/December 2014. Subsample of HHs with female carer: baseline: November/December 2011 and follow-up: November/December 2014.
- *Providers*: Zambian government: Ministry of Community Development, Mother and Child Health (MCDMCH).
- *Delivery*: payments were made every other month through a local paypoint manager.
- *Co-interventions*: during the baseline survey HHs were questioned regarding receipt of a food security pack; unclear whether this was a potential co-intervention.
- *Resource requirements*: NR
- *Economic indicators*: NR

Control: no intervention

- Co-*interventions*: during the baseline survey HHs were questioned regarding receipt of a food security pack; unclear whether this was a potential co-intervention.

Outcomes

Proportion of per capita expenditure spent on buying food

Food security: HFIAS

Hjelm 2017 *(Continued)*

	Anxiety/depression: Cohen PSS; CES-D short form; depression (based on cut-off value for the CES-D)
Identification	**Sponsorship source:** consortium of donors including DfID, UNICEF, Irish Aid, and the Government of Finland. Palermo, Handa, and Hjelm received additional funding from the Swedish International Development Cooperation Agency (G41102) to the UNICEF Office of Research – Innocenti for analysis of the data and drafting of the manuscript. **Country:** Zambia **Setting:** socially vulnerable HHs in 2 rural districts with extreme poverty (Luwinga, Serenje) **Author's name:** Lisa Hjelm **Email:** lhjelm@unicef.org **Declarations of interest:** no **Study or programme name and acronym:** Zambia Multiple Category Cash Transfer Program (MCP) **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Randomisation by coin toss with local officials, ministry staff and community members present. Randomisation appeared to have occurred by a single coin toss, allocating one half of the list of CWACs to intervention or control – unclear how this may have biased the process.
Allocation concealment (Selection bias)	Unclear risk	NR whether the allocation outcome of the randomisation process (a single coin toss) was protected from the person performing the randomisation (the Ministry's permanent secretary) beforehand.
Baseline characteristics similar (Selection bias)	Low risk	HH characteristics were similar for both groups at baseline in the total sample, as well as in the subsample of HHs with female carers.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Total group: balanced at baseline with no statistically significant differences for outcome measures. Subsample of HHs with female carers: indices of HH food insecurity were similar at baseline; however, parameters of perceived stress were only measured at the end of the study period.
Blinding of participants and personnel (Performance bias)	Low risk	Participants and study staff do not appear to have been blinded to assignment, but it is unlikely that this influenced the intervention received.
Blinding of outcome assessment (Detection bias)	High risk	Participants did not appear to have been blinded to assignment and were the outcome assessors as outcomes were self-reported.
Protection against contamination (Performance bias)	Low risk	Serenje and Luwingu are both large, geographically discrete districts. In addition, communities were the unit of randomisation. It is unlikely that contamination would present considerable bias.
Incomplete outcome data (Attrition bias)	Unclear risk	Missing values were dropped from the analysis, but there was low overall attrition of 3.4% (with 4.5% in the intervention and 2.3% in the control group); with no evidence of selective attrition. Attrition in HHs with female carers, however, was not described.

Hjelm 2017 *(Continued)*

Selective outcome reporting (Reporting bias)	Unclear risk	Outcomes for the overall evaluation were not clearly stated, but all outcomes appeared to have been addressed in the evaluation report.
Other bias	Low risk	Recruitment bias, low risk: randomisation followed recruitment and baseline survey. Incorrect analysis, low risk: OLS regression with cluster robust SEs were used to account for the clustered nature of the data. Loss of clusters, low risk: no loss of clusters reported. Seasonality bias, low risk: unlikely as the baseline and follow-up data were conducted at the same time of the year.

Hoddinott 2013

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel **How were missing data handled?** NR **Randomisation ratio:** NR **Recruitment method:** phase 1: all HHs in selected villages could voluntarily participate in the PWP and receive cash or food transfers. Study authors reported that the intervention began after a process of sensitisation in all villages. Phase 2: targeted HHs in selected villages continued with unconditional cash or food transfers according to specific criteria. **Sample size justification and outcome used:** NR **Sampling method:** phase 1: convenience sample. 79 villages were suitable and could receive either food or cash transfers. Of these, 52 villages were included in final sample since it would have been too complicated/led to tension if proximate villages shared a work site (5670 HHs). Phase 2: 50% of HHs in each village were targeted to receive the same transfer without having to fulfil a work requirement (2786 HHs). Random sample was taken from these HHs for the collection of outcome data such as food security outcomes before the start of the unconditional transfers (2268 HHs). **Study aim or objective:** to examine the differential impact of food and cash transfers on 5670 HHs eligible for emergency assistance in eastern Niger. **Study period:** first phase included 3 months of public works (April–June 2011), while second phase provided 3 months of unconditional transfers (July–September 2011) to the most vulnerable HHs during the peak of the lean season. **Unit of allocation or exposure:** village
Participants	**Baseline characteristics** Intervention or exposure • *Age*: HH head, mean, years: 48.7; ≥ 1 child aged 6–23 months in HH, %: 41.3 • *Place of residence*: Zinder, Niger • *Sex*: female HH heads, %: 22.1 • *Ethnicity and language*: HHs belonging to the ethnic majority (Hausa), %: 90.2 • *Occupation*: NR • *Education*: HH head with ≥ 1 year of primary schooling, %: 7.0 • *SES*: HH size, mean: 7.5; HH had: livestock, %: 69.1; latrine, %: 13.8; running water/closed well, %: 48.7 • *Social capital*: HH head has an official role in village, %: 21.3; borrowed food from relatives, neighbours or friends, %: 18.9

Hoddinott 2013 *(Continued)*

- *Nutritional status*: DDI: 7.8; HDDS: 5.2; FCS, mean: 37.6; CDS, mean: 2.2; Coping Strategy Index, mean: 7.3; reduced portion sizes for adults: 16.7; reduced portion sizes for children: 10.5; had to reduce the number of meals per day: 14.3; had entire days without eating: 6.2
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: HH head, mean, years: 48.3; ≥ 1 child aged 6–23 months in HH, %: 42.9
- *Place of residence*: NR
- *Sex*: female HH heads, %: 25.1
- *Ethnicity and language*: HHs belonging to the ethnic majority (Hausa), %: 89.3
- *Occupation*: NR
- *Education*: HH head with ≥ 1 year of primary schooling, %: 8.3
- *SES*: HH size, mean: 7.2; HH has: livestock, %: 79.1; latrine, %: 11.4; running water/closed well, %: 50.5
- *Social capital*: HH head has an official role in village, %: 26.8; borrowed food from relatives, neighbours or friends, %: 8.5
- *Nutritional status*: DDI: 8.7; HDDS: 5.6; FCS, mean: 44.4; CDS, mean: 2.4; Coping Strategy Index, mean: 3.1; reduced portion sizes for adults: 6.6; reduced portion sizes for children 3.9; had to reduce the number of meals per day: 5.9; had entire days without eating: 1.7
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: HH head, mean, years: 48.5; ≥ 1 child aged 6–23 months in HH, %: 42.1
- *Place of residence*: Zinder, Niger
- *Sex*: female HH heads, %: 23.6
- *Ethnicity and language*: HHs belonging to the ethnic majority (Hausa), %: 89.8
- *Occupation*: NR
- *Education*: HH head with ≥ 1 year of primary schooling, %: 7.6.3
- *SES*: HH size, mean: 7.4; HH has: livestock, %: 73.9; latrine, %: 10.7; running water/closed well, %: 50.3
- *Social capital*: HH head has an official role in village, %: 27.1
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: phase 1: HHs in 52 selected villages in the Mirrah district willing to participate in PWP. Phase 2: the following were targeted to receive unconditional cash or food transfers: HH with: female heads (for Karkara only, female heads with ≥ 5 dependents); children aged 6–23 months; lactating mother and child aged 0–5 months; migrants from Côte d'Ivoire, Libya or Nigeria; with disabled person (for Karkara only); and very vulnerable HHs (as decided in a consultative process with the community).

Exclusion criteria: NR

Pretreatment: no group differences between HHs targeted to receive unconditional cash or food transfers (during phase 2 of study) in terms of HH composition, age and gender of HH head, and housing characteristics.

Attrition per relevant group: intervention group (UCT): 19/1198 (1.6%); comparison group (unconditional food transfers): 40/1070 (3.4%). Study authors stated that these HHs could not be traced.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: NR

Total number enrolled per relevant group: phase 2 Intervention group (UCTs): 1198 HHs from 25 VCs; control group (unconditional food transfers): 1070 HHs from 27 VCs.

Hoddinott 2013 *(Continued)*

	Total number randomised per relevant group: phase 1: intervention group (cash villages): 25 VCs; control group (food villages): 27 VCs
Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: UCTs • *Description*: XOF 1000 (about USD 2) per day worked to a maximum of XOF 25,000 per month to the registered beneficiary (usually the HH head). Type of works included road construction, soil conservation, tree planting, well drilling, irrigation, deepening of ponds and gardening • *Duration of intervention period*: cash for work (3 months) UCTs (3 months) • *Frequency*: "twice-monthly." • *Number of study contacts*: 2 (July 2011 and October 2011) • *Providers*: transport, storage and distribution of food and cash payments contracted out to several Nigerian NGOs. • *Delivery*: public works committee in each village was established to provide a means of liaising with the NGOs responsible for implementation. • *Co-interventions*: NR • *Resource requirements*: NGOs charged a fixed percentage of the total amount of cash distributed • *Economic indicators*: for cash transfers, they charged WFP a fixed percentage of the total amount of cash distributed. Control • *Food access intervention category*: increase physical access to food • *Intervention type*: unconditional food transfers • *Description*: food basket provided a full ration of food for the mean HH size of 7 people, including 3.5 kg of grain (primarily maize in first transfer period and sorghum in second), 0.72 kg of pulses (cowpeas, red beans or lentils), 0.14 kg of vegetable oil, and 0.035 kg of salt (cost XOF 240,000 per month). Type of works included road construction, soil conservation, tree planting, well drilling, irrigation, deepening of ponds and gardening. • *Duration of intervention period*: food for work (3 months), unconditional food transfer (3 months) • *Frequency*: daily • *Number of study contacts*: 2 (July 2011 and October 2011) • *Providers*: transport, storage and distribution of food and cash payments were contracted out to several Nigerian NGOs. • *Delivery*: public works committee in each village was established to provide a means of liaising with the NGOs responsible for implementation. • *Co-interventions*: NR • *Resource requirements*: NGOs charged a monetary fee based upon the quantity of food delivered • *Economic indicators*: for food transfers, they charged a monetary fee based on the quantity of food delivered. These transport, storage and distribution costs were 15.4% higher for food relative to the cash payments.
Outcomes	Dietary diversity: HDDS; FCS; DDI; CDS; consumption of individual food groups
Identification	**Sponsorship source:** government of Spain through the WFP **Country:** Niger **Setting:** poor rural HHs at high risk of famine. **Author's name:** John Hoddinott **Email:** J.Hoddinott@cgiar.org **Declarations of interest:** NR

Hoddinott 2013 *(Continued)*

Study or programme name and acronym: NR

Type of record: study report

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Method of random sequence generation not described.
Allocation concealment (Selection bias)	Unclear risk	Quote: "Randomization was done through a procedure that assured an approximately equal distribution of villages/work sites by zone and size receiving each transfer." Comment: unclear how the procedure was conducted.
Baseline characteristics similar (Selection bias)	Low risk	HHs that were targeted to receive UCT (intervention group) or food transfers (control group) were similar in terms of HH composition; age and gender of HH head; and housing characteristics. Although these data were collected retrospectively, it was unlikely to increase the risk.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Since food security outcome data were only collected from HHs after first phase of study it is unknown what the food security status of these HHs was before the start of any intervention.
Blinding of participants and personnel (Performance bias)	Low risk	Unclear whether participants or personnel involved with the study (or both), were blinded. However, this is unlikely to influence participant or personnel behaviour beyond that expected by the intervention.
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether outcomes were assessed blindly but outcomes were self-reported and likely to be influenced by lack of blinding.
Protection against contamination (Performance bias)	Low risk	Study authors reported that they excluded proximate villages that would have had to share a worksite. Study villages were, therefore, geographically removed from one another.
Incomplete outcome data (Attrition bias)	Low risk	Although attrition was higher in the control group (food transfers; 3.4%) compared to the intervention group (UCT; 1.6%), it was low. Loss of entire clusters were NR.
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: low risk. HH food consumption was assessed using standardised methods. Incorrect analysis: low risk. Analysis was adjusted for clustering. Recruitment bias (cRCTs): low risk. Majority of all HHs in villages that were randomised participated in the study (95–98%).

Huerta 2006 (PROGRESA)

Study characteristics

Methods **Study design:** PCS

Huerta 2006 (PROGRESA) *(Continued)*

	How were missing data handled? missing data excluded **Randomisation ratio:** N/A **Recruitment method:** NR **Sample size justification and outcome used:** a subsample was chosen because a smaller number of children was adequate to assess the expected 2-year impact on growth (0.8 cm) and anaemia (10 pp reduction). Sample size was calculated according to the original 2-year intervention design for 1-tailed tests, assuming a 0.05 significance level and a power of 90%. It was first estimated as a simple random sample, which was further multiplied by a design effect of 1.4 to take into account the complex sample design. **Sampling method:** nutritional impact substudy was conducted in a random selection of 205/320 communities scheduled to enrol in the programme at the end of 1998 and 142 communities randomly selected from the 186 communities that enrolled 1 year later, in late 1999. The communities for the larger PROGRESA evaluation were randomly selected; more details in Gertler 2000). **Study aim or objective:** to document the short-term nutritional impact of a large-scale, incentive-based development programme in Mexico (Progresa) (Rivera 2004). To assess whether PROGRESA reduced the major childhood diseases that affect children aged < 5 years: diarrhoea and respiratory infections (Huerta 2006). **Study period:** August–September 1998 to November–December 2000 (data included a period when both groups were receiving the intervention) **Unit of allocation or exposure:** HHs
Participants	**Baseline characteristics** Intervention or exposure: NR Control: NR Overall: NR **Inclusion criteria:** poor households in rural areas where there is schooling and health infrastructure. Rivera 2004: infants aged 12 months. Huerta 2006: children aged 0–59 months. Gertler 2004: children aged < 3 years at baseline. **Exclusion criteria:** NR **Pretreatment:** True baseline data NR. Actual baseline data indicated no baseline differences between children aged ≤ 12 months, between the groups in terms of gender, age and anthropometric status (Rivera 2004). Socioeconomic and morbidity data N/A at baseline. **Attrition per relevant group:** From baseline to first follow-up (1999): intervention: 172 children LTFU; control: 132 children LTFU. **Description of subgroups measured and reported:** Children aged 6 months at baseline or aged 12 months at baseline **Total number completed and analysed per relevant group:** total: 595 children (however, these are children surveyed in 2000, when control HHs had already been receiving the intervention for 1 year). Intervention: 336 children (2 years of exposure); control: 259 children (1 year of exposure) **Total number enrolled per relevant group:** 795 children. Exposed group (received intervention): 461 children (aged 12 months) from 175 communities; unexposed group (also termed crossover intervention group): 334 children (aged 12 months) from 107 communities **Total number randomised per relevant group:** N/A
Interventions	**Intervention characteristics**

Huerta 2006 (PROGRESA) *(Continued)*

	Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: CCT • *Description*: families received 2 types of cash transfers every 2 months: a universal cash amount for all families and a specific cash transfer associated with school attendance of their school-aged children enrolled in third-grade primary school to third-grade secondary school. Transfer associated with school attendance varied according to number of children attending school and their grade. PROGRESA provided micronutrient fortified foods for women and children and health services and cash transfers for family. Food supplements were targeted to the groups of individuals that were more likely to benefit from the product. Families received the universal cash transfer as long as they complied with specific healthcare appointments in health centres for all family members, including immunisations, well baby care and growth monitoring of children, antenatal and postnatal care and education for women, check-up visits for other family members, and a mandatory session on nutrition and health education. Monthly transfers averaged about USD 25 per family. Typically, cash transfers added about 20–30% to HH income. • *Duration of intervention period*: about 2 years: May 1998 to November 1999/March 2000 (?) • *Frequency*: every 2 months • *Number of study contacts*: 3: August–September 1998 (baseline); September–December 1999 and November–December 2000 • *Providers*: federal government of Mexico • *Delivery*: lump sum payment once completed forms were submitted by HHs to verify school attendance. Actual transfers to each HH depended on age and sex of children in HH and their compliance with the programme. About 1% of HHs were denied the cash transfers for non-compliance during the evaluation period. • *Co-interventions*: none. 1 requirement of the PROGRESA programme was that HHs benefiting from PROGRESA were supposed to stop receiving benefits from other pre-existing programmes. • *Resource requirements*: access to health and educational facilities • *Economic indicators*: national budget (1997): MXN 465.8 million (6357 localities; 301,262 families; 344,457 scholarships). Monthly transfers averaged about USD 25 per family. Typically, cash transfers added about 20–30% to HH income. Control: no intervention • Co*-interventions*: none. 1 requirement of the PROGRESA programme was that HHs benefiting from PROGRESA were supposed to stop receiving benefits from other pre-existing programmes.
Outcomes	Anthropometry: LAZ or HAZ, WAZ, WLZ Biochemical: Hb Morbidity: anaemia, diarrhoeal disease, respiratory disease
Identification	**Sponsorship source:** CONACYT and the ESRC Research Centre for Analysis of Social Exclusion (CASE) at the London School of Economics; Mexican Ministry of Health. **Country:** Mexico **Setting:** poor rural HHs **Authors' names:** Juan A Rivera; Maria C Huerta **Email:** jrivera@correo.insp.mx; m.c.huerta@lse.ac.uk **Declarations of interest:** Mexican Ministry of Health commissioned the evaluation of the nutrition component of the Education, Health and Nutrition Program (Progresa) to a group of investigators of the Instituto Nacional de Salud Publica as independent evaluators. Ministry and its personnel did not participate in design, data collection or analysis. They did not participate in the preparation of manuscript or its authorisation for publication (Rivera 2004). No (Huerta 2006). **Study or programme name and acronym:** PROGRESA/Oportunidades

Huerta 2006 (PROGRESA) *(Continued)*

Type of record: journal articles

Notes		

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Nested cohort study design within a cRCT; therefore; no randomisation done.
Allocation concealment (Selection bias)	High risk	Nested cohort study design within a cRCT; therefore, no allocation concealment done.
Baseline characteristics similar (Selection bias)	Low risk	Data at baseline N/A, but some analyses showed that, although sample was balanced at community level, it was not at HH or individual level. However, authors accounted for potential confounders in their analyses. Quote: "In order to isolate the intervention effect from the possible influence of other background variables, we included a set of explanatory variables at the individual, household and community level."
Baseline outcome measurements similar (Selection bias)	Unclear risk	Data at baseline N/A.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding; however, unlikely that the performance of participants and personnel were influenced by lack of blinding.
Blinding of outcome assessment (Detection bias)	High risk	Blinding not done. Health outcomes based on self-report and could have been influenced by knowledge of treatment allocation. Authors reported evidence from preliminary analysis on biased reporting of these outcomes.
Protection against contamination (Performance bias)	High risk	There was contamination for some components of the intervention. Quote: "For ethical reasons, health centres provided supplements to malnourished children irrespective of whether they belonged to a control or a treatment community. Therefore, children in both types of localities could receive this in-kind benefit" (Huerta 2006).
Incomplete outcome data (Attrition bias)	High risk	Very high levels of attrition/missing data after 1 year of the intervention: intervention: 172/461 (37%) children; control: 132/334 children (39%).
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available.
Other bias	High risk	Misclassification bias: low risk. Recipients registered as beneficiaries of programme. Measurement bias: high risk. Quote: "One of the limitations of these data is that information on health outcomes may suffer from reporting errors. In preliminary analyses, we found some evidence of reporting errors, specifically for respiratory infections." Incorrect analysis: low risk. Authors adjusted for clustering (this was a nested cohort of a cRCT)

Jensen 2011

Study characteristics

Methods	**Study design:** RCT **Study grouping:** parallel group **How were missing data handled?** NR **Randomisation ratio:** 3:1 (3 intervention levels) **Recruitment method:** NR **Sample size justification and outcome used:** NR **Sampling method:** officially designated urban poor HHs in the Chinese provinces of Hunan and Gansu were randomly selected to participate using lists kept at the local offices of the Ministry of Civil Affairs. **Study aim or objective:** to determine whether food price subsidies result in improved nutrition in poor Chinese HHs. **Study period:** April–December 2006 **Unit of allocation or exposure:** HHs
Participants	**Baseline characteristics** Intervention or exposure • *Age*: NR • *Place of residence*: NR • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: mean family size: 0.1 subsidy 2.8 (SD 1.2), 0.2 subsidy 2.9 (SD 1.2), 0.3 subsidy 2.7 (SD 1.1); mean expenditure per capita: 0.1 subsidy CNY 279 (SD 274), 0.2 subsidy CNY 249 (SD 267), 0.3 subsidy CNY 290 (SD 376) • *Social capital*: NR • *Nutritional status*: mean calories per capita: 0.1 subsidy 1758 (SD 570); 0.2 subsidy 1767 (SD 526), 0.3 subsidy 1752 (SD 569); mean protein per capita, g: 0.1 subsidy 47.8 (SD 17.0), 0.2 subsidy 47.8 (SD 17.8), 0.3 subsidy 48.2 (SD 17.8); mean mineral intake per capita relative to RDA: 0.1 subsidy 1.02 (SD 0.36), 0.2 subsidy 1.02 (SD 0.36), 0.3 subsidy 1.01 (SD 0.35); mean vitamin intake per capita relative to RDA: 0.1 subsidy 1.20 (SD 0.47), 0.2 subsidy 1.19 (SD 0.43), 0.3 subsidy 1.21 (SD 0.43) • *Morbidities*: NR • *Concomitant or previous care*: NR Control • *Age*: NR • *Place of residence*: NR • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: mean family size: 2.9 (SD 1.2); mean expenditure per capita: CNY 259 (SD 255) • *Social capital*: NR • *Nutritional status*: mean calories per capita: 1752 (SD 565); mean protein per capita, g: 48.5 (SD 19.4); mean mineral intake per capita relative to RDA: 1.00 (SD 0.34); mean vitamin intake per capita relative to RDA: 1.17 (SD 0.38)

Jensen 2011 *(Continued)*

- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: officially designated as urban poor (HHs fell below a locally defined poverty threshold (the Di Bao line), typically CNY 100–200 per person per month or USD 0.41–0.82 per person per day, which is below even the World Bank's 'extreme' poverty line of USD 1 per person per day); located in 2 Chinese provinces which provide subsidies for staples goods (rice in Hunan and wheat flour in Gansu).

Exclusion criteria: NR

Pretreatment: no group differences for the total sample, but in the Hunan subsample the 0.3 subsidy group had higher vitamin and mineral intake compared to control as well as a smaller family size compared to the 0.2 subsidy group. In the Gansu subsample 0.1 and 0.2 subsidy groups both had a smaller family size compared to control, while the 0.3 subsidy group had lower protein per capita compared to control and lower mineral intake compared to the 0.2 subsidy group.

Attrition per relevant group: NR. Total attrition between round 1 and 2 was < 1% (11/1300 HHs), and no HHs attrited between round 2 and 3.

Description of subgroups measured and reported: baseline characteristics and outcomes were reported for Hunan and Gansu provinces as subgroups of the pooled data. Intervention group split into 3 levels: 0.1, 0.2 and 0.3 subsidy level (corresponding to CNY 0.1, CNY 0.2 and CNY 0.3 reduction per 500 g of staple good).

Total number completed and analysed per relevant group: total of 1293 HHs (Hunan 644; Gansu 649) completed baseline surveys: 324 in control group and 324 for subsidy level 0.1, 324 for subsidy level 0.2 and 321 for subsidy level 0.3. 1271 HHs were included in the analysis, but no breakdown by control and intervention levels provided.

Total number enrolled per relevant group: 1300 HHs enrolled. 324 HH completed baseline surveys in the control, 324 in subsidy level 0.1, 324 in subsidy level 0.2 and 321 in subsidy level 0.3.

Total number randomised per relevant group: NR

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: food subsidy vouchers
- *Description*: vouchers entitling HHs to a subsidy in the price of the local staple good (rice in Hunan and wheat flour in Gansu) to 750 g per person per day (twice the mean per capita consumption as determined by preintervention study) that could be used immediately or accumulated and used when required within the intervention period. HHs in the treatment groups were given printed vouchers entitling them to a price reduction of CNY 0.10, CNY 0.20 or CNY 0.30 off the price of each 500 g of staple good. Subsidy stayed fixed for each HH over course of study. These subsidies represented substantial price changes, since the mean preintervention price of rice in Hunan was CNY 1.2 per 500 g, and the mean for wheat flour in Gansu was CNY 1.04 per 500 g.
- *Duration of intervention period*: June–October 2006
- *Frequency*: vouchers printed in quantities of 1, 5 and 10 jin (500 g), and 1-month supply of vouchers was distributed at start of each month, with each HH receiving vouchers for 750 g per person per day (about twice the mean per capita consumption as measured by the preintervention survey). All vouchers remained valid until the end of the intervention, giving HHs time to spend down any accumulated vouchers at end of study.
- *Number of study contacts*: baseline (April 2006) with 2 follow-ups (September and December 2006)
- *Providers*: survey and intervention conducted by employees of provincial-level agencies of Chinese National Bureau of Statistics.
- *Delivery*: printed food vouchers entitling intervention HHs to the subsidy corresponding with its intervention level. Vouchers were redeemable at local grain shops, the owners of which were later re-

Jensen 2011 *(Continued)*

	imbursed for the cost of the vouchers and given a fixed payment for complying with the guidelines in implementing the subsidy. HHs could use the vouchers only to purchase the province-specific staple good and were not permitted to resell the vouchers or the goods purchased with the vouchers (they were told there would be auditing and accounting to make sure they were in compliance with the rules, and that any violations would result in their removal from the study without any additional compensation). • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: NR Control: no intervention
Outcomes	Adequacy of dietary intake: caloric/protein intake per capita Mineral Sufficiency index, Vitamin Sufficiency Index
Identification	**Sponsorship source:** National Institute of Aging, the William F. Milton Fund at Harvard Medical School, the Harvard Kennedy School's Dean's Research Fund, the Center for International Development at Harvard University, and the Hefner China Fund. **Country:** China **Setting:** extremely poor HHs in urban areas **Authors' names:** Robert T Jensen; Nolan H Miller **Email:** nmiller@illinois.edu; robertjensen@ucla.edu **Declarations of interest:** NR **Study or programme name and acronym:** N/A **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	HHs were randomised to control or 3 levels of intervention, but no information provided on how this was achieved. The even distribution of HHs at baseline (324, 324, 324 and 321) indicated that a pseudo-random technique may have been employed.
Allocation concealment (Selection bias)	Unclear risk	No information reported on whether or how the randomisation sequence was protected.
Baseline characteristics similar (Selection bias)	Unclear risk	Covariates were balanced across the entire pooled group, but significant differences existed at the province level. In Hunan, 0.3 subsidy HHs had significantly fewer members ($t = 0.27$; $P < 0.05$) when compared to 0.2 subsidy HHs; while in Gansu 0.1 and 0.2 subsidy HHs had significantly fewer HH members (0.1: $t = 0.24$; $P < 0.05$; 0.2: $t = 0.19$; $P < 0.05$) when compared to control.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Overall, for the pooled sample randomisation appears to have achieved balance across the control and 3 treatment groups. Statistically significant differences exist between intervention and control groups at the province level, with 0.3 subsidy HHs in Hunan having significantly higher mineral ($t = –0.074$; $P < 0.05$) and vitamin ($t = –0.13$; $P < 0.001$) intake; and 0.3 subsidy HHs in Gansu having significantly lower ($t = 3.84$; $P < 0.05$) per capita protein consumption.

Jensen 2011 *(Continued)*

		In the latter province, 0.3 subsidy HHs also had a significantly lower mineral intake when compared to 0.2 subsidy HHs (t = 0.058; P < 0.05).
Blinding of participants and personnel (Performance bias)	Low risk	Given the nature of the intervention, it is very unlikely that participants could have been blinded to their allocation but this is unlikely to have introduced performance bias.
Blinding of outcome assessment (Detection bias)	High risk	As participants were the outcome assessors during the survey and were likely aware of their allocation to control or intervention, it is possible that this knowledge may have influenced the results.
Protection against contamination (Performance bias)	Low risk	Quote: "The possibility that the subsidy may attract other non eligible family members to the household is one case where the subsidy as we implemented it may yield different impacts from general subsidy. Our subsidy was assigned to only a subset of households, creating a potential pool of ineligible persons related to an eligible person. In the case of a universal subsidy for which all individuals are eligible, or a subsidy targeted to the poor where there is high correlation in poverty among relatives, we would not expect the same household composition response. While this is a potential threat to the external validity of our study, the fact that we find that no such changes took place makes this concern less important."
Incomplete outcome data (Attrition bias)	Low risk	Attrition was very low across the study, with < 1% of HHs (11/1300) being LTFU.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available, but it appeared that all relevant outcomes in the methods section were reported in the results section.
Other bias	Low risk	None identified.

Jodlowski 2016

Study characteristics	
Methods	**Study design:** PCS **How were missing data handled?** 8 HHs that were missing in some of the survey rounds were excluded in the analyses. The authors stated that they found little evidence to suggest that attrition was systematic or influenced their results. No data provided. **Randomisation ratio:** N/A **Recruitment method:** formation of local community groups, followed by submitting an application to Heifer International's Zambia offices for participation in the livestock assistance programme. **Sample size justification and outcome used:** NR **Sampling method:** unclear. The authors stated: "The selection of original beneficiaries among the eligible households is known to have been random in 1 community, and is assumed to have been random in other communities where the process was not observed." **Study aim or objective:** to use unique panel data from the rollout of a Heifer International livestock programme in Zambia to identify the causal effect of livestock ownership on dietary diversity and consumption expenditure. **Study period:** January 2012 to August 2013 **Unit of allocation or exposure:** HHs

Jodlowski 2016 *(Continued)*

Participants

Baseline characteristics

Intervention or exposure group (livestock receipt and training programme):

- *Age*: head of HH, mean, years: 50.8 (SD 12.5)
- *Place of residence*: HHs, n: Kamisenga 31; Kaunga 20; Kanyenda 54
- *Sex*: female headed HHs, %: 27.6
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: education of head, mean: 2.46 (SD 0.12)
- *SES*: HH size, mean: 7.165 (SD 2.474); cultivated land area, mean, hectares: 4.675 (SD 6.577); HH expenditure, mean, per capita per week: USD 6.56 (4.83); livestock revenue, last 3 months, %: 0.3%
- *Social capital*: NR
- *Nutritional status*: HDDS, mean: 5.86 (SD 1.848); HH expenditure on food, %: 55.2 (SD 17.5)
- *Concomitant or previous care*: NR
- *Morbidities*: NR

Control (Prospectives and Pass-on-the-Gift (POG) group – no livestock receipt)

- *Age*: head of HH, mean, years: 43.99 (SD 13.509)
- *Place of residence*: HHs, n: Kamisenga 42; Kaunga 20; Kanyenda 54
- *Sex*: female headed HHs, %: 28.1
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: education of head, mean: 2.55 (SD 0.091)
- *SES*: HH size, mean: 6.842 (SD 2.842); cultivated land area, mean, hectares: 3 (SD 3); HH expenditure, mean, per capita per week: USD 7.64 (SD 5.43); livestock revenue, last 3 months, %: 2.8
- *Social capital*: NR
- *Nutritional status*: HDDS, mean: 5.747 (SD 1.774); HH expenditure on food, mean %: 56 (SD 17.9)
- *Concomitant or previous care*: NR
- *Morbidities*: NR

Overall: NR

Inclusion criteria: poor HHs from 5 rural communities in Zambia (Kamisenga, Kaunga, Kanyenda, Chembe and Mwanaombe) who were eligible to receive livestock from the Heifer International programme. These HHs were required to participate in training activities and agree to make initial investments in animal facilities at their homes, as well as payments into a community insurance fund.

Exclusion criteria: non-poor HHs in these communities or those not willing to partake in the livestock programme

Pretreatment: participants in the POG group were significantly different from those in the originals group with respect to age of head, and amount of land cultivated. Participants in POG group were significantly different from those in the independent group with respect to education of head, weekly expenditure per capita; value of HH and farm assets; amount of cultivated land.

Attrition per relevant group: intervention group (original group) 2/105; control group (POG): 8/111; control group (prospective group): 1/67

Description of subgroups measured and reported: types of livestock received by intervention HHs. Dairy cattle (Kamisenga): 73; graft cattle (Kaunga): 40; goat (Kanyenda): 103

Total number completed and analysed per relevant group: intervention group (original group) 103; control group (POG group) 103; prospective group 66

Total number enrolled per relevant group: intervention group (original group) 105; control group (POG group) 111; prospective group 67

Jodlowski 2016 *(Continued)*

	Total number randomised per relevant group: N/A
Interventions	**Intervention characteristics** Intervention or exposure group: • *Food access intervention category*: increase buying power • *Intervention type*: income generation • *Description*: HHs received livestock in an initial distribution (original group); ongoing training activities. One-off transfer of livestock contingent on training participation: 1. a pregnant dairy cow and bull, 2. 2 draft cattle and a bull, or 3. 7 female and 1 male meat-type goats. 1 female offspring per transferred female had to be donated to a POG HH. • *Duration of intervention period*: 18 months (January–February 2012 to July–August 2013) • *Frequency*: single transfer of livestock, ongoing training activities • *Number of study contacts*: 4 (January–February 2012; July–August 2012; January–February 2013 and July–August 2013) • *Providers*: Heifer International • *Delivery*: livestock delivered at study initiation • *Co-interventions*: NR • *Resource requirements*: 31 dairy cows, 40 draft cattle and 2 bulls, and 432 goats • *Economic indicators*: cost of livestock: about USD 2000 Control (POG) group – no livestock receipt • *Food access intervention category*: increase buying power • *Intervention type*: none • *Description*: prospective and POG HHs received female offspring from initially donated livestock to intervention group, but after the end of study. POG HHs may or may not have received livestock during the study period: if they did, they received immature livestock that did not yield income within the period of study. POGs may benefit from increased availability of livestock products consumption in their communities. • *Duration of intervention period*: 18 months (January–February 2012 to July–August 2013) • *Frequency*: single transfer of livestock to POG HHs, ongoing training activities • *Number of study contacts*: 4 (January–February 2012; July–August 2012; January–February 2013 and July–August 2013) • *Providers*: Heifer International • *Delivery*: may have received female offspring of initially donated livestock • *Co-interventions*: NR • *Resource requirements*: N/A • *Economic indicators*: N/A
Outcomes	Per capita total weekly expenditures on food and non-food items Dietary diversity: HDDI, probability weighted DDS
Identification	**Sponsorship source:** Elanco Animal Health (USA) and Heifer International **Country:** Zambia **Setting:** rural communities in Coppervelt Province of Zambia **Author's name:** Margaret Jodlowski **Email:** mcj47@cornell.edu **Declarations of interest:** no **Study or programme name and acronym:** Copperbelt Rural Livelihoods Enhancement Support Project (CRLESP)

Jodlowski 2016 *(Continued)*

Type of record: journal article

Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA study; therefore, randomisation was not done.
Allocation concealment (Selection bias)	High risk	CBA study and no randomisation was done.
Baseline characteristics similar (Selection bias)	Low risk	The study authors reported a marginally larger mean cultivated land area in the intervention group. However, they stated that 1 HH largely drove this difference and that when this outlier was removed, the difference disappeared (data not shown).
Baseline outcome measurements similar (Selection bias)	Low risk	HH DDSs were similar in intervention and control groups at baseline. Regression analyses reported no significant differences in terms of baseline dietary diversity or consumption between HHs receiving different types of livestock, compared to control HHs.
Blinding of participants and personnel (Performance bias)	Low risk	Participants and personnel were aware of the livestock intervention but this was unlikely to have influenced their behaviour.
Blinding of outcome assessment (Detection bias)	High risk	No blinding and for DDS outcome: (quote) "Food groups are recalled by the family member responsible for food preparation and recorded on the survey instrument." Self-reported data could have been influenced by lack of blinding.
Protection against contamination (Performance bias)	High risk	Authors assessed spillover effects to HHs in the control group (POGs) but that were in the same community as the intervention HHs, and found no statistically significant difference in outcomes except for milk consumption, which also increased in POG HHs although not to the same extent as in intervention HHs.
Incomplete outcome data (Attrition bias)	Low risk	Overall attrition was low (3.8%; 11/283).
Selective outcome reporting (Reporting bias)	Unclear risk	Outcomes reported were in line with those specified in the methods but no protocol available.
Other bias	Low risk	None identified

Kandpal 2016

Study characteristics

Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** authors reported that ITT analysis was performed; however, what they defined as ITT analysis was NR

Kandpal 2016 *(Continued)*

Randomisation ratio: 1:1

Recruitment method: sample selected in 3 stages (Figure 1). First, provinces in which the programme had not been introduced as of October 2008 were enumerated. Of the 11 provinces available, 3 were excluded because of security concerns. From the remaining 8 provinces, 4 provinces were chosen to span all 3 macro areas of the country (North, Visayas and Mindanao). Next, in each of these 4 provinces, 2 municipalities were randomly chosen to represent the mean poverty level of areas covered by the programme. Within each selected municipality, 130 villages were randomly assigned to treatment and control groups of 65 villages each. Data for the HH assessment form to run the PMT for beneficiary selection were fielded in the 8 RCT municipalities between October 2008 and January 2009. This was followed by the implementation of Pantawid in treated villages, with the first payment of cash grants commencing in April 2009. Data used in this analysis were collected in a follow-up survey from the 130 villages in October and November 2011, allowing for a programme exposure period of 30–31 months.

Sample size justification and outcome used: because this evaluation was a cRCT with treatment assignment at the village level, a power analysis (Supplemental Table 1) was conducted using the 3 main outcomes of interest: monthly per capita HH consumption, school participation by children aged 6–14 years, and health facility visits by children aged 0–5 years. In keeping with the programme's stated objective of improving child health and nutrition, the central research question of the impact evaluation was to estimate the programme effect on child health and education. However, at the time of the power calculations, data on child anthropometric measurements were N/A for the Philippinesat, a decentralised level; as a result, these outcomes were omitted from the power calculations despite their being a central concern of the impact evaluation. The 2007 Family Income and Expenditure Survey and the 2003 National Demographic Health Survey data sets were used as proxies for outcome mean and variance in the comparison population. A modest hypothesised impact ensured an adequately powered study. The power analysis used a 10% increase in HH per capita expenditures, a 7 pp increase in school enrolments in children aged 6–14 years, and a 7 pp increase in health facility visit rate in children aged 0–5 years. Intracluster correlation coefficients were 0.12–0.25, depending on the outcome of interest. These factors combined to suggest an RCT size of 3900 HHs randomly selected from 134 enumeration clusters.

Sampling method: eligible poor HHs were identified by the survey conducted by the National Household Targeting System for Poverty Reduction (NHTS-PR) that used a PMT, which estimated per capita HH income on the basis of observable and easily provided information, including HH size and physical dwelling conditions. HHs with estimated per capita income below the poverty line were classified as poor. From this subset of poor HHs, Pantawid identified eligible HHs as being those with children aged 0–14 years or a pregnant woman at the time of the assessment, or both. Poor and eligible HHs received a combination of health grants and education grants every 2 months of PHP 500–1400 (USD 11–32), depending on number of eligible children in HH.

Study aim or objective: to assess the impact of the Pantawid Pamilyang Pilipino Program (or Pantawid Pamilya) on HAZ and stunting of young children aged 6–36 months at the time of follow-up survey.

Study period: baseline data collected October 2008 to January 2009; follow-up data collected October–November 2011

Unit of allocation or exposure: villages were allocated as clusters

Participants

Baseline characteristics

Intervention or exposure

- *Age*: children aged ≤ 5 years: 1.1 per HH; children aged 6–14 years: 1.7 per HH
- *Place of residence*: owned a house and lot: 31.5%
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: farming and livestock: 73.1%
- *Education*: no grade completed: 9.5% completed elementary school: 21.8%; high school graduate: 11.9%
- *SES*: house had no toilet: 41.4%; house had electricity: 42.4%; HH composition: 5.7 members
- *Social capital*: NR

Kandpal 2016 *(Continued)*

- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: children aged ≤ 5 years: 1.1 per HH; children aged 6–14 years: 1.6 per HH
- *Place of residence*: owned a house and lot: 32.9%
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: farming and livestock: 69.4%
- *Education*: no grade completed: 8.5%; completed elementary school: 21.8%; high school graduate: 10.4%
- *SES*: house had no toilet: 43.3%; house has electricity: 39.6%; HH composition: 5.7 members
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: children aged ≤ 5 years: 1.1; children aged 6–14 years: 1.7
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: farming livestock: 71.3%
- *Education*: no grade completed: 9%; completed elementary school: 21.8%; high school graduate: 11.1%
- *SES*: had electricity in house: 41%
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: category 1 HH: 1418 poor HHs, i.e. HHs whose estimated per capita income fell below the poverty line, and that also had children aged 0–14 years or a pregnant mother (or both) at time of assessment.

Exclusion criteria: 3 provinces were excluded because of security concerns

Pretreatment: baseline data showed that HH characteristics were not significantly different between the 1418 category 1 treatment and control HHs.

Attrition per relevant group: survey data included complete HAZ data on 194/241 treated children aged 36 months and 178/244 control children aged 36 months. Complete weight-for-age data collected for 204/241 treated children aged 36 months, and 189/244 control children aged 36 months. Anthropometric z-scores were calculated on the basis of the WHO growth standard. Scores > 6 SDs above or below the reference mean were dropped from the sample. This trimming resulted in the dropping 10/194 treated children and 11/178 control children from the HAZ regressions, and the dropping of 2/204 treated children and 1/189 control children from the weight-for-age regressions. 15% of those eligible in the treatment villages reported that they did not participate; NR for control villages.

Description of subgroups measured and reported: N/A

Total number completed and analysed per relevant group: intervention group (children aged 6–36 months): 194 had height-for-age data, and 204 had weight-for-age data; control group (children aged 6–36 months): 178 had height-for-age data and 188 had weight-for-age data

Kandpal 2016 *(Continued)*

Total number enrolled per relevant group: intervention group: 241 children aged 6–36 months were part of HHs that underwent survey; control group: 244 children aged 6–36 months were part of HHs that underwent survey.

Total number randomised per relevant group: sample of 1418 HHs was randomly assigned to 714 treated HHs and 704 control HHs for the impact evaluation. At time of the data collection in 2011, in these 714 treated HHs there were 241 children aged 3 years who could have been exposed to the programme in the first 1000 days of their lives, and 244 children in the same age range from poor HHs in control areas.

Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: CCT • *Description*: health grant: poor HHs with children aged 0–14 years or pregnant women (or both) received up to PHP 500 (USD 11) per HH per month, conditional on fulfilling the following requirements: 1. all children aged 5 years had to visit the health centre or rural health unit to receive age-appropriate immunisation and vaccination, regular weight monitoring and monitoring for the management of childhood disease; 2. all pregnant women had to visit the health centre or rural health unit to undergo antenatal care, starting from the first trimester; 3. all school-aged children (aged 6–14 years) had to receive deworming tablets twice per year; and 4. for HHs with children aged 0–14 years, the HH grantee (mother) or spouse (or both) had to attend family development sessions once per month. Education grant: grant of up to PHP 300 (USD 6.50) per child per month aimed to improve the school attendance of children aged 6–14 years living in poor HHs in selected areas. HHs only could receive the grant for ≤10 month/year to correspond with the duration of the school year, and for ≤ 3 children in the HH. Beneficiary HHs received the education transfer for each child as long as the child was enrolled in primary or secondary school and attended 85% of the school days every month. • *Duration of intervention period*: 30–31 months: first payment of grants in April 2009 and a follow-up survey in October and November 2011 • *Frequency*: every 2 months • *Number of study contacts*: 2 (baseline and end of study period) • *Providers*: Pantawid program launched by the Philippine government • *Delivery*: NR • *Co-interventions*: none • *Resource requirements*: money; staff to manage the payments to the HHs; health workers to do the family development sessions; research staff, supervisors and a training manual for research staff collecting data • *Economic indicators*: NR Control: no intervention
Outcomes	Diet diversity: child consumption of eggs/dairy/meat/fish in the past week Anthropometry: WAZ, underweight, severely underweight, HAZ, stunted, severely stunted Morbidity: fever, cough, or diarrhoeal disease in past 2 weeks
Identification	**Sponsorship source:** Consultative Group on International Agricultural Research (CGIAR) Research Program on Policies, Institutions, and Markets **Country:** Philippines **Setting:** poor HHs across all 3 macro areas of the country (North, Visayas and Mindanao) **Author's name:** Eeshani Kandpal **Email:** ekandpal@worldbank.org **Declarations of interest:** yes; no conflicts of interest.

Kandpal 2016 *(Continued)*

Study or programme name and acronym: Pantawid Pamilyang Pilipino Program (CCT programme)

Type of record: journal article

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Method of randomisation NR.
Allocation concealment (Selection bias)	Unclear risk	Allocation concealment NR.
Baseline characteristics similar (Selection bias)	Low risk	Reported baseline characteristics were similar across intervention and control groups.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Baseline data for nutritional outcomes NR.
Blinding of participants and personnel (Performance bias)	Low risk	Participants not blinded, but this was unlikely to have influenced participant behaviour.
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether data collectors were blinded towards the group allocations, which may or may not have influenced the measurement of outcomes across groups, as some outcomes were self-reported.
Protection against contamination (Performance bias)	High risk	7% of the control group participated in the intervention (ITT analysis performed), which may or may not have biased the estimated effects of the intervention towards 0.
Incomplete outcome data (Attrition bias)	High risk	Missing outcome data excluded from analyses and differed across groups, and reasons for LTFU were NR. For the outcome height-for-age, attrition was 47/241 (19.5%) in intervention group and 66/244 (27%) in control group. For the outcome weight-for-age, attrition was 37/241 (15.4%) in intervention group and 55/244 (22.5%) in control group.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol or trial registration number NR. While height-for-age and weight-for-age anthropometrical measurements in children aged 6–36 months were reported; weight-for-height (important to indicate wasting) was not. Results for the following outcomes were NR: monthly per capita HH consumption and health facility visits by children aged 0–5 years.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: low risk. Quote: "Several rounds of training were conducted before data collection to ensure data quality, particularly of the anthropometric and dietary intake modules." However, the method for collecting dietary data (e.g. 24-hour recall, or food frequency questionnaire) was NR. Incorrect analysis: low risk. Quote: "In order to take into consideration regional factors, including province-specific eligibility cutoffs, and the clustered nature of the sample …,

Kandpal 2016 *(Continued)*

	municipality fixed-effects regressions were included. In addition, all SEs were clustered at the village level."

Kangmennaang 2017

Study characteristics	
Methods	**Study design:** PCS **Study grouping:** N/A **How were missing data handled?** NR **Randomisation ratio:** N/A **Recruitment method:** villages in the Mzimba and Dedza districts were selected in consultation with residents after the project was introduced at awareness meetings. Community representatives generated a list of indicators for different levels of food security with project staff, and these were used as part of selection criteria. Participants were interviewed at baseline and asked to be re-contacted at follow-up. **Sample size justification and outcome used:** NR **Sampling method:** NR for intervention. Control: random (control HHs with similar characteristics to intervention group were randomly selected from nearby villages) **Study aim or objective:** to examine the impact of a participatory agroecology development project on family farmers' food security and assets following 2 years of intervention. **Study period:** about 2 years. Baseline: 2012. Follow-up survey (1000 HHs) June–September 2014. **Unit of allocation or exposure:** cluster: HHs
Participants	**Baseline characteristics** Intervention or exposure • *Age*: means, Table 2: wife: 1.233; husband: 1.063 • *Place of residence*: NR • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: means, Table 2: wife's educational level: 0.787; husband's educational level: 0.826 • *SES*: means, Table 2: wealth index: 1.059; HH size: 1.043; farm size: 0.42; cash cropping: 0.008 • *Social capital*: means, Table 2: general HH well-being: 1.251; marital status: 1.787 • *Nutritional status*: Table 3: food insecurity, mean 0.966 (SE 0.036); Table 2: food insecurity, mean 0.966 (SE 0.036); higher score = more food insecurity • *Morbidities*: NR • *Concomitant or previous care*: NR Control • *Age*: means, Table 2: wife: 1.255; husband: 1.007 • *Place of residence*: NR • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: means, Table 2: wife's educational level: 0.794; husband's educational level: 0.765

Kangmennaang 2017 *(Continued)*

- *SES*: means, Table 2: wealth index: 0.917; HH size: 1.172; farm size: 0.363; cash cropping: 0.017
- *Social capital*: means, Table 2: general HH well-being: 1.123; marital status: 1.877
- *Nutritional status*: Table 3: food insecurity, mean 0.873 (SE 0.049); Table 2: food insecurity, mean 0.873 (SE 0.049)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: Table 1: wife, number (%): aged < 30 years: 375 (30.49); aged 30–44 years: 374 (30.41); aged 45–60 years: 240 (19.51); aged > 60 years: 241 (19.59). Husband, number (%): aged < 30 years: 508 (41.30); aged 30–44 years: 346 (28.13); aged 45–60 years; 220 (17.89); aged > 60 years: 156 (12.68)
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: Table 1: husband, n (%): none: 439 (35.69); primary: 615 (50.00); secondary and higher: 176 (14.31). Wife, n (%): none: 368 (29.92); primary: 776 (63.09); secondary and higher 86 (6.99)
- *SES*: Table 1: wealth quintile, number (%): poorer: 260 (21.14); poor: 240 (19.51); middle: 246 (20.00); rich 199 (19.90); richer 243 (19.76); richest: 241 (19.59)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: interest in doing farm experiments, food insecurity (determined at baseline using HFIAS and ability to farm (self-reported) with further probes as to whether the HH had access to land and labour, and were already cultivating crops.

Exclusion criteria: NR

Pretreatment: agroecological users and non-users were similar for HH structure, wife's age, husband's age, educational level of both husband and wife, knowledge of agricultural practices, food security and farm size at the baseline level. Significant differences for wealth, HH size, number of crops grown per field, dry season farming and general HH well-being (see Table 2): non-adopters were less wealthy, had a larger HH size, grew a lower number of crops and had a lower general HH well-being.

Attrition per relevant group: total 191/1191 (16%) HHs at follow-up. Per-group attrition unclear.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: 429 control, 571 intervention (based on MAFFA member)

Total number enrolled per relevant group: 408 control, 793 intervention (based on MAFFA member)

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation
- *Description*: agroecological development project: encouraged farmer experimentation, community involvement and F2F teaching on agroecology, nutrition and gender equity. Farmers did their own experimentation with agroecological methods. MAFFA encourages farmers to adopt a suit of innovations rather than just a single innovation and to encourage farmer-led learning. In addition to crop diversification, many farmers increased or began to apply compost and manure to their rain-fed fields. Some farmers also experimented with botanical pesticides. MAFFA goes beyond agroecological train-

Kangmennaang 2017 *(Continued)*

	ing to focus on knowledge sharing, leadership support, nutrition and attention to social inequalities through an iterative process that integrates reflection and action, including the development of different educational activities, campaigns and training. Farmers were assisted with quality seeds, and transportation to experimental farms and community events, although farmers also incurred opportunity costs from lost farm work due to participation in these activities. • *Duration of intervention period*: about 2 years (2012 to September 2014) • *Frequency*: NR • *Number of study contacts*: 1 • *Providers*: Soils, Food and Healthy Communities organisation of Ekwendeni Hospital, Chancellor College, University of Malawi as well as Malawian and Canadian scientists • *Delivery*: training, educational activities, campaigns, provision of seeds. Farmers shared knowledge with other farmers. • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: NR Control: no intervention
Outcomes	HFIAS score
Identification	**Sponsorship source:** Global Affairs Canada of the Government of Canada, the Canadian Food Grains Bank, and Presbyterian World Service and Development. Sponsors had no role in study design, data analysis and interpretation, writing report, and decision to submit report for publication. **Country:** Malawi **Setting:** smallholder farm HHs **Author's name:** Joseph Kangmennaang **Email:** jkangmen@uwaterloo.ca **Declarations of interest:** yes; no conflicts of interest. **Study or programme name and acronym:** the Malawi Farmer to Farmer Agroecology project (MAFFA). **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Prospective controlled study. No randomisation carried out.
Allocation concealment (Selection bias)	High risk	Prospective controlled study. No randomisation carried out.
Baseline characteristics similar (Selection bias)	Low risk	Due to differences in baseline characteristics between MAFFA and non-MAFFA HHs, study authors applied kernel-based PSM to reduce the effects of confounding and account for any systematic differences in baseline characteristics to enable them to obtain unbiased estimates of the mean treatment effects on the outcomes (Austin 2011). However, the balancing test after weighting revealed no significant differences between participants and non-participants (see Table 8).

Kangmennaang 2017 *(Continued)*

Baseline outcome measurements similar (Selection bias)	Low risk	No significant difference between adopters and non-adopters for HH food security outcome. Difference for wealth. However, (quote) "Due to differences in baseline characteristics between MAFFA and non-MAFFA HHs, we applied kernel based propensity score matching to reduce the effects of confounding and account for any systematic differences in the baseline characteristics to enable us to obtain unbiased estimates of the average treatment effects on the outcomes (Austin 2011)."
Blinding of participants and personnel (Performance bias)	Low risk	Given the prospective longitudinal design of the study, it was not possible to blind participants or personnel; however, it was unlikely that the outcomes of interest (food security and HH wealth) were prone to performance bias.
Blinding of outcome assessment (Detection bias)	High risk	NR whether outcome assessors were blinded. Given the design of the study, participants could not be blinded, and it appeared as though outcomes were self-reported (participants were interviewed and the HFIAS used to assess food security).
Protection against contamination (Performance bias)	Unclear risk	Adopters and non-adopters coexisted in the same villages, and the nature of the intervention was farmers teaching other farmers about agroecology, making contamination likely. However, given that non-adopters had to actively opt out of intervention, it is unclear to what extent contamination might have occurred. Despite the total number of HHs was smaller at the time of follow-up, the number of HHs in the control group (based on MAFFA membership) increased.
Incomplete outcome data (Attrition bias)	High risk	Attrition was high (16%) in total group and there was no strategy to account for missing values.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available.
Other bias	Unclear risk	Potential of recruitment bias. Although inclusion criteria were mentioned, was not clear from these criteria who was included or excluded from the study: (quote) "interest in doing farm experiments, food insecurity (determined at the baseline using the Household Food Insecurity Access Scale (HFIAS), and ability to farm (self-reported) with further probes as to whether the HH had access to land and labor, and were already cultivating crops."

Katz 2001

Study characteristics	
Methods	**Study design:** Prospective controlled study **How were missing data handled?** women who were LTFU and did not complete the follow-up questionnaires were excluded from the analysis. **Randomisation ratio:** N/A **Recruitment method:** not described but women applied for employment; therefore, we assumed that job adverts were circulated. **Sample size justification and outcome used:** NR

Katz 2001 *(Continued)*

Sampling method: purposive sampling. Women enrolled had applied for part-time employment in their own or neighbouring communities. Selection was based on results of a reading and writing test, relevant work experience and an interview.

Study aim or objective: to evaluate the impact of providing a small income on the HH food expenditures and nutritional status (MUAC) of women employed part-time in a health project compared to women not employed.

Study period: 2 years: February 1993 to January 1995.

Unit of allocation or exposure: individuals (women)

Participants	**Baseline characteristics** Intervention or exposure group: • *Age*: mean, years: 25.2 (SD 6.2) • *Place of residence*: rural area of the Sarlahi District, Nepal • *Sex*: female, %: 100 • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: literacy, n (%): 334 (98.2); ≥ 10 years of schooling, %: 23 • *SES*: likelihood of having HH servants, %: 35.4; likelihood of spending > 4 hours per week fetching firewood, %: 14.9 • *Social capital*: NR • *Nutritional status*: MUAC, mean: 22.8 (SD 2.0) • *Morbidities*: NR • *Concomitant or previous care*: none Control • *Age*: mean, years: 28.9 (SD 7.7) • *Place of residence*: rural area of the Sarlahi District, Nepal • *Sex*: female, %: 100 • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: literacy, n (%): 322 (81.7); ≥ 10 years of schooling, %: 13.2 • *SES*: likelihood of having HH servants, %: 21.1; likelihood of spending > 4 hours per week fetching firewood, %: 24.8 • *Social capital*: NR • *Nutritional status*: MUAC, mean: 23.0 (SD 2.2). • *Morbidities*: NR • *Concomitant or previous care*: none Overall • *Age*: NR • *Place of residence*: rural area • *Sex*: female, %: 100 • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: likelihood of having HH servants: OR 2.0 (95% CI 1.5 to 2.9); likelihood of spending > 4 hours per week fetching firewood: OR 0.17 (95% CI 0.07 to 0.38) • *Social capital*: NR • *Nutritional status*: NR • *Morbidities*: NR

Katz 2001 *(Continued)*

- *Concomitant or previous care*: none

Inclusion criteria: employees based on the results of a reading and writing test, relevant work experience and an interview.

Exclusion criteria: NR

Pretreatment: women who were hired were significantly younger than those who were not (25.2 years vs 28.9 years) (table 1). They were more likely to be literate (98.2% vs 81.7%; OR 10.8, 95% CI 4.9 to 28.2), to have ≥ 10 years of formal schooling (23.2% vs 13.2%; OR 2.0, 95% CI 1.3 to 3.0), and to have HH servants (35.4% vs 21.1%; OR 2.0, 95% CI 1.5 to 2.9). They were less likely to smoke (2.4% vs 12.4%; OR 0.54, 95% CI 0.36 to 0.80) and to spend > 4 hours per week fetching firewood (14.9% vs 24.8%; OR 0.17, 95% CI 0.07 to 0.38). Those who were hired and those who were not hired were comparable with respect to caste, HH size, and ownership of animals and other HH goods such as radios, watches, bicycles and furniture. Group differences assessed using t-test for continuous data and Chi^2 test for categorical data.

Attrition per relevant group: intervention (employed): 9/350 (2.6%) (7 no longer employed, 2 on leave of absence); control (not employed): 125/520 (24%) (2 dead, 2 moved to hired group, 85 no longer in area, 36 were not at initial addresses)

Description of subgroups measured and reported: no subgroups reported

Total number completed and analysed per relevant group: 341 employed and 395 not employed used for all baseline and follow-up outcomes, except changes in MUAC (data for 335 employed and 383 not employed).

Total number enrolled per relevant group: intervention: 350; control: 520

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention or exposure: short-term part-time employment for women

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation
- *Description*: women were followed over time to assess the impact of employment on changes in HH food expenditure and MUAC. The women had applied for part-time employment distributing weekly supplements to married women of childbearing age in their own or neighbouring communities. The job involved weekly visits to the homes of about 100 women to provide supplements, note the occurrences of menses in the previous week, record pregnancy status (not pregnant, pregnant, miscarriage in the previous week, stillbirth in the previous week or live birth in the previous week), and record the receipt of supplements. The women received about NPR 900 (USD 15) per month for an estimated 5 hours of work per week.
- *Duration of intervention period*: 2 years: 1993–1995
- *Frequency*: monthly income
- *Number of study contacts*: 2: baseline (December 1992 to January 1993), and follow-up after 2 years
- *Providers*: research project staff – Sarlahi Study Group
- *Delivery*: how salary was given to women was NR
- *Co-interventions*: among the 341 women who had been employed by the project, 106 (31.1%) reported additional cash employment (the project employment was part-time). Amounts not known. Unclear whether these women were also receiving nutritional supplements as part of the RCT they were working for.
- *Resource requirements*: NR
- *Economic indicators*: NR

Control group: no intervention

- Co-*interventions*: 36/395 (9.1%) women who had not been employed by the nutrition project reported that they had been employed in jobs for which they were paid some cash. Amounts not known. Un-

Katz 2001 *(Continued)*

	clear whether these women were also receiving nutritional supplements as part of the RCT that was ongoing.
Outcomes	Proportion of HH expenditure on food: weekly food expenditure (NR), food expenditure for different food groups (NR) Anthropometry: MUAC
Identification	**Sponsorship source:** co-operative agreement No. DAN 0045-A-5094 between the office of Nutrition, US Agency for International Development (USAID), the Center for Human Nutrition (CHN), and the Dana Center for Preventive Ophthalmology (DCPO) at Johns Hopkins University. **Country:** Nepal **Setting:** rural area of the Sarlahi District **Author's name:** Joanne Katz **Email:** NR **Declarations of interest:** NR **Study or programme name and acronym:** N/A **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA; therefore, no randomisation was done.
Allocation concealment (Selection bias)	High risk	Selection of study participants based on them getting employed. They had to do a reading and writing test, demonstrate relevant work experience and they were interviewed.
Baseline characteristics similar (Selection bias)	Low risk	Quote: "The women who were hired were younger and better educated than those who were not hired, but in other respects the two groups of women were similar. After adjustment for these baseline differences, the change in MUAC was not significantly different between the two groups of women."
Baseline outcome measurements similar (Selection bias)	Low risk	Quote: "… after adjustment for baseline differences between the two groups of women, the difference between the two groups was not significant. Among those households buying specific foods, the expenditure on each item was comparable for households of women who were hired and households of women who were not hired (table 3)."
Blinding of participants and personnel (Performance bias)	Low risk	No blinding carried out but it was unlikely that lack of blinding had an effect on the participant's behaviour.
Blinding of outcome assessment (Detection bias)	High risk	No blinding carried out. It is likely that self-reports of food purchases and expenditures was influenced by knowledge of allocation. MUAC was unlikely to have been influenced by lack of blinding.
Protection against contamination (Performance bias)	High risk	Quote: "At follow-up, 36 of the 395 women who had not been employed by the nutrition project (9.1%) reported that they had been employed in jobs for which they were paid some cash. Among the 341 women who had been em-

Katz 2001 *(Continued)*

		ployed by the project, 106 (31.1%) reported additional cash employment (the project employment was part-time). However, the amount of cash payments associated with these additional activities was not determined."
Incomplete outcome data (Attrition bias)	High risk	Very different proportion of attrition between the groups: 2.6% for women who were hired compared to 24% among women who were not hired. Missing data were excluded from the analysis and information from those in the control group could have an effect on the outcomes.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available. Authors stated in the methods that they would conduct baseline comparisons and conduct an assessment of the impact of employment (changes in expenditure and in MUAC) by fitting a linear regression model that adjusts for baseline differences. There was evidence that authors did these analyses.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: unclear. Measurement of MUAC or food expenditure is not very well described.

Kennedy 1989

Study characteristics	
Methods	**Study design:** PCS **How were missing data handled?** 462/504 HHs remained at follow-up. Report relied on a longitudinal analysis, the data presented were based primarily on the cohort sample. **Randomisation ratio:** N/A **Recruitment method:** NR **Sample size justification and outcome used:** NR **Sampling method:** Sony (The South Nyanza Sugar Factory) provided a list of all farmers in the outgrowers' scheme. From this list, a random sample of sugar farmers, weighted by sublocation, was chosen. Once the sample of sugar farmers was chosen, field staff identified the next nearest non-sugar farmers who met the same selection criteria. **Study aim or objective:** to evaluate the effects of cash crop production on agricultural production, income and food consumption, and to assess the impact of cash cropping on the health and nutritional status of preschool children and women. **Study period:** baseline: June 1984 to March 1985; follow-up: December 1985 to March 1987 **Unit of allocation or exposure:** HHs
Participants	**Baseline characteristics** Intervention or exposure group: cash cropping sugarcane • *Age*: NR • *Place of residence*: NR • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: mean nominal income per capita: sugar farmers KES 2591 (SD 139), new entrants KES 1956 (SD 42); mean real income per capita: sugar farmers KES 2712 (SD 135), new entrants KES 3070 (SD 38); mean (%) agricultural income used for own consumption: sugar farmers KES 748 (SD 29), new entrants

Kennedy 1989 *(Continued)*

KES 728 (SD 37); mean (%) marketed agricultural income: sugar farmers KES 942 (SD 36), new entrants KES 404 (SD 21)

- *Social capital*: NR
- *Nutritional status*: HH calorie intake (kilocalories/AE/day): sugar farmers 2689, new entrants 2822; percentage of HHs meeting < 80% of caloric requirements: sugar farmers 30.7, new entrants 17.9; percentage of preschool children with caloric adequacy: sugar farmers 69, new entrants 64; mean WAZ (n) of preschool children: sugar farmers –1.03 (356), new entrants –1.13 (90)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control group: no intervention

- *Age*: NR
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: NR
- *SES*: mean nominal income per capita: KES 1924 (SD 231); mean (real) income per capita: 2166 (SD 205); mean (%) agricultural income used for own consumption: KES 822 (SD 43); mean (%) marketed agricultural income: KES 393 (SD 20)
- *Social capital*: NR
- *Nutritional status*: HH calorie intake (kilocalories/AE/day): 2669; percentage of HHs meeting < 80% of caloric requirements: 30.0; percentage of preschool children with caloric adequacy: 58; mean WAZ (n) of preschool children: –1.17 (556)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: HHs had to have ≥ 1 preschool child; ≥ 1 resident farmer; and own < 20 hectares of land.

Exclusion criteria: NR

Pretreatment: Sugar farmers have a higher mean nominal income per capita than non-sugar farmers and higher marketed agricultural income per capita than all other groups.

Attrition per relevant group: attrition of the total HHs was 8.3% (42/504) from baseline: no clear attrition present in the sugar farmers subgroup (139 at baseline and 146 at follow-up); 35.7% (15/42) of new entrants attrited; and 11.3% (26/231) of non-sugar farmers attrited. Attrition of women was 37.6% (298/793), but 529 new women entered the sample. Attrition of preschool children was 34.9% (409/1171), but 535 new preschool children entered into/were born into the sample. Preschool children from 356 sugar farmer HHs, 90 from new entrant HHs, and 556 from non-sugar farmer HHs provided anthropometric data at baseline; with 243 sugar farmer HHs, 61 from new entrant HHs and 349 non-sugar farmer HHs providing data at follow-up.

Description of subgroups measured and reported: 1677 preschool children and 1343 women. Intervention HHs were split into 'sugar farmers' who had completed ≥ 1 harvest at baseline and 'new entrants' who were farming with sugar, but had not completed a harvest (and had consequently not been paid).

Total number completed and analysed per relevant group: 146 sugar farmer and 27 new entrant HHs completed the study, along with 205 HHs of non-sugar farmers. 1024 women and 1297 preschool children completed the study – no per group numbers are available.

Total number enrolled per relevant group: 139 sugar farmer and 42 new entrant HHs were enrolled at baseline, as well as 231 HHs of non-sugar farmers.

Total number randomised per relevant group: N/A

Kennedy 1989 *(Continued)*

Interventions	**Intervention characteristics** Intervention or exposure group: cash cropping sugarcane • *Food access intervention category*: increase buying power • *Intervention type*: income generation • *Description*: farmers were enrolled into the sugarcane outgrowers' scheme to provide sugarcane to a new factory, South Nyanza Sugar Factory (Sony) according to a contract agreement. • *Duration of intervention period*: ongoing, but study period was 1984–1987 • *Frequency*: continuous intervention, but payment after every harvest (24 months after planting) • *Number of study contacts*: baseline data collection in 1984–1985, and follow-up in 1986–1987 • *Providers*: Kenyan government • *Delivery*: NR • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: NR Control group: no intervention
Outcomes	Proportion of HH budget spent on food; food expenditure for different food groups/items; total per capita food expenditure in previous 7 days Adequacy of dietary intake: percentage of HHs with caloric deficiency; caloric adequacy of preschool children Anthropometry: WAZ; underweight; HAZ; stunted; WHZ; wasting; women weight; adult BMI Morbidity: illness of women and children (all-cause and diarrhoea)
Identification	**Sponsorship source:** IFPRI received support as a constituent of the Consultative Group on International Agricultural Research from a number of donors including Australia, Belgium, Canada, the People's Republic of China, the Ford Foundation, France, the Federal Republic of Germany, India, Italy, Japan, the Netherlands, Norway, the Philippines, the Rockefeller Foundation, Switzerland, the UK, the US, and the World Bank. In addition, a number of other governments and institutions contribute funding to special research projects. **Country:** Kenya **Setting:** smallholder farm HHs **Author's name:** Eileen Kennedy **Email:** eileen.kennedy@tufts.edu **Declarations of interest:** NR **Study or programme name and acronym:** smallholder sugarcane outgrowers' scheme **Type of record:** research report
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Cohort study and there was no randomisation performed.

Kennedy 1989 *(Continued)*

Allocation concealment (Selection bias)	High risk	Cohort study and no allocation concealment was done.
Baseline characteristics similar (Selection bias)	Low risk	HHs of sugar farmers had significantly higher (P < 0.05) incomes than non-sugar farmer HHs, as well as significantly higher (P = 0.05) marketed agricultural income per capita than all other groups. However, the main comparison was between 'new entrants' and 'sugar farmers', between which there were no major differences.
Baseline outcome measurements similar (Selection bias)	Low risk	No baseline outcome measurements were significantly different.
Blinding of participants and personnel (Performance bias)	Low risk	Participants were not blinded, but it was unlikely that the lack of blinding could have resulted in performance bias given the outcomes.
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether outcome assessors were blinded to allocation. Outcomes were subjective/self-reported and could have been influenced by lack of blinding.
Protection against contamination (Performance bias)	Low risk	NR, but it was unlikely that the control group received the intervention due to the nature of the intervention.
Incomplete outcome data (Attrition bias)	Unclear risk	Attrition was considerable for new entrants and non-sugar farmers, and no information on differential attrition was provided. It was also difficult to assess the impact of attrition as more HHs were included at follow-up.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available, but all a priori stated outcomes were reported on.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: high. Some of the outcomes relied on participants having to recall information for several days or weeks.

Kurdi 2019

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** N/A **How were missing data handled?** A conservative ITT approach was taken for determining impact estimates. 6 HHs, which had identification matching problems at follow-up, were dropped entirely from analysis. **Randomisation ratio:** 1:1. Data for the evaluation came from a HH survey of 2000 HHs with indirect relatives of Social Welfare Fund beneficiaries in the 3 targeted districts in Al Hodeidah, half of which were in communities where indirect relatives were included in the programme (treated) and half of which were in communities where they were not included (control). (Kurdi 2019 policy brief) **Recruitment method:** programme targeted the poorest and the most vulnerable HHs in the country by restricting recipients to Social Welfare Fund beneficiary HHs in 3 eligible districts in Al Hodeidah governorate: Marawi'ah, Bayt Al Faqiah and Zabid (Kurdi 2019, Introduction – Program description). Beneficiaries were divided into 2 separate priority groups. Women in the pilot districts who were direct family

Kurdi 2019 *(Continued)*

members of Social Welfare Fund beneficiaries were in the first priority group and were automatically included in the Cash for Nutrition programme (received the intervention). Indirect family members, such as daughters-in-law, of Social Welfare Fund beneficiaries were added to a second priority list. Because the programme was not large enough to include all of these second priority women, inclusion of these indirect family member beneficiaries was randomised at the community level (Kurdi 2019, Sample and Methodology – Randomization). The primary survey respondent was the woman identified as a second-priority potential beneficiary by the programme, which meant that all respondents were pregnant or mothers of children aged < 2 at the time of the baseline survey (Kurdi 2019, Sample and Methodology – Survey). Manner in which HHs were approached and invited to participate NR.

Sample size justification and outcome used: NR

Sampling method: purposive sampling. Programme targeted the poorest and the most vulnerable HHs in the country by restricting recipients to Social Welfare Fund beneficiary HHs (Kurdi 2019, Introduction). Because the pilot programme was limited to 4800 beneficiaries, Social Welfare Fund beneficiaries were divided into 2 separate priority groups. Women in the pilot districts who were direct family members of Social Welfare Fund beneficiaries were in the first priority group and were automatically included in the Cash for Nutrition programme (received intervention). Indirect family members, such as daughters-in-law, of Social Welfare Fund beneficiaries were added to a second priority list. Because the programme was not large enough to include all of these second priority women, inclusion of these indirect family member beneficiaries was randomised at the community level (Kurdi 2019, Sample and methodology – Randomization). The cRCT population consisted of the HHs of these women on the 'second priority list.'

Study aim or objective: to measure the impact of the Cash for Nutrition programme on eligible HHs; to describe the degree to which HH characteristics, details of programme implementation and the external environment increased or decreased programme impact; and to describe the functioning of the programme and changes in HH welfare in the current conflict environment.

Study period: December 2014 to August 2017

Unit of allocation or exposure: HHs

Participants

Baseline characteristics

Cash for Nutrition Intervention

- *Age*: mother mean, years: 27.6 (SD 6.86); mother's age at marriage: mean, years: 17.6 (SD 2.94)
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: HHs with illiterate mother, %: 79.7
- *SES*: Asset Index mean –0.1349 (SD 1.768); HHs owning a television, %: 33.6; HHs owning a washing machine, %: 5.9; HH owning livestock, %: 52.3; rooms in house, mean: 1.30 (SD 0.581); people in house, mean: 6.21 (SD 3.54)
- *Social capital*: HHs with husband, %: 72.9
- *Nutritional status*: mean calories consumed per adult male equivalent mean coefficient: 1820.4 (SD 1081.8); proportion of HHs without enough food in past 7 days: 0.358
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: mother, mean, years: 28.1 (SD 6.81); mother's age at marriage, mean, years: 17.6 (SD 2.86)
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: HHs with illiterate mother, %: 73.4

Kurdi 2019 *(Continued)*

- *SES*: Asset Index mean 0.1352 (SD 1.930); HHs owning a television, %: 44.0; HHs owning a washing machine, %: 9.2; HH owning livestock, %: 52.7; rooms in house mean: 1.31 (SD 0.636); people in house mean: 6.50 (SD 3.26)
- *Social capital*: HHs with husband, %: 74.6
- *Nutritional status*: mean calories consumed per adult male equivalent mean coefficient: 1662.8 (SD 888.9); proportion of HHs without enough food in past 7 days: 0.407
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: for cRCT (not overall Cash for Nutrition programme): residents in 1 of the 3 targeted districts in Al Hodeidah (Marawi'ah, Bayt Al Faqiah or Zabid); mothers of children aged < 2 years and pregnant women; indirect relatives of Social Welfare Fund beneficiaries

Exclusion criteria: NR

Pretreatment: intervention HHs had a lower Asset Index mean than control HHs; fewer intervention HHs owned TVs and washing machines compared to controls; and more mothers in intervention HHs were illiterate compared to mothers in control HHs.

Attrition per relevant group: at baseline, communities that included indirect relatives of Social Welfare Fund beneficiaries were randomly assigned to the intervention (95 communities, 1001 HHs) or control (95 communities, 999 HHs) groups. The randomisation only applied to HHs of INDIRECT relatives of Social Welfare Fund beneficiaries – DIRECT relatives all received the intervention, and were not included in the impact analysis. In the intervention group, 935 HHs in 95 communities were resurveyed at follow-up (attrition rates: HHs 6.59%, community 0.0%). In the control group, 915 HHs in 93 communities were resurveyed at follow-up (attrition rates: HHs 8.41%, communities 2.1%). Total HH attrition rate was 7.5%, slightly higher among the treatment sample, but not significantly different between treatment and control (Kurdi 2019, Sample and Methodology – Sample size and attrition).

Description of subgroups measured and reported: heterogeneity of impacts for baseline HH wealth, baseline sources of information, women's position in the HH, women's educational level.

Total number completed and analysed per relevant group: with replacement HHs at follow-up: 935/1001 (93.4%) intervention HHs; 915/999 (91.6%) control HHs. Without replacement HHs at follow-up: 898/1001 (89.7%) intervention HHs; 857/999 (85.8%) control HHs (communities: 95/95 (100.0%) intervention communities; 93/95 (97.9%) control communities).

Total number enrolled per relevant group: 1001 women from intervention HHs (in 95 communities) and 999 women from control HHs (in 95 communities).

Total number randomised per relevant group: number of HHs randomised (indirect family members of Social Welfare fund beneficiaries): 2000; intervention group: 1001 HHs in 95 communities; control group: 999 HHs in 95 communities

Interventions	**Intervention characteristics** Cash for Nutrition intervention • *Food access intervention category*: increase buying power • *Intervention type*: CCT • *Description*: first part of intervention: CCT started as a pilot in Al Hodeidah in January 2015 (Kurdi 2019, Introduction). Originally intended to last for 2 years, with payments of YER 3000 per month (Kurdi 2019, Introduction). The pilot programme provided CCTs to mothers of children aged < 2 years and pregnant women to motivate attendance at nutritional training sessions and compliance with health centre referrals (Kurdi 2019, Introduction). The pilot programme was suspended in late 2015 due to financing challenges related to the civil conflict in Yemen (Kurdi 2019, Introduction). The conditionality of the cash transfers was based on the attendance of the beneficiaries of the programme at nutrition-focused training sessions and compliance with child monitoring and treatment of malnutrition (Kurdi 2019, Executive summary). The monthly sessions covered topics on infant and young child feeding practices, including exclusive breastfeeding, for children aged ≤ 6 months, complementary

Kurdi 2019 *(Continued)*

	feeding for children aged 6–24 months, the importance of balanced meals, use of iodised salt, proper hygiene and sanitation, appropriate treatment of drinking water, and treatment of diarrhoea. Additional quarterly sessions targeted pregnant and lactating women and covered breastfeeding initiation, the importance of colostrum and no prelacteal feeds, as well as the consequences of consuming the stimulant qat (Catha edulis), smoking during pregnancy, hygiene and sanitation and treatment of drinking water. Pregnant women were also referred to the nearest health centre for antenatal care. In addition, under Yemen's Social Fund for Development, periodic screening sessions during home visits were carried out to detect and refer cases of malnutrition to health centres for treatment (Kurdi 2019, Introduction). Cash for Nutrition programme beneficiaries were required to attend these sessions and attendance was tracked, although the conditionality was not strictly enforced (Kurdi 2019, Introduction). Second part of the intervention: in the last quarter of 2017 an expanded version of the pilot programme was included in the World Bank funded Yemen Emergency Crisis Response Project. • *Duration of intervention period*: January–December 2015; October 2016 to August 2017 • *Frequency*: quarterly transfers during January–December 2015, monthly transfers during October 2016 to August 2017, monthly nutritional training sessions from January–December 2015 and nutritional training sessions for 12 months from October 2016 to August 2017 • *Number of study contacts*: surveys completed at baseline (December 2014 to January 2015) and follow-up (July–August 2017) • *Providers*: Yemen Social Fund for Development in coordination with the Ministry of Public Health and Population, and the Yemen Emergency Crisis Response Project (funded by the World Bank) • *Delivery*: local women with at least a high school education were selected as community health volunteers and received basic training in health and nutrition education and malnutrition screening. The volunteers were employed to provide monthly educational sessions and monitor the children of participating HHs (Kurdi 2019, Introduction). Data collection for the baseline survey was done by an independent survey organisation, Prodigy, while for the follow-up survey the data collection was managed directly by the Social Fund for Development due to the challenges of conducting survey fieldwork during the conflict (Kurdi 2019, Sample and methodology – survey). • *Co-interventions*: unspecified other food distribution programmes. • *Resource requirements*: transfers of YER 3000 per HH per month for January–December 2015, and YER 10,000 (about USD 30 at the time of conflict) per HH per month for October 2016 to August 2017. Requirements for nutritional training NR. • *Economic indicators*: NR Control: no intervention • Co*-interventions*: unspecified other food distribution programmes.
Outcomes	Diet diversity: HDDS (0–12) WHZ; HAZ
Identification	**Sponsorship source:** managed by the World Bank and funded by the Nordic Trust Fund. Data collection funded by World Bank and United Nations Development Programme. **Country:** Yemen **Setting:** poor and vulnerable HHs in 3 eligible districts in Al Hodeidah governorate: Marawi'ah, Bayt Al Faqiah and Zabid (Kurdi 2019, Introduction). **Comments:** N/A **Author's name:** Sikandra Kurdi **Institution:** N/A **Email:** s.kurdi@cgiar.org; ifpri@cgiar.org **Address:** N/A **Declarations of interest:** NR **Study or programme name and acronym:** Cash for Nutrition programme

Kurdi 2019 *(Continued)*

Type of record: impact evaluation report

Notes		

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Reported that communities were randomised to either the intervention or control groups, but the method was not specified.
Allocation concealment (Selection bias)	High risk	Allocation of communities of HHs to intervention and control groups was done for indirect family members of Social Welfare Fund beneficiaries. However, direct beneficiaries in all the communities all received the intervention. Therefore, it was not possible (and there does not seem to have been attempts made) to conceal group allocation.
Baseline characteristics similar (Selection bias)	High risk	Intervention HHs had significantly lower Asset Indices (P = 0.001), and owned significantly fewer televisions (P < 0.01) and washing machines (P = 0.007). Intervention HHs also had a significantly higher percentage of illiterate mothers (P < 0.001).
Baseline outcome measurements similar (Selection bias)	Unclear risk	No formal hypotheses to test baseline outcome values reported.
Blinding of participants and personnel (Performance bias)	Low risk	Given the nature of the study design, it was unlikely that blinding of participants and training volunteers was possible. Some outcomes, such as health and nutrition behaviour and spending on food, may have been prone to performance bias. It was not clear, however, whether participants and volunteers were aware that the survey was recording their behaviour.
Blinding of outcome assessment (Detection bias)	High risk	It is NR whether people administering the survey and taking anthropometric measurements were blinded to assignment. It is also unclear whether participants, the outcome assessors for self-reported measures, were blinded.
Protection against contamination (Performance bias)	High risk	The authors reported high levels of contamination. During the survey, 16% of intervention HHs reported not receiving the transfer at baseline and 7% at follow-up. 23% of control HHs reported receiving the cash transfer at baseline and 24% follow-up. It is not clear how large the role of contamination was for non-recipient HHs located close to recipient HHs in the same communities.
Incomplete outcome data (Attrition bias)	High risk	Attrition 7.5% overall and fairly balanced across intervention (6.59%) and control groups (8.41%). The use of replacement HHs for those who could not be resurveyed at follow-up is reported, but it was assumed that these HHs are in addition to those HHs 're surveyed at follow-up'. However, 2 entire control clusters were lost.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available for review
Other bias	Low risk	Incorrect analysis: low risk for SEs for model coefficients clustered at community level; recruitment bias: low risk for recruitment prior to randomisation.

Kusuma 2017a

Study characteristics

Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** No missing data reported **Randomisation ratio:** 1:1 **Recruitment method:** NR **Sample size justification and outcome used:** NR **Sampling method:** First, within each province, the 20% richest districts were excluded for both programmes (based on school transition rates, malnutrition and poverty). Districts who participated in the Kecamatan Development Project (a governmental poverty programme that developed infrastructure and capacity) were eligible for Generasi, from which 20 were selected and stratified by province. In NTT, East Java, and West Java selection was random, in Gorontalo and North Sulawesi all eligible districts were selected. Within the selected districts, subdistricts were not eligible if they had participated in the UPP or where < 30% of the villages (desa) and urban precincts (kelurahan) were considered as rural by the national statistics office. The final screening yielded 300 PNPM Generasi eligible subdistricts. The remaining districts were considered for PKH. The subdistricts that were deemed as 'supply-side ready' were then randomly assigned to the PKH treatment and control groups. **Study aim or objective:** Kusuma 2016: to provide evidence on the effects of HH cash transfers (PKH) and community cash transfers (Generasi) on determinants of maternal mortality. Kusuma 2017: to provide evidence on the impact of HH cash transfers (PKH) and community cash transfers (Generasi) on children's food consumption. **Study period:** from June–August 2007 to October–January 2010 **Unit of allocation or exposure:** subdistricts
Participants	**Baseline characteristics** **Intervention**: NR **Control** • *Age*: mother, mean, years: 35.77; children aged < 5 years, mean, n: 1.46; child age, mean, months: 30.11 • *Place of residence*: urban subdistricts • *Sex*: child, female, proportion: 0.45 • *Education*: mother's education (1 = ≥ 6 years): 0.71 • *SES*: HH size, mean: 5.8; per capita HH expenditure: IDR 5.36; latrine in house, mean: 0.48; house had electricity, mean: 0.77; wood and coal cooking fuel, mean: 0.77 • *Nutritional status*: children's food consumption (previous week), mean: grain, roots, tubers: 0.97; milk: 0.4; meat: 0.38; fish: 0.76; eggs: 0.66; fruit, vegetables: 0.95 **Overall**: NR **Inclusion criteria:** very poor HHs (UCT database) with pregnant/lactating women, children aged 0–15 years in supply-ready urban subdistricts (based on existing health and education facilities). **Exclusion criteria:** NR **Pretreatment:** for PKH there were more girls in the intervention group (P < 0.05). However, the study authors did not report any other differences for a number of maternal, HH and subdistrict characteristics at baseline between the intervention and control groups within each programme. **Attrition per relevant group:** the PKH children sample can be considered without attrition because it was 1394 at follow-up out of 1395 at baseline.

Kusuma 2017a *(Continued)*

	Description of subgroups measured and reported: NR **Total number completed and analysed per relevant group:** 1394 children, 1376 HHs in total. **Total number enrolled per relevant group:** Kusuma 2017 used subsets of data from HHs that participated in PKH and Generasi and reported on food consumption for children aged 24–36 months: 1395 HHs at baseline. **Total number randomised per relevant group:** 360 subdistricts (Intervention group: 180 subdistricts; control group: 180 subdistricts)
Interventions	**Intervention characteristics** • *Food access intervention category*: increase buying power • *Intervention type*: PKH (CCT) • *Description*: cash transfers to a HH consisting of a fixed amount of USD 20 per year with the following additions: USD 80 per year if a mother was pregnant or had children aged 0–6 years (or both); USD 40 per year if a mother had 1 child at primary school and USD 80 per year if she had 1 child at secondary school. No rules how the cash should be used. Trained field facilitators advised HHs on conditionalities and cash penalty. Conditionalities: health: 1. 4 antenatal visits, 2. iron tablets during pregnancy, 3. assisted delivery, 4. 2 postnatal visits, 5. complete childhood immunisations, 6. adequate monthly weight increases for infants, 7. monthly weighing for children aged < 3 years and biannually for children aged < 5 years and 8. vitamin A twice a year for children aged < 5 years. Education: 9. primary school enrolment of children aged 6–12 years, 10. minimum attendance rate of 85% for primary school-aged children, 11. junior secondary school enrolment of children aged 13–15 years and 12. minimum attendance rate of 85% for junior secondary school-aged children. • *Duration of intervention period*: 2 years • *Frequency*: every 3 months • *Number of study contacts*: 2: baseline survey (June–August 2007); follow-up survey (October-December 2009) • *Providers*: government of Indonesia • *Delivery*: collected by mothers through the nearest post office. Follow-up survey showed that 50% of sampled HHs in the treatment areas said that they ever received PKH. This relatively low PKH coverage rate could partly explain the lack of impact. However, such coverage rates might be due to HHs not really being aware of the various poverty programme cash/subsidy they received (e.g. BLT (UCTs) vs PKH (CCTs) vs BOS (school operational assistance). • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: NR **Control characteristics:** no intervention
Outcomes	Anthropometry: underweight (WAZ < –2SD); severe underweight (WAZ < –3SD); wasting (WHZ < –2SD); severe wasting (WHZ < –3SD); stunting (HAZ < –2SD); severe stunting (HAZ < –3SD)
Identification	**Sponsorship source:** research fellowship from the Harvard Kennedy School Indonesia Program. **Country:** Indonesia **Setting:** urban very poor HHs (PKH) and rural very poor HHs (Generasi) in West Java, East Java, North Sulawesi, Gorontalo, and East Nusa Tenggara provinces **Author's name:** Dian Kusuma **Email:** dkusuma@mail.harvard.edu **Declarations of interest:** none declared. **Study or programme name and acronym:** Program Keluarga Harapan (PKH) and Generasi.

Kusuma 2017a *(Continued)*

	Type of record: journal articles
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Random sequence generation method NR.
Allocation concealment (Selection bias)	Unclear risk	Allocation concealment methods NR
Baseline characteristics similar (Selection bias)	Low risk	No important differences between groups reported at baseline.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Although food consumption was similar at baseline, growth outcomes at baseline were NR
Blinding of participants and personnel (Performance bias)	Low risk	Blinding of participants and personnel was not possible but unlikely to influence intervention received.
Blinding of outcome assessment (Detection bias)	Low risk	Unclear whether outcome assessors were blinded but key outcomes were objective and unlikely to be influenced by lack of blinding.
Protection against contamination (Performance bias)	Low risk	Allocation was at subdistrict level, which minimised the risk of spillovers.
Incomplete outcome data (Attrition bias)	Low risk	No attrition was reported.
Selective outcome reporting (Reporting bias)	Unclear risk	Protocol N/A.
Other bias	Unclear risk	Misclassification of exposure: low risk. Measurement bias: unclear risk. Incorrect analysis: low risk. analyses adjust for clustering. Recruitment bias: low risk. HHs randomly selected after subdistrict randomisation.

Kusuma 2017b

Study characteristics

Methods	**Study design:** cRCT
	Study grouping: parallel group
	How were missing data handled? No missing data reported
	Randomisation ratio: 1:1:1.
	Recruitment method: NR
	Sample size justification and outcome used: NR

Kusuma 2017b *(Continued)*

Sampling method: first, within each province, the 20% richest districts were excluded for both programmes (based on school transition rates, malnutrition and poverty). Districts who participated in the Kecamatan Development Project (a governmental poverty programme that developed infrastructure and capacity) were eligible for Generasi, from which 20 were selected and stratified by province. In NTT, East Java, and West Java selection was random, in Gorontalo and North Sulawesi all eligible districts were selected. Within the selected districts, subdistricts were not eligible if they had participated in the UPP or where < 30% of the villages (desa) and urban precincts (kelurahan) were considered as rural by the national statistics office. The final screening yielded 300 PNPM Generasi eligible subdistricts, which were randomly assigned to incentivised treatment (hereafter referred to as treatment I), non-incentivised treatment (hereafter treatment II) and the control group. The remaining districts were considered for PKH. The subdistricts that were deemed as 'supply-side ready' were then randomly assigned to the PKH treatment and control groups.

Study aim or objective: Kusuma 2016: to provide evidence on the effects of HH cash transfers (PKH) and community cash transfers (Generasi) on determinants of maternal mortality. Kusuma 2017: to provide evidence on the impact of HH cash transfers (PKH) and community cash transfers (Generasi) on children's food consumption.

Study period: from June–August 2007 to October 2009 to January 2010

Unit of allocation or exposure: subdistricts

Participants

Baseline characteristics

Intervention: NR

Control

- *Age*: mother, mean, years: 33.47; children aged < 5 years, mean, n: 1.33; child, age, mean, months: 30.06
- *Place of residence*: rural subdistricts
- *Sex*: child, female, proportion: 0.44
- *Education*: mother's education (1 = ≥ 6 years): 0.85
- *SES*: HH size, mean: 5.1; per capita HH expenditure: IDR 7.19; latrine in house, mean: 0.61; house had electricity, mean: 0.64; wood and cooking fuel, mean: 0.74
- *Nutritional status*: children's food consumption (previous week), mean: grain, roots, tubers: 0.97; milk: 0.49; meat: 0.44; fish: 0.8; eggs: 0.69; fruit, vegetables: 0.94

Overall: NR

Inclusion criteria: very poor HHs (UCT database) with pregnant/lactating women, children aged 0–15 years in rural villages.

Exclusion criteria: NR

Pretreatment: no baseline differences reported.

Attrition per relevant group: 2 independent cross-sectional samples analysed. Overall attrition: 98/4262 (2.3%).

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: 1481 children, 1472 HHs in total (2 cross-sectional samples; 1 for baseline and 1 at follow-up).

Total number enrolled per relevant group: Kusuma 2017 used subsets of data from HHs that participated in PKH and Generasi and reported on food consumption for children aged 24–36 months: 4262 HHs. Kusuma 2016 used subsets of data from HHs that participated in Generasi and had married women aged 16–49 who had had pregnancies or deliveries within the past 24 months in 2007 and 2009: 4262 women at baseline

Kusuma 2017b *(Continued)*

	Total number randomised per relevant group: 300 subdistricts (Intervention group (Versi A – with rewards): 100 subdistricts; intervention group (Versi B – without rewards): 100 subdistricts; control group: 100 subdistricts). Results for Generasi Versi A and B are presented together.
Interventions	**Intervention characteristics** • *Food access intervention category*: increase buying power • *Intervention type*: community conditional grant programme • *Description*: mean payment of USD 8500 (2007) and USD 18,200 (2009) to each village. Only for health and education use. 2 types: Versi A: performance incentive and Versi B: no incentive. Conditionalities for PKH and Generasi. Health: 1. 4 antenatal visits, 2. iron tablets during pregnancy, 3. assisted delivery, 4. 2 postnatal visits, 5. complete childhood immunisations, 6. adequate monthly weight increases for infants, 7. monthly weighing for children aged < 3 years and biannually for children aged < 5 years and 8. vitamin A twice a year for children aged < 5 years. Education: 9. primary school enrolment of children aged 6–12 years, 10. minimum attendance rate of 85% for primary school-aged children, 11. junior secondary school enrolment of children aged 13–15 years and 12. minimum attendance rate of 85% for junior secondary school-aged children. • *Duration of intervention period*: 2 years • *Frequency*: annually • *Number of study contacts*: baseline survey (June–August 2007); follow-up survey (October–December 2009) • *Providers*: government of Indonesia • *Delivery*: block grant payments to villages. Trained facilitators advised village management team on allocation of funds. 41% of villages implemented financial incentives for health worker outreach, which might contribute to health knowledge; 79% of villages implemented SFP, which might contribute to nutritional intake; 96% villages implemented financial assistance for mothers. However, the potential impact might be hampered because many activities were toward Posyandu e 33% and 37% villages provided transport and financial incentive for posyandu cadres and only 2% and 4% villages did for midwives. **Control: n**o intervention
Outcomes	Anthropometry: underweight (WAZ < –2SD); severe underweight (WAZ < –3SD); wasting (WHZ < –2SD); severe wasting (WHZ < –3SD); stunting (HAZ < -2SD); severe stunting (HAZ < –3SD)
Identification	**Sponsorship source:** research fellowship from the Harvard Kennedy School Indonesia Program. **Country:** Indonesia **Setting:** urban very poor HHs (PKH) and rural very poor HHs (Generasi) in West Java, East Java, North Sulawesi, Gorontalo, and East Nusa Tenggara provinces **Author's name:** Dian Kusuma **Email:** dkusuma@mail.harvard.edu **Declarations of interest:** none declared. **Study or programme name and acronym:** Program Keluarga Harapan (PKH) and Generasi. **Type of record:** journal articles
Notes	The Generasi programme is reported in the same papers that report PKH programme, a CCT to HHs programme.

Risk of bias

Bias	Authors' judgement	Support for judgement

Kusuma 2017b *(Continued)*

Random sequence generation (Selection bias)	Unclear risk	Study authors referred to randomisation of subdistricts but did not describe how randomisation sequence was generated.
Allocation concealment (Selection bias)	Unclear risk	Allocation concealment NR.
Baseline characteristics similar (Selection bias)	Low risk	No important differences reported in terms of maternal, HH and subdistrict characteristics between groups at baseline.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Food consumption in children was similar at baseline; however, important growth outcomes were NR at baseline.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding of participants and personnel in these types of studies was not possible, but lack of blinding was unlikely to influence intervention received.
Blinding of outcome assessment (Detection bias)	Low risk	Unclear whether outcome assessors were blinded. However, key anthropometric outcomes were objective and thus less susceptible to lack of blinding.
Protection against contamination (Performance bias)	Low risk	Randomisation was at subdistrict level which reduces spillover effect risk.
Incomplete outcome data (Attrition bias)	Low risk	2 independent cross-sectional surveys conducted. Response rate was high.
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A.
Other bias	Unclear risk	Misclassification of exposure: low risk. Measurement bias: unclear risk. Incorrect analysis: low risk. analyses adjust for clustering. Recruitment bias: low risk. HHs randomly selected after subdistrict randomisation.

Leroy 2008 (PROGRESA)

Study characteristics

Methods

Study design: PCS

How were missing data handled? children LTFU or with missing data were excluded from the analysis.

Randomisation ratio: N/A

Recruitment method: mass media advertised the programme and invited families to solicit a socioeconomic screening questionnaire at the enrolment centres. Assessment utilised HH assets, housing quality, years of education and HH composition. Programme staff visited all HHs that appeared eligible to validate the results of the screening questionnaire. Eligible applicants subsequently had to return to the programme office to register. HH enrolment in urban areas started in 2002 and was staged over 2 years.

Sample size justification and outcome used: NR

Sampling method: For the evaluation sample, 149 manzanas (the smallest administrative unit within an urban area) in 17 of Mexico's 31 states were selected through probabilistic stratified sampling from the pool of localities where Oportunidades would be implemented in 2002. The localities were select-

Leroy 2008 (PROGRESA) *(Continued)*

	ed based on density of low-income HHs. The survey included eligible HH that enrolled and eligible HHs that did not enrol in the programme. **Study aim or objective:** to evaluate the impact of Mexico's CCT programme, Oportunidades, on the growth of children aged 24 months living in urban areas. **Study period:** 2 years (baseline: 2002; follow-up: 2004) **Unit of allocation or exposure:** HHs
Participants	**Baseline characteristics** Intervention or exposure • *Age*: child, mean, months: 12.6 (SD 6.7) • *Place of residence*: poor urban areas in Mexico • *Sex*: female, %: 50 • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: head of HH completed primary school, %: 60 • *SES*: rooms in house, mean, n: 1.0 (SD 0.7); HH income, mean: MXN 1540 (SD 2011.41) • *Social capital*: NR • *Nutritional status*: HAZ, mean: –1.29 (SD 1.36); length, mean, cm: 70.9 (SD 8.5); WHZ, mean: 0.30 (SD 1.07); weight, mean, kg: 8.62 (SD 2.05); maternal height, mean, cm: 149.1 (SD 5.6) • *Morbidities*: NR • *Concomitant or previous care*: NR Control • *Age*: child, mean, months: 12.4 (SD 6.9) • *Place of residence*: poor urban areas in Mexico • *Sex*: female, %: 52 • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: head of HH completed primary school, %: 64 • *SES*: rooms in house, mean, n: 1.0 (SD 0.7); HH income, mean: MXN 1708.33 (SD 2934.36) • *Social capital*: NR • *Nutritional status*: HAZ, mean: –1.40 (SD 1.16); length, mean, cm: 70.2 (SD 8.7); WHZ, mean: 0.33 (SD 1.0); weight, mean. kg: 8.46 (SD 2.08); maternal height, mean, cm: 149.8 (SD 5.5) • *Morbidities*: NR • *Concomitant or previous care*: NR Overall • *Age*: NR • *Place of residence*: poor urban areas in Mexico • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: all HHs were within the poorest 20th percentile of the Mexican population. • *Social capital*: NR • *Nutritional status*: NR • *Morbidities*: NR • *Concomitant or previous care*: NR

Leroy 2008 (PROGRESA) *(Continued)*

Inclusion criteria: poorest HHs in an urban block in urban centres (based on a cut-off of the national HH Income and Expenditure Survey). None other reported.

Exclusion criteria: NR

Pretreatment: baseline characteristics did not differ between treatment and comparison HHs. However, the propensity score was substantially higher in intervention HHs ($P < 0.05$). The score was based on SE variables and likelihood of enrolment.

Attrition per relevant group: total: 301/733 (41.1%) children (263 LTFU and 38 with missing data); intervention: 230/574 (40.1%) children (202 LTFU and 28 with missing data); control: 71/159 (44.7%) children (61 LTFU and 10 with missing data).

Description of subgroups measured and reported: age of child at baseline: 0–6 months; 6–12 months and 12–24 months. Socioeconomic tertile at baseline: tertile 1, 2 and 3.

Total number completed and analysed per relevant group: intervention group (HHs who enrolled in the programme): 344 children; control group (HHs who did not enrol in the programme): 88 children

Total number enrolled per relevant group: total: 733 HHs; intervention: 574 children; control: 159 children

Total number randomised per relevant group: N/A

Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: CCT • *Description*: cash transfers linked to children's school enrolment and regular school and clinic attendance. 3 types of cash transfers: scholarships linked to school attendance; money for school supplies and a cash transfer for food (the alimento). The programme also provided in-kind health benefits (nutritional supplements for: children aged 6–23 months; low-weight children (WAZ –1SD) aged 2–4 years, and pregnant or lactating women); and instructional meetings on health and nutrition issues. Typically, HHs received the equivalent of USD 32.5–41.3, constituting 19–24% of mean HH consumption. • *Duration of intervention period*: 2 years (2002–2004) • *Frequency*: monthly • *Number of study contacts*: 2 study contacts: September–December 2002 (baseline); July–November 2004 (follow-up). • *Providers*: federal government of Mexico • *Delivery*: growth monitoring and health and nutrition education components of the programme were obligatory and hence compliance was > 90%. Cash transfer to female head of HHs. • *Co-interventions*: none reported • *Resource requirements*: NR • *Economic indicators*: NR Control: no intervention
Outcomes	Anthropometry: height; weight; HAZ, WHZ
Identification	**Sponsorship source:** National Coordination of the Oportunidades programme of the Mexican secretary of Social Development **Country:** Mexico **Setting:** urban poor HHs participating in a national anti-poverty programme **Authors' names:** Lynnette M Neufeld; first author: Jef L Leroy **Email:** neufeld@insp.mx

Leroy 2008 (PROGRESA) *(Continued)*

Declarations of interest: no conflicts of interest

Study or programme name and acronym: PROGRESA/Oportunidades

Type of record: journal article

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA; no randomisation done.
Allocation concealment (Selection bias)	High risk	CBA; no randomisation done. By excluding 26% of all HHs surveyed, this could have introduced other forms of bias in their sample. Study authors did not compare these HHs to included HHs.
Baseline characteristics similar (Selection bias)	Low risk	Although intervention HHs had a higher baseline mean propensity score (probability of enrolment in the Oportunidades programme) than those in the control group, the study authors used PSM to compare changes in HHs in both groups during their analysis.
Baseline outcome measurements similar (Selection bias)	Low risk	The anthropometric parameters of the children at baseline did not differ. The study authors also adjusted for baseline child anthropometric measurements and maternal height in their analyses.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding not possible but lack of blinding unlikely to influence participant or personnel behaviour.
Blinding of outcome assessment (Detection bias)	Low risk	Blinding of outcome assessors NR. However, outcomes of interest (anthropometric measures) were objective and unlikely to have been influenced by lack of blinding.
Protection against contamination (Performance bias)	Low risk	Eligible HHs were enrolled in the programme and control HHs were eligible HHs that did not enrol in the programme. Therefore, it was not possible for control HHs to receive any programme benefits.
Incomplete outcome data (Attrition bias)	High risk	High levels of missing data overall (41%) and in intervention (40.1%) and control (44.7%) groups. Although for most HHs reasons for LTFU were because of moving to another area, this information was only available for some of these HHs (91/263). Furthermore, by excluding 26% of all HHs surveyed this could have introduced other forms of bias in their sample. The study authors did not compare these HHs to included HHs.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available.
Other bias	Low risk	Misclassification bias: low risk. The study authors only used data from included HHs that were consistently classified as either intervention or control HHs. Measurement bias: low risk. Incorrect analysis: N/A. Seasonality bias: unknown risk (time of year not stated).

Lopez Arana 2016

Study characteristics

Methods	**Study design:** CBA **How were missing data handled?** Children's study (secondary analysis): children with missing covariates at baseline as well as children LTFU were excluded from the analysis. Analysis of differential attrition was done for children LTFU (Lopez-Arana 2016); Women's study (secondary analysis): ITT analysis was according to HH allocation, but women with missing covariates as well as those LTFU were excluded from the analysis. Analysis of differential attrition was done for women LTFU (Forde 2012). **Randomisation ratio:** N/A **Recruitment method:** NR **Sample size justification and outcome used:** NR **Sampling method:** stratified sample. 57 municipalities were randomly selected from 622 municipalities (with < 100,000 inhabitants) implementing FA (classified into 25 strata based on routine government data on region, health/education structure, population). Intervention municipalities were matched with 65 control municipalities from the same stratum. Of the eligible HHs within each municipality, 100 HHs were randomly sampled. **Study aim or objective:** to evaluate the impact of the FA programme on under- and overnutrition of children as well as the BMI of women from poor HHs in Colombia. **Study period:** June 2002–2006. **Unit of allocation or exposure:** municipalities
Participants	**Baseline characteristics** Intervention or exposure • *Age*: HH head, mean, years: TCP HHs 45.44 (SE 13.13); TSP HHs: 44.15 (SE 12.95); children aged < 7 years, mean, n: TCP HHs 1.1 (SE 0.12); TSP HHs 1.25 (SE 1.19) • *Place of residence*: lived in a rural but sparsely populated part of the municipality, mean: TCP HHs 0.47 (SE 0.5); TSP HHs 0.41 (SE 0.49); lived in a rural but populous part of the municipality: TCP HHs 0.08 (SE 0.27); TSP HHs 0.14 (SE 0.34) • *Sex*: female adults, mean, n: TCP HHs 1.38 (SE 0.72); TSP HHs 1.36 (SE 0.7) • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: HH head, TCP HHs, mean: incomplete primary schooling 0.48 (SE 0.50); complete primary schooling 0.15 (SE 0.35); secondary schooling 0.1 (SE 0.3); TSP HHs, mean: incomplete primary schooling 0.45 (SE 0.5); complete primary schooling 0.16 (SE 0.36); secondary schooling 0.09 (SE 0.28) • *SES*: HH members, mean, n: TCP HHs 5.86 (SE 2.35); TSP HHs 6.12 (SE 2.41); owns a house, mean: TCP HHs 0.97 (SE 0.17); TSP HHs 0.97 (SE 0.18); subsidised health insurance, mean: TCP HHs 0.63 (SE 0.48); TSP HHs 0.7 (SE 0.46) • *Social capital*: informally subsidised health insurance, mean: TCP HHs 0.22 (SE 0.42); TSP HHs 0.18 (SE 0.39) • *Nutritional status*: Attanasio 2006: number of different food types consumed during the previous week, mean: TCP HHs 8.6 (SE 0.92); TSP HHs 7.8 (SE 0.14); food consumption per month, mean: TCP HHs COP 317,339.1; TSP HHs COP 301,111.6; food consumption as proportion of HH consumption per month, mean: TCP HHs 0.715, TSP HHs 0.735; all intervention HHs (Lopez-Arana 2016): HAZ, mean: –1.47 (SD 1.21); stunting, n (%): 391 (30.3); BMIZ, mean: 0.20 (SD 1.0); all intervention HHs (Forde 2012): BMI of women, mean: 25.17 (95% CI 25 to 25.34) • *Morbidities*: NR • *Concomitant or previous care*: children participating in Hogares Comunitarios, n (%): 521/1290 (40.4) Control • *Age*: HH head, mean, years: 45.53 (SE 13.23); children aged < 7 years, mean, n: 1.12 (SE 1.15)

Lopez Arana 2016 *(Continued)*

- *Place of residence*: lived in a rural but sparsely populated part of the municipality, mean: 0.35 (SE 0.48); lived in a rural but populous part of the municipality: 0.07 (SE 0.26)
- *Sex*: female adults, mean, n: 1.37 (SE 0.74)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: HH heads, mean: incomplete primary schooling 0.45 (SE 0.5); complete primary schooling 0.14 (SE 0.35); secondary schooling 0.09 (SE 0.29)
- *SES*: HH members, mean, n: 6.07 (SE 2.47); owns a house, mean: 0.96 (SE 0.19); subsidised health insurance, mean: 0.7 (SE 0.46)
- *Social capital*: informally subsidised health insurance, mean: 0.14 (SE 0.35)
- *Nutritional status*: Attanasio 2006: number of different food types consumed during the previous week, mean: NR; food consumption per month, mean: COP 289,527.1; food consumption as proportion of HH consumption per month, mean: 0.71; control HHs (Lopez-Arana 2016), HAZ, mean –1.42 (SD 1.13); stunting, n (%): 442 (SD 27.9); BMIZ: 0.25 (0.9); control HHs (Forde 2012): BMI of women, mean: 25.43 (95% CI 25.21 to 25.65)
- *Morbidities*: NR
- *Concomitant or previous care*: children participating in Hogares Comunitarios, n (%): 897/1584 (56.6)

Overall: NR

Inclusion criteria: families living in a municipality where the intervention (FA) was implemented were required to 1. hold a Colombian citizen card, 2. have children aged < 18 years and 3. be classified in the lowest level of the official socioeconomic classification in December 1999.

Exclusion criteria: none reported for IFS report summary (Attanasio 2005) or children's study (secondary analysis) (Lopez-Arana 2016). Women's study (secondary analysis): women who were underweight (BMI 18.5 kg/m^2) at baseline; women who were pregnant or breastfeeding at any point during the study (Forde 2012).

Pretreatment: in the children's study more children in the control group were participating in the Hogares Comunitarios programme. Control HHs were also less likely to have a mother with no education or be in an un urbanised (rural) area. In the women's study women in the treatment group were more likely to be slightly older and participate in community activities. Treatment HHs also had less persons per room, less piped water to the HH, and were less likely to be in an urban location; while control HHs had lower HH wealth. Treatment areas had larger populations, more intervention-eligible families, slightly higher average HH wealth, and many more banks; while control areas a higher quality of life index, ratio of doctors to population, and proportion of HHs with piped water.

Attrition per relevant group: Attanasio 2006: attrition was 6% overall at the first follow-up. Lopez-Arana 2016: children's study (secondary analysis): attrition was 39.2% (833/2123) in the intervention group and 41.8% (1138/2722) in the control group, with no differential LTFU reported between the 2 groups. Forde 2012: women's study (secondary analysis): attrition was 38.8% (785/2023) in the intervention group and 38.0% (512/1347) in the control group with no differential LTFU reported between the 2 groups (Chi^2 = 0.21, P = 0.64).

Description of subgroups measured and reported: women's study (secondary analysis): subgroup analysis excluding women in pre-exposed areas (26 municipalities).

Total number completed and analysed per relevant group: Attanasio 2006: unclear. Forde 2012: women's study (secondary analysis): intervention group: 1238 women from 57 municipalities; control group: 835 women from 65 municipalities. Lopez-Arana 2016: children's study (secondary analysis): intervention group: 1290 children (aged 7 years) from 31 municipalities; control group: 1584 children (aged 7 years) from 65 municipalities.

Total number enrolled per relevant group: Attanasio 2006: intervention group: 6293 HHs from 57 municipalities (2954 TSP HHs from 31 municipalities and 3339 TCP HHs from 26 municipalities); control group: 4424 HHs from 65 municipalities

Total number randomised per relevant group: N/A

Interventions	**Intervention characteristics**

Lopez Arana 2016 *(Continued)*

	Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: CCT • *Description*: cash payments to mothers on condition that their children aged < 7 years regularly attended vaccination programmes as well as growth and development check-ups (COP 40,000) and that their children aged 7–17 years attended school regularly – ≥ 80% of school lessons (additional payments of COP 14,000 per primary school and COP 28,000 per secondary school child). • *Duration of intervention period*: mid-2002 to early 2006. • *Frequency*: money periodically transferred to the bank account of the beneficiaries • *Number of study contacts*: June–September 2002 (baseline survey); July–November 2003 (first follow-up survey) and 2005–2006 (second follow-up survey) • *Providers*: Colombian government through World Bank and Inter-American Development Bank funding. • *Delivery*: transfer of cash into the HH bank account. • *Co-interventions*: some children were also participating in the Hogares Comunitarios programme; a childcare supplementary nutrition and psychosocial stimulation programme. • *Resource requirements*: sufficient health and education infrastructure to service conditionalities without causing bottlenecks. • *Economic indicators*: programme paid USD 183,258,944 to mothers between April 2001 and November 2004. Control: no intervention • Co*-interventions*: some children were also participating in the Hogares Comunitarios programme; a childcare supplementary nutrition and psychosocial stimulation programme.
Outcomes	Diet diversity: DDI Anthropometry: HAZ, stunting, BMIZ, thinness Adverse events: overweight, obesity
Identification	**Sponsorship source:** IFS report summary: NR; children's study: (quote) "S. L.-A. was supported by the European Union Erasmus Mundus Partnerships programme Erasmus-Colombus (ERACOL) and Fundación para el Futuro de Colombia (COLFUTURO) at Erasmus MC in the Netherlands. M.A. was supported by the European Research Council (ERC) (grant no. 2636840), the National Institute on Ageing (award numbers R01AG040248 and R01AG037398), and the LIFEPATH project funded by the European Union's Horizon2020 research and innovation programme under grant agreement 633666. The funders had no role in study design, data collection and analysis, decision to publish or preparation of the manuscript."; women's study: (quote) "IF is funded by a Medical Research Council Fellowship which mandates open access publishing (grant code G0701333). In 2001, a partnership between the Institute of Fiscal Studies (London, a research institute), Econometria (Bogotá, a research institute) and SEI (Bogotá, a company specialising in the design and collection of social surveys) was commissioned by the Colombian Government to evaluate Familias, after open tendering." **Country:** Colombia **Setting:** very poor rural and urban HHs **Authors' names:** Sandra Lopez-Arana; Ian Forde; Orazia Attanasio **Email:** o.attanasio@ucl.ac.uk; s.lopezarana@erasmusmc.nl; i.forde@ucl.ac.uk **Declarations of interest:** Attanasio 2006: No. Forde 2012: Yes. "All authors have completed the Unified Competing Interest form and declare no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work." Lopez-Arana 2016: Yes. "The authors declare that no conflicts of interest exist." **Study or programme name and acronym:** Familias en Acción (FA)

Lopez Arana 2016 *(Continued)*

Type of record: Centre for the Evaluation of Development Policies: Institute for Fiscal Studies report summary; journal articles (Attanasio 2006; Forde 2012; Lopez-Arana 2016)

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Prospective controlled study. No randomisation carried out.
Allocation concealment (Selection bias)	High risk	Prospective controlled study. No randomisation carried out.
Baseline characteristics similar (Selection bias)	Low risk	Baseline non-equivalence was detected for a number of pertinent characteristics: children's participation in the Hogares Comunitarios programme (P = 0.01) in the control group; while control children were significantly less likely to have mothers with no education (P = 0.006) or come from rural areas (P = 0.002). Women in the treatment group were older (P < 0.01), while control women came from significantly less wealthy (P < 0.001) HHs which were more likely to be in semi-urban areas (P < 0.001). However, the study authors adjusted for covariates at the individual, HH and municipality level in the regression analyses.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Study authors stated that the higher level of food consumption in TCP HHs was an early effect of the intervention (26 municipalities who received the intervention before the baseline survey was conducted). The true baseline comparability in terms of food consumption across the intervention municipalities was, therefore, unknown (Attanasio 2006).
Blinding of participants and personnel (Performance bias)	Low risk	No blinding as this was a CBA. Unclear if this lack of blinding and the awareness of follow-up surveys would have resulted in a temporary performance bias in terms of the volume and quality of food purchased; which may have affected anthropometric outcomes.
Blinding of outcome assessment (Detection bias)	Low risk	Unclear whether the field workers were blinded but outcomes were objective and unlikely to have been influenced by lack of blinding.
Protection against contamination (Performance bias)	Unclear risk	Study authors provided no information on the geographical location of intervention vs control municipalities.
Incomplete outcome data (Attrition bias)	High risk	The secondary analysis by Forde 2012 reported high attrition among women (38.8% vs 38%). Women who were LTFU were older (P = 0.01), with lower formal educational attainment (P = 0.01) and greater parity (P < 0.001) compared to those with complete data. The secondary analysis by Lopez-Arana 2016 also reported high attrition (39.2% vs 41.8%) in children. Children who were LTFU were older (P < 0.0001), less likely to be overweight (P = 0.02) and had lower BMIZ (P = 0.001).
Selective outcome reporting (Reporting bias)	Unclear risk	Study protocol N/A.
Other bias	Unclear risk	Misclassification bias: high. Information on receipt of cash transfer was self-reported by HHs. Measurement bias: unlikely.

Macours 2012

Study characteristics

Methods	**Study design:** cRCT **Study grouping:** parallel **How were missing data handled?** N/A **Randomisation ratio:** about 1:1 **Recruitment method:** municipalities selected for their extreme levels of poverty and because they had been affected by a severe drought in previous year. **Sample size justification and outcome used:** NR **Sampling method:** in communities randomly selected to participate in the Atención a Crisis programme, the primary child carer (known as the 'titular'), mainly a woman, was invited to a registration assembly where the programme objectives and various components were explained. At the end of assembly, a lottery took place in each community. Participation in the assemblies and lotteries was close to 100%. Based on lottery, all eligible HHs within each community were assigned to 1 of 3 treatments. **Study aim or objective:** to analyse the impact of a cash transfer programme on early childhood cognitive development and the extent to which changes in child development could be explained solely by the cash component of the Atención a Crisis programme. **Study period:** Atención a Crisis pilot programme was implemented between November 2005 and December 2006, Baseline data for the evaluation collected in April–May 2005. A first follow-up survey collected in July–August 2006, 9 months after the HHs had started receiving payments. A second follow-up survey, covering the same HHs, was collected between August 2008 and May 2009. **Unit of allocation or exposure:** HHs, stratified by community
Participants	**Baseline characteristics** Intervention or exposure • *Age*: HH members aged 0–5 years: 1.04; aged 5–14 years: 1.7; aged 15–24 years: 1.17; aged 24–64 years: 1.84; aged > 65 years: 0.13 • *Place of residence*: number of rooms in the house: 1.57 • *Sex*: female children. %: 50; male HH head, %: 85 • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: number of years of education: mother 4.05; father 3.81 • *SES*: NR • *Social capital*: NR • *Nutritional status*: children aged 0–5 years: WAZ –1.06; HAZ –1.27; WHZ –0.18 • *Morbidities*: NR • *Concomitant or previous care*: NR Control • *Age*: HH members aged 0–5 years: 1.06; aged 5–14 years: 1.69; aged 15–24 years: 1.21; aged 24–64 years: 1.88; aged > 65 years: 0.18 • *Place of residence*: rural community in Nicaragua • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: number of years of education: mother 4.21; father 3.88 • *SES: NR*

Macours 2012 *(Continued)*

- *Social capital*: NR
- *Nutritional status*: children aged 0–5: WAZ –0.88; HAZ –1.08; WHZ –0.16
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: baseline data on HH assets and HH composition were then used to define programme eligibility. The eligibility criteria were determined using the proxy means methodology developed for the RPS and based on the national HH data from 2001 (EMNV). Additional discussions with local leaders from each intervention community were conducted to identify possible exclusion or inclusion errors. Based on the discussions with leaders, 3.7% of all the HHs considered were re-assigned from non-eligible to eligible, and 3.7% from eligible to non-eligible. To avoid any possible selection bias resulting from the re-assignment by the leaders, the results they presented use eligibility by the proxy means as the ITT (without taking into account the reclassification by the community leaders).

Exclusion criteria: NR

Pretreatment: children aged 0–5 years in the intervention group at baseline were significantly more underweight and received fewer vitamins and deworming drugs in the previous 6 months when compared to those in the control group. Also, in the control compared to the intervention group, HHs had more members aged ≥ 65 years.

Attrition per relevant group: attrition over the study period was minimal, < 1.3% in 2006 and 2.4% in 2008. Attrition is uncorrelated with treatment status, and does not differ across treatment packages. The low attrition rates were a result of repeat visits to recover temporary absence and extensive tracking of migrants. Migrant HHs and children were interviewed and tested in their new locations.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: overall: 3326 in 2006 and 4245 in 2008. Numbers of participants per group N/A.

Total number enrolled per relevant group: NR

Total number randomised per relevant group: NR

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: CCT
- *Description*: programme had 2 objectives. First, to serve as a short-term safety net by providing cash transfers to reduce the need for adverse coping mechanisms, such as taking children out of school or reductions in food consumption. Second, to promote long-term upward mobility and poverty reduction by enhancing HHs' asset base and income diversification capacity. There were 3 different intervention groups, all received the same cash transfers (the same amount paid to the child's primary carer every 2 months), but with differing conditionalities or other co-interventions. Group 1: the conditionality of regular health check-ups for children aged 0–5 years was not monitored, and thus HHs were not penalised if they did not comply. Group 2: 1 member per HH was offered a scholarship to choose out of a number of vocational training courses at the municipal headquarters. Group 3: HHs were offered a lump sum payment to start a small non-agricultural activity; the lump sum was conditional on developing a business development plan.
- *Duration of intervention period*: Atención a Crisis pilot programme was implemented between November 2005 and December 2006.
- *Frequency*: bi-monthly cash transfers
- *Number of study contacts*: 3; baseline, first follow-up, second follow-up
- *Providers*: Ministry of the Family and programme staff
- *Delivery*: cash transfers paid every 2 months. For Group 1 the educational condition was monitored in practice. For Group 3 the lump sum was paid at the end of May and September 2006. The repeated

Macours 2012 *(Continued)*

	information and communication efforts were delivered by programme staff during enrolment and paydays. Regular meetings were delivered by local programme promoters. • *Co-interventions:* NR • *Resource requirements*: NR • *Economic indicators*: total transfer of USD 145 during the year of the programme. HHs with children aged 7–15 enrolled in and attending primary school received an additional USD 90 per HH, and an additional USD 25 per child (with all amounts referring to the total transfer received over the year), conditional on school enrolment and attendance. Control: no intervention
Outcomes	Proportion of HH expenditure on food: % of food in total expenditure; % staple/animal protein/fruit and vegetables in total food expenditure Anthropometry: WAZ; HAZ Anxiety and depression: depression score (CES-D scale); Cognitive function and development: language test score (TVIP score) Morbidity: number of days ill in bed in past month
Identification	**Sponsorship source:** World Bank support including the Trust Fund for Environmentally and Socially Sustainable Development (TFESSD) made available by the governments of Finland and Norway, the Bank-Netherlands Partnership Trust Fund Program (BNPP), as well as the Research Committee through a Research Support Budget (RSB) grant. Funding from BASIS was also received under the USAID Agreement No. EDH-A- 00-06-0003-00 awarded to the Assets and Market Access Collaborative Research Support Program. **Country:** Nicaragua **Setting:** poor HHs in 6 municipalities of rural Nicaragua **Author's name:** Karen Macours **Email:** karen.macours@parisschoolofeconomics.eu **Declarations of interest:** NR **Study or programme name and acronym:** Atención a Crisis **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Quote: "These households were allocated one of three different packages through a participatory lottery."
Allocation concealment (Selection bias)	Low risk	Allocation at community level, and it performed on all units at start of study.
Baseline characteristics similar (Selection bias)	Low risk	Some small differences noted at baseline, but regressions were used to adjust for differences between treated and control groups (page 258).
Baseline outcome measurements similar (Selection bias)	Low risk	There were significant differences between the groups at baseline (the WHZ was higher in the control group) but these were controlled for in the analysis.

Macours 2012 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	It is difficult to blind in these types of interventions, but lack of blinding is unlikely to influence participants or personnel behaviour during a trial of this nature.
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether the data collectors were blinded towards the group allocations, which may have influenced the measurement of outcomes across groups as these were self-reported.
Protection against contamination (Performance bias)	Low risk	Geographical communities were the unit of allocation. Therefore, it is unlikely that there was a spillover effect of the intervention.
Incomplete outcome data (Attrition bias)	Low risk	Quote: "Attrition over the study period was minimal, less than 1.3 percent in 2006 and 2.4 percent in 2008."
Selective outcome reporting (Reporting bias)	Unclear risk	Protocol or trial registration number NR. Specific outcomes were not specified in the article's Methods section.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: unclear risk. Unclear how food intake data were collected. Incorrect analysis: low risk. SEs adjusted for clustering at the community level.

Maluccio 2005

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** 90% (1581) of the stratified random sample was interviewed in the first round. In 2002, just over 90% of these were re-interviewed. The sample for which there is a complete set of observations (1 in each of the 3 survey rounds) was 1396, smaller than the 1434 shown in the first row of the third column of Table 3. The HHs were about evenly divided between intervention and control groups, indicating that at least the level of attrition was not significantly different between them. Similarly, when the sample was limited to those interviewed in all 3 rounds as a partial control for attrition bias, estimated effects changed only slightly, with no systematic bias. Another partial remedy to control for attrition bias is to estimate a HH fixed-effects model, particularly if one suspects that unobserved persistent heterogeneity is leading to attrition. However, as with the other robustness checks, when the models were estimated with these controls, the results differed little. The number of HHs was about evenly divided between intervention and control groups, suggesting that attrition was not significantly different between groups. Combining this with the evidence from the robustness checks just described, it was concluded that attrition bias was not driving the results presented. **Randomisation ratio:** 1:1 **Recruitment method:** NR **Sample size justification and outcome used:** 42 HHs were randomly selected in each comarca using a census carried out by RPS 3 months prior to the survey as the sample frame, yielding an initial target sample of 1764 HHs. The sample size calculation was based on assessing the necessary sample sizes for the indicators listed in Appendix B, Table 26. Assuming a random sample, the indicator that required the largest sample size, using a significance level of 5% and a power of 80%, was enrolment for Grades 1–4 (indicator 5 in Appendix B, Table 26). To detect a minimum, statistically significant difference of 8 pps between intervention and control groups, a sample size of 549 students for each group was required. Not all HHs had children in this age group. According to the 2000 RPS population census, 63% of HHs had ≥ 1 child aged 6–12 years. Therefore, to obtain a sample of 549 children (in different HHs), it

Maluccio 2005 *(Continued)*

	was necessary to interview 871 HHs in each group (549 divided by 0.63) or 1742 in total. Thus, the study authors arrived at a target sample of 1764 HHs. **Sampling method: i**n the design phase of RPS, rural areas in all 17 departments of Nicaragua were eligible for the programme. In addition, these departments had easy physical access and communication (including being < 1-day drive from the capital, Managua, where RPS is headquartered), relatively strong institutional capacity and local co-ordination, and reasonably good coverage of health posts and schools. By purposively targeting, RPS avoided devoting a disproportionate share of its resources during the pilot to increasing the supply of educational and health services. In the next stage of geographic targeting, all 6 (out of 20) municipalities that had the participatory development programme Microplanificación Participativa (Participatory Micro-planning), run by the national Fondo de Inversión Social de Emergencia (FISE), were chosen. In the last stage of geographic targeting, a marginality index based on information from the 1995 National Population and Housing Census was constructed, and an index score was calculated for all 59 rural census comarcas2 in the selected municipalities. The index was a weighted mean of the following set of poverty indicators (with respective weights in parentheses) known to be highly associated with poverty (Arcia 1999): 1. family size (10%), 2. access to potable water (50%), 3. access to latrines (30%), and 4. illiteracy rates (10%). Higher index scores were associated with more impoverished areas. Recognising that the index could not reliably distinguish between 2 comarcas with similar scores, rather than use the scores directly, the 59 rural comarcas were grouped into 4 priority levels after renormalising the highest index score to 100: a score > 85 was given highest priority (priority 1); 70–85, priority 2; 60–70, priority 3 and below 60, lowest priority. The 42 comarcas with the priority scores 1 and 2 were eligible for the pilot phase's first stage. Comarcas are administrative areas within municipalities that include 1–5 small communities averaging 100 HHs each. **Study aim or objective:** to determine the impact evaluation of a randomised community-based intervention, RPS, against a broad range of outcomes related to the programme's primary objectives, including 1. HH (food) expenditures, 2. child schooling and child labour, 3. preventive health care of children aged < 5 years, and 4. nutritional status of children. **Study period:** baseline: 2000; follow-up: 2001–2002 **Unit of allocation or exposure:** randomisation was at the comarca level. Intervention at HH level
Participants	**Baseline characteristics** Intervention or exposure: NR Control: NR Overall • *Age*: children 0–5 years and 7–13 years • *Place of residence*: rural Central Region of Nicaragua • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: within the 42 comarcas selected for the programme evaluation, 42% of the population was extremely poor before the programme, i.e. their total expenditures were less than the amount necessary to purchase a food basket providing minimum caloric requirements (World Bank 2003) and 80% extremely poor or poor. • *Social capital*: NR • *Nutritional status*: NR • *Morbidities*: NR • *Concomitant or previous care*: participatory development programme Microplanificación Participativa (Participatory Micro-planning), run by the national Fondo de Inversión Social de Emergencia (FISE), were chosen. The goal of that programme was to develop the capacity of municipal governments to select, implement and monitor social infrastructure projects such as school and health post construction, with an emphasis on local participation.

Maluccio 2005 *(Continued)*

Inclusion criteria: in the design phase of RPS, rural areas in all 17 departments of Nicaragua were eligible for the programme. The focus on rural areas reflects the distribution of poverty in Nicaragua of the 48% of Nicaraguans designated as poor in 1998, 75% resided in rural areas. For the pilot, the Government of Nicaragua selected the departments of Madriz and Matagalpa from the northern part of the Central Region, on the basis of poverty as well as on their capacity to implement the programme. Table 1 of the publication summarises the eligibility requirements and demand and supply-side benefits of RPS.

Exclusion criteria: HH not extremely poor satisfying 1 or both of the following: 1. own a vehicle, truck, pickup truck or jeep; 2. own > 20 manzanas (14.1 hectares) of land. Based on these criteria, 169 HHs (2.9% of HHs living in the intervention areas as reported in the May 2000 RPS census population) were excluded from the programme. In addition to these HHs, 219 (3.8%) HHs were excluded after the orientation assemblies and programme registration for ≥ 1 of the following reasons: 1. HH comprising a single man or woman who was not disabled, 2. HH with significant economic resources or a business, 3. HH that omitted or falsified information during the RPS population census. Finally, 240 (4.2%) HHs did not attend the orientation assembly or chose not to participate.

Pretreatment: there were few significant differences between HHs (or individuals) in intervention and control groups at baseline. Differences in baseline 2000 study: RPS mean effect on annual total HH: intervention: NIO 20,903 control; NIO 20,695 in control

Attrition per relevant group: 90% (1581) of the stratified random sample was interviewed in the first round (see Table 3 of publication). In a few comarcas, the coverage was 100%, but in 6, it was < 80%. For the follow-up surveys in October 2001 and October 2002, the target sample was limited to these 1581 first-round interviews. In 2002, just over 90% of these were re-interviewed, on a par with surveys of similar magnitude in other developing countries. Again, however, coverage in 6 of the comarcas was substantially worse, with < 80% successfully re-interviewed (and 1 was 1 of the 6 from above with high first-round non-response rate). This attrition was unlikely to have been random.

Description of subgroups measured and reported: Grades 1, 2, 3 and 4; extreme poor, poor and non-poor; children aged 0–3 years, 12–23 months; HHs with children aged 0–5 years; HHs with children aged 7–13 years;

Total number completed and analysed per relevant group: total completed interview: 1581 in 2000, 1490 in 2001 and 1434 in 2002. Total completed interview in all 3 rounds: 1396.

Total number enrolled per relevant group: total enrolled: 1764 in 2000, 1581 in 2001 and 1581 in 2002.

Total number randomised per relevant group: evaluation design was based on a randomised, community-based intervention with measurements before and after the intervention in both treatment and control communities. One-half of the 42 comarcas (targeted in the first stage) were randomly selected into the programme. Thus, there are 21 comarcas in the intervention group and 21 in the control group.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: CCT
- *Description*: modelled after PROGRESA, RPS is designed to address both current and future poverty via cash transfers targeted to HHs living in poverty in rural Nicaragua. The transfers were conditional, and HHs were monitored to ensure that children were, among other things, attending school and making visits to preventive healthcare providers. RPSs specific objectives included: supplementing HH income for up to 3 years to increase expenditures on food, reducing school desertion during the first 4 years of primary school, and increasing the health care and nutritional status of children aged < 5 years.
- *Duration of intervention period*: 2 years
- *Frequency*: every other month
- *Number of study contacts*: 3 (baseline, follow-up 2001 and follow-up 2002)

Maluccio 2005 *(Continued)*

- *Providers*: IADB loan financing the project and the Government of Nicaragua and RPS provided the service. IFPRI conducted the quantitative impact evaluation
- *Delivery*: to ensure adequate supply, RPS trained and paid private providers to deliver the specific healthcare services required by the programme. Cash transfer delivery method NR.
- *Co-interventions*: none reported
- *Resource requirements*: to ensure adequate supply, RPS trained and paid private providers to deliver the specific healthcare services required by the programme. These services provided free of charge to beneficiary HHs, included growth and development monitoring; vaccination; and provision of antiparasites, vitamins, and iron supplements. The monitoring was done using the MIS designed specifically for and by RPS. It comprises a continuously updated, relational database of beneficiaries, healthcare providers and schools. The MIS is also used to 1. select beneficiaries and prepare invitations to programme incorporation assemblies, 2. calculate transfer payments, 3. compile requests to the Ministry of Health for vaccines and other materials, and 4. monitor whether service providers were meeting their responsibilities. Decision rules capturing the requirements were programmed directly into the MIS. Substantial time was dedicated to designing data forms for the various programme participants that fed into this system (including the HH registry or census forms, school forms, and healthcare provider forms that were all sent to the main office where they were entered into the computer).
- *Economic indicators*: RPS comprised 2 phases over 5 years, starting in 2000. The pilot phase (also known as Phase I) lasted 3 years and had a budget of USD 11 million, representing approximately 0.2% of GDP or 2% of annual recurring government spending on health and education. The value of the supply-side services, as measured by how much RPS paid to the providers, was also substantial. On an annual basis, the education workshops cost approximately USD 50 per beneficiary and the health services for children aged < 5 years, approximately USD 110, including the value of the vaccines, antiparasites, vitamins and iron supplements, all of which were provided by the Ministry of Health. To enforce compliance with programme requirements, beneficiaries did not receive the food or education component of the transfer if they failed to carry out any of the conditions.

Control: no intervention

Outcomes	Proportion of HH expenditure on food: per capita food expenditure (annual); percentage of HH food expenditure; food expenditure for different food groups/items Anthropometry: underweight (WAZ < –2SD); stunted (HAZ < 2SD); wasted (WHZ < –2SD); HAZ
Identification	**Sponsorship source:** IFPRI **Country:** Nicaragua **Setting:** 42 rural comarcas areas in rural departments of Madriz and Matagalpa in the northern part of the Central Region in Nicaragua **Authors' names:** John A Maluccio and Rafael Flores **Email:** NR **Declarations of interest:** NR **Study or programme name and acronym:** Red de Protección Social (RPS) or 'Social Safety Net' **Type of record:** report
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Randomisation done through lottery process. Given the geography of the programme area, control and intervention comarcas were at times adjacent to one another. The selection was done at a public event with representatives from the comarcas, the Government of Nicaragua, IADB, IFPRI and the me-

Maluccio 2005 *(Continued)*

		dia present. The 42 comarcas were ordered by their marginality index scores and stratified into 7 groups of 6 each. Within each stratum, randomisation was achieved by blindly drawing 1 of 6 coloured balls (3 blue for intervention, 3 white for control) from a box after the name of each comarca was called out. Thus, 3 comarcas from each group were randomly selected for inclusion in the programme, while the other 3 were selected as controls. The survey sample is a stratified random-sample at the comarca level from all 42 comarcas. The areas represented comprise a relatively poor part of the rural Central Region in Nicaragua, but the sample is not statistically representative of the 6 municipalities (or other areas of Nicaragua, for that matter). 42 HHs were randomly selected in each comarca using a census carried out by RPS 3 months prior to the survey as the sample frame, yielding an initial target sample of 1764 HHs.
Allocation concealment (Selection bias)	Low risk	Allocation was at the comarca level at the beginning of the study. Randomisation process was done at a public event with representatives from the comarcas, the Government of Nicaragua, IADB, IFPRI, and the media present. No recruitment was done after randomisation.
Baseline characteristics similar (Selection bias)	Low risk	Baseline outcome data are presented. On the whole, there were few significant differences between HHs (or individuals) in intervention and control groups at baseline.
Baseline outcome measurements similar (Selection bias)	Low risk	Quote: "… double-difference estimates of the effects of the program presented later in this report all show differences at baseline for the entire range of outcomes analyzed. In no instance were any of those measures significantly different at baseline."
Blinding of participants and personnel (Performance bias)	Low risk	Although authors stated that, "Within each stratum, randomisation was achieved by blindly drawing one of six colored balls (three blue for intervention, three white for control) from a box after the name of each comarca was called out." Unclear who was blinded.
Blinding of outcome assessment (Detection bias)	High risk	No information on whether or not the assessments were done blindly but some outcomes were self-reported which could have been influenced by lack of blinding.
Protection against contamination (Performance bias)	Unclear risk	Although this study had a community cluster randomised design, the clusters in the intervention and control comarcas were at times adjacent to one another. A HH may be a beneficiary while its neighbour is a non-beneficiary, particularly in a few cases where boundaries such as roads divide 2 comarcas. Seeing the activity and the emphasis placed on the RPS objectives may lead non-beneficiaries to undertake behaviour they would not have otherwise.
Incomplete outcome data (Attrition bias)	Low risk	Quote: "We now document non-response in the 2000 baseline survey and attrition in the follow-up surveys. Overall, 90 percent (1,581) of the stratified random sample was interviewed in the first round (see Table 3)." The authors also state that, "Recall that the number of households is about evenly divided between intervention and control groups, suggesting that attrition was not significantly different between intervention and control groups. Combining this with the evidence from the robustness checks just described, we conclude that attrition bias is not driving the results presented here."
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol is available
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: unlikely. Incorrect analysis: unlikely. Seasonality bias: low. Authors statistically controlled for seasonality.

Marquis 2018

Study characteristics

Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** ITT analysis **Randomisation ratio:** 1:1 **Recruitment method:** 6 Upper Manya Krobo District subdistricts stratified by population size, 3 subdistricts randomly selected as study site, census of communities completed with GPS location of all HHs, 89 communities organised geographically into 16 clusters, within each cluster, communities randomly chosen to reach target number of eligible HHs per cluster, 39 communities selected as study area. Enrolment and intervention implementation carried out in 2 phases: Phase 1 (2014–2015): all women with infants who lived in selected communities and planned to remain community for duration of project invited to enrol. Phase 2 (2016–2017): age range expanded to target young children < 18 months to include planned sample size – both phases included additional eligibility criteria. All 277 eligible HHs in selected communities of 8 intervention clusters invited to enrol in Phase 1 (2014). At end of Phase 1, new 95 eligible HHs from same communities identified and invited to enrol in Phase 2 (2016). 2 intervention clusters had no new eligible HHs so 6 intervention clusters were active in Phase 2. 34 eligible HHs were not enrolled, 51 were enrolled, baseline data lost due to malfunction. Control cluster communities with no benefit not enrolled a second time and order of including control clusters randomly assigned. To mimic intervention enrolment, 5 control clusters were used in Phase 1 (135 eligible HHs) and 3 control clusters (114 eligible HHs) in Phase 2. Among control clusters, 36 HHs were not enrolled. **Sample size justification and outcome used:** sample size calculated with an α = 0.05, power = 0.80, effect size d = 0.35, and variance inflation factor = 1.79, resulting in 227 HHs/group. Assuming an LTFU of 10%, the sample size estimate was 250 per treatment group or a total of 500 mother–child pairs. Outcome not mentioned. **Sampling method:** random as communities within clusters were randomly chosen. **Study aim or objective:** to determine the effect of a 12-month intervention (inputs and training for poultry farming and home gardening, and nutrition and health education) on child diet and nutritional status. **Study period:** phase 1: 12 months; phase 2: 12 months **Unit of allocation or exposure:** clusters consisting of either 1 distinct community or multiple adjacent small communities.
Participants	**Baseline characteristics** Intervention or exposure • *Age*: child, mean, months: 10.52 (SD 5.17) • *Place of residence*: NR • *Sex*: female children, n (%): 143 (49.8) • *Ethnicity and language, n (%)*: mothers of Krobo ethnicity: 217 (76.4); mothers of other ethnicity: 67 (23.6) • *Occupation*: NR • *Education, n (%)*: no education 54 (24.5); primary education 100 (45.5); secondary education 66 (30.0) • *SES, n (%)*: low HH wealth 92 (33.0); middle HH wealth 95 (34.0); high HH wealth 92 (33.0); raised poultry in past 12 months 140 (48.8) • *Social capital*: NR • *Nutritional status*: mean: LAZ: –0.88 (SD 1.27); WAZ: –0.78 (SD 1.12); WLZ: –0.37 (SD 1.08); consumed eggs in previous 24 hours, n (%): 56 (25.3); minimal diverse diet, n (%): 67 (30.9); food secure, n (%): 123 (43.3); mild food insecurity, n (%): 79 (27.8); moderate food insecurity, n (%): 48 (16.9); severe food insecurity, n (%): 34 (12.0)

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- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: child mean, months: 10.43 (SD 5.07)
- *Place of residence*: NR
- *Sex*: child female, n (%): 97 (45.5)
- *Ethnicity and language, n (%)*: mothers of Krobo ethnicity: 161 (77.4); mothers of other ethnicity: 47 (22.6)
- *Occupation*: NR
- *Education, n (%)*: no education 40 (29.2); primary education 89 (42.8); secondary education 79 (38.0)
- *SES, n (%)*: low HH wealth 70 (33.8); middle HH wealth 67 (32.4); high HH wealth 70 (33.8); raised poultry in past 12 months 114 (53.5)
- *Social capital*: NR
- *Nutritional status*: mean: LAZ: −0.78 (SD 1.30); WAZ: −0.68 (SD 1.27); WLZ: −0.31 (SD 1.24); consumed eggs in previous 24 hours, n (%): 35 (21.5); minimal diverse diet, n (%): 54 (33.8); food secure, n (%): 95 (45.2); mild food insecurity, n (%): 54 (25.7); moderate food insecurity, n (%): 39 (18.6); severe food insecurity, n (%): 22 (10.5)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: in Phase 1 (2014–2015), all women with infants (aged 0–12 months) who lived in the selected communities and who planned to remain in the community for the duration of the project were invited to enrol in the trial. In Phase 2 (2016–2017), the age range was expanded to target young children aged < 18 months to include the planned sample size. For both phases, additional eligibility criteria for the intervention participants included the timely preparation of a chicken coop that met project specifications and a fenced home garden plot.

Exclusion criteria: NR

Pretreatment: rate for enrolment with baseline completion was lower among the intervention compared with the control clusters, partly due to a malfunction of the electronic data collection system (77.2% intervention vs 83.5% control; P < 0.01). There were no enrolment phase differences in baseline values for the infant anthropometric indices (data not shown). There were no baseline treatment group differences in child, maternal or HH characteristics

Attrition per relevant group: total 14.4%. Total LTFU cases were due to refusal (2), participant moved outside study area (49), and maternal or child death (5). The remaining cases could not be found (16). There was no difference in attrition rate by treatment group (13.9% intervention vs 15.0% control; P = 0.73).

Description of subgroups measured and reported: logistic regression models: primary or secondary/above education vs none, married vs not married, middle or high wealth vs low, male vs female, krobo ethnicity vs non-krobo, mild or moderate or severe food insecurity vs secure.

Total number completed and analysed per relevant group: intervention: 247 analysed for endline outcomes; control: 181 analysed for endline outcomes

Total number enrolled per relevant group: intervention: 287 mother–infant pairs (194 in phase 1, 93 in phase 2); control: 213 mother–infant pairs (122 phase 1, 91 phase 2)

Total number randomised per relevant group: intervention: 372 mother–infant pairs (277 phase 1, 95 phase 2); control: 249 mother–infant pairs (135 phase 1, 114 phase 2)

Interventions	**Intervention characteristics** Intervention or exposure

Marquis 2018 *(Continued)*

- *Food access intervention category*: improve buying power
- *Intervention type*: income generation
- *Description*: 12-month intervention was an integrated package of agricultural inputs and training as well as education in nutrition, health care and child stimulation for participants. Beekeeping was introduced for interested HHs only in Phase 1 for honey harvesting after end of trial. The intervention had 4 main components. 1. Poultry for egg production. Participants received 4 days of intensive training from livestock extension and veterinary officers on a wide variety of topics to build their knowledge and skills in poultry farming. These included 2 days on coop construction using local materials and 2 days on feeding and caring of poultry. During Phase 1, each participant received 40 Swiss Brown chickens at point of lay. The Heifer's POG funds supported the purchase of 30 chickens for each Phase 2 participant. To compensate for the lower number of chickens provided so that women in Phase 2 would have similar income to Phase 1, the POG repayment requirement was reduced by 50%. To assist women with their poultry-based small business, the project facilitated egg sales for women who could not access markets. 2. Home gardens. Project agricultural staff trained participants at the University of Ghana's Nutrition Research and Training Centre and in the communities on vegetable gardening, providing information on site selection, fencing, seedbed preparation, compost preparation and use, and organic weed, insect, and pest control. 3. Group education. Weekly group education sessions were carried out using a curriculum of 12 lessons that was repeated during the year. The lessons emphasised young child diet and health, with special emphasis on diet diversity and consumption of eggs, green leafy vegetables and orange-fleshed sweet potatoes. 4. Community-wide education. The intervention communities received training that was accessible to all residents. The training included a. food demonstration sessions that emphasised the consumption of vegetables promoted for home gardens and eggs, b. mother-to-mother support groups that encouraged optimal child-feeding practices, c. enhanced community-based growth monitoring and promotion, and d. community-wide discussions on gender and diversity. Training in the community was provided by the project as well as through collaborations with district government staff.
- *Duration of intervention period*: 12 months
- *Frequency*: component. 1. 4 days of intensive training on poultry farming and weekly technical assistance on poultry production and management. 2. Home gardens: training at the University of Ghana and weekly technical assistance during 12 month period. 3. Group education. Weekly group education through the year. 4. Community-wide education: frequency of training NR
- *Number of study contacts*: 2 contacts per phase: baseline and endline (12 months)
- *Providers*: Heifer's POG community development programme, project staff, district agricultural extension officers, district government staff, University of Ghana's Nutrition Research and Training Centre
- *Delivery*: see description above
- *Co-interventions*: NR
- *Resource requirements*: 1. 40 Swiss brown chickens in Phase 1 and 30 chickens in Phase 2 for each participant, Initial chicken feed for 1 month and vaccinations were provided to all participants at no cost. Weekly technical assistance on poultry production and poultry health management was available in the community throughout the year, provided by the project staff, sometimes accompanied by district agricultural extension officers. 2. Home gardens: participants received planting materials (e.g. 1 sachet of seeds and 5–10 kg of vines) for nutrient-rich vegetables such as kontomire (Cocoyam leaves, Colocasia esculenta), tomatoes and orange-fleshed sweet potato. 3. Weekly group education sessions were carried out using a curriculum of 12 lessons that was repeated during the year. 4. Community-wide education provided by the project as well as through collaborations with district government staff.
- *Economic indicators*: NR

Control: no intervention

Outcomes	Dietary diversity: MDD Anthropometry: HAZ; WAZ; WHZ
Identification	**Sponsorship source:** McGill University, Heifer International, World Vision Canada, Global Affairs Canada, Grant/Award Number: S065653 **Country:** Ghana

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Setting: rural: Upper Manya Krobo District of the Eastern Region of Ghana. 86 communities in 3 selected subdistricts + 3 additional.

Comments: trial was registered at Clinicaltrials.gov (NCT01985243).

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Declarations of interest: no conflicts of interest.

Study or programme name and acronym: Nutrition Links (NL)

Type of record: journal article (supplement)

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Quote: "The 16 clusters were randomly assigned to treatment group (sequential, using random numbers)."
Allocation concealment (Selection bias)	Low risk	The 16 clusters were randomly assigned to treatment group (sequential, using random numbers).
Baseline characteristics similar (Selection bias)	Low risk	Quote: "There were no baseline treatment group differences in child, maternal, or household characteristics."
Baseline outcome measurements similar (Selection bias)	Low risk	There were no enrolment phase differences in baseline values for the infant anthropometric indices (data not shown). Baseline dietary outcome values (egg consumed and minimum diet diversity) were not compared, as phase was associated with child age and diet changed with age.
Blinding of participants and personnel (Performance bias)	Low risk	Given the nature of the intervention, it was not possible to mask the treatment assignment; therefore, the project maintained separate field staff for the implementation of the intervention and survey data collection. The clusters were geographically distant enough to avoid direct contamination, i.e. no control community participants received inputs or took part in educational activities planned for intervention participants.
Blinding of outcome assessment (Detection bias)	Low risk	Given the nature of the intervention, it was not possible to mask the treatment assignment; therefore, the project maintained separate field staff for the implementation of the intervention and survey data collection.
Protection against contamination (Performance bias)	Low risk	16 clusters were randomly assigned to treatment group. The clusters were geographically distant enough to avoid direct contamination, i.e. no control community participants received inputs or took part in educational activities planned for intervention participant.
Incomplete outcome data (Attrition bias)	Low risk	Quote: "There were no significant differences in child, maternal, or household characteristics (see list of variables in Table 1) between those participants who were lost to follow-up and those who completed the study (data not shown). There was no difference in attrition rate by treatment group (13.9% intervention vs. 15.0% control; P = 0.73)."
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available. All relevant outcomes in the methods section were reported in the results section.

Marquis 2018 *(Continued)*

Other bias	Unclear risk	Quote: "There may have been some selection bias due to enrolment procedures. enrolment, all eligible women were informed of the project requirements including preparation of a chicken coop and a garden plot. Not all participants completed the requirement in time; those who did not received no project inputs. This additional requirement may have led to a group bias in willingness to participate. However, we did not detect any baseline differences by treatment group, and the sensitivity analysis results were consistent with the ITT analysis, suggesting that selection bias was not large enough to affect the results."

Merttens 2013

Study characteristics

Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** (quote) "Column 8 shows the number of observations at follow-up (FU1) which is 2,867 (the sample of households comprising the treatment plus control panel) minus any missing values." Therefore, where there were missing data, the sample size for that outcome was reduced accordingly. Probability of retention was estimated using regression, and weighting of HHs was adjusted by inverse retention probability to adequately represent attrition HHs. **Randomisation ratio:** 1:1 **Recruitment method:** evaluation covered the 4 former districts of Mandera, Marsabit, Turkana and Wajir, in 12 randomly selected sublocations in each district. The sublocations that were covered by the evaluation were referred to as the evaluation sublocations. The HSNP applied a staggered roll-out, with sublocations being brought into the Programme on a month-by-month basis. **Sample size justification and outcome used:** calculated based on the expected sampling error for point estimates, differences and DID for key indicators. These key indicators were not explicitly reported. A sample attrition buffer of 10% was factored in to compensate for the high risk of sample attrition. **Sampling method:** intervention and control HHs were sampled from HSNP administrative records. From these, 66 HHs were sampled from each sublocation using simple random sampling. In the event of non-response, a replacement HH which had not yet been drawn was randomly selected from the administrative record. The sequence in which the sampled evaluation sublocations were targeted and surveyed was determined randomly. The evaluation sublocations were selected from a sample frame of all secure sublocations in each district. The evaluation sublocations were sorted within new districts by population density and paired up, with 1 of the pair being control and 1 being treatment. The reason sublocations were sorted (within each new district) by population density before pairing them up was to ensure that similar sublocations were matched to reduce as far as possible significant variations between the characteristics of the control and treatment groups. For both the treatment and control sublocations there were an equal number of CBT, SP and DR sublocations. **Study aim or objective:** to evaluate the HSNP programme's impact on consumption expenditure and poverty reduction, food security, and increased asset retention and accumulation. Secondary impacts namely uptake of health and education services, stabilised food prices, supplies of key commodities, diversity of livelihood activities, financial savings, vulnerability to shocks, empowerment of women, and well-being of the young and elderly people were also assessed. **Study period:** August 2009 to November 2012 **Unit of allocation or exposure:** sublocations (geographical areas within counties)
Participants	**Baseline characteristics** Intervention or exposure

Merttens 2013 *(Continued)*

- *Age*: HHs containing ≥ 1 child aged < 18 years, %: 91.9; HHs containing ≥ 1 orphan child, %: 21.6; HHs containing ≥ 1 chronically ill member, %: 11.7; HHs containing ≥ 1 disabled member, %: 8.4%
- *Place of residence*: HHs in communities with, %: a primary school: 52.5; a health facility: 29.8
- *Sex*: HHs that are female-headed, %: 34.0
- *Ethnicity and language*: NR
- *Occupation*: adults in productive work, %: main activity 53.8; main or secondary activity; 58.5; children aged 5–17 years whose main activity was paid or unpaid work, %: 22.4
- *Education*: children currently attending school, %: all children aged 6–17 years: 63.2; female children aged 6–17 years: 57.5; male children aged 6–17 years: 68.3; all children aged 6–12 years: 63.9; all children aged 13–17 years: 62.0; children whose main activity was education, %: 69.1
- *SES*: proportion of HHs below absolute poverty line, %: 88.0; mean HH consumption expenditure: KES 1941; mean HH food consumption expenditure: KES 1446; proportion of HHs, %: food insecure in worst recent food shortage 61.8; receiving food aid 70.5; receiving school feeding 57.2; receiving supplementary feeding 16.5; owning agricultural land 9.5; owning livestock 61.5; mean number of children aged < 18 years per HH: 3.4; mean HH size: 6.0
- *Social capital*: NR
- *Nutritional status*: mean HH DDS: 6.7; children aged < 5 years with, %: moderate stunting 26.7; severe stunting 11.6; moderate wasting 25.3; severe wasting 6.8; moderate underweight 30.7; severe underweight 9.8; proportion of HHs which in the last 30 days, %: had a reduced number of meals 77.5; had smaller meals 74.5; skipped eating for entire days 57.7.
- *Morbidities*: children aged 0–17 years who were ill or injured in previous 3 months, %: 20.0; adults aged ≥ 55 years who were ill or injured in previous 3 months, %: 36.6
- *Concomitant or previous care*: HHs that received informal in-kind transfers in previous 3 months, %: 41.3; HHs that received informal cash transfers in previous 3 months, %: 45.6

Control

- *Age*: HHs containing ≥ 1 child aged < 18 years, %: 91.5; HHs containing ≥ 1 orphan child, %: 22.7; HHs containing ≥ 1 chronically ill member, %: 15.4; HHs containing ≥ 1 disabled member, %: 9.0
- *Place of residence*: proportion of HHs (%) in communities with: a primary school 52.0; a health facility 24.2
- *Sex*: proportion female-headed HHs, %: 30.9
- *Ethnicity and language*: NR
- *Occupation*: proportion adults in productive work, %: main activity 58.5; main or secondary activity 63.5; children aged 5–17 years whose main activity was paid or unpaid work, %: 29.2
- *Education*: children currently attending school, %: all children aged 6–17 years: 42.6; female children aged 6–17 years: 37.5; male children aged 6–17 years: 47.1; all children aged 6–12 years: 42.0; all children aged 13–17 years: 43.4; children whose main activity was education, %: 58.3
- *SES*: proportion of HHs below absolute poverty line, %: 93.2; mean HH consumption expenditure: KES 1753; mean HH food consumption expenditure: KES 1385; proportion of HHs, %: food insecure in worst recent food shortage 74.8; receiving food aid 88.7; receiving school feeding 53.7; receiving supplementary feeding 10.6; owning agricultural land 7.1; owning any livestock 85.1; mean number of children aged < 18 years per HH: 3.0; mean HH size: 5.5
- *Social capital*: NR
- *Nutritional status*: mean HH DDS: 6.1; children aged < 5 years with, %: moderate stunting 35.6; severe stunting 15.2; moderate wasting 24.2; severe wasting 8.0; moderate underweight 33.7; severe underweight 10.9; proportion of HHs which in the last 30 days, %: had a reduced number of meals 89.0; had smaller meals 87.8; skipped eating for entire days 72.7
- *Morbidities*: children aged 0–17 years who were ill or injured in previous 3 months, %: 20.1; adults aged ≥ 55 years who were ill or injured in previous 3 months, %: 36.6
- *Concomitant or previous care*: HHs that received informal in-kind transfers in previous 3 months, %: 42.4; HHs that received informal cash transfers in previous 3 months, %: 39.1.

Overall: NR

Inclusion criteria: selected for the HSNP programme (whether currently receiving or on the waiting list), which included: community identification as a HH in need of cash transfer, or HHs with proportion

Merttens 2013 *(Continued)*

of its members aged < 18 and > 55 years exceeding a prespecified dependency ratio, or individuals aged ≥ 55 years.

Exclusion criteria: ineligible for the HSNP programme.

Pretreatment: lower proportion of intervention HHs were food insecure in the worst recent food shortage when compared to control HHs. Higher proportions of intervention HHs were receiving food aid when compared to control HHs, and a lower proportion of intervention HHs had children aged < 5 years with moderate stunting. A lower proportion of intervention HHs reported having skipped eating for entire days in the past 30 days. School attendance for all ages and both sexes was higher in intervention HHs. Significantly more control HHs owned livestock when compared to intervention HHs.

Attrition per relevant group: follow-up (November 2011): 9% (137/1571) for intervention and 7% (103/1536) for control HHs. From baseline at second follow-up (November 2012): 22% (347/1571) for intervention and 21% (324/1536) for control HHs.

Description of subgroups measured and reported: NR.

Total number completed and analysed per relevant group: for the final impact analysis there were 20 treatment and 20 comparison (control) sublocations, with 1224 intervention HHs and 1212 control group HHs.

Total number enrolled per relevant group: total of 1571 intervention and 1536 control HHs at baseline.

Total number randomised per relevant group: just over 5000 HHs were randomly selected at baseline (prior to programme roll-out) for interview on an annual basis in 48 evaluation sublocations (24 treatment and 24 control), also selected at random.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT transfer
- *Description*: unconditional transfer of KES 2150 (at commencement) which increased to KES 3500 by the end of the intervention period. The value of the transfer was determined as 75% of the WFP food aid ration in 2006 (when the value was determined). Some HHs had multiple nominated beneficiaries; the effective value of the transfer per HH member was smaller for larger HHs.
- *Duration of intervention period*: 2 years (November 2010 to November 2012)
- *Frequency*: every 2 months
- *Number of study contacts*: impact evaluation data collected over 3 rounds comprising a baseline round (August 2009 to November 2010), follow-up 1 round (November 2010 to November 2011), and follow-up 2 round (February 2012 to November 2012).
- *Providers*: operated under the Ministry of State for the Development of Northern Kenya and Other Arid Lands and was delivered by several contracted service providers.
- *Delivery*: cash was loaded onto a biometric smart card that could be used to collect the cash transfer from a range of pay points (usually small shops).
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: for two-thirds of beneficiary HHs the transfer had a per capita value of KES 350–700.

Control

- *Food access intervention category*: delayed-intervention (waiting list) control (non-active control at the time of data collection)
- *Intervention type*: N/A
- *Description*: control HHs only began to receive cash upon completion of the final round of data collection (follow-up 2 survey), i.e. 2 years after the baseline survey.
- *Duration of intervention period*: N/A

Merttens 2013 *(Continued)*

- *Frequency*: N/A
- *Number of study contacts*: baseline data collection (November 2010) and 2 follow-up interviews (November 2011 and 2012)
- *Providers*: N/A
- *Delivery*: N/A
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: NR

Outcomes	Proportion of HH expenditure on food: proportion of consumption expenditure spent on food; monthly food consumption expenditure per AE Food security: proportion of HHs food insecure in worst recent food shortage period Dietary diversity: HDDS (0–12) Anthropometry: moderate and severe wasting; moderate and severe stunting; moderate and severe underweight Morbidity: proportion of people ill/injured in previous 3 months
Identification	**Sponsorship source:** DfID. **Country:** Kenya **Setting:** impoverished rural HHs **Author's name:** Fred Merttens **Email:** fred.merttens@opml.co.uk; admin@opml.co.uk **Declarations of interest:** NR **Study or programme name and acronym:** Hunger Safety Net Programme (HSNP) **Type of record:** impact evaluation report
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Quote: "Forty-eight programme sub-locations were then randomly selected from the pool of all programme sub-locations and then from those each pair were randomly assigned between treatment and control at a public lottery event (bahati na sibu) facilitated by the HSNP Secretariat and attended by officials from the district and the two sub-locations in question."
Allocation concealment (Selection bias)	Low risk	The unit of allocation was 'sublocations', stratified by district. Allocation was performed on all units at the start of the study.
Baseline characteristics similar (Selection bias)	High risk	Important differences between the number of children going to school (intervention group: 63.2%; control group: 42.6%), and the number of HHs owning any livestock (intervention group: 61.5%; control group: 85.1%) were present and not adjusted for in analyses.
Baseline outcome measurements similar (Selection bias)	High risk	Some outcomes were not equivalent at baseline: intervention HHs were significantly more food secure in the worst recent food shortage and significantly more received food aid (both P = 0.05). Intervention HHs also had significantly fewer moderately stunted children aged < 5 years (P = 0.05) and significantly

Merttens 2013 *(Continued)*

		less reported skipping eating for entire days (P = 0.10). Proportion of children attending school (for all ages and both sexes) was significantly higher for intervention HHs (P = 0.05). The HHs for which the baseline characteristics were reported differed from the HHs that were analysed in the year 2 analysis, so it is unclear whether outcome measurements of those analysed have been similar.
Blinding of participants and personnel (Performance bias)	Low risk	Participants were not blinded, but this was unlikely to have influenced participant behaviour.
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether the data collectors were blinded towards the group allocations, which may or may not have influenced the measurement of outcomes across groups. Self-reported outcomes may have been prone to reporting bias.
Protection against contamination (Performance bias)	Low risk	Given the geographical separation between intervention and control sublocations, the risk of contamination was low. Participants were also selected from a list that identified current recipients and waiting list recipients. According to the report itinerant/mobile people were more likely to attrite from the sample, and, therefore, unlikely to contaminate conditions due to their migration.
Incomplete outcome data (Attrition bias)	High risk	Quote: "The reduction in the number of sublocations surveyed at follow-up 2 was the result of decisions made by the programme and its stakeholders, rather than a technical decision by the evaluation team. This reduction in sample size is unfortunate for a number of reasons …" Comment: in the intervention group, 1224/1571 (77.9%) and in the control group 1212/1536 (78.9%) HHs were analysed. Although the percentage attrition per group was similar, the total attrition was > 20%.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol or trial registration reported. All expected outcomes were prespecified in methods section and addressed in results section.
Other bias	Unclear risk	Misclassification bias: high risk. Loss of 8 clusters (sublocations) – a programme and stakeholder decision. Measurement bias: incorrect analysis: unclear. It is unclear whether these findings were comparable to individually randomised trials. Low risk of bias due to clustering, as adjustment for clustering was performed. Seasonality bias: high risk. The 8 sublocations that were dropped were scheduled to be surveyed in the end and beginning of the calendar year. Recruitment bias: unclear. Could not be ruled out as it is not explicitly stated whether randomisation, in the form of a public lottery, preceded recruitment.

Miller 2011

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** Only participants for which there were data for all 3 data collection rounds, were analysed **Randomisation ratio:** 1:1 **Recruitment method:** research team attempted to interview all HH heads in the sampling frame by setting up appointments, meeting respondents at their homes or fields, and returning to HHs ≥ 3 times.

Miller 2011 *(Continued)*

Sample size justification and outcome used: sample size for this study was determined considering the wide range of expected impacts at the child and HH level. Used the software package R (Version 2.11.1) to perform posthoc power calculations and confirm there was sufficient power to detect statistically significant results at or exceeding the standard 0.80 level for each analysis.

Sampling method: 8 village groups were randomly assigned to the intervention or control group. The sampling frame consisted of all cash transfer targeted HHs in these village groups (about 100 villages per village group).

Study aim or objective: to examine the impact of the SCTS on food security and diversity at the HH level.

Study period: March 2007 to April 2008

Unit of allocation or exposure: village groups

Participants

Baseline characteristics

Intervention or exposure

- *Age*: HH head, years: 61
- *Place of residence*: NR
- *Sex*: female-headed HH, %: 63
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: received by HH head, %: no schooling: 44; some primary schooling: 45; some secondary schooling: 1
- *SES*: HH size, n: 4.7; HHs with ≥ 1 chronically ill member, %: 42; HHs with ≥ 1 disabled member, %: 30; HHs with ≥ 1 orphans, %: 74; elderly-only HHs, %: 12; had a death in the HH in past 5 years, %: 35. Type of housing, %: grass 4; mud 71; mud or burnt brick 26; no toilet, %: 65; pit latrine with no ventilation, %: 35
- *Social capital*: free food maize distribution, %: 1; food for work programme or inputs for work: 0; supplementary inputs for malnourished children: 1; agricultural inputs or other: 1
- *Nutritional status*: FDS: 5; expenditure on food: MWK 129 per week, MWK 24 per capita per week; total expenditure on food, %: 56; number of meals the day before: 1.46
- *Morbidities*: members with HIV, %: 2; members with disability, %: 21; chronically ill adults, %: 35
- *Concomitant or previous care*: NR

Control

- *Age*: HH head, years: 63
- *Place of residence*: NR
- *Sex*: female headed HHs, %: 66
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: HH head, %: no schooling: 65; some primary schooling: 35; some secondary schooling: 0
- *SES*: HH size, n: 3.5; HHs with ≥ 1 chronically ill member, %: 35; HHs with ≥ 1 disabled member, %: 28; HHs with ≥ 1 orphans, %: 68; elderly-only HHs, %: 22; had a death in the HH in the past 5 years, %: 26. Type of housing, %: grass 2; mud 41; mud or burnt brick 56; no toilet, %: 64; pit latrine with no ventilation, %: 35
- *Social capital*: free food maize distribution, %: 1; food for work programme or inputs for work: 0; supplementary inputs for malnourished children: 1; agricultural inputs or other: 1
- *Nutritional status*: FDS: 5; expenditure on food: MKW 122 per week, MKW 18 per capita per week; total expenditure on food, %: 52; number of meals the day before: 1.49
- *Morbidities*: members with HIV, %: 3; members with disability, %: 22; chronically ill adults, %: 31
- *Concomitant or previous care*: NR

Overall: NR

Miller 2011 *(Continued)*

	Inclusion criteria: ultra poor HHs in selected villages in the Mchinji district (within the lowest economic quintile, having no assets, or consuming only 1 meal and labour constrained) (dependency ratio > 3, or undefined) **Exclusion criteria:** child-headed HHs **Pretreatment:** intervention group had a greater number of HHs with orphans, whereas the control group had a greater number of elderly headed HHs. According to the study authors these differences were due to differences observed during the targeting process. A greater number of HH heads had no schooling in the intervention group, compared to the control group. HH size was higher in the control group. **Attrition per relevant group:** intervention group: 42/408 (10.3%); control group: 25/411 (6%); most common reason for LTFU was death (7 deaths in intervention group and 16 deaths in control group). **Description of subgroups measured and reported:** NR **Total number completed and analysed per relevant group:** number of HHs: intervention group: 366; control group: 386 **Total number enrolled per relevant group:** number of HHs: intervention group: 385; control group: 411. 17 intervention HHs were found not to be eligible during recruitment. **Total number randomised per relevant group:** number of village groups: intervention group: 4; control group: 4
Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: UCTs • *Description*: HHs received a cash payment (on average MKW 2000 (USD 14) per month), depending on HH size and the number of school-aged children. Top-up payments included payments of MKW 200 for children at primary school and MKW 400 for those at secondary school. • *Duration of intervention period*: 12 months • *Frequency*: monthly • *Number of study contacts*: 3 (baseline, 6 and 12 months after first cash payment) • *Providers*: government of Malawi • *Delivery*: NR • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: total programme expenditure in Mchinji district (USD 121,000 per month) by February 2009 Control: no intervention for duration of the study; however, after the study (May 2008), the control group also received the intervention. • Co-*interventions*: single food bucket valued at USD 8.80 containing oil, sugar, tea, salt, soap and beans before the midline follow-up.
Outcomes	Proportion of HH expenditure on food; proportion of total weekly expenditure on food; weekly HH food expenditure; per capita total weekly expenditures Food security: proportion of HHs reporting not consuming enough food per day/eating ≥ 2 meals per day/reporting hunger after meals/reporting insufficient food for > 8 days/month Dietary diversity: food diversity composite score based on number of food groups consumed in the past week.
Identification	**Sponsorship source:** USAID and UNICEF

Miller 2011 *(Continued)*

Country: Malawi

Setting: HHs that were ultra-poor and labour constrained; Mchinji district

Author's name: Candace M Miller

Email: candace@bu.edu

Declarations of interest: yes; none reported.

Study or programme name and acronym: Malawi Social Cash Transfer Scheme (SCTS)

Type of record: journal article, policy research working paper

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Method to generate random sequence NR.
Allocation concealment (Selection bias)	Unclear risk	Allocation concealment NR.
Baseline characteristics similar (Selection bias)	Low risk	Some baseline characteristics differed between the groups: intervention group had fewer HH heads with no schooling (P < 0.0001), larger HH size (P < 0.0001), fewer elderly-only HHs (P < 0.001). The study authors used the DID method to account for these differences in their analysis.
Baseline outcome measurements similar (Selection bias)	Low risk	Quote: "… the outcome variables of interest were statistically similar between study households at baseline, so that these groups generally experienced the same level of food insecurity" at baseline.
Blinding of participants and personnel (Performance bias)	Low risk	Participants were not blinded, but this was unlikely to have influenced the participant behaviour.
Blinding of outcome assessment (Detection bias)	High risk	Unclear whether the data collectors were blinded towards the group allocations. Outcomes were self-reported, which could have been influenced by lack of blinding.
Protection against contamination (Performance bias)	Low risk	HHs were monitored by the district to prevent contamination.
Incomplete outcome data (Attrition bias)	Low risk	No clusters were lost. In terms of HHs: 42/408 (10.3%) from the intervention group and 25/411 (6.1%) from the control group were not part of the final analysis.
Selective outcome reporting (Reporting bias)	Unclear risk	Protocol citation or trial registration number NR. All expected outcomes were reported on in the methods section, and reported on in the results section.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: low risk. Repeated 7-day dietary recall administered by trained research assistants: (quote) "We trained the team of research assistants (RAs) over 1 week prior to each round of data collection." "Study supervisors checked surveys on a daily basis for consistency and completeness." Incorrect analysis: low risk. Quote: "These villages are homogeneous however; and as was expected, simple OLS regression and re-

Miller 2011 *(Continued)*

	gression models that account for village level clustering yielded nearly identical effect sizes and standard errors". Seasonality bias: low risk. Recruitment bias: low risk. The study authors stated that baseline differences between the 1 groups most likely resulted from differences in the prioritisation of either elderly-only HHs or HHs with orphans in the intervention group during targeting process. However, analyses adjusted for these differences.

Murshed E Jahan 2011

Study characteristics

Methods	**Study design:** PCS **How were missing data handled?** No missing data reported by study authors. **Randomisation ratio:** N/A **Recruitment method:** NR **Sample size justification and outcome used:** NR **Sampling method:** stratified random sampling. Respondents were selected in such a way that farmers of different wealth ranks were included by means of a participatory wealth ranking exercise undertaken in the study sites. The participants identified land holding as the proxy measure of wealth for ranking the HHs. All HHs were ranked based on their access to different natural resources. **Study aim or objective:** to assess the farm productivity, profitability, efficiency and HH nutrition of participants in integrated aquaculture-agriculture training (with and without a small financial grant) and of a group of control farmers. **Study period:** 3 years; 2002/2003 to 2005/2006 **Unit of allocation or exposure:** individuals (farmers)
Participants	**Baseline characteristics** Intervention or exposure group: • *Age*: NR • *Place of residence*: districts in Bangladesh • *Sex*: NR • *Ethnicity and language*: NR • *Occupation, %*: farmers: 100 • *Education*: NR • *SES*: n (%) of farmers, according to farm area: poor (0.20 ha): 73 (28.1); marginal (0.20–0.60 ha): 81 (31.2); medium (0.61–1.21 ha): 64 (24.6); rich (> 1.21 ha): 42 (16.2) • *Social capital*: access to local government institutions such as the Department of Fisheries (DOF), the Department of Agriculture Extension (DAE), or the Department of Livestock (DOL), which enables farmers to seek technical support: 10% of project farmers. Enabled the project farmers to take leading roles in community organisations such as fish farmer groups, mosque committees and school committees: 7% • *Nutritional status*: NR • *Morbidities*: NR • *Concomitant or previous care*: NR Control group: • *Age*: NR

Murshed E Jahan 2011 *(Continued)*

- *Place of residence*: districts in Bangladesh
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation, %*: farmers: 100
- *Education*: NR
- *SES*: n (%) of farmers according to farm area: poor (0.20 ha): 31 (24.6); marginal (0.20–0.60 ha): 41 (32.5); medium (0.61–1.21 ha): 32 (25.4); rich (> 1.21 ha): 22 (17.5)
- *Social capital*: access to local government institutions such as the Department of Fisheries (DOF), the Department of Agriculture Extension (DAE), or the Department of Livestock (DOL), which enables farmers to seek technical support: 10% farmers. Enabled the project farmers to take leading roles in community organisations such as fish farmer groups, mosque committees and school committees: NR (4% in 2005/2006)
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: farmers from 4 districts (Mymensingh, Comilla, Magura and Bogra). No other criteria reported.

Exclusion criteria: farmers who had previously received training in aquaculture production or integrated aquaculture-agriculture and those who did not agree to participate were excluded from the pool.

Pretreatment: baseline characteristics were not assessed for the control group; table 2 presented characteristics of both groups assessed in 2006, which showed no differences between them. At baseline the table showed that there was no significant difference between different groups of farmers included in the study at the time of selection in terms of farm area, i.e. number of hectares owned (land holding was proxy measure for wealth).

Attrition per relevant group: attrition NR.

Description of subgroups measured and reported: none

Total number completed and analysed per relevant group: intervention (project farmers) 260 (grant farmer: 127; non-grant farmers: 133); control farmers 126

Total number enrolled per relevant group: intervention (project farmers) 260 (grant farmer: 127; non-grant farmers: 133); control farmers = 126

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention or exposure group: integrated agriculture-aquaculture intervention

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation
- *Description*: integrated agriculture-aquaculture intervention with and without a small financial grant. Farmers were provided with 3 years of continuous training and extension support to enable them to become efficient in utilising inputs such as labour, organic fertiliser and capital. The project tested the adoption of integrated aquaculture-agriculture under 2 different models: 1 with the provision of a small financial grant (which was provided for purchasing inputs especially fish seed but also other inputs), and 1 without. The project aimed at improving resource-use efficiency to increase farm-level productivity in a sustainable manner through diffusion of low-cost integrated aquaculture-agriculture approaches suitable for poor farmers with limited resources. Long-term training and close extension support were provided to the project farmers. These farmers received 3 training sessions during the first year, 2 during the second year, and 1 follow-up training in the final year. Formal training was complemented by regular informal training sessions, such as group meetings at the pond/plot site using the Participatory Adaptive Learning approach (PAL), and annual participatory evaluation sessions.

Murshed E Jahan 2011 *(Continued)*

	Under the PAL approach community members and field staff learn together while going through the process. • *Duration of intervention period*: 3 years; 2002/2003 to 2005/2006 • *Frequency*: 3 training sessions during the first year, 2 during the second year, and 1 follow-up training in the final year. The grant seemed to have been provided one-off but this was unclear. • *Number of study contacts*: "Research assistants visited each family on a bi-monthly basis to collect the information, help complete the form where necessary and answer technical questions. • *Providers*: NGO Project staff; 48 partner NGOs participated in the programme and disseminated low-cost aquaculture technologies. • *Delivery*: Farmers received technical and extension support from 2003/2004 to 2005/2006. They were trained in filling in the record book provided to them to monitor all on-farm production activities over the duration of study. Research assistants visited each family on a bi-monthly basis to collect the information, help complete the form where necessary and answer technical question. Respondents kept daily records of consumption in a consumption diary from 2003/2004 onwards. • *Co-interventions*: NR • *Resource requirements*: NR • *Economic indicators*: NR Control group: no intervention
Outcomes	Total and per capita HH food consumption – total/for individual foods
Identification	**Sponsorship source:** USAID; World Fish Center **Country:** Bangladesh **Setting:** small-scale farms in 4 Bangladesh districts **Author's name:** Khondker Murshed-E-Jahan **Email:** k.jahan@cgiar.org; d.pemsl@cgiar.org **Declarations of interest:** NR **Study or programme name and acronym:** Development of Sustainable Aquaculture Project (DSAP) **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA; no randomisation done.
Allocation concealment (Selection bias)	High risk	CBA; no allocation concealment done.
Baseline characteristics similar (Selection bias)	Unclear risk	Study authors reported similar farm areas and access to social capital for both groups at baseline; however, other baseline characteristics were NR.
Baseline outcome measurements similar (Selection bias)	Unclear risk	No baseline measurements reported.

Murshed E Jahan 2011 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	No blinding but this was unlikely to have influenced participant or personnel behaviour.
Blinding of outcome assessment (Detection bias)	High risk	There was no blinding. Measures were based on self-report, and lack of blinding could have influenced reporting.
Protection against contamination (Performance bias)	Unclear risk	Control farmers were selected from the same districts as project farmers but it was not clear what their distance was from project farmers and whether any of these started any integrated aquaculture-agriculture projects by themselves.
Incomplete outcome data (Attrition bias)	Low risk	All farmers completed the study; there were no missing data.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available.
Other bias	Unclear risk	Misclassification bias: unlikely. NGO assigned farmers to intervention. Measurement bias: low risk. HHs completed daily food consumption diary. Seasonality bias: low risk.

Olney 2016

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** analytic sample was restricted to HHs or mothers with complete data at baseline and endline for a given indicator. To address possible attrition bias, attrition weights were calculated and applied to the sample descriptive statistics and impact estimates." **Randomisation ratio:** approximately 1:1 (initially 25:15:15 for control, intervention led by OWLs, and intervention led by HC members; intervention data were combined as no differences were observed for OWL-led and HC-led with regards to outcomes, and to increase statistical power) **Recruitment method:** HHs were invited to participate. Trained field workers explained the study to eligible HHs, and informed consent was obtained from either the HH head or the mother of the selected child. **Sample size justification and outcome used:** the study was restricted to 55 villages that met minimum programme eligibility criteria in the 4 departments because of logistics and cost. We estimated a sample size of 30 children per cluster with statistical significance of 0.05, power of 0.80 and an intracluster correlation of 0.02. This sample size provided the ability to detect minimum differences between treatment groups of a change of 0.25 in mean HAZ and WHZ and a 0.3 g/dL change in Hb. The sample also permitted the estimation of changes of 10 pps in the prevalence of wasting, anaemia and diarrhoea and 15 pp in stunting." **Sampling method:** before the baseline evaluation, villages within 4 'departments' in the province of Gourma were identified for possible inclusion in the EHFP programme; participating villages needed to have water sources to support production during the dry season. 55/181 eligible villages were identified for randomisation and were stratified by commune/department and village size before randomisation into 1 of 3 groups: 1. control group, which received no interventions from HKI (25 control villages), 2. EHFP programme with BCC led by OWLs (15 OWL villages – nutrition and health education done by OWLs), or 3. EHFP programme with BCC led by HC members (15 HC villages – nutrition and health education done by HC members). Within the selected villages, all HHs with a mother who had a child aged

Olney 2016 *(Continued)*

3–12 months at the time of the baseline survey (February–May 2010) were invited to participate in the impact evaluation.

Study aim or objective: to assess the impact of the EHFP programme on child nutritional status and health as primary impact measures, as well as on mothers' nutritional status and empowerment as secondary impact measures.

Study period: February 2010 to June 2012.

Unit of allocation or exposure: villages

Participants

Baseline characteristics

Intervention or exposure

- *Age*: children aged ≤ 6 years in HH, mean: 2.6 (SD 1.42); mothers, mean, years: 28.1 (SD 6.74); child, mean, months: OWL: 7.14 (SD 2.6); HC: 7.21 (SD 2.71)
- *Place of residence*: rural area in Burkina Faso; mean Housing Quality Index Score: –0.1 (SD 1.27)
- *Sex*: female, %: 100 (Olney 2016). Boys, n (%): OWL: 217 (49), HC: 218 (50.5)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: HH head had any formal education, n (%): 97 (11); OWL: 49 (11.3); HC: 42 (9.9). Woman/mother had any formal education, n (%): 62 (7); OWL: 26 (5.9); HC (31 (7.1)
- *SES*: HH size, mean, n: 7.5 (SD 3.59); OWL: 7.78 (SD 3.64); HC: 7.24 (SD 3.52). Housing quality index factor score, mean: 20.1 (SD 1.27). Dirt floor in primary house, n (%): OWL: 273 (61.6), HC: 252 (57.1); children aged 6 years, mean, n: 2.6 (SD 1.42); mean asset value for men: XOF 74,312 (SD 61,035); mean asset value for women: XOF 42,225 (SD 64,193); female-headed HHs, n (%): 62 (7)
- *Social capital*: social support score for women, mean: 3.2 (SD 1.37)
- *Nutritional status*: HHs experiencing food shock in the last 12 months, mean, n: 0.4 (SD 0.63); mother's BMI, mean: 20.2 (SD 2.22); underweight mothers, n (%): 203 (23); DDS for mothers, mean: 1.8 (SD 1.09); DDS for HHs, mean: 5.6 (SD 1.93)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: children aged ≤ 6 years in HH, mean: 2.7 (SD 1.53); mothers, mean, years: 28.3 (SD 6.86); child's age, mean, months: 7.4 (SD 2.64)
- *Place of residence*: rural area in Burkina Faso; mean housing quality index score: 0.1 (SD 1.26)
- *Sex*: female, %: 100 (Olney 2016). Boys, n (%): 292 (50.6)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: HH heads with formal education, n (%): 58 (10); women with formal education, n (%): 42 (7)
- *SES*: HH size, mean: 8.0 (SD 3.82). Housing quality index factor score, mean: 0.1 (SD 1.26). Dirt floor in primary house, n (%): 213 (35.7); mean number of children aged 6 years: 2.7 (SD 1.53); mean asset value for men: XOF 72,689 (SD 54,694); mean asset value for women: XOF 44,294 (SD 36,923); number of female-headed HHs (%): 42 (7)
- *Social capital*: social support score for women, mean: 3.0 (SD 1.44)
- *Nutritional status*: HHs experiencing food shock in the last 12 months, mean, n: 0.3 (SD 0.58); mother's BMI, mean: 20.6 (SD 2.27); underweight mothers, n (%): 90 (15); DDS for mothers, mean: 1.8 (SD 1.07); DDS for HHs, mean: 5.8 (SD 1.70)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall

- *Age*: child's age, mean, months: 7.26 (SD 2.65)
- *Place of residence*: rural area in Burkina Faso

Olney 2016 *(Continued)*

- *Sex*: boys, n (%): 727 (50.1)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: HH head had any formal education, n (%): 148 (10.2). Women/mother had any formal education, n (%): 96 (6.6)
- *SES*: HH size, mean: 7.72 (SD 3.69). Dirt floor in primary house, n (%): 148 (10.2)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: villages located in the 4 selected departments, had access to water in the dry season to enable participation in the agricultural intervention, and met the population size criteria (≤ 4000 inhabitants) (Olney 2015). Mothers with a child aged 3–12 months.

Exclusion criteria: NR.

Pretreatment: mothers' BMI was lower in the treatment group compared to control, and more underweight mothers (BMI 18.5 kg/m^2) were present in the treatment group.

Attrition per relevant group: total attrition 16% of the original sample. Attrition: control villages: 19% (113/597) for HHs and 29% (148/510) for mothers; intervention villages: 14% (124/884) for HHs and 22% (173/787) for mothers.

Description of subgroups measured and reported: NR.

Total number completed and analysed per relevant group: total 1481 completed the endline survey; intervention: 884 HHs (441 in HC group and 443 in OWL group). 376 children (HC group) and 395 children (OWL group) with complete observations. Control: 597 HHs. 511 children with complete observations. Mothers' BMI: control 510, intervention 787; mothers' consumption of individual food groups and mean DDS: control 506, intervention 766; HH consumption of individual food groups and mean DDS: control 596, intervention 880; women's empowerment: control 517, intervention 781.

Total number enrolled per relevant group: total: 1767 HHs. Intervention: 15 villages in HC group and 15 villages in OWL group. 514 HHs in HC group and 512 HHs in OWL group. Control: 25 villages, 741 HHs

Total number randomised per relevant group: control: 25 villages; intervention: 30 villages (15 OWL villages and 15 HC villages analysed together in Olney 2015). Total group: 1767 HHs with intervention HHs 514 in HC group and 512 in OWL group. Control HHs were 741.

Interventions

Intervention characteristics

Intervention or exposure group: integrated agriculture and nutrition programme

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation.
- *Description*: integrated agriculture and nutrition programme aimed at improving maternal nutrition outcomes through increased production and consumption of nutrient-rich food. Set of agricultural production and nutrition interventions targeted to mothers with children aged 3–12 months at baseline. Agricultural production interventions centred on dedicating land to women's production during the secondary agricultural season and distributing inputs and training to increase production and consumption of nutrient-rich foods and to generate additional income (and control over that income) through the sale of surplus production. Programme beneficiaries were provided with saplings, cuttings and seeds of nutrient-rich fruits (e.g. mangoes and papayas) and vegetables (e.g. orange-flesh sweet potatoes, dark green leafy vegetables and carrots) and small gardening tools (e.g. hoes, shovels and watering cans). Beneficiaries were also given chicks to increase production of animal source foods (i.e. eggs and meat from the chickens). In addition, they received training in optimal agriculture and poultry-raising practices to help them establish their homestead food production activities. Nutrition intervention: used a BCC strategy known as the Essential Nutrition Actions framework, which focuses on 7 primary health and nutrition behaviours. Twice a month, all beneficiary mothers were visited in groups or individually by 1 of 2 different types of community volunteers trained by the pro-

Olney 2016 *(Continued)*

	gramme; either OWLs or HC members. This component aimed to improve mothers' own health and nutrition by enabling them to adopt optimal health and nutrition practices for themselves and their young children. • *Duration of intervention period*: NR • *Frequency*: frequency of distribution of productive assets and training regarding agricultural intervention NR. For the nutrition intervention, beneficiary mothers were visited twice a month by community volunteers (either OWLs or HC members). • *Number of study contacts*: 2; baseline (February–May 2010); and 2-year follow-up (February–June 2012). • *Providers*: NPO (HKI) • *Delivery*: agricultural interventions first rolled out to female village farm leaders, who in turn trained other mothers in their communities. Primary health and nutrition education was through BCC led by OWLs or HC members. • *Co-interventions*: NR but authors mentioned in discussion that (quote) "it is possible that other unmeasured factors also contributed to reducing underweight such as changes in use of health care services, morbidity, or workload." • *Resource requirements*: NR • *Economic indicators*: NR Control group: no intervention
Outcomes	Dietary diversity: HDDI, MDD; proportion of mothers consuming individual food groups in past 7 days Dietary intake: energy gap Anthropometry: adult BMI; prevalence of underweight among adults
Identification	**Sponsorship source:** USAID, Office of US Foreign Disaster Assistance through HKI; European Commission/International Fund for Agricultural Development; the Gender, Agriculture and Assets Project, supported by the Bill Melinda Gates Foundation; the CGIAR Research Program on Agriculture for Nutrition and Health led by the IFPRI; and the USDA (AD). **Country:** Burkina Faso **Setting:** homesteads in agricultural areas **Comments:** trial registration: NCT01825226 **Author's name:** Deanna K Olney **Email:** d.olney@cgiar.org **Declarations of interest:** yes; 5 authors had no conflicts of interest. 1 author (A Pedehombga) worked for HKI. **Study or programme name and acronym:** Helen Keller International (HKI) enhanced-homestead food production (EHFP) programme **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Stratified randomisation was performed (by commune and village size), but no information provided on how the randomisation sequence was generated.

Olney 2016 *(Continued)*

Allocation concealment (Selection bias)	Low risk	Allocation to intervention groups was done at the same time for all clusters/villages.
Baseline characteristics similar (Selection bias)	Low risk	All baseline characteristics (with the exception of BMI outcomes) were similar across groups. Many of these were also adjusted for in the analysis.
Baseline outcome measurements similar (Selection bias)	Low risk	Prevalence of diarrhoea was lowest in control group, and, for mothers, BMI and prevalence of underweight was lower in control group. However, these were adjusted for in the analysis.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding not possible, but this is unlikely to have influenced participants' or staff's behaviour or experience.
Blinding of outcome assessment (Detection bias)	High risk	Unclear who collected outcome data. Some outcomes were based on women's self-reports, which could have been influenced by lack of blinding, e.g. the self-reported consumption by food group.
Protection against contamination (Performance bias)	Low risk	Allocation was by village and it was unlikely that the control group received the intervention.
Incomplete outcome data (Attrition bias)	Unclear risk	Overall attrition was fairly low (16%); however, differential attrition across groups resulted in significantly higher attrition among control HHs and mothers. This problem was addressed by including attrition weights in analyses. Differential attrition also occurred by HH size and composition, the presence of polygamy, female-headed HHs and female formal education. Furthermore, women with a higher BMI were more likely to attrite resulting in an attenuation of effect size.
Selective outcome reporting (Reporting bias)	Low risk	No protocol available. All outcomes in the trial registry reported in publications. Some stated measures such as mothers' health and knowledge of nutrition and hygiene were NR.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: unlikely. Incorrect analysis: low risk. Analyses adjusted for clustering, it is unclear whether these findings were comparable with an individually randomised trial. Recruitment bias: high risk. Randomisation was performed before recruitment was done, significant baseline imbalance was present for important outcomes of interest, there was a considerable risk of bias from loss of clusters as 1 intervention cluster attrited before follow-up.

Osei 2017

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** Missing or implausible outcome data were reported in the article and were excluded from the analysis involving the respective outcomes variables (Osei 2017). Attrition not relevant as study data were collected through independent cross-sectional surveys at baseline (2009) and follow-up (2012). Therefore, data on the impact of the intervention were not gathered from the same individuals in the 2 surveys. **Randomisation ratio:** 1:1 (subdistrict level)

Osei 2017 *(Continued)*

Recruitment method: recruitment to intervention group: not described. 1 woman per group of intervention villages (about 5 or 6) was selected and trained by HKI in improved gardening and poultry-rearing practices in preparation to host a VMF. Under the guidance of HKI, this woman then trained 20 other beneficiary women on how to establish their home gardens and poultry production (Osei 2017).

Sample size justification and outcome used: calculated to detect an assumed difference in the prevalence of stunting and underweight of 10% as well as a difference in wasting of 5% among children in the treatment compared to the control communities. Using a power of 0.80, a 95% CI (2 sided), an assumed design effect of 2 and an upward adjustment of 10% to account for LTFU, 1970 children were considered adequate for each of the pre- and post-treatment surveys. The baseline sample was increased to 2106 to allow enough participants for a substudy, which involved providing micronutrient powders to a subsample of 110 children in the intervention communities for 6 months. The follow-up sample was also increased to 2614 to allow sufficient participants for disaggregated analysis (Osei 2017)

Sampling method: multistage cRCT. The Baitadi district is administratively divided into 12 subdistricts called 'Ilakas', and each 'Ilaka' is further divided into 'village development committees' (VDCs), which consist of several (about 9) villages. (Osei 2015). Assigned Ilakas (instead of villages or HHs) into each of the 2 study groups. Ilakas were paired on several key socioeconomic indicators, and 4 of the generated 6 pairs of Ilakas were selected for inclusion in study using a simple random sampling procedure. The same procedure was followed to assign 1 Ilaka in each pair as the treatment group and the other as the control. Overall, there were 21 VDCs in the treatment Ilaka and 20 in the control Ilakas (Osei 2017). All the VDCs in the EHFP programme communities received the EHFP intervention. To select families for the pre- and postsurveys, VDCs were stratified by treatment (21) or control group (20), and 14 VDCs were selected from each using a simple random sampling procedure to participate in the surveys. However, all the VDCs in the EHFP programme communities received the EHFP intervention, regardless of their participation in the surveys. Within each selected VDC, HHs were selected using the probability proportional to size technique, and in each selected HH, a child aged 12–48 months was chosen together with his/her mother for the assessments. If a HH had > 1 eligible child, the youngest child was chosen (Osei 2017).

Study aim or objective: to determine the effect of an EHFP programme consisting of home garden, poultry raising and nutrition education implemented over 2.5 years vs control (no intervention) on anthropometry and anaemia among children (aged 12–48 months) and their mothers (Osei 2017).

Study period: 2.5 years from 2009 to 2012. The baseline survey was conducted in August 2009, the follow-up survey in August/September 2012.

Unit of allocation or exposure: subdistricts (Ilakas)

Participants

Baseline characteristics

Intervention or exposure

- *Age*: mother, mean, years: 27.3 (SD 5.8); child mean, months: 28.3 (SD 10.0); Child aged < 24 months, %: 35.2.
- *Place of residence*: NR
- *Sex*: child female, %: 46.6. Male head of HH, %: 77.3
- *Ethnicity and language*: upper caste, %: 77.4
- *Occupation*: mother work outside the home, %: 10.1
- *Education*: mother education: none, %: 57.3
- *SES*: Wealth terciles, %: lower 25.5, middle 28.2, upper 46.3. No cash income in last month, %: 46.7. Own land, %: 99.0. HH size, mean: 7.2 (SD 4.0). Mother parity, mean: 2.0 (SD 2.0). Mother ≥ 3 children, %: 48.1. Mother married, %: 98.9. Mother main carer of child, %: 48.8. In debt, %: 76.5
- *Social capital*: NR
- *Nutritional status*: food insecure HHs, total, %: 79.7 (77.2–82.0)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

Osei 2017 *(Continued)*

- *Age*: mother, mean, years: 27.5 (SD 5.7); child, mean, months: 27.8 (SD 9.8); child aged < 24 months, %: 36.1
- *Place of residence*: NR
- *Sex*: child female, %: 46.1; male head of HH, %: 83.8
- *Ethnicity and language*: upper caste, %: 82.3
- *Occupation*: mother work outside the home, %: 15.0
- *Education*: mother education none, %: 80.3
- *SES*: wealth terciles, %: lower 42.2, middle 36.7, upper 21.1. No cash income in last month, %: 49.2. Own land, %: 98.9. HH size, mean: 6.0 (SD 3.0). Mother parity, mean: 3.0 (SD 2.0). Mother ≥ 3 children, %: 53.1. Mother married, %: 99.4. Mother main carer of child, %: 70.3. In debt, %: 76.2
- *Social capital*: NR
- *Nutritional status*: food insecure HHs, total, %: 87.4 (85.3–89.3)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: families with children aged 0–23 months in 1 group of communities received the EHFP intervention (treatment group); in each selected HH, a child aged 12–48 months was chosen together with his/her mother for the assessments.

Exclusion criteria: NR

Pretreatment: baseline intervention sample had significantly more pregnant women, lower maternal parity, larger family size and a lower proportion of male-headed HHs than the control, although these characteristics did not differ between the groups at follow-up. Children in the intervention group were significantly older than those in the control group at follow-up. Other characteristics that were similar among the study groups at baseline but differed significantly at follow-up included the proportion of HHs with no monthly cash income and those with some financial debts at the time of the surveys. Both surveys showed significantly fewer mothers with no formal education, mothers who worked outside the home, and proportion of families with married HH heads, in the upper caste and lower tercile of wealth among the treatment compared to the control group.

Attrition per relevant group: attrition not relevant as baseline and follow-up samples were independent. NR. Authors reported data excluded from analysis. Of the 2106 mother–child pairs in the baseline sample, 1 child and 2 mothers missed Hb measurements; 8 children had implausible HAZ and 4 children had implausible WHZ values, and 1 mother had implausible BMI (< 12.0 kg/m^2). Therefore, these participants were excluded from the analysis involving these outcomes. In addition, 10.9% of the mothers (intervention: 100; control: 129) were pregnant at baseline and were excluded from maternal BMI and underweight analysis. For the 2614 mother–child pairs assessed at follow-up, 18 had implausible HAZ and 11 children had implausible WHZ values, and 9.7% mothers (intervention: 125; control: 128) were pregnant. These participants were excluded from the analysis involving the respective outcome variables.

Description of subgroups measured and reported: NR.

Total number completed and analysed per relevant group: total number varied depending on the outcome being analysed. General numbers at follow-up: intervention: 1037 families (1037 mothers and 1037 children); control: 1037 families (1037 mothers and 1037 children).

Total number enrolled per relevant group: intervention: 4 subdistricts; 21 VDC; 1055 families (1055 mothers and 1055 children); control: 4 subdistricts; 20 VDC; 1051 families (1051 mothers and 1051 children).

Total number randomised per relevant group: intervention: 4 subdistricts; 21 VDC; 1055 families (1055 mothers and 1055 children); control: 4 subdistricts; 20 VDC; 1051 families (1051 mothers and 1051 children).

Interventions	**Intervention characteristics**
	Intervention or exposure

Osei 2017 *(Continued)*

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation through EHFP programme consisting of home garden, poultry raising and nutrition education.
- *Description*: 1 woman per group of intervention villages (about 5 or 6) was selected and trained by HKI in improved gardening and poultry-rearing practices in preparation to host a VMF. Under the guidance of HKI, this woman then trained 20 other beneficiary women on how to establish their home gardens and poultry production. Altogether, the project intended to establish 120 VMFs, each of which served as a site for purchasing inputs and ongoing training for all the beneficiary women. For every season (rainy and winter) of the first year, each woman was given a one-off free supply of seeds, saplings and locally bred chicks to establish their home gardens and poultry production. Throughout the intervention, the women met monthly at the VMF to refresh lessons on agriculture techniques and nutrition through social and BCCs, such as optimal infant and young child feeding practices, cooking demonstrations on how to use the EHFP produce to enrich family meals, and participation in routine public health services (immunisation, growth monitoring, vitamin A supplementation and deworming) offered in their communities. The intervention activities were jointly monitored through monthly home visits by trained project staff, female community health volunteers, and agriculture extension officers. During each home visit, the project staff and agriculture extension officers observed the home gardens and poultry, including the number of different varieties of crops cultivated, whether the garden was fenced, how many of poultry birds the family had, whether the poultry had started laying eggs, etc., and provided advice on any garden or poultry issues the family was facing. On these home visits, the project staff and the female community health volunteers also reinforced the educational messages on breastfeeding and complementary feeding to all mothers (Osei 2017).
- *Duration of intervention period*: 2.5 years: 2009–2012
- *Frequency*: For every season (rainy and winter) of the first year, each woman was given a one-off free supply of seeds, saplings and locally bred chicks to establish their home gardens and poultry production. This was followed by monthly home visits by trained project staff, female community health volunteers,and agriculture extension officers, who observed the home gardens and poultry, and provided advice on any garden or poultry issues the family was facing. Monthly meetings at VMF.
- *Number of study contacts*: 2: 1 pre-intervention survey (August 2009) and 1 post-intervention survey (August–September 2012)
- *Providers*: NGO (Hellen Keller International) project staff
- *Delivery*: before study started, there were briefings in all the intervention villages (including meetings with village leaders) to gain their commitment and support. The intervention activities were jointly monitored through monthly home visits by trained project staff, female community health volunteers and agriculture extension officers. During each home visit, the project staff and agriculture extension officers observed the home gardens and poultry, and reinforced the educational messages on breastfeeding and complementary feeding to all mothers.
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: NR

Control: no intervention

Outcomes	Food security: HFIAS Anthropometry: WAZ, WHZ, HAZ, stunting, wasting, underweight, BMI and underweight of mothers Biochemical: mean Hb concentration (mother/child) Morbidity: anaemia (mother/child)
Identification	**Sponsorship source:** USAID **Country:** Nepal **Setting:** homesteads in Baitadi District, a remote hilly community in the far western region of Nepal. **Author's name:** Akoto Osei **Email:** andykofi20@gmail.com; oseia@africa-union.org

Osei 2017 *(Continued)*

Address: Department of Social Affairs, African Union Commission, Room 1216, New Building, PO Box 3243, Addis Ababa, Ethiopia

Declarations of interest: no potential conflicts of interest.

Study or programme name and acronym: Enhanced Homestead Food Production (EHFP) programme

Type of record: journal article

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Quote: "Simple random sampling procedures' were performed to select both the sub-district pairs (Ilakas), allocate one sub-district in each pair to either the intervention and control groups, and to select village development committees from which families were selected for the pre-and post intervention surveys. However, no information is provided on which 'simple random sampling procedure' was followed. Households that participated in the pre- and post intervention surveys were selected using the probability proportional to size technique."
Allocation concealment (Selection bias)	Low risk	Allocation of subdistricts to study groups were performed for all units at the start of the study.
Baseline characteristics similar (Selection bias)	Low risk	Imbalances at baseline and follow-up for many variables were present, but these were adjusted for in the analysis.
Baseline outcome measurements similar (Selection bias)	Unclear risk	At baseline, treatment HHs were less food insecure, had a higher mean WAZ for children, had a lower prevalence of underweight and stunting in children, and a significantly lower adjusted mean BMI compared to the control HHs. Unclear to what extend these were adjusted for in the analysis.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding was possible but it was unlikely this influenced the intervention received.
Blinding of outcome assessment (Detection bias)	Low risk	Blinding of participants and personnel was not possible due to the nature of the intervention, but it was unlikely that the outcomes were influenced by the lack of blinding. The primary outcome variables (stunting, underweight, wasting, Hb concentration and anaemia among children and Hb concentration, anaemia and underweight among their mothers) were assessed using objective anthropometric and Hb measurements that were taken at baseline and follow-up.
Protection against contamination (Performance bias)	Unclear risk	Although the randomisation was done at a subdistrict level, which should have minimised contamination, the authors reported an increase in the same activities of the intervention in the control group during the trial.
Incomplete outcome data (Attrition bias)	Unclear risk	Unclear how the micronutrient powder intervention provided in the substudy (Osei 2015) might have affected the study outcomes. It is NR if it was adjusted for in the analysis. Attrition not relevant: study data were collected through independent cross-sectional surveys at baseline (2009) and follow-up (2012), so data on the impact of the intervention were not gathered from the same individuals in the 2 surveys.

Osei 2017 *(Continued)*

		Outcome data from both intervention and control groups were excluded from the analysis, but the number of exclusions for Hb measurements, HAZ and WHZ values, maternal BMI were small and the reasons for them reported. Exclusion of maternal BMI and underweight analysis due to pregnancy in both the baseline and follow-up surveys were balanced across groups.
Selective outcome reporting (Reporting bias)	Unclear risk	The stated primary outcomes were reported on in the article, and intermediary outcomes are reported in supplemental tables. However, no protocol was available.
Other bias	High risk	Measured association might be biased. Study data were collected through independent cross-sectional surveys and assessments at baseline (2009) and follow-up (2012), so data on the impact of the intervention were not gathered from the same individuals in the 2 assessment periods. Therefore, the observed changes in outcomes cannot be directly associated with the intervention.

Pellerano 2014

Study characteristics

Methods	**Study design:** cRCT **Study grouping:** parallel **How were missing data handled?** HHs that were living elsewhere or unavailable for interview for other reasons were dropped from the study. Analysis was limited to panelled HHs that were observed both at baseline and follow-up (25% of the original sample not analysed). **Randomisation ratio:** 1:1 (clusters = EDs) **Recruitment method:** field workers visited each randomly selected HH, where the head of each HH was interviewed. In case the head of the HH/carer was N/A, any knowledgeable member of the HH aged > 18 years qualified for the interview. **Sample size justification and outcome used:** NR **Sampling method:** multistage stratified random cluster sampling. Within 10 community councils, 96 EDs were randomly allocated to the CGP programme or not (primary sampling units) in public lottery events that took place in each ED. EDs that were selected for the programme were paired with EDs that were not (48 pairs). Of these, 40 pairs were randomly selected. Within each selected ED, 2 villages (or clusters) were randomly selected (secondary sampling units). In every cluster, a random sample of 20 HHs (10 eligible and 10 non-eligible at baseline) were randomly selected and interviewed. **Study aim or objective:** to assess the direct impact of the CGP on the well-being of eligible HHs. To assess the indirect impact of the CGP on non-eligible HHs (data not extracted). **Study period:** 2 years; September 2011–2013 **Unit of allocation or exposure:** EDs (HHs within these were then selected based on eligibility criteria).
Participants	**Baseline characteristics** Intervention or exposure • *Age*: mean, years: 23.6 (table 9). Mean number of children (aged 0–17): 2.9. Proportion of HHs with elderly people (aged > 59 years): 39 • *Place of residence*: rural areas • *Sex*: female, %: 51.5 (table 9)

Pellerano 2014 *(Continued)*

- *Ethnicity and language*: Sesotho
- *Occupation*: NR
- *Education*: NR
- *SES*: mean HH size: 5.8; proportion of HHs with: single orphans: 17.3; double orphans: 35.5; no able bodied adult: 23; proportion of HH heads that are: children (aged < 18 years): 0.1; elderly (aged > 59 years): 38.6; able-bodied adult: 44.6; female: 45.6
- *Social capital*: proportion of HHs that borrowed or received support from other family members, friends or neighbours: cash: 72.4; in-kind: 71.2; labour: 11.4; agricultural: 47.5
- *Nutritional status*: DDI: 4; HHs with poor food consumption: 20.9; HH food expenditure per month: LSL 553.5
- *Morbidities*: proportion of HHs with chronically ill members: 39.9; disabled members: 21.1; proportion of HH heads that are chronically ill or disabled: 14.9; proportion of children aged 0–5 years with any illness in the last month: 38.9; mean number of days ill in the last month (children aged 0–5 years that were ill): 6.7; mean number of days ill in the last month (all children aged 0–5 years): 2.4
- *Concomitant or previous care*: NR

Control

- *Age*: mean: 24.2. Mean number of children (aged 0–17): 2.7. Proportion of HHs with elderly people (> 59 years)
- *Place of residence*: rural areas
- *Sex:* female, %: 51.9
- *Ethnicity and language*: Sesotho
- *Occupation*: NR
- *Education*: NR
- *SES*: mean HH size: 5.5; proportion of HHs with: single orphans: 17.9; double orphans: 37.3; no able-bodied adult: 22.1; proportion of HH heads that are: children (aged < 18 years): 0; elderly people (aged > 59 years): 39; able-bodied adult: 45; female: 49.8
- *Social capital*: proportion of HHs that borrowed or received support from other family members, friends or neighbours: cash: 76; in-kind: 80.1; labour: 11; agricultural: 49.7
- *Nutritional status*: DDI: 4; HHs with poor food consumption: 20.3; HH food expenditure per month: LSL 570.1.
- *Morbidities*: proportion of HHs with chronically ill members: 38.2; disabled members: 18.1; proportion of HH heads that were chronically ill or disabled: 14.4; proportion of children aged 0–5 years with any illness in the last month: 36.7; mean number of days ill in the last month (children aged 0–5 years that were ill): 7.6; mean number of days ill in the last month (all children aged 0–5 years): 2.7
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: ultra-poor HHs with any child aged 0–17 years in 10 selected community councils spread across 5 districts. Ultra-poor HHs were identified by members of their community and by collection of proxy indicators of HH wealth, captured in the National Information System for Social Assistance (NISSA – HHs had to be categorised as NISSA 1 or NISSA 2)

Exclusion criteria: NR

Pretreatment: baseline differences between HHs in the intervention and control group included number of children aged 0–5 years ($P < 0.01$), females aged 18–59 years ($P < 0.05$), and proportion of HHs that borrowed or received support from other family members, friends or neighbours ($P < 0.05$) (data included eligible and non-eligible HHs in treatment and control groups – not disaggregated for only eligible HHs).

Attrition per relevant group: intervention group: 5% (41/747); control group: (12%; 92/739); main reason for LTFU: moved outside the cluster.

Description of subgroups measured and reported: none reported

Pellerano 2014 *(Continued)*

	Total number completed and analysed per relevant group: total: 1353 HHs (91%); intervention group: 706 HHs; control group: 647 HHs. Only 75% of children were in both baseline and follow-up surveys (attrition: 25%) **Total number enrolled per relevant group:** intervention group: 747 HHs; control group: 739 HHs **Total number randomised per relevant group:** total: 48 EDs in 5 districts. Intervention: 24 EDs; control: 24 EDs.
Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: increase buying power • *Intervention type*: UCT • *Description*: UCT targeted to poor and vulnerable HHs. Provided regular transfer of LSL 360–7506 every quarter. Transfer value for CGP was originally set at a flat rate of LSL 120 (USD 12) per month per HH and was disbursed every quarter. Effective from April 2013, the cash transfer was indexed to number of children: 1. HHs with 1 or 2 children LSL 360 quarterly; 2. HHs with 3 or 4 children LSL 600 quarterly; and 3. HHs with ≥ 5 children LSL 750 quarterly • *Duration of intervention period*: 24 months. HHs enrolled in July and August 2011 and the first payments started in September 2011. Quantitative panel HH survey with a baseline in 2011 and a follow-up in 2013, in control and intervention locations and covering CGP eligible and non-eligible HHs. • *Frequency*: quarterly payments. However, payments were not made as scheduled; payment schedule was unpredictable and the transfers were made in more irregular disbursements than expected. Based on the administrative records, the mean number of payments received per CGP beneficiary HH in the sample was 6 to 7, while based on the operational design, the intended number of quarterly payments should have been 8. • *Number of study contacts*: 2. Baseline survey in June–August 2011 and follow-up survey in June–August 2013 • *Providers*: programme run by the Ministry of Social Development of the government of Lesotho, with financial support from the European Commission and technical support from UNICEF-Lesotho. In the pilot stage, technical assistance to the implementation was provided by Ayala Co. and World Vision. • *Delivery*: a cash-in-transit firm provided payments at pay points in each community. Majority of HHs received the total intended amount of funds, despite irregular payments (mean of 6.6 instead of 10 payments made per HH). • *Co-interventions*: a Food Emergency Grant was also disbursed to CGP beneficiaries in 2012 and 2013. A bi-monthly top-up of LSL 400 (LSL 200/month) that was disbursed together with the CGP, but in a separate envelope. • *Resource requirements*: respondents reported spending on average around 3 hours travelling to and from the pay point on pay days (return journey on foot). Almost all the respondents walked to the pay point where they on average spent 2.3 hours waiting. On average, respondents spent LSL 9 to collect the payment. • *Economic indicators*: costs of overall programme reported elsewhere but for a different time period. Control: no intervention
Outcomes	Real monthly total consumption expenditure; monthly amount spent on food Food security: proportion of children aged 0–5 and 6–17 years with severe food deprivation (FSI); number of months in which HHs had sufficient/some shortage/extreme shortage food to meet their needs Dietary diversity: DDI; FCS; proportion of HHs with poor/borderline/acceptable food consumption Anthropometry: weight; underweight Morbidity: proportion of children ill in previous month; mean number of days children ill in previous month. Adverse event: overweight

Pellerano 2014 *(Continued)*

Identification	**Sponsorship source:** Oxford Policy Management (OPM) was contracted by UNICEF to design and undertake an independent evaluation of Round 2 Phase 1 of the CGP pilot. **Country:** Lesotho **Setting:** rural HHs **Author's name:** Luca Pellerano **Email:** luca.pellerano@opml.co.uk **Declarations of interest:** NR **Study or programme name and acronym:** Lesotho Child Grants Programme (CGP) **Type of record:** report
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Randomisation took place through public lottery events in each community council.
Allocation concealment (Selection bias)	Low risk	Allocation was at the ED level, in public lottery events.
Baseline characteristics similar (Selection bias)	Low risk	A number of baseline differences reported between HHs in the intervention and control group despite the matching of electoral districts (primary sampling unit), followed by random sampling of clusters (secondary sampling units). These include number of children aged 0–5 years ($P < 0.01$), women aged 18–59 years ($P < 0.05$), price of rubber boots in the community ($P < 0.05$), and proportion of HHs that borrowed or received support from other family members, friends or neighbours ($P < 0.05$). The study authors used the DID method and adjusted for baseline imbalances in their analyses.
Baseline outcome measurements similar (Selection bias)	Low risk	HHs in both groups were similar at baseline in terms of outcome measurements such as HH food consumption, HH food security and expenditure on food.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding possible. This was unlikely to introduce performance bias.
Blinding of outcome assessment (Detection bias)	High risk	Outcomes were measured by self-report in questionnaire. Self-reported outcomes could have been influenced by knowledge of treatment allocation.
Protection against contamination (Performance bias)	Low risk	CGP administrative records indicated that no eligible HHs in control areas received the intervention.
Incomplete outcome data (Attrition bias)	Low risk	Differential attrition (12% in control group; 8% in intervention group), mainly due to more HHs in the control group that moved outside their clusters. The study authors adjusted sampling weights for selective non-response in their analysis by calculating the probability of HHs being retained in the sample on the basis of key HH characteristics at baseline. Loss of clusters (cRCT): low risk. No loss of complete clusters (villages) reported.

Pellerano 2014 *(Continued)*

Selective outcome reporting (Reporting bias)	Unclear risk	No study protocol available.
Other bias	Unclear risk	Misclassification bias: low risk. Measurement bias: low risk. Trained fieldworkers. Used a 7-day dietary recall 8 food groups at baseline and follow-up. Incorrect analysis: low risk. Estimates adjusted for clustering. Recruitment bias: low risk. Villages (clusters) were sampled before randomisation of electoral districts to the intervention or control group. Seasonality bias: low risk.

Ponce 2017

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** NR **Randomisation ratio:** 1:2:1 **Recruitment method:** NR **Sample size justification and outcome used:** power estimates as well as sample size were computed using the Optimal Design software, working with a power of 80%, at 5% significance and with a minimum detectable effect of 0.25 (SD). However, it was NR which outcome was used in this calculation. **Sampling method:** 3 groups of approximately 200 HHs per group were randomly selected in 3 provinces. **Study aim or objective:** to differentiate the effects of food vouchers and training in health and nutrition on consumption and dietary diversity in Ecuador by using an experimental design. **Study period:** baseline data collected between September and November 2013, and the intervention lasted 1 year thereafter. **Unit of allocation or exposure:** HHs
Participants	**Baseline characteristics** Intervention T1: food vouchers • *Age*: HH head, years: 32.6 (no variance provided) • *Place of residence*: NR • *Sex*: female head of HH, %: 17 • *Ethnicity and language*: Head of HH Mestizo race, %: 76.6 • *Occupation*: NR • *Education*: head of HH schooling, mean, years: 7.731 (no variance reported) • *SES*: NR • *Social capital*: NR • *Nutritional status*: HH energy intake, mean, kCal/day: 7529.6 (no variance reported). HH per capita energy intake, mean, kCal/day: 1635,6 (no variance reported). DDI, mean: 5.96 (no variance reported) • *Morbidities*: NR • *Concomitant or previous care*: NR Intervention T2: food vouchers + training on health and nutrition • *Age*: HH head, mean, years: 34.0 (no variance reported)

Ponce 2017 *(Continued)*

- *Place of residence*: NR
- *Sex*: female head of HH, %: 17.5
- *Ethnicity and language*: head of HH Mestizo race, %: 81
- *Occupation*: NR
- *Education*: head of HH schooling, mean, years: 7.638 (no variance reported)
- *SES*: NR
- *Social capital*: NR
- *Nutritional status*: HH energy intake, mean, kCal/day: 7415.6 (no variance reported). HH per capita energy intake, mean, kCal/day: 1609.6 (no variance reported). DDI, mean: 5.83 (no variance reported)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control: received no intervention

- *Age*: HH head, mean, years: 33.8 (no variance reported)
- *Place of residence*: NR
- *Sex*: female head of HH, %: 17
- *Ethnicity and language*: head of HH Mestizo race, %: 79.5
- *Occupation*: NR
- *Education*: head of HH schooling, mean, years: 7.535 (no variance reported)
- *SES*: NR
- *Social capital*: NR
- *Nutritional status*: HH energy intake, mean, kCal/day: 7638.6 (no variance reported). HH per capita energy intake, mean, kCal/day: 1660.8 (no variance reported). DDI, mean: 5.89 (no variance reported).
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: NR

Exclusion criteria: NR

Pretreatment: except for the first intervention group (T1, food voucher only) that had significantly fewer (P = 0.008) HH members aged 45–64 years when compared to the second intervention group (T2, food voucher + training), there were no significant differences, indicating that the randomisation worked properly.

Attrition per relevant group: unclear if 'cases' referred to HHs or individuals (conflicting statements), and, therefore, it is unclear how many HHs/individuals were enrolled in the study and how many completed the study or what data were included in the analyses.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: T1, food voucher only: individuals analysed 336; T2, food voucher + training: individuals analysed 512; control: unclear (from Table 3)

Total number enrolled per relevant group: T1, food voucher only: HHs at baseline 171; individuals at baseline 920; T2, food voucher + training: HHs at baseline 401; individuals at baseline 2426; control: HHs at baseline 201; individuals at baseline 997

Total number randomised per relevant group: T1 group (food voucher only): 171 HHs; T2 group (food voucher + training): 401 HHs; control: 201 HHs.

Interventions	**Intervention characteristics** Intervention T1: food vouchers • *Food access intervention category*: food prices • *Intervention type*: food vouchers

Ponce 2017 *(Continued)*

- *Description*: HHs received a food voucher of USD 40 monthly
- *Duration of intervention period*: unclear, but seemed to have been for 1 year because follow-up assessment was performed at 1 year after baseline
- *Frequency*: monthly
- *Number of study contacts*: NR
- *Providers*: NR
- *Delivery*: NR
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: NR

Intervention T2: food vouchers + training on health and nutrition

- *Food access intervention category*: food prices
- *Intervention type*: food vouchers + training on health and nutrition
- *Description*: HHs received a food voucher of USD 40 monthly + monthly training sessions on topics that included malnutrition, food preparation, children's health, mother's health, women's rights and women's empowerment. Unclear whether only the head of the HH received this training or whether more (e.g. all adults) or all members of the HH received this training.
- *Duration of intervention period*: unclear, but seemed to have been for 1 year because follow-up assessment was performed at 1 year after baseline
- *Frequency*: monthly
- *Number of study contacts*: NR
- *Providers*: NR
- *Delivery*: NR
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: NR

Control: no intervention

Outcomes	Dietary diversity: FCS Dietary intake: per capita energy consumption at HH level in the previous 7 days
Identification	**Sponsorship source:** WFP in Ecuador and the Spanish Ministry of Science and Innovation (grant number HAR2013-47182-C2-1-P). **Country:** Ecuador **Setting:** 3 provinces in Ecuador, 2 from the Sierra region (Carchi and Chimborazo) and 1 from the Coastal region (Santa Elena)." **Comments:** no protocol or trial registry number reported **Author's name:** Jesus Ramos-Martin **Institution:** N/A **Email:** jramos@flacso.edu.ec **Address:** N/A **Declarations of interest:** none **Study or programme name and acronym:** N/A **Type of record:** journal article

Ponce 2017 *(Continued)*

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Quote: "In our study, we randomly assigned households to one of the following groups …" Comment: however, the method of generating the random sequence was NR.
Allocation concealment (Selection bias)	Unclear risk	NR in the paper.
Baseline characteristics similar (Selection bias)	Unclear risk	Not many baseline characteristics were reported, thus it is not possible to make a fair judgement. e.g. HH income and farming activities are important characteristics for this study's research question but these were NR.
Baseline outcome measurements similar (Selection bias)	Low risk	HH energy intake, per capita energy intake and dietary diversity were measured at baseline and there were no meaningful differences between groups.
Blinding of participants and personnel (Performance bias)	Low risk	Blinding was not done, but it was unlikely that the lack of blinding influenced the participants' performance.
Blinding of outcome assessment (Detection bias)	High risk	Blinding of study participants was not possible. Outcomes were self-reported and could have been influenced by lack of blinding.
Protection against contamination (Performance bias)	Unclear risk	Unclear how close HHs that participated in the study, and who were allocated to different intervention/control groups, lived from each other. It is possible that HHs from the intervention groups could have sold, shared or exchanged the extra food they got through the vouchers with other HHs; however, unclear from the manuscript whether this was likely or not.
Incomplete outcome data (Attrition bias)	High risk	Unclear how many individuals were analysed at endpoint in the control group, but there appeared to be high attrition in the 2 groups.
Selective outcome reporting (Reporting bias)	Unclear risk	Study authors did not mention whether they had an a priori protocol or if they registered their trial prospectively in a trial registry. All relevant outcomes in the methods section were reported in the results section of the manuscript.
Other bias	Unclear risk	Risk of misclassification bias: N/A as this was a trial. Risk of measurement bias: unclear, because the method used to collect 'Weekly HH values of food consumption' was NR. Risk of incorrect analysis: low, because outcomes were analysed at the HH level. Risk of recruitment bias: unclear because it is not clear whether recruitment took place before or after randomisation of HHs.

Porter 2016

Study characteristics

Methods	**Study design:** PCS **How were missing data handled?** NR **Randomisation ratio:** N/A

Porter 2016 *(Continued)*

Recruitment method: NR

Sample size justification and outcome used: NR

Sampling method: used the data set from the Young Lives Ethiopia survey, which offers rich child and HH level panel information for 2 cohorts (born 1994 and 2001), including siblings, which allows study authors to evaluate programme impacts of different age groups from 5 years to 15 years. The Young Lives Ethiopia was a longitudinal cohort study conducted over 3 waves (2002, 2007 and 2009–2010). This data set included HHs selected for the PSNP programme and others that were not; and this was identified through survey questionnaire questions. The PSNP combines geographic and community-based targeting to identify chronically food-insecure HHs. Many communities had public meetings to discuss the shortlist for potential beneficiaries of PSNP, which was then approved by the next level of administration. Due to budget constraints, some HHs were short listed, but did not receive the programme. The sample comprised data from 20 sentinel sites chosen in 5 regions. HHs within sites were chosen randomly among those that had children born in the stipulated year. Importantly, PSNP was operating in 15 of these sites with 530/1886 HHs (29.1% of the sample) active beneficiaries of the programme.

Study aim or objective: to provide transfers to the food insecure population' and to 'bridge the food gap' (Ministry of Agriculture and Rural Development, 2004). It operates as a safety net, whereby the public works (also known as cash/food for-work, or workfare) programme operates seasonally, but predictably (and similarly for the direct support, or UCT).

Study period: introduced in 2005 and is still ongoing.

Unit of allocation or exposure: HHs

Participants	**Baseline characteristics** Intervention or exposure group: NR Control: NR Overall: NR **Inclusion criteria:** targeting criteria for PSNP: HHs were food insecure and had been receiving food aid in the past. **Exclusion criteria:** NR **Pretreatment:** NR **Attrition per relevant group:** NR. Overall attrition for the sample was just 5.7% over the 8-year period. **Description of subgroups measured and reported:** NR **Total number completed and analysed per relevant group:** total 1606 HHs; intervention: 682 HHs; control: 924 HHs **Total number enrolled per relevant group:** NR **Total number randomised per relevant group:** N/A
Interventions	**Intervention characteristics** Intervention or exposure group: PWP + UCTs • *Food access intervention category*: increase buying power • *Intervention type*: income generation and UCT • *Description*: social protection scheme in Africa, a programme comprising 80% public works (food-for-work or cash-for work) and 20% unconditional transfers for those unable to work, covering almost 8 million rural citizens. The PSNP was designed to provide predictable support for selected HHs over several years. The programme has a principle paying in cash rather than food, with the ratio of cash/food in 2008 at 60/40, and the daily wage rate was ETB 8 in 2008 (USD 0.56).

Porter 2016 *(Continued)*

- *Duration of intervention period*: 2005 to ongoing
- *Frequency*: public works (also known as cash/food for-work, or workfare) programme operates seasonally but predictably (and similarly for the direct support, or UCT)
- *Number of study contacts*: 3; 2002, 2007, 2009–2010
- *Providers*: Ethiopian government
- *Delivery*: PSNP, centrally co-ordinated by Government
- *Co-interventions*: NR
- *Resource requirements*: NR
- *Economic indicators*: the annual donor financed budget is approximately USD 347 million (about 1.2% of Ethiopia's GDP). Daily wage rate was ETB 8 in 2008 (USD 0.56). Mean annual transfers for both direct support and the public works beneficiaries in 2009 were USD 137, which compared with a per capita income for Ethiopia of about USD 550.

Control group: no intervention

Outcomes	Anthropometry: HAZ; WAZ
Identification	**Sponsorship source:** Young Lives is core-funded from 2001 to 2017 by UK aid from DfID, and co-funded by IrishAid from 2014 to 2015. **Country:** Ethiopia **Setting:** poor rural areas **Comments:** useful to look at Supplementary Appendix Material **Author's name:** Catherine Porter **Email:** catherine.porter@hw.ac.uk **Declarations of interest:** NR **Study or programme name and acronym:** Productive Safety Net Program (PSNP), studied using Young Lives Ethiopia cohort dataset **Type of record:** journal article
Notes	Results of this study were reported under "income generation" interventions category, as this component comprised 80% of the programme. Results were NR for the 2 groups; only for the overall group participating in the programme.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	Cohort study, therefore, no randomisation.
Allocation concealment (Selection bias)	High risk	Cohort study, therefore, no randomisation done.
Baseline characteristics similar (Selection bias)	Unclear risk	Baseline assessment NR.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Baseline assessment NR.

Porter 2016 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	No blinding done. This was unlikely to have influenced behaviour or participants or personnel.
Blinding of outcome assessment (Detection bias)	Low risk	No blinding done. Outcomes were objective, which are unlikely to have been influenced by knowledge of intervention allocation.
Protection against contamination (Performance bias)	Unclear risk	Unclear what the control group was or if they were in the same communities as intervention groups.
Incomplete outcome data (Attrition bias)	Unclear risk	Total number of participants and of those analysed are unclear. Overall attrition was low, 5.7%, but we do not know which group these participants belonged to or reasons for attrition. Missing data were excluded from the analysis.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available.
Other bias	Unclear risk	Misclassification bias: unclear. Possible as treatment allocation was based on self-report in multiple cross-sectional surveys. Measurement bias: unclear. Potential issues regarding anthropometric or dietary intake data. Unclear whether anthropometry was measured or self-reported, or if there was validation of questionnaire. Incorrect analysis: low risk.

Renzaho 2017

Study characteristics	
Methods	**Study design:** controlled prospective study **Study grouping:** N/A **How were missing data handled?** to increase the accuracy of the anthropometric indices, implausible values were excluded. Unclear how much data were excluded due to this. No other missing/excluded data reported but according to table 4, data were missing for 10/3000 originally enrolled HHs (7 in intervention group; 3 in control group; both at baseline and follow-up for each). **Randomisation ratio:** N/A **Recruitment method:** NR **Sample size justification and outcome used:** sample size calculation was primarily to detect meaningful levels of change in the study outcomes compared to the comparison group. Planned to sample only 1 child per HH, hence an equal sample size of 750 HHs at baseline and 750 at follow-up was obtained in the intervention (1500) as well as the control area (1500). This sample size was adequate to show a 10% effect size for stunting (primary outcome) among children aged < 5 years at 6 years follow-up (32.9% in the intervention vs 40% in the control) with > 80% power and 5% significance level (2-sided test), a design effect of 2% and 5% sampling error. The sample size allowed for a 10% non-response rate. The sample size was adequately powered to detect a 6% effect size in the prevalence of wasting at 6-year follow-up and to model associations between outcome and intervention, adjusted for demographics and other variables. **Sampling method:** the surveys were conducted using a 2-stage cluster sampling method. The first stage involved identifying clusters (wards) within each district to be included in the study. All wards in each district were listed separately in alphabetical order by VDC. Using the 2011 population census data for each ward (cluster), a cumulative population for all wards was computed. From this cumulative list, the required number of clusters in each district was determined using the probability proportion-

Renzaho 2017 *(Continued)*

al to size sampling method. In the second stage, HHs within the selected clusters were identified for inclusion in the study. A list of HHs in each selected ward was constructed with the help of the local leaders and UNICEF staff. From the list, a HH was selected using a systematic sampling approach. Only HHs with ≥ 1 child aged < 60 months were eligible for the study. The sampling interval (X) was determined by dividing the total number of HHs in each ward with the expected sample size, and the first HH to be surveyed was randomly selected by choosing a number between 1 and X. For each selected HH, mothers/caretakers of children aged < 5 years volunteered to take part in the surveys, and the interview occurred outside the home, away from other HH members. If the selected HH was not inhabited, or there was no-one at home, the closest neighbouring HH was used for the survey. Sampled about 30 HHs per cluster in each selected district at baseline, midline and endline surveys. For clusters where the number of HHs was < 25, the selected ward and its adjoining neighbour were merged and treated as a single cluster. In HHs with > 1 child, only 1 child was randomly selected for enumeration.

Study aim or objective: to evaluate the effectiveness of the synergetic effect of child sensitive social protection programmes, augmented by a capacity building for social protection and embedded within existing government's TRTs for families on child nutritional status.

Study period: 6 years: October–December 2009 (pre) to December 2014–February 2015 (post)

Unit of allocation or exposure: district

Participants

Baseline characteristics

Intervention or exposure

- *Age*: child, mean, months: 28.66 (SD 15.36)
- *Place of residence*: NR
- *Sex*: proportion of girls: 44.8% (SD 49.8%); boys: 55.2% (SD 49.8%)
- *Ethnicity and language*: ethnicity proportion: disadvantaged ethnic groups: 1.5% (SD 12.0%); Dalit Hill/Terai: 21.3% (SD 41.0%); upper caste group: 77.2% (SD 42.0%)
- *Occupation*: NR
- *Education*: proportion of fathers with primary education or less: 2.1% (SD 14.5%); secondary level education: 33.1% (SD 47.1%); intermediate or higher education: 64.8% (SD 47.8%). District total literacy rate: 38.5%
- *SES*: HH Wealth Index, mean: poor: 89.1% (SD 31.2%); middle class: 9.7% (SD 29.6%); rich: 1.2% (SD 11.1%)
- *Social capital*: NR
- *Nutritional status*: proportion stunting: girls: 68; boys: 65.7. Proportion of wasting: girls: 9.3; boys: 15.3
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: child, mean, months: 28.08 (SD 15.55)
- *Place of residence*: Bajhang District, Seti Zone
- *Sex*: proportion of girls: 43.7% (SD 49.6%); boys: 56.3% (SD 49.6%)
- *Ethnicity and language*: proportion: disadvantaged ethnic groups: 0.0% (SD 0.0%); Dalit Hill/Terai: 16.8% (SD 37.4%); upper caste group: 83.2% (SD 37.4%)
- *Occupation*: NR
- *Education*: proportion of fathers with primary education or less: 25.9% (SD 43.8%); secondary level education: 26.4% (SD 44.1%); intermediate or higher education: 47.7% (SD 50.0%). District Total literacy rate: 35.5%
- *SES*: Household Wealth Index, mean: poor: 10.1% (SD 30.2%); middle class: 23.9% (SD 42.7%); rich: 65.9% (SD 47.4%)
- *Social capital*: NR
- *Nutritional status*: proportion stunting: girls: 61.9; boys: 63.7. Proportion of wasting: girls: 4.5; boys: 6.6
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Renzaho 2017 *(Continued)*

Overall: NR

Inclusion criteria: HHs with ≥ 1 child aged < 60 months.

Exclusion criteria: NR

Pretreatment: total literacy rate was higher in the intervention group than the control group (38.5% with intervention vs 35.5% with control). A larger percentage of HHs in the control group were in the middle class or rich categories (measured by Household Wealth Index) than the intervention group (intervention group: poor 89.1%, middle class 9.7%, rich 1.2% compared with control group: poor 10.1%, middle class 23.9%, rich 65.9%). Imbalances were adjusted for using PSM for the analyses.

Attrition per relevant group: none reported. According to table 4 and initial enrolment of 1500 HHs per district: data missing for 2 control HHs at baseline and 1 control HH at follow-up; and for 7 intervention HHs at baseline.

Description of subgroups measured and reported: children's age groups: children aged < 5 years (all, girls, boys); children aged > 24 months; children aged < 24 months.

Total number completed and analysed per relevant group: total HHs: baseline 1491; follow-up 1499; control HHs: baseline 748; follow-up 749; intervention HHs: baseline 743; follow-up 750

Total number enrolled per relevant group: 3000 HHs; 1500 in intervention district and 1500 in control district

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: CCG + government TRTs for families
- *Description*: intervention district received the TRTs, augmented with a CCG programme introduced in the Government of Nepal's 2009/2010 budget and a capacity building component for social protection (Figure 1). The CCG provides NPR 200 per month for up to 2 children for poor families with children aged < 5 years in Karnali Zone (Kalikot, Jumla, Mugu, Humla and Dolpa) to complement existing social protection schemes for senior citizens, single women, endangered communities and people with disabilities. The Government of Nepal's CCG is an UCT scheme in which allowances are provided to all eligible HHs. The CCG programme has been supported and enhanced by the capacity building for social protection implemented by a UNICEF/Nepal partnership programme, whose aim has been to design and implement complementary interventions, partly funded by the Asian Development Bank through Japan Fund for Poverty Reduction (Table 1). The capacity building for social protection had 4 major components: 1. capacity development of central and local government officials; 2. system development for effective implementation and monitoring of child grant; 3. linking the child grant with nutrition; and 4. grant management, monitoring and audit. The Ministry of Federal Affairs and Local Development (the main executing agency) was responsible for the system development component and the Asia Development Bank together with the Ministry of Federal Affairs and Local Development and the Ministry of Health and Population were responsible for grant management component. (Table 1 of publication for all programme activities).
- *Duration of intervention period*: 6 years
- *Frequency*: assessments were completed and outcome measures recorded pre- (October–December 2009) and post- (December 2014 to February 2015) intervention. Distribution of child grants to all children aged < 5 years were done every 4 months (3 times a year). In addition, the intervention group had multiple contacts with study partners, including 1. capacity building activities to enhance capacity of local bodies to deliver the child grant, 2. network enhancing activities aimed at improving child nutrition, 3. social BCC on child nutrition, 4. awareness raising activities for timely birth registration to identify all eligible HHs and about the availability of the CCG, 5. assisting mothers/carers to identify the best possible locally available food and encouraging use of cash grant for nutritious foods and the improvement of nutritional status of children, 6. improving the knowledge and skills of CCG beneficiaries in the areas of infant and young child feeding practices, hygiene, sanitation and other key behaviours linked to child nutrition.

Renzaho 2017 *(Continued)*

- *Number of study contacts*: multiple. Repeat cross-sectional quasi-experimental design with measures taken pre- (October–December 2009) and post- (December 2014 to February 2015) intervention in the intervention community (Kalikot district) and comparison communities (Bajhang district).
- *Providers*: the Ministry of Federal Affairs and Local Development (the main executing agency) was responsible for the system development component and the Asia Development Bank together with the Ministry of Federal Affairs and Local Development and the Ministry of Health and Population were responsible for grant management component. UNICEF was responsible for implementation of the capacity development and linking CCG with nutrition and supported the Government of Nepal's (Ministry of Federal Affairs and Local Development and Ministry of Health and Population) in implementing key strategies underpinning the intervention.
- *Delivery*: the CCG programme was administered and paid for by the Government of Nepal and supported and enhanced by capacity building for social protection implemented by a UNICEF/Nepal partnership programme. UNICEF was responsible for implementation of the capacity development and linking CCGs with nutrition and supported the Government of Nepal (Ministry of Federal Affairs and Local Development and Ministry of Health and Population) in implementing key strategies underpinning the intervention (training, workshops, group meetings, radio messages, campaigns, technical support). The Ministry of Federal Affairs and Local Development (the main executing agency) was responsible for the system development component and the Asia Development Bank together with the Ministry of Federal Affairs and Local Development and the Ministry of Health and Population were responsible for grant management component. The capacity building component was partly funded by the Asian Development Bank through Japan Fund for Poverty Reduction. The intervention was embedded within existing universal social transfer programmes hence ensuring continuity of participation and preventing the disruption in disbursements. The implementation of the intervention involved too many stakeholders with differing expectations and competing objectives, which might have hampered the effective implementation of the project. This challenge was overcome by having clear role and responsibilities and a focal co-ordinating committee overseen by the Government of Nepal.
- *Co-interventions*: TRTs
- *Resource requirements*: NR
- *Economic indicators*: NR

Control

- *Food access intervention category*: increase buying power (weaker)
- *Intervention type*: government TRTs for families
- *Description*: government's funded TRTs for families. The TRTs included senior citizens allowance for all people aged ≥ 70 years (NPR 500/month), single women's and widow allowance (NPR 500/month), disability allowance for all people with disability aged ≥ 16 years (NPR 1000/month for total disability and NPR 300/month for partial disability), endangered ethnicities allowance (all HH members receive NPR 500/month), and maternity incentive scheme for pregnant women (NPR 500 in Tarai, NPR 1000 in Hills and NPR 1500 in mountains as transportation costs + NPR 300 provided to health professionals and NPR 1000 reimbursement to facilities + free delivery care).
- *Duration of intervention period*: 6 years
- *Frequency*: monthly transfers across all programmes.
- *Number of study contacts*: repeat cross-sectional quasi-experimental design with measures taken pre- (October–December 2009) and post- (December 2014–February 2015) intervention in the intervention community (Kalikot district) and control communities (Bajhang district).
- *Providers*: government of Nepal
- *Delivery*: government of Nepal
- *Co-interventions*: TRTs
- *Resource requirements*: NR
- *Economic indicators*: NR

Outcomes	Anthropometry: HAZ; WHZ; WAZ; stunting; wasting; underweight
Identification	**Sponsorship source:** designed and implemented by UNICEF Nepal. The capacity building for social protection element was partly funded by the Asian Development Bank through Japan Fund for Poverty Reduction. The CCG programme introduced in the Government of Nepal's 2009/2010 budget

Renzaho 2017 *(Continued)*

Country: Nepal

Setting: poor communities and HHs in 2 districts in Nepal (Bajhang District and Kalikot District)

Comments: the study was approved by the Nepal Health Research Council Ethical Review Board (Approval No. 2071-12-18; Reg No. 29/2015).

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Declarations of interest: yes; no conflict of interest.

Study or programme name and acronym: Child Cash Grant (CCG)

Type of record: journal article

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	PCS; no randomisation done.
Allocation concealment (Selection bias)	High risk	PCS; no randomisation done.
Baseline characteristics similar (Selection bias)	Low risk	High variability at baseline for some characteristics such as Household Wealth Index (control wealthier than intervention), ethnicity (control group with slightly higher proportion of people from upper caste group whereas intervention group had more people from more disadvantaged ethnic groups), and education (intervention group had higher schooling than comparison group). However, PSM was used for analysis.
Baseline outcome measurements similar (Selection bias)	High risk	Higher proportions of stunting, underweight and wasting in the intervention group at baseline. This was not adjusted for in the analysis.
Blinding of participants and personnel (Performance bias)	Low risk	There was no blinding, but the outcomes were unlikely to be influenced by the lack of blinding.
Blinding of outcome assessment (Detection bias)	Low risk	No blinding possible. Outcomes were objective and not susceptible to influence due to lack of blinding.
Protection against contamination (Performance bias)	Low risk	Allocation at district level and the distance between them acted as a buffer zone, hence minimising the risk of contamination.
Incomplete outcome data (Attrition bias)	Low risk	No missing data reported but they excluded anthropometric data that was biologically implausible. According to table 4 of the publication and initial enrolment of 1500 HHs per district: data missing for 2 control HHs at baseline and 1 control follow-up; and for 7 intervention HHs at baseline.

Renzaho 2017 *(Continued)*

Selective outcome reporting (Reporting bias)	Unclear risk	No protocol mentioned.
Other bias	Low risk	Misclassification bias of exposure: low risk; intervention assigned by government. Measurement bias: low risk.

Schwab 2013

Study characteristics

Methods

Study design: cRCT

Study grouping: parallel group

How were missing data handled? Authors reported that data were analysed as ITT. However, due to discrepancies in timing of implementation of the interventions in both groups, with the food group receiving the last instalment 15 days before the endline survey whereas in the cash group the transfer was received 49 days before, some HHs were excluded from the analysis: for outcomes that rely on a recall period including the week before the survey (e.g. days in the last 7 the HH consumed meat), the analysis excluded those HHs that received their transfer in the 8-day period before the survey. Other data were also excluded. This analysis conducted throughout this report was restricted to 3353 treatment and comparison HHs for whom consistent data from both the baseline and endline surveys exists. In addition, the remaining HHs not considered here had extensive incomplete, missing or unreliable data for key sections.

Randomisation ratio: 1:1. The 136 FDPs within the sample area were randomised into equal numbers of cash or food transfers.

Recruitment method: NR. Initial meetings with beneficiaries were held in June 2011 before the first transfer of the 2011 cycle was distributed to sensitise beneficiaries to the programme objectives and logistics. A follow-up meeting for cash beneficiaries was held in November 2011 during the first disbursement of cash transfers.

Sample size justification and outcome used: NR. Based on the distribution of clusters in the treatment groups and the required sample sizes, 15 intervention HHs and 11 non-beneficiary HHs were randomly selected to be interviewed in each FDP. In total, 3536 HHs were included in the baseline sample. Approximate sample size calculations were conducted across countries at the inception of the study and are found in Ahmed et al. (2010). (Note: we were unable to find this reference.)

Sampling method: 14 governorates were chosen to implement the ESN based on the classifications of ≥ 10% of the population as severely food insecure, with the end objective of reaching ≥ 75% of this population at the governorate level. The governorates of Hajjah and Ibb were chosen to be the sites of the cash and voucher pilot based on several criteria. These governorates are second- and third-ranked among the 14 governorates implementing the ESN in terms of absolute numbers of food-insecure people. In addition, Hajjah and Ibb had high percentages of the food-insecure (Hajjah: 46.3% and Ibb: 44.0%, according to the 2009 CFSS), as well as relative stability and implementation feasibility (WFP-CO Yemen 2011a). The 136 FDPs within the sample area were randomised into equal numbers of cash or food transfers. Taking into consideration the context of the project area, the study authors stratified the randomisation of clusters at the governorate level due to the distinct socioeconomic and geographic characteristics of Hajjah and Ibb. Based on the distribution of clusters in the treatment groups and the required sample sizes, 15 intervention HHs and 11 non-beneficiary HHs were randomly selected to be interviewed in each FDP. In total, 3536 HHs were included in the baseline sample. Unclear who the non-beneficiary HHs were; they were not mentioned elsewhere.

Study aim or objective: in order to provide rigorous evidence on the relative impact and cost-effectiveness of cash and food transfers, the study authors analysed the results of a cRCT of a seasonal safety net programme implemented by the WFP in rural Yemen. The analysis focused on the relative effectiveness of food and cash transfers. The analysis focused primarily on the differential impacts of these transfer types on food security outcomes.

Schwab 2013 *(Continued)*

Study period: 7 months. Start and end date of study not clearly reported but it started sometime in 2011, with the first cash disbursement in November 2011. Initial meetings with beneficiaries were held in June 2011 before the first transfer of 2011. A follow-up meeting for cash beneficiaries was held in November 2011 during the first disbursement of cash transfers.

Unit of allocation or exposure: clusters; FDPs (villages)

Participants

Baseline characteristics

Intervention or exposure

- *Age*: HH head, mean, years: 47.59. HH members aged 0–5 years, mean, n: 1.2. HH members aged 6–17 years, mean, n: 3.89
- *Place of residence*: proportion in Hajjah governorate, %: 51
- *Sex*: proportion of female headed HHs, %: 21
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: proportion of HHs where HH head attended primary school or higher, %: 27
- *SES*: Standardized Wealth Index, mean: 0.07 SDs (Note: other SES indicators included in Table 2 of publication)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: HH head, mean, years: 47.06. HH members age 0–5, mean, n: 1.23. HH members age 6–17 years, mean, n: 4.00
- *Place of residence*: proportion in Hajjah governorate, %: 49
- *Sex*: proportion of female-headed HHs, n: 17
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: proportion of HHs where HH head attended primary school or higher, %: 25
- *SES*: Standardized Wealth Index, mean: –0.02 SDs (Note: other SES indicators included in Table 2 of publication)
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: both treatment groups, only need-eligible HHs, as determined by a PMT, received benefits. Authors mentioned criteria for which governorates were selected: governorates are second- and third-ranked among the 14 governorates implementing the ESN in terms of absolute numbers of food-insecure people. In addition, Hajjah and Ibb have high percentages of food-insecure people (Hajjah 46.3% and Ibb 44.0%, according to the 2009 CFSS), as well as relative stability and implementation feasibility (WFP-CO Yemen 2011a).

Exclusion criteria: NR

Pretreatment: comparing the food and cash treatment groups, the randomisation appeared to function reasonably well. In terms of HH demographics, food HHs appeared relatively more likely to be headed by females and singles, although the education levels of the HH head did not significantly differ. In terms of assets, cash HHs appeared to be slightly more likely to have more telephones and own their plot of land, and they had a Wealth Index Level 0.09 SDs higher than food HHs. These differences were relatively small in magnitude, but significant at the 10% level, implying that controlling for baseline SES in the main analysis would improve the accuracy of estimated treatment effects. Note: the

Schwab 2013 *(Continued)*

baseline characteristics below were taken from Table 2. (Table 3 could also have been chosen: subsample only. However, text with respect to Table 3 seemed not in line with what is represented in Table 3.) Furthermore, comparisons of means of key outcome variables at baseline were only presented for treatment (food and cash) vs comparison.

Attrition per relevant group: data for 183 HHs excluded from analysis (5% of baseline sample): of the 183 HHs in the original sampling frame not included in this analysis, only 26 were omitted due to pure attrition. These 26 HHs had moved away from their location during the baseline survey, and were unable to be interviewed for the endline survey. The majority of these HHs originally resided in the Al-Wahdah FDP in Hajjah, and were forced to move due to ongoing tribal violence, but these HHs were not included because multiple beneficiaries lived in the same HH. The remaining HHs not considered here had extensive incomplete, missing or unreliable data for key sections. Attrition per group was NR. Furthermore, for outcomes that relied on a recall period including the week before the survey (e.g. days in the last 7 the HH consumed meat), the analysis excluded those HHs that received their transfer in the 8-day period before the survey. However, they stated that as a whole, the summary statistics did not suggest that selecting the subsample of food HHs who received the transfers > 8 days from survey time introduces discernible bias into the analysis.

Description of subgroups measured and reported: dietary diversity in infants and young children: aged 6–23 months and 24–59 months

Total number completed and analysed per relevant group: 1581 HHs analysed. Numbers per group NR.

Total number enrolled per relevant group: total: 1983 HHs; cash group: 1001 HHs; food group: 982 HHs. Total number in baseline table 1 of publication showed 3355 HHs (this may have included a comparison group that is sometimes mentioned but this was unclear). Total number randomised according to text was 3536.

Total number randomised per relevant group: total: 1983 HHs; cash group: 1001 HHs; food group: 982 HHs. Total number in baseline table 1 of publication showed 3355 HHs (this may include a comparison group that is sometimes mentioned but this was unclear). Total number randomised according to text was 3536.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: food transfer
- *Description*: HHs in food FDPs received 3 food transfers, each consisting of 50 kg of wheat and 5 L of oil. The bi-monthly food ration to cover this gap for a mean HH size of 7 people is 50 kg of wheat flour and 5.0 L of vegetable oil.
- *Duration of intervention period*: 7 months. However, the timing of transfers/disbursements was not the same in both groups. The first food disbursement began in August prior to the baseline survey, and the second transfer began in late October. The final transfer, however, did not occur until April.
- *Frequency*: transfer every 2 months
- *Number of study contacts*: 2; baseline and endline surveys of both beneficiaries and those with proxy mean scores just above the qualifying threshold were conducted in all clusters.
- *Providers*: HH-level transfers were distributed in co-ordination with local partners: the Ministry of Education (MoE) in the case of food transfers. Transfers were given out at district branches of the PPSC in each governorate (see Annexe 1, PPSC branches in Hajjah and Ibb).
- *Delivery*: the food transfers were stored in warehouses outside of Sana'a and distributed through local government-run primary schools with the assistance of a FDC (see Annexe 2, FDPs in Hajjah and Ibb). The FDC is comprised of approximately 3 individuals per FDP including a school teacher from each primary school, a local council administrator and a guard. Each individual beneficiary held an WFP ration card containing a unique ID number, photograph, and other identifying information, and presented the card at the time of transfer pickup. Because beneficiaries may not always have been able to travel due to physical disability or other reasons, other family members can collect transfers on behalf of the beneficiary if they have the ration card, national ID of the beneficiary and self-identi-

Schwab 2013 *(Continued)*

fication. Initial meetings with beneficiaries were held in June 2011 before the first transfer of the 2011 cycle was distributed to sensitise beneficiaries to the programme objectives and logistics.

- *Co-interventions*: NR
- *Resource requirements*: the FDC is comprised of approximately 3 individuals per FDP including a school teacher from each primary school, a local council administrator and a guard.
- *Economic indicators*: food incurred higher costs for distribution and those costs associated with in-country transport, as well as warehousing and other associated costs for commodity storage. Ocean freight, port operations and other external shipping expenses were excluded from this analysis. However, internal transportation and labour costs were included to accurately reflect the cost of food distribution in country. Cash modality was less expensive per beneficiary (USD 162.65) than the food modality (USD 181.49). These costs included beneficiary verification and the cost of the transfers itself during the 3-cycle intervention period. On a per-transfer basis (Figure 3), excluding the cost of the transfer, the modality-specific cost of cash (USD 4.09) was approximately half as expensive compared to food (USD 10.37). Incorporation of the beneficiary cost to collect transfer raised the per-transfer cost (excluding the value of the transfer) of cash to USD 8.22. For food transfers, addition of beneficiary costs raised the per-transfer cost (excluding the transfer value) to USD 11.35. Thus, including the beneficiary costs reduces the per-transfer cost gap from USD 6.28 to USD 3.13.

Control

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT
- *Description*: HHs in cash FDPs received 3 cash transfers of an amount equivalent to the local value of the food basket (about USD 50). The total value of the cash transfer was approximately USD 49 (YER 10,500) per transfer per HH, a figure based on the mean equivalent price of the food ration on local markets. Cash transfer HHs could collect cash at any time up to 25 days after disbursement. In the case of cash transfer FDPs, a second resensitisation campaign was held between 22 and 25 November after funds were transferred to PPSC to reinforce messages from the first campaign.
- *Duration of intervention period*: 7 months. However, the timing of transfers/disbursements was not the same in both groups. The first food disbursement began 3 August prior to the baseline survey, and the second transfer began in late October. The final transfer, however, did not occur until April.
- *Frequency*: 3 cash transfers; every 2 months
- *Number of study contacts*: 2; baseline and endline surveys of both beneficiaries and those with proxy mean scores just above the qualifying threshold were conducted in all clusters.
- *Providers*: HH-level transfers are distributed in coordination with local partners: the Yemen PPSC in the case of cash transfers. Transfers are given out at district branches of the PPSC in each governorate (see Annexe 1, PPSC branches in Hajjah and Ibb).
- *Delivery*: initial meetings with beneficiaries were held in June 2011 before the first transfer of the 2011 cycle was distributed to sensitise beneficiaries to the programme objectives and logistics. A follow-up meeting for cash beneficiaries was held in November 2011 during the first disbursement of cash transfers. Cash transfer HHs could collect cash at any time up to 25 days after disbursement.
- *Co-interventions*: NR
- *Resource requirements*: HHs had to invest income in significant travel to receive the cash transfer.
- *Economic indicators*: a primary cost driver for cash was the 3% fee of total cash transferred each cycle as incurred by the post office. Cash modality was less expensive per beneficiary (USD 162.65) than the food modality (USD 181.49). These costs included beneficiary verification and the cost of the transfers itself during the 3-cycle intervention period. On a per-transfer basis (Figure 3), excluding the cost of the transfer, the modality specific cost of cash (USD 4.09) was approximately half as expensive as compared to food (USD 10.37). Incorporation of the beneficiary cost to collect transfer raises the per-transfer cost (excluding the value of the transfer) of cash to USD 8.22. For food transfers, addition of beneficiary costs raises the per-transfer cost (excluding the transfer value) to USD 11.35. Thus, including the beneficiary costs reduces the per-transfer cost gap from USD 6.28 to USD 3.13.

Outcomes	Food expenditure Food security: days in the past week that HHs/adults/children were required to reduce the amount of food consumed at or frequency of meals consumed; months in the previous 6 that HHs had difficulty satisfying their food needs

Schwab 2013 *(Continued)*

	Dietary diversity: HDDS (number of distinct food categories consumed by the HH in the previous 7 days); probability of having a low FCS (< 28.5)
Identification	**Sponsorship source:** government of Spain. **Country:** Yemen **Setting:** poor HHs in rural communities in poorest districts in Yemen **Author's name:** Benjamin Schwab **Email:** b.schwab@cgiar.org **Declarations of interest:** NR **Study or programme name and acronym:** NR **Type of record:** report
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Unclear risk	Not described how randomisation was conducted other than (quote) "In the intervention under study, 136 village clusters (known as Food Distribution Points) were randomly assigned to receive either food or cash assistance."
Allocation concealment (Selection bias)	Low risk	Allocation was at cluster level, by FDP.
Baseline characteristics similar (Selection bias)	Unclear risk	There were many disparities in baseline characteristics between the groups. Unclear whether these had been adjusted for in all analyses. Comparing the food and cash treatment groups, the randomisation appeared to function reasonably well. In terms of HH demographics, food HHs appeared relatively more likely to be headed by a females and singles, although the education levels of the HH head did not significantly differ. In terms of assets, cash HHs did appear to be slightly more likely to have more telephones and own their plot of land, and they have a Wealth Index Level 0.09 SDs higher than food HHs. These differences were relatively small in magnitude, but significant at the 10% level, implying that controlling for baseline SES in the main analysis will improve the accuracy of estimated treatment effects. With respect to the subgroup: comparing those included and those excluded within the food treatment group (Table 3), it becomes clear that while the excluded group was slightly more likely to come from Hajjah, differences in other indicators were generally not significant economically and statistically. The lone exception was that the excluded group had higher motor vehicle ownership rates (5% vs 1%), and slightly higher wealth index levels (not statistically significant). As a whole, the summary statistics did not suggest that selecting the subsample of food HHs who received the transfers > 8 days from survey time introduced discernible bias into the analysis.
Baseline outcome measurements similar (Selection bias)	Unclear risk	Despite the fact that the main analysis was comparing the food and cash transfers, the comparison of baseline outcome measures was only presented for treatment (food and cash) vs comparison (Table 5). The baseline data were not true baseline as the food transfer group had already received the first transfer.

Schwab 2013 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	No blinding was possible, but this was unlikely to influence the delivery of the intervention.
Blinding of outcome assessment (Detection bias)	High risk	Blinding was not possible. Unclear who the outcome assessors were. Some outcomes were self-reported and could thus have been influenced by the knowledge of treatment allocation, especially as preferences for cash vs food among participants varied from baseline to endline, with majority preferring cash at endline.
Protection against contamination (Performance bias)	Low risk	Communities were randomised. Could only get the relevant intervention when having the correct ID.
Incomplete outcome data (Attrition bias)	High risk	183 HHs were excluded from the analysis (5% of baseline sample). At the HH level, there was high attrition: the number analysed was 1581/1983 at baseline (20%). The numbers missing/excluded per group were not provided.
Selective outcome reporting (Reporting bias)	Unclear risk	The paper outlining the methods could not be accessed. Authors did clearly report all the outcomes of interest in the methods section of the report.
Other bias	High risk	There might have been bias introduced due to the differences in the timing of the interventions. Quote: "changes in timing of the survey and distribution schedule resulted in the loss of a pure pre-intervention survey, as the baseline survey occurred after the first food transfer (but before the first cash transfer). Ideally, the disbursement schedules should be identical so that differences in impact can be attributed to difference between the modalities rather than differences in seasonal or other environmental factors influencing budgeting and resource flows within the household, or discrepancies in the period between transfer receipt and survey measurement." Misclassification bias of exposure: low risk. Measurement bias: unclear. It is unclear who collected data and how it was done. Incorrect analysis: low risk. Analyses were adjusted for clustering. Misclassification bias of exposure: low risk. Measurement bias: unclear. Unclear who collected data and how it was done. Incorrect analysis: low risk. Analyses were adjusted for clustering.

Skoufias 2013

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel **How were missing data handled?** Missing data were excluded from analysis. Sample of HHs used for the analysis of consumption was what remained after dropping HHs with food consumption < 1 percentile and > 99 percentile of the food distribution in the sample. An additional 802 HHs were excluded from the analysis because of missing or incomplete data (Leroy 2010). Analyses provide an estimate of ITT effect of in-kind and cash transfers. **Randomisation ratio:** 1:1:1:1 **Recruitment method:** NR **Sample size justification and outcome used:** sample size was calculated so that statistical tests had the power to detect statistically significant and biologically relevant differences in several nutritional and economic variables. Specifically, the calculations of the sample size prior to the baseline survey

Skoufias 2013 *(Continued)*

were based on 60 communities per treatment group, a power of 80%, and a minimum detectable difference in food per capita consumption between each treatment and control group of 17.8%. The final sample consisted of 33 HHs per community and around 52 communities per treatment group (ICC 0.220) (Skoufias 2013).

Sampling method: 2-stage random sampling. A random sample of 208 rural communities was drawn from a pool of communities within 8 of the poorest states in the Southeast region. Within each community, 33 HHs were selected using systematic random sampling. After baseline data collection, the 208 selected communities (6687 HHs) were randomly assigned to 1 of 4 study groups: food basket without education (52 communities, 1657 HHs), food basket with education (52 communities, 1680 HHs), cash transfer with education (53 communities, 1687 communities) or control (51 communities, 1663 HHs). Due to partial contamination of the original evaluation design the analysis pools both in-kind/food basket groups.

Study aim or objective: to examine the impacts of cash and in-kind transfers on HH welfare as measured by food and total consumption, poverty and labour supply (Skoufias 2008; 2013). To estimate the programme's impact on HH energy and macro- and micronutrient consumption and to evaluate whether the cash and in-kind transfers had a differential effect on these outcomes (LeRoy 2010).

Study period: delivery of the PAL benefits began in June 2004 and the mean time of exposure to the availability of the programme transfers was 14 months.

Unit of allocation or exposure: communities

Participants

Baseline characteristics

Intervention (cash transfer)

- *Age*: NR
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: NR
- *SES*: mean total HH expenditure (per AE per month), n = 1492: MXN 551.6 (SD 336.5)
- *Social capital*: NR
- *Nutritional status*: mean dietary intake (per AE per day), n = 1492: total energy (kcal) 2776.8 (SD 1172.2); energy from fruits and vegetables (kcal): 79.7 (SD 70.5); energy from cereals and legumes (kcal): 1723.7 (SD 916.5); energy from animal source food (kcal): 261.7 (SD 214.0); energy from processed food (kcal): 664 (SD 344.1)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age*: NR
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: NR
- *SES*: mean total HH expenditure (per AE per month), n = 1384: MXN 571.3 (SD 352.3)
- *Social capital*: NR
- *Nutritional status*: mean dietary intake (per AE per day), n = 1384: total energy (kcal): 2702 (SD 1140.3); energy from fruits and vegetables (kcal): 81.8 (SD 73.6); energy from cereals and legumes (kcal): 1625.3 (SD 838.9); energy from animal source food (kcal): 278.1 (SD 229.6)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Skoufias 2013 *(Continued)*

Overall

- *Age*: NR
- *Place of residence*: NR
- *Sex*: NR
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: at baseline, about 40% of the HHs heads had completed primary school.
- *SES*: families lived in homes with a mean of < 3 rooms. The mean number of AE per HH was about 4.
- *Social capital*: NR
- *Nutritional status*: NR
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Inclusion criteria: HHs eligible for PAL (localities had to meet some requirements such as having a population of < 2500, having a high or very high marginality and being accessible (not > 2.5 km from a road), and close enough (not > 2.5 km) to a DICONSA store (Mexican Government's agency that distributes the supply of food).

Exclusion criteria: NR

Pretreatment: the occasional significance of some variables indicated that the random assignment did not manage to balance totally the sample across the treatment and control groups, especially with respect to HH consumption (Table A.1). However, DID analysis accounted for this imbalance. In Leroy 2010, baseline nutrient intakes in cash transfer and control groups were similar.

Attrition per relevant group: intervention group (cash transfers with education): 195/1687 (11.6%); control group: 279/1663 (16.8%). Total attrition: 864/6687 (13%) HHs. Reasons for attrition not provided, except for 1 cluster (33 HHs) in the control group and another in food basket without education group, that refused to participate in the follow-up survey.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: full data were thus available for 5823 HHs (food basket without education: 51 communities, 1447 HHs; food basket with education: 52 communities, 1500 HHs; cash transfer with education: 53 communities, 1492 HHs; control: 50 communities, 1384 HHs) (Leroy 2010).

Total number enrolled per relevant group: the data use were based on a longitudinal sample of 5851 HHs in 206 poor rural localities from 6 southern Mexican states (Chiapas, Guerrero, Oaxaca, Quintana Roo, Tabasco and Veracruz). Numbers per group NR.

Total number randomised per relevant group: after baseline data collection, the 208 selected communities (6687 HHs) were randomly assigned to 1 of 4 study groups: food basket without education (52 communities, 1657 HHs), food basket with education (52 communities, 1680 HHs), cash transfer with education (53 communities, 1687 HHs) or control (51 communities, 1663 HHs) (Leroy 2010).

Interventions

Intervention characteristics

Intervention (cash transfer)

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT
- *Description*: in-kind and cash transfers provided for poor rural HHs. The PAL programme offers nutrition and health education sessions (platicas), as well as participation in programme-related logistic activities. However, attendance was not compulsory. HHs received either a cash transfer of MXN 150/month (equivalent to USD 14 at the time) or a monthly food basket with a cost to the programme of MXN 150. The size of the cash transfer and the amount of food was the same for all HHs regardless of family size or composition. The value of the food basket at local prices was 30% higher for consumers than the actual cost to the programme (Leroy 2010).

Skoufias 2013 *(Continued)*

- *Duration of intervention period*: delivery of the PAL benefits began in June 2004 and the mean time of exposure to the availability of the programme transfers was 14 months.
- *Frequency*: every 2 months
- *Number of study contacts*: the control and the treatment groups were surveyed on 2 occasions 2 years apart: at baseline in October 2003 to April 2004, and at follow-up in October–December 2005.
- *Providers*: Mexican government, specifically: benefits were distributed through DICONSA, the related federal programme which distributes non-perishable foods and housekeeping goods throughout rural poor communities.
- *Delivery*: distribution of transfers was through DICONSA stores (Mexican government's agency that manages the supply of food). 75% of beneficiaries were women. The value of cash transfer in real terms was smaller than the in-kind transfers. The cash transfers provided by the programme were implemented for those very isolated communities where DICONSA did not regularly reach.
- *Co-interventions*: none reported
- *Resource requirements*: NR
- *Economic indicators*: cash transfers: USD 14/month. Other: NR

Control: no intervention

Outcomes	Dietary diversity: proportion of children with MDD (consumed foods from ≥ 3–6 food groups) Diet intake: consumption of iron-rich or iron-fortified foods Anthropometry: BMI
Identification	**Sponsorship source:** Mexican government **Country:** Mexico **Setting:** poor rural HHs in Southern states of Mexico **Author's name:** Emmanuel Skoufias **Email:** eskoufias@worldbank.org **Declarations of interest:** no conflicts of interest (Leroy 2010). **Study or programme name and acronym:** Programa de Apoyo Alimentario (PAL) (food support programme) **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Quote: "Localities were randomised into four groups using a simple randomisation algorithm" (Cunha 2014).
Allocation concealment (Selection bias)	Low risk	Allocation was at location level (clusters), carried out by the Ministry of Social Development after baseline data collection.
Baseline characteristics similar (Selection bias)	Low risk	Although there were some differences between characteristics at baseline, the DID analysis adjusted for these.
Baseline outcome measurements similar (Selection bias)	Low risk	Baseline nutrient intakes in both groups were similar (Leroy 2010). Although HH food expenditure was less in the intervention group at baseline ($P < 0.1$) (Addendum A, Skoufias 2013), the data were analysed with DID methods which adjusts for pre-existing baseline differences.

Skoufias 2013 *(Continued)*

Blinding of participants and personnel (Performance bias)	Low risk	Blinding was not possible due to the nature of the intervention. This was unlikely to influence behaviour of participants and personnel.
Blinding of outcome assessment (Detection bias)	Low risk	Quote: "To avoid potential interviewer bias, field workers were, to the extent possible, unaware of the group assignment."
Protection against contamination (Performance bias)	Unclear risk	Allocation was done at the community level; however, there was no information about whether communities in control group received either intervention. Cunha 2014 reported that 1 control HH reported receiving aid.
Incomplete outcome data (Attrition bias)	High risk	11.6% attrition in the intervention group and 16.8% in the control group. 1 cluster lost as 1 community in the control group refused to participate in the follow-up survey (33 HHs). The study authors reported that HHs excluded from the analyses tended to live in smaller houses than those included (2.48 vs 2.77 rooms; $P < 0.05$). Nutrient consumption at baseline was higher in excluded HHs, but no details were reported.
Selective outcome reporting (Reporting bias)	Unclear risk	No study protocol available.
Other bias	Unclear risk	Misclassification bias: unclear risk. Receipt of cash transfers were self-reported in 1 paper (Cunha 2014), but NR as such in other papers. Measurement bias: low risk. Trained field workers interviewed the homemaker at baseline and follow-up (semi-quantitative FFQ questionnaire of 61 food items consumed at home in the 7 days prior). Incorrect analysis: unclear risk. SEs were corrected for clustering of individuals at the village level in Skoufias 2013, but adjusting for clustering NR in Leroy 2010. Recruitment bias: low risk. Participants were recruited after allocation of locations (clusters), but were randomly sampled in each location. Seasonality bias: low risk. The month of data collection was included to adjust for the possible effect of seasonality on consumption.

Sturm 2013

Study characteristics	
Methods	**Study design:** PCS **How were missing data handled?** NR. It is unclear how many HHs had incomplete data at follow-up. Data were analysed as monthly observations for each HH. **Randomisation ratio:** N/A **Recruitment method:** N/A **Sample size justification and outcome used:** NR **Sampling method:** HHs enrolled in Discovery Vitality used the Discovery visa credit card for purchases at pick n pay supermarkets. Scanner data from Pick n Pay for credit card purchases from November 2009 to March 2012 were linked to 169,485 HHs. **Study aim or objective:** to examines the effect of a price reduction for healthy food items on HH grocery shopping behaviour among members of South Africa's largest health plan. **Study period:** 28 months: November 2009 to March 2012 **Unit of allocation or exposure:** HHs

Sturm 2013 *(Continued)*

Participants	**Baseline characteristics** Intervention or exposure • *Age*: NR • *Place of residence*: NR • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: NR • *Social capital*: NR • *Nutritional status*: ratio of healthy to total food expenditure, mean: 10% rebate: 0.21 (SD 0.11); 25% rebate: 0.21 (SD 0.12). Ratio of fruit and vegetable to total food expenditure, mean: 10% rebate: 0.10 (SD 0.08), 25% rebate: 0.10 (SD 0.08). • *Morbidities*: NR • *Concomitant or previous care*: NR • *Distance from home to nearest Pick and Pay store*: mean distance, km: 10% rebate: 1.96 (SD 1.88); 25% rebate: 1.96 (SD 1.91) Control • *Age*: NR • *Place of residence*: NR • *Sex*: NR • *Ethnicity and language*: NR • *Occupation*: NR • *Education*: NR • *SES*: NR • *Social capital*: NR • *Nutritional status*: ratio of healthy to total food expenditure, mean: 0.17 (SD 0.13). Ratio of fruit and vegetable to total food expenditure, mean: 0.09 (SD 0.09) • *Morbidities*: NR • *Concomitant or previous care*: NR • *Distance from home to nearest Pick and Pay store*: mean distance, km: 2.11 (SD 1.99) Overall: NR **Inclusion criteria:** all Vitality members were eligible for the healthy food benefit at no additional cost to them, but they had to activate the benefit online or by telephone. Only purchases made with a Visa credit card issued by Discovery were analysed, as this was the only identifying information for purchases for which there was no rebate. **Exclusion criteria:** none reported **Pretreatment:** HHs who became eligible for a rebate during the study period already had a larger proportion of overall food expenditure going towards healthy foods and a smaller proportion towards less desirable foods at baseline (when nobody was eligible for the rebate) than HHs that never participated in the programme. Participants also lived closer to a Pick n Pay supermarket than to a competing supermarket; the opposite was true for non-participants. The difference between non-participants and participants was significant for all variables. **Attrition per relevant group:** NR **Description of subgroups measured and reported:** effects for all shoppers vs nearby shoppers (those living ≥ 1 km closer to nearest Pick n Pay supermarket relative to nearest Shoprite or Woolworths supermarket)

Sturm 2013 *(Continued)*

Total number completed and analysed per relevant group: total: 169,485 Discovery visa holders; intervention (HealthyFood benefit): 100,344 (10% rebate); 67,343 (25% rebate); control (non-participants): 69,141

Total number enrolled per relevant group: total: 169,485. Discovery visa holders; intervention (HealthyFood benefit): 100,344 (10% rebate); 67,343 (25% rebate); control (non-participants): 69,141

Total number randomised per relevant group: N/A

Interventions	**Intervention characteristics** Intervention or exposure • *Food access intervention category*: food prices • *Intervention type*: rebate for healthy food purchases (cash-back payments) • *Description*: large subsidy programme that operated nationwide, started in 2009 by South Africa's largest health insurer: the HealthyFood programme. Provided a rebate of up to 25% on healthy food purchases in > 400 designated supermarkets across South Africa. All Vitality members were eligible for the healthy food benefit at no additional cost to them, but they had to activate the benefit online or by telephone. Following activation, members immediately received a 10% rebate for healthy foods, which increased to a 25% rebate on completion of an online health risk assessment questionnaire. The rebate was capped at a ZAR 4000 maximum monthly purchase (about USD 480) per HH and a limit related to participation in health promotion activities. Food items eligible for the rebate programme were selected by a panel consisting of nutritionists, physicians and behavioural scientists based on international guidelines on healthy nutrition, including those from South Africa and the US. Complete list of eligible items (> 6000) was on Discovery's website (www.discovery.co.za) and distributed as brochures to programme participants. Participating supermarkets had in-store signs identifying eligible foods; they are also marked on the store receipt. The labelling was implemented prior to the study period and was not changed during the study • *Duration of intervention period*: 28 months; scanner data from Pick n Pay for credit card purchases from November 2009 to March 2012. • *Frequency*: monthly. Purchases were collapsed into monthly observations, resulting in 1,909,740 observations (HH months). • *Number of study contacts*: NR. Scanner data available every time the card was used to purchase items at Pick n Pay. • *Providers*: Discovery health insurance company in collaboration with Pick n Pay supermarkets. • *Delivery*: activate HealthyFood benefit online or by telephone • *Co-interventions*: none reported • *Resource requirements*: NR • *Economic indicators*: NR Control: no intervention
Outcomes	Proportion of HH expenditure on food: ratio of healthy to total food expenditure for 10% rebate; ratio of healthy to total food expenditure for 25% rebate; ratio of fruit and vegetables to total food expenditure for 10% rebate; ratio of fruit and vegetables to total food expenditure for 25% rebate; ratio of less desirable food to total food expenditure in a HH for 10% rebate; ratio of less desirable food to total food expenditure in a HH for 25% rebate.
Identification	**Sponsorship source:** National Cancer Institute (grant R21CA161287); the National Institute of Child Health Human Development (grant R21HD071568); and the Anne and James Rothenberg Dissertation Award, 2011–2012. **Country:** South Africa **Setting:** supermarkets **Author's name:** Roland Sturm **Email:** sturm@rand.org

Sturm 2013 *(Continued)*

Declarations of interest: yes; no financial disclosures.

Study or programme name and acronym: HealthyFood programme

Type of record: journal article

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA, where participants self-selected into intervention.
Allocation concealment (Selection bias)	High risk	CBA.
Baseline characteristics similar (Selection bias)	Unclear risk	Intervention HHs lived closer to a Pick and Pay supermarket than controls. Other sociodemographic characteristics NR. The authors used a DID analysis with matched HHs but, since no characteristics were reported, it was not possible to assess baseline imbalance.
Baseline outcome measurements similar (Selection bias)	High risk	Study authors reported that the expenditure on healthy food as a ratio of total expenditure was higher in the intervention HHs than in the controls.
Blinding of participants and personnel (Performance bias)	Low risk	Intervention was assessed based on sales data as part of participants' usual grocery shopping behaviour.
Blinding of outcome assessment (Detection bias)	Low risk	Outcome was measured using scanner data from supermarkets, therefore, blinding unlikely to influence these outcomes.
Protection against contamination (Performance bias)	Low risk	Non-participants could not have benefited from the intervention (rebates) as they were not registered to receive benefits.
Incomplete outcome data (Attrition bias)	Unclear risk	Missing or excluded data among scanner data collected NR.
Selective outcome reporting (Reporting bias)	Unclear risk	No protocol available.
Other bias	Unclear risk	Misclassification bias: unlikely. Linked with use of Vitality credit card. Measurement bias: unclear. Potential bias due to use of scanner data which may not be representative of total purchasing behaviour. Seasonality bias: unlikely. Seasonality in grocery shopping patterns were controlled for with a set of dichotomous variables for each specific month in a year.

Tonguet Papucci 2015

Study characteristics

Methods

Study design: cRCT

Study grouping: parallel group

Tonguet Papucci 2015 *(Continued)*

How were missing data handled? influence of missing data assessed using a sensitivity analysis using multiple imputation to account for missing values. Children without ≥ 2 measurements or excluded from the analysis. Authors employed ITT analysis.

Randomisation ratio: 1:1 (16 control villages and 16 intervention villages)

Recruitment method: initial recruitment by approaching a village representative (normally village head and his/her committee) to obtain consent for participation of village following an explanation of aims of research. Individual informed consent then sought from individual HH representatives (usually mothers) following explanation of research aim, sequence of activities and procedures, and risks and benefits of participation.

Sample size justification and outcome used: Houngbe: type I error of 5%, a statistical power of 90% and a minimum follow-up time of 24 months, assuming a 33% reduction in the cumulative incidence of wasting, a coefficient of variation K of 0.25 and an anticipated 25% dropout, 16 clusters with 50 children were required in each study group. Tonguet-Papucci: to detect a decrease with 33% in the cumulative incidence of wasting assuming a baseline incidence rate of wasting of 0.26 per child-year with a Type I error of 5%, a statistical power of 90% and a minimum follow-up of 24 months, assuming a coefficient of variation K of 0.25, 16 clusters of 50 HHs per cluster were necessary per study group. This calculation accounted for an anticipated 25% drop-out.

Sampling method: villages randomly assigned to intervention and control groups during a ceremony to keep the allocation of cash transparent and fair. Representatives of each of 32 villages drew blindly from a bag 1 of the 32 identical papers with 'cash' or 'no cash' written on it. Within villages, HH participation in study was voluntary and based on inclusion criteria. How 32 villages in 3 municipalities were selected was NR.

Study aim or objective: Houngbe: "to assess the impact of a cash transfer programme in reducing the incidence of acute malnutrition and morbidity and the prevalence of stunting in children aged 36 months.

Study period: June 2013 to October 2015

Unit of allocation or exposure: villages

Participants

Baseline characteristics

Intervention or exposure

- *Age*: child, mean, months: 6.83 (SD 3.29); children, n (%): aged 6 months: 236 (37.5); aged 6–11 months: 358 (56.8); aged 12–15 months: 36 (5.7)
- *Place of residence*: rural area in eastern Burkina Faso
- *Sex*: children, n (%): boys 349 (55.4); girls 281 (446)
- *Ethnicity and language*: predominantly Gourmanche people, Gulmancema is the predominant local language
- *Occupation*: NR
- *Education*: NR
- *SES*: HHs, n (%): low SES: 288 (45.7); medium SES: 224 (35.6); high SES: 118 (18.7)
- *Social capital*: NR
- *Nutritional status*: mean: WHZ: –1.24 (SD 1.23); HAZ: –1.18 (SD 1.44); MUAC, mm: 131.3 (SD 12.8); stunted children, n (%) (HAZ2): 175 (27.7)
- *Morbidities*: NR
- *Concomitant or previous care*: none reported but authors mentioned that a national social protection policy that promoted social transfer mechanisms to the poorest and most vulnerable was adopted in 2012 to enhance food security among the population.

Control

- *Age*: child, mean, months: 7.79 (SD 2.93); children, n (%): aged 6 months: 161 (26.0); aged 6–11 months: 396 (63.8); aged 12–15 months: 63 (10.2)
- *Place of residence*: rural area in eastern Burkina Faso

Tonguet Papucci 2015 *(Continued)*

- *Sex*: children, n (%): boys 313 (50.5); girls: 307 (49.5)
- *Ethnicity and language*: predominantly Gourmanche people, Gulmancema is the predominant local language
- *Occupation*: NR
- *Education*: NR
- *SES*: Number (%) of HHs: low SES 248 (40.1) middle SES 205 (33.1) high SES 166 (26.8)
- *Social capital*: NR
- *Nutritional status*: mean: WHZ: –1.07 (SD 1.12); HAZ –1.33 (SD 1.24); MUAC, mm: 133.1 (SD 11.7) mm; stunted children, n (%) (HAZ2): 169 (SD 27.2)
- *Morbidities*: NR
- *Concomitant or previous care*: none reported but authors mentioned that a national social protection policy that promoted social transfer mechanisms to the poorest and most vulnerable was adopted in 2012 to enhance food security among the population.

Overall: NR

Inclusion criteria: HHs classified as poor or very poor according to the Household Economy Approach; with ≥ 1 child aged < 1 year at time of inclusion, regardless of nutritional status; children with ≥ 2 follow-up measurements.

Exclusion criteria: NR

Pretreatment: overall, baseline characteristics were balanced between groups. Children in intervention group were more likely to be 1 month younger and more wasted than children in the control group.

Attrition per relevant group: Houngbe 2017: intervention group: 2.2% (14/644) of children; control group: 2.2% (14/634) of children. Intervention: 14 children LTFU at visit 2 (12 deaths and 2 left study area); excluded from analysis. Additional LTFU: 43 children LTFU between visits 3 and 9 (reasons: 35 deaths; 8 left study area); control: 14 children LTFU at visit 2 (10 deaths, 4 wrongly included); excluded from analysis. Additional LTFU: 28 LTFU between visits 3 and 9 (reasons: 22 deaths; 6 left study area).

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: intervention: 630 children analysed; control: 620 children analysed

Total number enrolled per relevant group: Houngbe 2017: intervention: 644 children from 602 HHs; control: 634 children from 583 HHs.

Total number randomised per relevant group: total 1278 children from 32 villages randomised; intervention: 644; control: 634.

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: UCT
- *Description*: seasonal UCTs provided monthly July–November over 2 years (2013 and 2014). Monthly allowance of XOF 10,000 (USD 17) was given by mobile phone (offered by the project) to participating HHs. Specifically designated mothers were the primary recipients of the transfer because they were usually in charge of child care.
- *Duration of intervention period*: 5 months (July–November) in 2013 and 5 months (July–November) in 2014. These months represent the 'lean season' in Burkina Faso.
- *Frequency*: monthly
- *Number of study contacts*: 9 visits. Baseline data collected 1 month earlier in the intervention group than in the control group in order to enable cash transfer to start on time. Follow-up visits performed at the same time in the 2 groups. Data collection lasted 29 month (June 2013 to October 2015).
- *Providers*: ECHO trained project staff

Tonguet Papucci 2015 *(Continued)*

- *Delivery*: a dedicated team supervised and followed up cash transfer activities jointly with the research team. A partnership with a mobile telephone company enabled cash distribution via mobile telephone. Before the intervention, all mothers in the intervention group received an identity card provided by the field teams, a mobile telephone and a subscriber identification module card linked to an electronic account. At the time of distribution, mothers received a text message providing a code and notifying them that their account was credited. Mothers were thus invited to visit cash withdrawal points to collect their money. Presentation of the identity card and the code granted access to the money. Mothers confirmed the cash withdrawal by signing follow-up lists. All study participants in the intervention group (100%) received their monthly allowance within 1 week. Operational constraints such as mothers' limited knowledge about the use of mobile telephones, difficulty charging the mobile telephones because of the lack of electricity and low literacy rate among mothers were encountered during the delivery of cash. Sessions demonstrating basic uses of a mobile telephone, home visits by cash transfer supervisors to inform HHs about the scheduled dates for cash transfers, switching subscriber identification module cards from 1 telephone to another at cash withdrawal points, and direct transfers in remote villages were mitigation strategies put in place to tackle these difficulties.
- *Co-interventions*: none reported but authors mentioned that a national social protection policy that promotes social transfer mechanisms to the poorest and most vulnerable was adopted in 2012 to enhance food security among the population.
- *Resource requirements*: NR
- *Economic indicators*: over 1 year, a total of XOF 50,000 (USD 85) was transferred to each eligible HH, representing; 33% of the 2014 national poverty line, estimated at XOF 153,530 (USD 260).

Control

- *Food access intervention category*: non-active control
- *Intervention type*: N/A
- *Description*: mothers of children in control group did not receive a cash grant. Incentives (e.g. a cooking kit, fabrics) were given to HHs in the control group to compensate for the time they spent answering the MAM'Out questionnaires.
- *Duration of intervention period*: N/A
- *Frequency*: unclear how often compensation was given.
- *Number of study contacts*: 9 visits. Baseline data collected 1 month earlier in intervention group than in control group in order to enable cash transfer to start on time. Follow-up visits performed at the same time in the 2 groups. Data collection lasted 29 months (June 2013 to October 2015).
- *Providers*: N/A
- *Delivery*: N/A
- *Co-interventions*: 9 visits. Baseline data collected 1 month earlier in intervention group than in control group in order to enable cash transfer to start on time. Follow-up visits performed at the same time in the 2 groups. Data collection lasted 29 months (June 2013 to October 2015).
- *Resource requirements*: N/A
- *Economic indicators*: N/A

Outcomes	Dietary diversity: DDS; MDD; minimum acceptable diet; proportion consuming iron-rich or iron-fortified foods Anthropometry: incidence of wasting; HAZ; WHZ; incidence of stunting; MUAC Morbidity: incidence diarrhoeal disease; incidence ARIs
Identification	**Sponsorship source:** Houngbe et al 2017: Action Against Hunger France and the CDC, European Commission's Humanitarian Aid and Civil Protection department, USAID (through the Technical Operational Performance Support programme) and Foundation Action Against Hunger (France) for research and innovation supported research uptake and the dissemination of results. The cash transfer programme was funded by European Commission's Humanitarian Aid and Civil Protection department. 1 study author supported by the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH), led by the International Food Policy Research Institute. Tonguet-Papucci: study funded by Actino Contre la Faim – France and the Center for Disease Control. The cash transfer programme was made possible thanks to ECHO funds. The cost-effectiveness analysis is co-funded by Action Contre la Faim and the Nutrition Embedding Evaluation Program (NEEP, PATH-DFID).

Tonguet Papucci 2015 *(Continued)*

Country: Burkina Faso

Setting: poor and very poor rural HHs in eastern Burkina Faso

Comments: registered at clinicaltrials.gov as NCT01866124.

Authors' names: F Houngbe; A Tonguet-Papucci

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Declarations of interest: yes; Houngbe: "J-FH, LH, and PK, no conflicts of interest. FH, AT-P, CA, and MA-A are employed by Action Against Hunger France, which implemented the MAM'Out study." Tonguet-Papucci: "The authors declare that they have no competing interests."

Study or programme name and acronym: Moderate Acute Malnutrition Out (MAM'Out) research project/study

Type of record: Houngbe: journal article. Tonguet-Papucci: study protocol

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Quote: "Villages were randomly assigned to the intervention and control groups during a ceremony in order to keep the allocation of cash transparent and fair. Representatives of each of the 32 villages drew blindly from a bag one of the 32 identical papers with "cash" or "no cash" written on it."
Allocation concealment (Selection bias)	Low risk	Allocation to intervention groups was by village at the beginning of the study.
Baseline characteristics similar (Selection bias)	Low risk	Quote: "Overall, baseline characteristics were balanced between the intervention and the control groups (Table 1)." Comment: intervention group had more young children (aged < 6 years) compared to control group but all analyses adjusted for child's age at baseline. In addition, Houngbe 2017 reported that adjustment had been done for important prognostic covariates.
Baseline outcome measurements similar (Selection bias)	Low risk	Children in intervention group were more likely to be wasted. No morbidity outcomes measured at baseline. Analysis adjusted for morbidity status and WHZ at baseline.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding possible but this was unlikely to affect participant behaviour.
Blinding of outcome assessment (Detection bias)	High risk	Outcome assessors were not blinded to treatment assignment. Morbidity outcomes were recalled by mothers and these could have been influenced by knowledge of treatment allocation.
Protection against contamination (Performance bias)	Low risk	Allocation was by village and it was unlikely that control villages received treatment. Given the cluster randomised design of the study combined with poor and very poor participants who likely did not travel to other villages often, the risk of contamination was not judged to be appreciable.
Incomplete outcome data (Attrition bias)	Low risk	Attrition was not high: 99/1278 (7.8%) children enrolled LTFU, due to either death or leaving the study area. 57/644 (8.9%) children in intervention group and 42/634 (6.6%) children in control group LTFU from visits 1 to 9. Data from

Tonguet Papucci 2015 *(Continued)*

		children with < 2 measurements were excluded: 14 (2.2%) children in intervention group (2.2%) and 14 (2.2%) children in control group were excluded.
Selective outcome reporting (Reporting bias)	High risk	Some morbidity outcomes reported in the protocol were NR in published paper (oedema and measles).
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: unlikely. Incorrect analysis: unclear. Adjusted for clustering. Poisson regression model adjusted for clustering by village, household and child. The payment ('compensations') for the time control participants spent on the study may have resulted in volunteer bias, which may have altered effect sizes. Furthermore, the payment in itself was not meaningfully different from the intervention (though no values were specified) and may have influenced outcomes as well.

Verbowski 2018

Study characteristics	
Methods	**Study design:** cRCT **Study grouping:** parallel group **How were missing data handled?** In 9 cases, the participant who had been enrolled at baseline was N/A at the time of data collection; so another adult female HH member of the appropriate age completed the 24-hour recall. When nutrient values were N/A for protein, fat, iron, zinc, calcium, vitamin A, thiamine or riboflavin, values were imputed from USDA food composition equivalents, based on values per 100 g by weight (USDA 2016). Given the high attrition rates, instead of estimating missing data using multiple imputation, study authors employed the direct maximum likelihood method to account for the missing values at 22 months, which uses each respondent's available data to compute the likelihood function. The overall likelihood was the product of 2 factors: 1 computed for those respondents with missing data on some variables and 1 for those with complete data on all variables. Parameter estimation and SEs were derived from maximising the overall likelihood function. **Randomisation ratio:** 1:1:1 **Recruitment method:** among the eligible villages (190, which were those not already participating in other development programmes), random selection was used to identify 90 villages to participate in the study. **Sample size justification and outcome used:** number of clusters and HHs within each cluster was estimated based on the proportion of anaemic women and children, with 80% power and an a priori significant level of 0.025, to account for multiple comparisons. Assuming a 50% prevalence of anaemia and an interclass correlation of 0.05, a sample size of 300 for each group provided 80% power to detect a 15% absolute reduction in the prevalence of anaemia. **Sampling method:** with randomised villages, purposive sampling was used to identify 10 HHs per village to participate. Half of the participants (5/10 HHs within each cluster) were randomly selected to complete endline dietary assessment. **Study aim or objective:** to examine the effect of EHFP with or without aquaculture on dietary intake and prevalence of inadequate intake of select nutrients among women and children living in rural Cambodia, compared to controls. **Study period:** July 2012 to June 2014, a 22-month period **Unit of allocation or exposure:** villages
Participants	**Baseline characteristics** EHFP + aquaculture

Verbowski 2018 *(Continued)*

- *Age, mean*: women, years: 29.4 (SD 6.3); children, months: 24.2 (SD 15.0)
- *Place of residence*: NR
- *Sex*: adults were all women; sex of children, n %: 167 boys (55.7)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: women's schooling, mean, years: 3.8 (SD 3.0)
- *SES*: Wealth Index quintiles, n (%): lowest: 49 (16.3); middle: 67 (22.3); highest: 68 (22.7); HH size, mean: 4.6 (SD 1.5)
- *Social capital*: NR
- *Nutritional status*: women, n (%): underweight: 40 (14.2); anaemia: 110 (39.0). Children, n (%): underweight: 70 (23.5), wasted: 20 (6.7); stunted: 83 (27.0); anaemia: 188 (63.1)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

EHFP

- *Age, mean*: women, years: 29.8 (SD 6.5); children, months: 24.4 (SD 15.7)
- *Place of residence*: NR
- *Sex*: adults were all women; sex of children, n (%): 163 boys (54.3)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: women's schooling, mean, years: 4.6 (SD 2.6)
- *SES*: Wealth Index quintiles, n (%): lowest: 53 (17.7%); middle: 62 (20.7%); highest: 74 (24.7%); HH size, mean: 4.6 (SD 1.5)
- *Social capital*: NR
- *Nutritional status*: women, n (%): underweight: 37 (13.4); anaemia: 116 (41.9). Children, n (%): underweight: 78 (26.1), wasted: 25 (8.4); stunted: 68 (22.7); anaemia: 195 (65.4)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Control

- *Age, mean*: women, years: 29.6 (SD 6.77); children, months: 24.3 (SD 15.2)
- *Place of residence*: NR
- *Sex*: adults were all women; sex of children, n (%): 156 boys (52.0)
- *Ethnicity and language*: NR
- *Occupation*: NR
- *Education*: women's schooling, mean, years: 3.8 (SD 2.9)
- *SES*: Wealth Index quintiles, n (%): lowest: 78 (26.0); middle: 54 (18.0); highest: 42 (14.0); HH size, mean: 4.8 (SD 1.6)
- *Social capital*: NR
- *Nutritional status*: women, n (%): underweight: 46 (16.6); anaemia: 114 (41.0). Children, n (%): underweight: 69 (23.0), wasted: 25 (8.3); stunted 88 (29.3); anaemia: 177 (59.2)
- *Morbidities*: NR
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: Within each village, 10 HHs were purposefully selected, according to specific criteria: HH home to a woman of childbearing age, considered poor based on local wealth rankings, had access to sufficient land and labour, had # 1 child aged < 5 years, and the woman was interested in participating in the FoF project.

Exclusion criteria: NR

Pretreatment: no significant differences between groups (P > 0.05), except for years of education and wealth quintiles were not equally distributed across groups; women on average had completed more

Verbowski 2018 *(Continued)*

years of schooling in the EHFP group than in the EHFP + aquaculture and control groups, and more HHs in the control group were in the bottom Wealth Index quintile as compared with HHs in the EHFP and EHFP + aquaculture groups. Therefore, these were included in the multivariable models as potential confounders.

Attrition per relevant group: EHFP + aquaculture group: 7 women and 7 children LTFU; EHFP group: 4 women and 4 children LTFU; control group: 10 women and 10 children LTFU. The overall HH attrition rate was 16.2% (146), which did not differ across groups (P = 0.74), but attrition for women overall was higher (38.6%, 348), mainly due to employment-related temporary migration. Primary outcome data were available for 179 (control), 185 (EHFP) and 188 (EHFP + aquaculture) women and 232 (control), 255 (EHFP) and 245 (EHFP + aquaculture) children. Venous blood samples were successfully obtained from 88% of the subset of 450 women at 22 months. LTFU for the venous blood draw was higher among women in control group (22.0%, 33) than in the EHFP (6.7%, 10) and EHFP + aquaculture (6.0%, 9) groups.

Description of subgroups measured and reported: only a subgroup of participants measured and analysed per group: of the 10 HHs per village, only 5 per group were randomly selected to be assessed for dietary intake outcomes and analysed as such. Of these, further subgroups (43 woman–child pairs for EHFP + aquaculture group; 45 woman–child pairs for EHFP group; 46 woman–child pairs for the control group) were selected to do a repeat dietary intake assessment on a non-consecutive day.

Total number completed and analysed per relevant group: EHFP + aquaculture group: 143 women and 142 children analysed; EHFP group: 146 women and 144 children analysed; control group: 140 women and 135 children analysed.

Total number enrolled per relevant group: each group had 30 villages randomly assigned to them, and from each village 10 HHs were enrolled, which provided per group: 300 HHs, 300 women (of which 150 women's venous blood samples were taken), 300 children

Total number randomised per relevant group: see above

Interventions

Intervention characteristics

EHFP + aquaculture

- *Food access intervention category*: increasing buying power
- *Intervention type*: income generation
- *Description*: basic agricultural inputs and training, and nutrition and hygiene education. The education inter alia focused on optimal nutrition for women and infant and young child practices, and the use of nutrient-dense produce grown by farmers were demonstrated. EHFP aimed to increase production and intakes of various types of vegetables, herbs and tree fruit. The aquaculture intervention intended to increase the production of 3 types of small fish, which typically are consumed whole, as well as 3 types of large fish (typically sold for income or fillets consumed).
- *Duration of intervention period*: 22 months
- *Frequency*: unclear
- *Number of study contacts*: unclear
- *Providers*: trained village health volunteers provided education sessions. This support was provided through VMFs (1 in each village), set up and supported by HKI and local NGO partners.
- *Delivery*: group received basic agricultural inputs and training as well as nutrition and hygiene education. Trained village health volunteers provided education sessions, through small group and one-on-one counselling. Cooking demonstrations were also conducted. Support was provided through VMFs (1 in each village), set up and supported by HKI and local NGO partners.
- *Co-interventions*: NR
- *Resource requirements*: agricultural and aquacultural inputs and training, nutrition and hygiene education, trained village health volunteers, support from local and international agencies.
- *Economic indicators*: NR

EHFP

- *Food access intervention category*: increasing buying power

Verbowski 2018 *(Continued)*

- *Intervention type*: income generation
- *Description*: basic agricultural inputs and training, and nutrition and hygiene education. The education inter alia focused on optimal nutrition for women and infant and young child practices, and the use of nutrient-dense produce grown by farmers were demonstrated. EHFP aimed to increase production and intakes of various types of vegetables, herbs and tree fruit.
- *Duration of intervention period*: 22 months
- *Frequency*: unclear
- *Number of study contacts*: unclear
- *Providers*: trained village health volunteers provided education sessions. This support was provided through VMFs (1 in each village), set up and supported by HKI and local NGO partners.
- *Delivery*: group received basic agricultural inputs and training as well as nutrition and hygiene education. Trained village health volunteers provided education sessions, through small group and one-on-one counselling. Cooking demonstrations were also conducted. Support was provided through VMFs (1 in each village), set up and supported by HKI and local NGO partners.
- *Co-interventions*: NR
- *Resource requirements*: agricultural inputs and training, nutrition and hygiene education, trained village health volunteers, support from local and international agencies.
- *Economic indicators*: NR

Control: no intervention

Outcomes	Dietary intake: prevalence of inadequacy of food intake in women/children Anthropometry: underweight (mothers/children); stunting Biochemical: Hb concentration (women/children) Morbidity: anaemia (women/children)
Identification	**Sponsorship source:** International Development Research Centre (IDRC, grant number 106928) and Global Affairs Canada (GAC); HKI; University of British Columbia (UBC) **Country:** Cambodia **Setting:** villages in the rural Prey Veng Province, 1 of the poorest provinces with 27% of homes classified as poor, and located on the east bank of the Mekong river. **Comments:** trial registry number: NCT01593423 **Authors' names:** Susan Barr and Tim Green **Email:** susan.barr@ubc.ca; tim.green@sahmri.com **Declarations of interest:** yes; no conflicts of interest **Study or programme name and acronym:** Fish on Farms (FoF) project using the Enhanced Homestead Food Production (EHFP) programme **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	Low risk	Quote: "Random allocation was done by the study coordinator in Cambodia using a computer generated random number sequence in Excel."

Verbowski 2018 *(Continued)*

Allocation concealment (Selection bias)	Unclear risk	NR
Baseline characteristics similar (Selection bias)	Low risk	Baseline characteristics of participants per group were reported and mostly similar, except for it appeared that years of education and wealth quintiles were not equally distributed across groups; women on average had completed more years of schooling in the EHFP group than in the EHFP + aquaculture and control groups, and more HHs in the control group were in the bottom Wealth Index quintile as compared with HHs in the EHFP and EHFP + aquaculture groups. Because these were included in the multivariable models as potential confounders, we judged this domain at low risk of bias.
Baseline outcome measurements similar (Selection bias)	Unclear risk	The study authors reported it a limitation of their study, that baseline dietary intake data were not collected. Although most baseline characteristics were similar across groups, the years of education and bottom Wealth Index (which were included in the multivariable models as possible confounders) were not, and it is also not certain that dietary intake data were similar across groups at baseline.
Blinding of participants and personnel (Performance bias)	Low risk	No blinding, but it was unlikely that the performance were influenced by lack of blinding.
Blinding of outcome assessment (Detection bias)	High risk	No blinding done. It is possible (but unknown) whether outcome assessors behaved differently when interviewing women from different groups (e.g. prompting women from different groups differently during facilitating the 24-hour recall). The dietary intake of women and children was self-reported, thus there was also a possibility that a lack of blinding of participants could have influenced their recall and outcome reporting.
Protection against contamination (Performance bias)	Low risk	Allocation was by village and it was unlikely that the control group received the intervention, or that the group with only the EHFP also received the aquaculture.
Incomplete outcome data (Attrition bias)	Unclear risk	Quote: "At the end of the study, there were no missed clusters (n = 90). The overall HH attrition rate at 22 months was 16.2% (n = 146) and did not differ across groups (P = 0.74…). Attrition was higher for women only (38.6%; n = 348) than for households …" Comment: because the total attrition was high, study authors used the direct maximum likelihood method to account for the missing values at 22 months. However, no sensitivity analysis was done and we are unclear as to how this method influenced the findings.
Selective outcome reporting (Reporting bias)	Low risk	The trial was prospectively registered on a trial registry website (NCT01593423). All important outcomes pre-specified in this registry entry have reported in either Verbowski 2018, Michaux 2018 or Karakochuk 2015.
Other bias	Low risk	Misclassification bias: low risk. Incorrect analysis: low risk as clustering was taken into account adequately during analysis. Recruitment bias: low risk because participants in relevant villages were recruited before randomisation took place.

Weinhardt 2017

Study characteristics

Methods	**Study design:** PCS **How were missing data handled?** missing data for the analysis of the particular outcome were excluded, but the HH with missing data were retained and all other observations were included. **Randomisation ratio:** N/A **Recruitment method:** NR **Sample size justification and outcome used:** study's statistical power was determined for the primary HIV sexual risk outcome and the primary food security outcome. The sample size was 598 for the control group and 301 for the intervention group. The study authors stated that effect sizes (d) were used in the calculation, but did not report any values. **Sampling method:** selected HHs in 3 intervention TAs received the intervention, compared with those in 3 non-intervention TAs (matched for demographics and distance from urban centre. **Study aim or objective:** to evaluate the impact of a large-scale multilevel economic and food security intervention on health outcomes and HIV vulnerability in rural Malawi. **Study period:** 2009–2012 **Unit of allocation or exposure:** TAs
Participants	**Baseline characteristics** Intervention or exposure group: • *Age*: respondent age, mean, years: 40.4 (range 18–84) • *Place of residence*: NR • *Sex*: females, n/N (%): 398/598 (66.6) • *Ethnicity and language*: language: Chichewa • *Occupation*: most important income source, n (%): crop farming: 372/598 (62.2%); casual labour: 72/598 (12%); trading/selling: 17/598 (5.6%) • *Education*: HHs with literate head, n (%): 472/598 (78.9); HH heads with, n (%): primary education: 447/598 (74.7); secondary education: 81/598 (13.5); no schooling: 68/598 (11.4) • *SES*: HH size, mean: 5.3 (range 1–11); male-headed HHs, n (%): 495/598 (82.8); HHs with economic crisis, n (%): due to illness/hospitalisation: 343/562 (61.0); due to environmental disaster: 88/559 (15.7); HHs with ganyu engagement, n (%): adult: 290/564 (51.4); child: 85/553 (15.4) • *Social capital*: NR • *Nutritional status*: HHs with food security, n (%): HH food secure: 165/564 (29.3); consuming vitamin A-rich vegetables: 536/586 (95.0); consuming other vegetables: 426/564 (75.5); consuming vitamin A-rich fruits: 27/564 (4.8); consuming groundnuts: 396/563 (70.3); HHs reducing amount/number of meals to cope with shortage, n (%): 59/398 (14.8); HHs with malnourished children, n (%): 62/420 (14.8) • *Morbidities*: self-reported HIV-positive status, n (%): 16/564 (2.8) • *Concomitant or previous care*: NR Control group: • *Age*: respondent age, mean, years: 38.5 (range 19–86) • *Place of residence*: NR • *Sex*: females, n (%): 201 (66.8) • *Ethnicity and language*: language: Chichewa • *Occupation*: most important income source, n (%): crop farming: 203/301 (67.3); casual labour: 33/301 (11); trading/selling: 64/301 (10.7) • *Education*: HHs with literate head, n (%): 236/301 (78.4); number of HH heads with, n (%): primary education: 225/301 (74.8); secondary education: 28/301 (9.3); no schooling: 47/301 (15.6)

Weinhardt 2017 *(Continued)*

- *SES*: HH size, mean: 6.3 (range 2–14); male-headed HHs, n (%): 265/301 (88); number of HHs with economic crisis, n (%): due to illness/hospitalisation: 120/263 (45.6); due to environmental disaster: 12/263 (4.6); number of HHs with ganyu engagement, n (%): adult 111/263 (42.2); child 39/260 (15.0)
- *Social capital*: NR
- *Nutritional status*: HHs with food security, n (%): HH food secure: 71/262 (27.1); consuming vitamin A-rich vegetables: 248/263 (94.3); consuming other vegetables: 198/263 (75.3); consuming vitamin A-rich fruits: 47/263 (17.9); consuming groundnuts: 191/262 (72.9); HHs reducing amount/number of meals to cope with shortage, n (%): 17/191 (8.9); HHs with malnourished children, n (%): 48/213 (22.5)
- *Morbidities*: self-reported HIV-positive status, n (%): 9/263 (3.4)
- *Concomitant or previous care*: NR

Overall: NR

Inclusion criteria: NR

Exclusion criteria: NR

Pretreatment: participants in intervention group were older, had smaller HHs and the HHs were less dominated by males. The intervention group and control group had significant differences in income sources (P = 0.025), and practice/applying sustainable agriculture methods. Higher number of HHs with malnourished children in the control group (22%) compared to intervention group (14.8%).

Attrition per relevant group: total attrition was 5.7% (34/598) in the intervention group and 12.6% (38/301) in the control group. No differential attrition was detected for the study conditions, or between HHs who attrited and those who did not. Attrition per outcome: for reported HIV testing and self-reported HIV status there was no additional attrition; for food security there was no additional attrition with the exception of groundnut consumption (0.2% for intervention and 0.4% for control) and HH food security (0.4%, control only); for reduction of amount/number of meals to cope with food shortage additional attrition was 29.4% for intervention and 27.4% for control; and for child anthropometric measurements additional attrition was 25.5% for intervention and 19.0% for control.

Description of subgroups measured and reported: NR

Total number completed and analysed per relevant group: intervention group (SAFE intervention group): 564 HHs; control group: 263 HHs

Total number enrolled per relevant group: intervention group (SAFE intervention group): 598 HHs; control group: 301 HHs

Total number randomised per relevant group: N/A

Interventions

Intervention characteristics

Intervention or exposure

- *Food access intervention category*: increase buying power
- *Intervention type*: income generation
- *Description*: multilevel economic and food security programme (increased VSL groups; improved farming practices; capacity building of local governance structures; HIV education and gender empowerment). Support to able-bodied vulnerable groups to achieve food security (SAFE) programme consisted of 4 components: 1. improving farming practices and sustainable agriculture through FFSs, 2. increasing access to savings and investment through VSL groups, 3. building capacity of local governance structures, and 4. integrating HIV education and gender empowerment into programmes through training and education.
- *Duration of intervention period*: 24 months (January 2008 to December 2010)
- *Frequency*: NR
- *Number of study contacts*: 3 (baseline: February–August 2009), 18-month follow-up (November 2010 to April 2011) and 36-month follow-up (February–August 2012)
- *Providers*: NGO (CARE International).
- *Delivery*: community-based, structural, multilevel health and development programme.
- *Co-interventions*: non-CARE agricultural education programme in few participants

Weinhardt 2017 *(Continued)*

- *Resource requirements*: NR
- *Economic indicators*: NR

Control group:

- *Food access intervention category*: N/A
- *Intervention type*: HIV prevention education
- *Description*: brief HIV prevention programme for school children
- *Duration of intervention period*: NR
- *Frequency*: NR
- *Number of study contacts*: 3 (baseline February–August 2009), 18-month follow-up (November 2010 to April 2011) and 36-month follow-up (February–August 2012)
- *Providers*: NGO (CARE International).
- *Delivery*: school-based programme.
- *Co-interventions*: non-CARE agricultural education programme in few participants
- *Resource requirements*: NR
- *Economic indicators*: NR

Outcomes	Food security: mean number of months with less food than necessary to meet needs Dietary intake: self-reported types of foods consumed in past 3 days Anthropometry: WAZ, HAZ, % malnourished, child BMI
Identification	**Sponsorship source:** National Institutes of Health, Eunice K. Shriver National Institute of Child Health and Human Development grant R01-HD055868 (2008–2015). **Country:** Malawi **Setting:** poor HHs in rural areas **Author's name:** Lance S Weinhardt **Email:** weinhardt@uwm.edu; yanf@uwm.edu **Declarations of interest:** yes; no conflicts of interest. **Study or programme name and acronym:** Study name: Savings, Agriculture, Governance, and Empowerment for Health (SAGE4-Health); Programme name: Support to Able-Bodied Vulnerable Groups to Achieve Food Security (SAFE). **Type of record:** journal article
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (Selection bias)	High risk	CBA study; no randomisation.
Allocation concealment (Selection bias)	High risk	CBA study; no allocation concealment.
Baseline characteristics similar (Selection bias)	Low risk	Intervention HHs had significantly older respondents (P = 0.040), and significantly smaller HHs (P = 0.001) and higher likelihood of being male-headed (P = 0.039). These factors were treated as covariates in the assessment of intervention effects.

Weinhardt 2017 *(Continued)*

Baseline outcome measurements similar (Selection bias)	Low risk	Proportion of food insecure HHs was similar between groups at baseline.
Blinding of participants and personnel (Performance bias)	Low risk	There was no blinding but outcomes unlikely to be influenced by lack of blinding of participants or personnel administering the intervention.
Blinding of outcome assessment (Detection bias)	High risk	Most outcomes were self-reported and knowledge of treatment allocation, due to lack of blinding, could have influenced outcome assessment. Objective anthropometric measurements were included and unlikely to be influenced by blinding.
Protection against contamination (Performance bias)	Low risk	Contamination was assessed and it was found that no control participants received any components of the intervention.
Incomplete outcome data (Attrition bias)	High risk	Low attrition overall that was differential (Intervention vs control: 5.7% vs 12.6%), but higher attrition for outcomes such as reduction of number/amount of meals during shortage (33.4% vs 36.5%) and child anthropometric measurements (29.8% vs 29.2%); however these were balanced between the groups.
Selective outcome reporting (Reporting bias)	Low risk	Study protocol and methods available. All a priori stated outcomes in the methods sections were reported on in the results section.
Other bias	Unclear risk	Misclassification bias: unlikely. Measurement bias: unlikely. Seasonality bias: unclear. Baseline survey conducted during 2009. No details reported in terms of the time period of data collection. The study authors did not specify that the month of data collection was included in their analysis to adjust for the possible effect of seasonality on consumption.

(?): not clear in report; AAY: Antyodaya Anna Yojana; ADRA: Adventist Development and Relief Agency; AE: adult equivalent; AM: Ajuda Mútua; APL: above poverty line; ARI: acute respiratory infection; BCC: behaviour change communication; BDH: Bono de Desarrollo Humano; BDT: Bangladeshi taka; BLT: unconditional cash transfer program; BMI: body mass index; BMIZ: body mass index-for-age z-score; BPL: below poverty line; BPO: Bangladesh Post Office; BOS: school operational assistance program; CBA: controlled before-after; CCG: child cash grant; CCT: conditional cash transfer; CDS: Child Diet Score; CES-D: Center for Epidemiologic Studies Depression Scale; CFPR-TUP: Challenging the Frontiers of Poverty Reduction – Targeting the Ultra Poor; CFSS: the paper doesn't provide full name ; CGP: Child Grant Programme; CI: confidence interval; CMC: community management committee; CNW: community nutrition worker; CNY: Chinese yuan; COP: Colombian peso; cRCT: cluster randomised controlled trial; CWAC: Community Welfare Assistance Committee; DDI: Dietary Diversity Index; DDS: Dietary Diversity Score; DfID: Department for International Development; ECHO: European Civil Protection and Humanitarian Aid Operations; DID: difference in differences; EHFP: enhanced-homestead food production; EA: enumeration area; ECD: Early Childhood Development; ED: electoral division; EGP: Egyptian pound; EPA: extension planning area; ESD: enumerator subdistrict; ESDO: Eco-Social Development Organization; ETB: Ethiopian birr; ETT: effect of treatment on the treated; F2F: farmer to farmer; FA: Familias en Acción; FAO: Food and Agriculture Organization; FCS: Food Consumption Score; FDC: food distribution committee; FDP: food distribution point; FDS: Food Diversity Score; FFS: Farmer Field School; FISP: fertiliser input subsidy programme; FSI: Food Security Index; GD: GiveDirectly; GDP: gross domestic product; GHQ-12: 12-item General Health Questionnaire; GPS: Global Positioning System; GVH: group village headmen; HAZ: height-for-age z-score; Hb: haemoglobin; HC: health committee; HDDS: Household Dietary Diversity Score; HH: household; HFAIS: Household Food Insecurity Access Scale; HKI: Helen Keller International; HSNP: Hunger Safety Net Programme; IADB: Inter-American Development Bank; ICC: intraclass correlation coefficient; IDDS: Individual Dietary Diversity Score; IDR: Indonesian rupiah; IFPRI: International Food Policy Research Institute; IGIDR: Indira Gandhi Institute of Development Research; IHS3: Integrated Household Survey 3; INR: Indian rupees; IQR: interquartile range; ITT: intention to treat; IYCDDS: Infant and Young Child Dietary Diversity Score; KBK: Kalahandi-Balangir-Koraput; KES: Kenyan shilling; LGA: local government authority; LPG: liquid petroleum gas; LSL: Lesotho loti; LTFU: loss to follow-up; MASAF: Malawi Social Action Fund; MDD: minimum dietary diversity; MIS: management information system; MoSS: Ministry of Social Solidarity; MPCE: monthly per capita expenditure; MUAC: mid-upper arm circumference; MUACZ: mid-upper arm circumference z-score; MWK: Malawian kwacha; MXN: Mexican peso; MZN: Mozambican metical; n: number of participants; N/A: not applicable/available; NGO: non-governmental organisation; NIO: Nicaraguan córdoba; NPO: non-profit organisation; NPR: Nepalese rupee; NR: not reported; NWG: non-women's group; OLS: ordinary least squares; OWL: older women leader; PCS: prospective controlled study;

PDS: Public Distribution System; PEN: Peruvian sol; PIM: Policies, Institutions and Markets; PHP: Philippine peso; PKH: Program Keluarga Harapan; PKR: Pakistani rupee; PM2A: Preventing Malnutrition in Children under 2 Approach; PMT: Proxy Means Test; POG: Pass-on-the-Gift; pp: percentage point; PPSC: Post and Postal Savings Corporation; PSLSD: Project for Statistics on Living Standards and Development; PSM: propensity score matching; PSNP: Productive Safety Net Program; PSS: Perceived Stress Scale; PVDI: photovoltaic drip irrigation system; PWP: public works programme; RCT: randomised controlled trial; RDA: recommended daily allowance; RPS: Red de Protección Social; SAFE: Support to Able-Bodied Vulnerable Groups to Achieve Food Security; SAR: South African rand; SCTS: Social Cash Transfer Scheme; SD: standard deviation; SE: standard error; SES: socioeconomic status; SFP: supplementary food programme; SMG: Solar Market Garden; TA: traditional authority; TASAF: Tanzania Social Action Fund; TCP: tratamiento con pago (treatment with payment); TKP: Takaful and Karama Program; TMRI: Transfer Modality Research Initiative; TRT: targeted resource transfer; TSP: tratamiento sin pago: treatment without payment; TVIP: Test de Vocabulario en Imagenes Peabody; UCT: unconditional cash transfer; UMKD: ; UNHCR: United Nations High Commissioner for Refugees; UNICEF: United Nations Children's Fund; UP: Union Parishad; UPP: Urban Poverty Program; USAID: United States Agency for International Development; USDA: United States Department of Agriculture; VC: village cluster; VDC: village development cluster; VMF: village model farm; VSL: village savings and loan; WAZ: weight-for-age z-score; WDDS-10: Women's Dietary Diversity Score; WEG: Women Empowerment Group; WFP: World Food Program; WFP-CO: ; WG: women's group; WHO: World Health Organization; WHZ: weight-for-height z-score; WINS: Women and Children/Infants Improved Nutrition in Sindh; WLZ: weight-for-length z-score; XOF: West African CFA franc; YER: Yemeni rial; ZMW: Zambian kwacha.

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Abubakari 2014	Wrong study design.
ACTRN12611001170910	Ineligible setting; not LMIC (New Zealand).
Aker 2017	Ineligible setting.
Akresh 2016	Ineligible outcomes.
Alderman 2009	Wrong intervention.
Alvarez 2008	Wrong study design.
Amarante 2016	Wrong study design.
Attanasio 2014	Wrong study design.
Attanasio 2014a	Wrong intervention.
Ayala 2015	Ineligible setting; not LMIC.
Ayele 2003	Wrong study design.
Barber 2008	Wrong study design.
Bazzi 2012	Ineligible outcomes.
Behrman 2009	Wrong outcomes.
Bezu 2014	Wrong study design.
Bihan 2010	Ineligible setting; not LMIC.
Bleich 2007	Wrong study design.
Braido 2012	Wrong study design.

Study	Reason for exclusion
Broutin 2006	Wrong study design.
Buller 2016	Wrong outcomes.
Cabral 2014	Wrong study design.
Cardenas 2015	Wrong study design.
Cluver 2018	Ineligible intervention.
Cohen 2015	Wrong patient population.
Dammert 2009	Wrong outcomes.
Debela 2015	Wrong study design.
Downs 2017	Ineligible intervention.
ENN 2018	Ineligible setting.
Fenn 2015_Niger	Wrong study design.
Fernald 2017	Wrong intervention.
Fortin 2016	Wrong outcomes.
Gelli 2017	Ineligible intervention.
Gertler 2012	Ineligible outcomes.
Gram 2019	Ineligible outcomes.
Grellety 2017	Ineligible participants.
Gutiérrez 2019	Ineligible outcomes.
Haghparast-Bidgoli 2019	Ineligible intervention.
Haque 2017	Ineligible outcomes.
Hardin Fanning 2014	Wrong study design.
Huey 2019	Ineligible intervention.
Idiaye 2014	Wrong study design.
ISRCTN10323949	Ineligible intervention.
ISRCTN77820875	Ineligible study design.
Issaley 2013	Wrong study design.
Jharendu 2014	Ineligible outcomes.
Kagawa 2017	Wrong intervention.

Study	Reason for exclusion
Kakuhikire 2016	Wrong study design.
Kidoido 2015	Wrong study design.
Kim 2012	Wrong outcomes.
Kimenju 2015	Wrong study design.
Kronebusch 2019	Ineligible outcomes.
KumarGhosh 2011	Wrong study design.
Lopez 2018	Ineligible outcomes.
Loubser 2010	Wrong study design.
Martins 2013	Wrong study design.
Mascie Taylor 2010	Wrong intervention.
NCT02558660	Not conducted in a LMIC (USA-based study).
NCT02577705	Ineligible setting; not LMIC.
NCT02843178	Ineligible setting; not LMIC (USA).
NCT03311698	Ineligible intervention.
NCT04135625	Ineligible intervention.
NCT04166370	Ineligible intervention.
NCT04171999	Ineligible participants.
Nisbett 2016	Wrong study design.
Nsabuwera 2016	Wrong study design.
Olajide-Taiwo 2011	Wrong outcomes.
Pasdar 2016	Wrong study design.
Pereko 2017	Ineligible intervention.
Perez Lu 2016	Wrong study design.
Prifti	Ineligible outcomes.
Quiñones 2016	Wrong study design.
Ragini 2017	Ineligible intervention.
Rahman 2015	Wrong outcomes.
Ramirez-Silva 2013	Wrong study design.

Study	Reason for exclusion
Roschnik 2017	Ineligible intervention.
Roy 2019	Ineligible outcomes.
Rutherford 2016	Wrong study design.
Schultz 2001	Wrong outcomes.
Schwab 2019	Ineligible outcomes.
Sinharoy 2017	Ineligible intervention.
Sudfeld 2019	Ineligible intervention.
TorresSalcido 2015	Wrong study design.
Wang 2012	Wrong study design.
Young 2014	Ineligible outcomes.
Zhang 2018	Ineligible outcomes.

LMIC: low- and middle-income country.

Characteristics of studies awaiting classification *[ordered by study ID]*

ACTRN12618001803280

Methods	cRCT
Participants	Rural households of flood-prone areas of Bangladesh
Interventions	Duck-rearing intervention
Outcomes	Diet diversity
Notes	Unclear eligibility from information in trial registry

ACTRN12618001975280

Methods	RCT
Participants	Pregnant women
Interventions	Unconditional cash transfers and mobile behaviour change communications
Outcomes	Changes in the percentage of stunted children (height-for-age < –2SD); mean cost per stunted child prevented Changes in the percentage of wasted children; household food security; birthweight
Notes	www.who.int/trialsearch/Trial2.aspx?TrialID=ACTRN12618001975280

Adubra 2017

Methods	cRCT
Participants	Pregnant women and children aged < 2 years
Interventions	Conditional cash transfer and nutritional supplementation
Outcomes	Stunting
Notes	Conference abstract

Al-serhan 2010

Methods	Retrospective cohort study Study used a panel data set on 74 Bedouin households in 3 villages in the Northern Badia of Jordan interviewed in 2001 and 2009
Participants	Households in Northern Badia of Jordan
Interventions	Households received assistance through the development assistance programmes in the decade before 2006
Outcomes	Factors enabling household to escape poverty
Notes	Full-text could not be accessed

Antwi 2013

Methods	Monitoring and evaluation study A structured questionnaire used to collect and analyse data from the project beneficiaries through face-to-face interviews. Livelihood of beneficiaries 'before and after' project was analysed
Participants	Unknown
Interventions	Distribution of Nguni cattle
Outcomes	Critical evaluation of project strategy/design, implementation and determine how well the project objectives had been achieved and the constraints to that effect
Notes	Full-text could not be accessed

Becquey 2017

Methods	cRCT
Participants	Children aged 6–12 months

Becquey 2017 *(Continued)*

Interventions	Enhanced-Homestead Food Production platform for increasing multiple micronutrient powder knowledge and utilisation and reducing anaemia
Outcomes	Anaemia
Notes	Conference abstract

Bezuneh 1989

Methods	Unknown
Participants	Data collected in 1983–1984 in the Ewalel and Marigat locations of Baringo District, Kenya
Interventions	Food-for-work
Outcomes	Unknown
Notes	Full-text could not be accessed

Bhandari 2019

Methods	Unclear (difference-in-difference)
Participants	100 children aged 6–60 months enrolled in each group from households with HIV-infected adults aged 18–49 years on antiretroviral therapy and with access to surface water and land
Interventions	Human-powered water pump, a microfinance loan to purchase farm commodities, and training in sustainable farming practices and financial management
Outcomes	Dietary intake and nutritional status of children living in HIV-affected households
Notes	Conference abstract

Briaux 2017

Methods	Unclear
Participants	Unclear
Interventions	Cash transfer programme targeting the '1000 days period'
Outcomes	Birthweight and growth retardation
Notes	Conference abstract

Deji 2015

Methods	Unknown

Deji 2015 *(Continued)*

Participants	Rural villages in Nigeria
Interventions	Food security sustainability
Outcomes	Unknown
Notes	Full-text could not be accessed

Donato 2017

Methods	RCT
Participants	Children and mothers in Ethiopia
Interventions	Cash transfers and provision of personalised information about quality of child growth
Outcomes	Food consumption
Notes	Conference abstract

Gahamanyi 2015a

Methods	Unclear
Participants	Households in Rwanda
Interventions	Vision 2020 Umurenge Programme – Direct Support and Public Works programme
Outcomes	Poverty; food security
Notes	Conference abstract

Gauchan 1997

Methods	Unknown
Participants	Farmers in Nepal's mountainous region
Interventions	Fruit tree integration (to increase income)
Outcomes	Household income and food security
Notes	Full-text could not be accessed

Ghattas 2019

Methods	Unclear

Ghattas 2019 *(Continued)*

Participants	Women and children in refugee camps in Palestine
Interventions	Employment of women through social enterprises to deliver a subsidised healthy daily school meal to elementary school children in Palestinian camps
Outcomes	Women's economic, social and food security outcomes
Notes	Conference abstract

Ilham 2011

Methods	Secondary time series
Participants	Unknown
Interventions	Food price support policies
Outcomes	Food security
Notes	Full-text could not be accessed

ISRCTN29521514

Methods	Non-randomised cluster controlled trial
Participants	Residents in refugee camps in Mogadishu
Interventions	Unconditional cash transfer (concern NGO)
Outcomes	Primary outcomes: individual diet diversity scores of children aged 6–59 months, measured during the baseline survey and during end-line survey after 3 months of intervention; incidence of acute malnutrition in children aged 6–59 months (defined as a MUAC < 12.5 cm or nutritional oedema, or both), measured over 6 months of follow-up following the start of the intervention Secondary outcomes: prevalence of global acute malnutrition (weight-for-height < –2 z-scores or nutritional oedema, or both) in children aged 6–59 months; mean weight-for-height in children aged 6–59 months; household expenditure; Household Dietary Diversity Score (24-hour recall); Household Food Insecurity Access Scale score (1-month recall); Coping Strategies Index (7-day recall); access to water and sanitation; infant and young child feeding practices in children aged < 2 years; 2-week retrospective morbidity; treatment sought and received; mean maternal MUAC; mean maternal BMI
Notes	Potential study for review update

Kim 2009

Methods	Unclear
Participants	Underprivileged in Belo Horizonte, Brazil
Interventions	Food security programmes of the Secretaria Municipal de Abastecimento in Belo Horizonte

Kim 2009 *(Continued)*

Outcomes	Food security
Notes	Full-text could not be accessed

Kroeun 2019

Methods	cRCT
Participants	Farmers in Cambodia
Interventions	Enhanced Homestead Food Production (EHFP) programme
Outcomes	Food security; dietary diversity; food production
Notes	Conference abstract

Lukmanji 2017

Methods	Unclear
Participants	Rural ultra-poor households in Bangladesh
Interventions	Food and Livelihood Security (FLS) project
Outcomes	Food security
Notes	Conference abstract

Marsh 1994

Methods	Paper analysed field data collected for a mid-term evaluation of project impacts; included a control group
Participants	Rural areas in northwestern Bangladesh
Interventions	Large-scale home garden project
Outcomes	Production and consumption of vitamin-rich fruits and vegetables; income from garden sales
Notes	Full-text could not be accessed

Miller 2017

Methods	cRCT
Participants	Communities in Nepal

Miller 2017 *(Continued)*

Interventions	Community development provided by Heifer Nepal, including social capital promotion, livestock/nutrition training
Outcomes	Food security; dietary diversity; anthropometry
Notes	Conference abstract

Morris 1999

Methods	Quasi-experimental study
Participants	Members Honduran smallholder farmers groups
Interventions	1 year of credit and technical assistance
Outcomes	Household food security and nutrition
Notes	Full-text could not be accessed

Mpiira 2019

Methods	cRCT
Participants	Villages in Uganda
Interventions	Uganda's National Development Plan; 6 intervention groups: agricultural training for the first year; agriculture and health interventions; agricultural credit; a voucher scheme for subsidised inputs; price insurance and health interventions – growth monitoring and promotion in children aged > 2 years, quarterly health and nutrition community forums and conditional food transfers to pregnant women
Outcomes	Food security (HFIAS), smallholder family nutrition (prevalence of wasting, underweight and stunting in children aged < 5 years)
Notes	Conference abstract

NCT03336021

Methods	Non-randomised
Participants	Farmers in Egypt
Interventions	Agribusiness Support and Nutrition Services Projects
Outcomes	Food insecurity; nutrition
Notes	Unclear eligibility based on available information in the trial register

NCT03847662

Methods	Unclear
Participants	Women subsistence farmers in rural Vietnam
Interventions	Scaling up small-scale food processing
Outcomes	Food security
Notes	Unclear eligibility based on available information in the trial register

PACTR201804003012418

Methods	RCT
Participants	Pregnant women
Interventions	Enhanced homestead food production (relevant group)
Outcomes	Anaemia; dietary diversification; household food security; women empowerment
Notes	Unclear eligibility based on available information in the trial register

Park 2019

Methods	cRCT
Participants	Mothers
Interventions	Food vouchers and behaviour change communication
Outcomes	Stunting
Notes	Conference abstract

Pham Van 2004

Methods	Unknown
Participants	Mothers and children aged < 5 years
Interventions	Integrated food security project
Outcomes	Child malnutrition (stunting, wasting, low birthweight)
Notes	Full-text could not be accessed

Raneri 2017

Methods	cRCT
Participants	Women with children
Interventions	Community-based farmer field school-like model
Outcomes	Dietary diversity
Notes	Conference abstract

Raza 2018

Methods	RCT
Participants	Poor households
Interventions	Targeting the Ultra-Poor (TUP) is an integrated programme that combines the transfer of income-generation assets and multifaceted training on entrepreneurship, health-nutrition and social awareness
Outcomes	Nutritional outcomes; food security
Notes	Conference abstracts

Rosas 2017

Methods	RCT
Participants	Residents of highly and very highly marginalised localities
Interventions	National Crusade against Hunger
Outcomes	Dietary diversity and nutritional status of children
Notes	Conference abstract

Santoso 2019

Methods	RCT
Participants	Farmers in Tanzania
Interventions	Singida Nutrition and Agroecology Project (SNAP-Tz)
Outcomes	Child's dietary diversity; women empowerment
Notes	Conference abstract

Shamah-Levy 2003

Methods	RCT
Participants	Low-income families in Mexico
Interventions	Tortilla subsidy
Outcomes	Anthropometry; diet intake
Notes	Conference abstract

Talukder 2017

Methods	cRCT
Participants	Households in Cambodia
Interventions	Aquaculture and enhanced homestead food production
Outcomes	Maternal and child anaemia, child anthropometry, household food security, production and income
Notes	Conference abstract

Taren 2017

Methods	Unclear
Participants	Households with children
Interventions	Solar market gardens, a labour-saving solar power drip irrigation system at the village level
Outcomes	Anthropometry measures, haemoglobin
Notes	Conference abstract

Tchale 2000

Methods	Data collected as a part of the International Food Policy Research Institute University of Malawi, Bunda College Rural Financial Market Study
Participants	Smallholder farmers in Malawi
Interventions	Agricultural credit
Outcomes	Food security
Notes	Full-text could not be accessed

Teran Cadima

Methods	Unknown
Participants	Unknown
Interventions	Nutritional interventions in childcare centres
Outcomes	Unknown
Notes	Full-text could not be accessed

Vliegen 2000

Methods	Unknown
Participants	Unclear (Vietnam)
Interventions	Nutrition and household food security project
Outcomes	Unknown
Notes	Full-text could not be accessed

Wood

Methods	RCT
Participants	Unknown
Interventions	Food and cash transfers
Outcomes	Children's height-for-age and BMI scores
Notes	Full-text could not be accessed

BMI: body mass index; cRCT: cluster randomised controlled trial; HFIAS: Household Food Insecurity Access Scale; MUAC: mid-upper arm circumference; NGO: non-governmental organisation; RCT: randomised controlled trial.

Characteristics of ongoing studies *[ordered by study ID]*

Green 2016

Study name	Scale up of enhanced homestead food production in Cambodia
Methods	RCT
Participants	Children aged 6–59 months
Interventions	Enhanced Homestead Food Production (EHFP) package
Outcomes	Primary outcomes • Difference in mean intake of zinc

Green 2016 *(Continued)*

	• Difference in mean intake of vitamin A Secondary outcomes: • Household food security • Women's empowerment/gender equity • Incremental net monetary benefit • WASH practices • Difference in mean energy intake; mean protein intake; mean fat intake; mean riboflavin intake; mean thiamine intake; mean iron intake
Starting date	April 2016
Contact information	Tim Green University of British Columbia
Notes	Clinicaltrials.gov identifier: NCT02786368

Hidrobo 2016

Study name	The effect of a cash transfer program on household welfare and child nutritional status in Mali
Methods	RCT
Participants	Children aged 6 months to 5 years in households part of Jigisemejiri programme
Interventions	Cash distribution and behavioural interventions
Outcomes	Primary outcomes • Child height-for-age z-score • Value of household consumption • Household dietary diversity • Child height-for-age z-score • Value of household consumption • Household dietary diversity • Child weight-for-height z-score Secondary outcomes • Child weight-for-height z-score • Prevalence of child wasting • Prevalence of child stunting • Child haemoglobin concentration • Prevalence of child anaemia • Body mass index of primary carer of index child • Early child development • Child morbidity • Carer's knowledge and practices related to IYCF, child health and hygiene • Household assets and savings • Educational level of Household members • Household food security • Household composition

Hidrobo 2016 *(Continued)*

- Household agricultural production
- Cognitive function of the head of household
- Well-being of household members
- Women's empowerment
- Child dietary diversity
- Professional occupation of household members
- Child MUAC
- Maternal haemoglobin concentration
- Maternal anaemia

Starting date	September 2014
Contact information	Dr Melissa Hidrobo m.hidrobo@cgiar.org
Notes	Study is recruiting. Clinicaltrials.gov identifier: NCT02858011

ISRCTN24757827 2018

Study name	Cash for improved nutrition in Somalia
Methods	Cluster RCT
Participants	Boys and girls aged 0–59 months
Interventions	Conditional and unconditional cash transfers, and mHealth intervention
Outcomes	Primary outcomes • Measles vaccination coverage: % of children aged 9–59 months who received measles vaccine; EPI vaccination coverage, % of children aged 0–59 months who received all vaccines required by the national vaccination protocols (measured at baseline and endline via carer interview and health record card examination) • Diet diversity score of children aged 6–24 months (measured at baseline and endline via carer 24-hour dietary recall) • Parental/caretakers knowledge of BCC health and nutrition topics (measured monthly via questionnaire) Secondary outcomes • Incidence of acute malnutrition: MUAC < 12.5 cm or oedema among children aged 6–59 months (measured monthly during household visits) • Incidence of mortality among children aged 6–59 months (assessed monthly by questionnaire during household visits) • Exclusive breastfeeding prevalence: % of infants aged 0–5 months who were exclusively breastfed during the last 24 hours (measured at baseline and endline via carer 24-hour dietary recall) • Incidence of child morbidity (assessed monthly by questionnaire during household visits) • Causes of death ascertained by Verbal Autopsy (assessed by carer interview following a mourning period)
Starting date	1 January 2019
Contact information	Andrew Seal: Institute for Global Health University College London, UK

ISRCTN24757827 2018 *(Continued)*

Notes	Completed 1 January 2020

NCT03170986 2017

Study name	Multi-sectoral agricultural intervention to improve nutrition, health, and developmental outcomes of HIV-infected and affected children in Western Kenya
Methods	RCT
Participants	Children aged 6–36 months in households participating in parent study, and parents/guardians of eligible children
Interventions	Multisectoral agriculture and microfinance Intervention
Outcomes	Primary outcome • Weight-for-length z-score Secondary outcome • Morbidity • Number of incident respiratory and diarrhoeal illnesses in prior 2 weeks • Neurobehavioural development • Cognitive, motor and social development score using the Profile for Child Monitoring measures Time frame: 24 months
Starting date	June 2016 (completed March 2020)
Contact information	Lisa Butler, Associate Research Professor, University of Connecticut, US
Notes	

NCT03299218 2017

Study name	Effectiveness of SNF, cash and BCC to prevent stunting among children 6–24 months in Rahim Yar Khan, Pakistan
Methods	RCT
Participants	BISP beneficiary for intervention groups and poverty score between 16.18 and 20.00 according to the BISP approach for control group; living in the catchment area of LHW; have ≥ 1 child aged 6–7 months at time of inclusion and willing and able to provide written informed consent for study
Interventions	Cash-based transfers only; cash-based transfers, and SBCC; cash-based transfer and dietary supplement (SNF); cash-based transfers, SNF and SBCC
Outcomes	Primary outcomes • Reduction in stunting • SBCC package on the basis of formative research • Cost-effectiveness of intervention packages for prevention of stunting in children Secondary outcomes

NCT03299218 2017 *(Continued)*

	• Weight gain in kilograms • Length gain in centimetres • Impact of the intervention on micronutrient deficiencies • Improvement in IYCF practices • Improved nutrition, hygiene and health-related knowledge and practices • Proportion of households with moderate or severe hunger • Uptake of health services and interventions
Starting date	May 2017 (Completed 31 July 2019)
Contact information	Dr Sajid Bashir Soofi, Associate Professor, Aga Khan University
Notes	

NCT03455257 2018

Study name	Evaluation of a cash transfer program in low-income families in Guinea-Bissau
Methods	RCT (open label)
Participants	Families (defined as groups of individuals who routinely eat together) in 3 regions of Guinea-Bissau. Identified by developing scale based upon household characteristics and assets per capita. access to services such as water, electricity and sanitation. Families having the lowest income.
Interventions	Cash transfer
Outcomes	Primary outcome • Change in per capita food expenditures Secondary outcomes • Change in family demographics • Change in weight, height; MUAC; waist circumference; haemoglobin; blood pressure; HbA1c; food intake; cognitive function; others
Starting date	25 April 2017 (ongoing)
Contact information	Ministry of Finance, Guinea-Bissau
Notes	

NCT03518593 2018

Study name	Evaluation of NICHE (Nutritional Improvements Through Cash and Health Education) programme activities in Kitui and Machakos, Kenya
Methods	RCT (open label)
Participants	Pregnant women and children aged ≤ 23 months in households receiving CT-OVC in Kitui and Machakos counties of Kenya
Interventions	Cash transfer and nutritional counselling

NCT03518593 2018 *(Continued)*

Outcomes	Stunting
Starting date	1 January 2017
Contact information	Kimetrica LLC
Notes	

NCT03590717 2018

Study name	Impact evaluation of WFP's Fresh Food Voucher Pilot Programme in Ethiopia
Methods	RCT
Participants	Households with young children aged 6–17 months at baseline in December 2017
Interventions	Cash transfers, food vouchers; behaviour change communication
Outcomes	Primary outcomes • Minimum Acceptable Diet Scores of children aged 6–23 months • Minimum diet diversity for women of reproductive age Secondary: • Minimum diet diversity of children aged 6–23 months • Minimum meal frequency of children aged 6–23 months • Household Diet Diversity Score • WFP Food Consumption Score – Nutrition
Starting date	27 June 2018
Contact information	Kalle Hirvonen, Research Fellow, International Food Policy Research Institute
Notes	

NCT03741634 2018

Study name	Assessing the preliminary effects of a multisectoral agricultural intervention on adolescent girls' health
Methods	RCT (open label)
Participants	Adult participating in the parent study; currently unmarried adolescent girls aged 13–20 years (preferred target aged 15–19 years); adolescent girl with parent/primary guardian aged > 18 years who resides in the household
Interventions	Loan (about USD 175) from a well-established Kenyan bank used to get a human-powered water pump, seeds, fertilisers and pesticides, and education in financial management and sustainable farming practices
Outcomes	Primary outcomes

NCT03741634 2018 *(Continued)*

	• Food insecurity • Depressive symptoms • Unprotected sex
Starting date	5 December 2018 (ongoing)
Contact information	Sheri D Weiser, MD, MPH. sheri.weiser@ucsf.edu
Notes	

NCT04101487 2019

Study name	Cash transfers to increase dietary diversity in Grand Gedeh County, Liberia
Methods	RCT (open label)
Participants	Participants aged 6–23 months with consenting carers to have monthly visits and to participate in the programme. Carers of any age
Interventions	Cash transfers and nutrition education
Outcomes	Primary • Minimum dietary diversity (children) Secondary • Meal frequency • Weight • MUAC • Length/height • Healthcare utilisation • Knowledge • Attitudes and practices
Starting date	15 October 2019
Contact information	Michelle Niescierenko, Assistant Professor of Pediatrics and Emergency Medicine, Boston Children's Hospital, US
Notes	

Wendt 2019

Study name	Food and agricultural approaches to reducing malnutrition (FAARM): protocol for a cluster-randomised controlled trial to evaluate the impact of a Homestead Food Production programme on undernutrition in rural Bangladesh
Methods	Cluster RCT
Participants	Married women and their children (aged 0–3 years) in 96 rural settlements of Habiganj district in Sylhet division, Bangladesh.

Wendt 2019 *(Continued)*

Interventions	Homestead Food Production (HFP) programme implemented by Helen Keller International on women's and children's undernutrition: training of women's groups and asset distribution to support year-round home gardening, poultry rearing, and improved nutrition and hygiene practices
Outcomes	Primary outcome • Children's length/height-for-age z-scores Secondary outcomes • Women's and children's micronutrient status, dietary intake, dietary diversity and other indicators of child growth, development and morbidity
Starting date	14 March 2015
Contact information	Sabine Gabrysch, Head, Unit of Epidemiology and Biostatistics, Institute of Global Health, Heidelberg University
Notes	

BISP: Benazir Income Support Programme; HbA1c: glycated haemoglobin; IYCF: Infant and Young Child Feeding; LHW: Lady Health Worker; MUAC: mid-upper arm circumference; CT-OVC: cash transfer for orphans and vulnerable children; RCT: randomised controlled trial; SBCC: social and behaviour change communication; SNF: Dietary supplement; WASH: Water, Sanitation and Hygiene; WFP: World Food Program.

DATA AND ANALYSES

Comparison 1. Unconditional cash transfers (UCT) versus no intervention

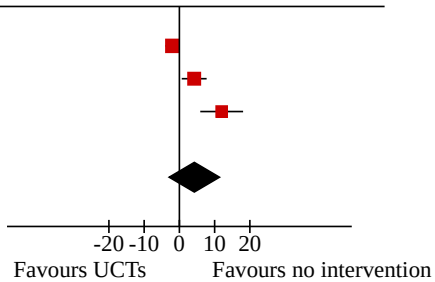
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 Proportion of household expenditure on food	3		Mean Difference (IV, Random, 95% CI)	4.24 [-2.88, 11.36]
1.2 Proportion consuming > 1 meal/day	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.3 Food security scores	3		Std. Mean Difference (IV, Random, 95% CI)	0.18 [0.13, 0.23]
1.4 Dietary Diversity Score including composite food consumption score (FCS) (weighted)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.5 Proportion with minimum dietary diversity	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.6 Proportion of food poverty (per capita daily caloric intake < 2122 calories)	2		Mean Difference (IV, Random, 95% CI)	-4.64 [-9.34, 0.06]
1.7 Proportion stunted (height-for-age z-score (HAZ) < -2SD)	2		Odds Ratio (IV, Random, 95% CI)	0.62 [0.46, 0.84]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.8 HAZ	7		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.8.1 Change in z-scores	6		Mean Difference (IV, Random, 95% CI)	0.07 [-0.04, 0.18]
1.8.2 Change in z-score/month	1		Mean Difference (IV, Random, 95% CI)	-0.00 [-0.00, 0.00]
1.9 Weight-for-height z-score (WHZ)	6		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.9.1 Change in z-scores	5		Mean Difference (IV, Random, 95% CI)	-0.02 [-0.10, 0.06]
1.9.2 Change in z-scores/month	1		Mean Difference (IV, Random, 95% CI)	-0.00 [-0.01, 0.00]
1.10 Weight-for-age z-score (WAZ)	2		Mean Difference (IV, Random, 95% CI)	-0.04 [-0.43, 0.35]
1.11 Haemoglobin concentration (g/dL)	2		Mean Difference (IV, Random, 95% CI)	-0.06 [-0.21, 0.09]
1.12 Depression score (CES-D scale)	3		Mean Difference (IV, Random, 95% CI)	-0.41 [-1.31, 0.49]
1.13 Perceived Stress Scale (PSS)	2		Mean Difference (IV, Random, 95% CI)	-0.15 [-0.26, -0.03]

Analysis 1.1. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 1: Proportion of household expenditure on food

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Brugh 2018 (1)	-2	1	36.4%	-2.00 [-3.96 , -0.04]
Hjelm 2017 (2)	4.2	1.8	34.2%	4.20 [0.67 , 7.73]
Miller 2011 (3)	12	3.1	29.4%	12.00 [5.92 , 18.08]
Total (95% CI)			**100.0%**	**4.24 [-2.88 , 11.36]**

Heterogeneity: Tau² = 35.28; Chi² = 24.22, df = 2 (P < 0.00001); I² = 92%
Test for overall effect: Z = 1.17 (P = 0.24)
Test for subgroup differences: Not applicable

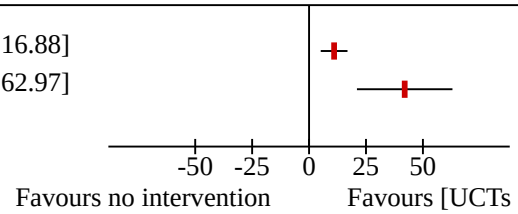


Footnotes
(1) 3290 households
(2) 2969 households
(3) 752 households

Analysis 1.2. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 2: Proportion consuming > 1 meal/day

Study or Subgroup	MD	SE	Mean Difference IV, Random, 95% CI
Brugh 2018	11	3	11.00 [5.12 , 16.88]
Miller 2011	42	10.7	42.00 [21.03 , 62.97]

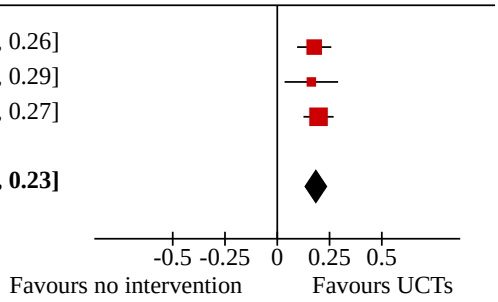
Test for subgroup differences: Not applicable



Analysis 1.3. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 3: Food security scores

Study or Subgroup	SMD	SE	Weight	Std. Mean Difference IV, Random, 95% CI
Daidone 2014 (1)	0.1766	0.0418	37.0%	0.18 [0.09 , 0.26]
Haushofer 2013 (2)	0.163	0.0653	15.2%	0.16 [0.04 , 0.29]
Hjelm 2017 (3)	0.1974	0.0368	47.8%	0.20 [0.13 , 0.27]
Total (95% CI)			**100.0%**	**0.18 [0.13 , 0.23]**

Heterogeneity: Tau² = 0.00; Chi² = 0.27, df = 2 (P = 0.88); I² = 0%
Test for overall effect: Z = 7.25 (P < 0.00001)
Test for subgroup differences: Not applicable



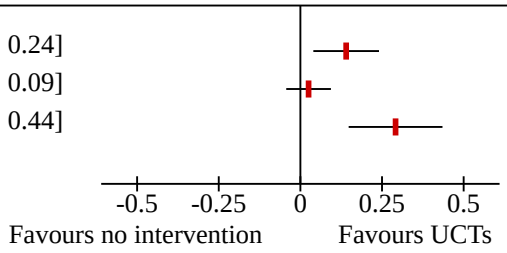
Footnotes

(1) HFIAS converted to food security scale; 2299 households
(2) FSI; 940 households
(3) HFIAS converted to food security scale; 2970 households

Analysis 1.4. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 4: Dietary Diversity Score including composite food consumption score (FCS) (weighted)

Study or Subgroup	SMD	SE	Std. Mean Difference IV, Random, 95% CI
Asfaw 2014 (1)	0.1402	0.0513	0.14 [0.04 , 0.24]
Brugh 2018 (2)	0.0251	0.0349	0.03 [-0.04 , 0.09]
Miller 2011 (3)	0.2915	0.0733	0.29 [0.15 , 0.44]

Test for subgroup differences: Not applicable



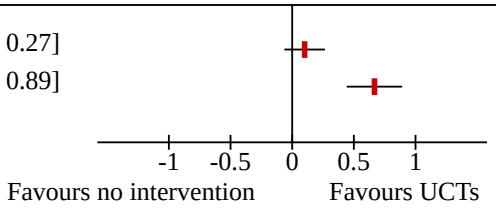
Footnotes

(1) Dietary Diversity Score
(2) Household Dietary Diversity Score
(3) Food Diversity Composite Score

Analysis 1.5. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 5: Proportion with minimum dietary diversity

Study or Subgroup	SMD	SE	Std. Mean Difference IV, Random, 95% CI
Skoufias 2013	0.101	0.084	0.10 [-0.06 , 0.27]
Tonguet Papucci 2015	0.6672	0.1146	0.67 [0.44 , 0.89]

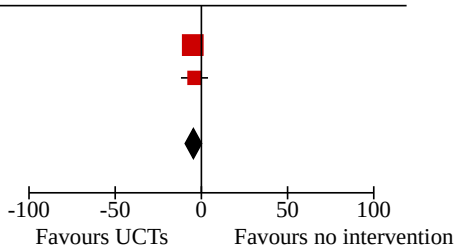
Test for subgroup differences: Not applicable



Analysis 1.6. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 6: Proportion of food poverty (per capita daily caloric intake < 2122 calories)

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Ahmed 2019a (1)	-5	3	64.0%	-5.00 [-10.88 , 0.88]
Ahmed 2019b (1)	-4	4	36.0%	-4.00 [-11.84 , 3.84]
Total (95% CI)			**100.0%**	**-4.64 [-9.34 , 0.06]**

Heterogeneity: Tau² = 0.00; Chi² = 0.04, df = 1 (P = 0.84); I² = 0%
Test for overall effect: Z = 1.93 (P = 0.05)
Test for subgroup differences: Not applicable



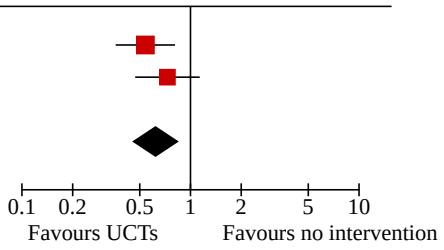
Footnotes

(1) Numbers of individuals per group not reported.

Analysis 1.7. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 7: Proportion stunted (height-for-age z-score (HAZ) < -2SD)

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Fenn 2015 (1)	-0.6162	0.2069	54.1%	0.54 [0.36 , 0.81]
Tonguet Papucci 2015 (2)	-0.3147	0.2247	45.9%	0.73 [0.47 , 1.13]
Total (95% CI)			**100.0%**	**0.62 [0.46 , 0.84]**

Heterogeneity: Tau² = 0.00; Chi² = 0.97, df = 1 (P = 0.32); I² = 0%
Test for overall effect: Z = 3.14 (P = 0.002)
Test for subgroup differences: Not applicable

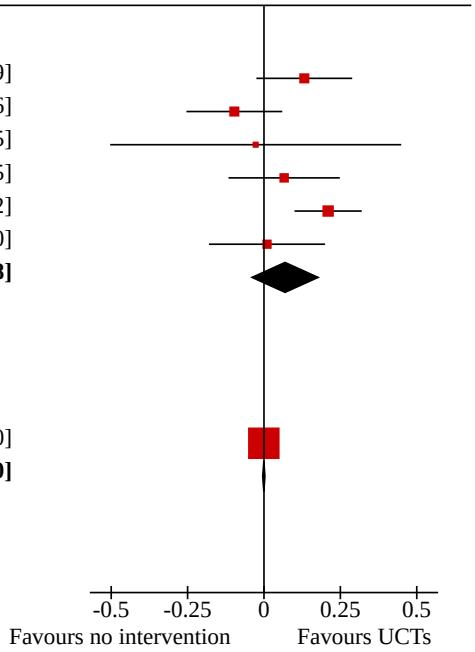


Footnotes
(1) 1664 children
(2) 1250 children

Analysis 1.8. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 8: HAZ

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
1.8.1 Change in z-scores				
Ahmed 2019a (1)	0.132	0.08	19.2%	0.13 [-0.02 , 0.29]
Ahmed 2019b (1)	-0.097	0.08	19.2%	-0.10 [-0.25 , 0.06]
Asfaw 2014 (2)	-0.0272	0.243	4.4%	-0.03 [-0.50 , 0.45]
Daidone 2014 (3)	0.066	0.0929	16.8%	0.07 [-0.12 , 0.25]
Fenn 2015 (4)	0.21	0.0561	24.2%	0.21 [0.10 , 0.32]
Fernald 2011 (5)	0.01	0.0969	16.1%	0.01 [-0.18 , 0.20]
Subtotal (95% CI)			**100.0%**	**0.07 [-0.04 , 0.18]**
Heterogeneity: Tau² = 0.01; Chi² = 11.29, df = 5 (P = 0.05); I² = 56%				
Test for overall effect: Z = 1.25 (P = 0.21)				
1.8.2 Change in z-score/month				
Tonguet Papucci 2015 (6)	-0.0005	0.0018	100.0%	-0.00 [-0.00 , 0.00]
Subtotal (95% CI)			**100.0%**	**-0.00 [-0.00 , 0.00]**
Heterogeneity: Not applicable				
Test for overall effect: Z = 0.28 (P = 0.78)				

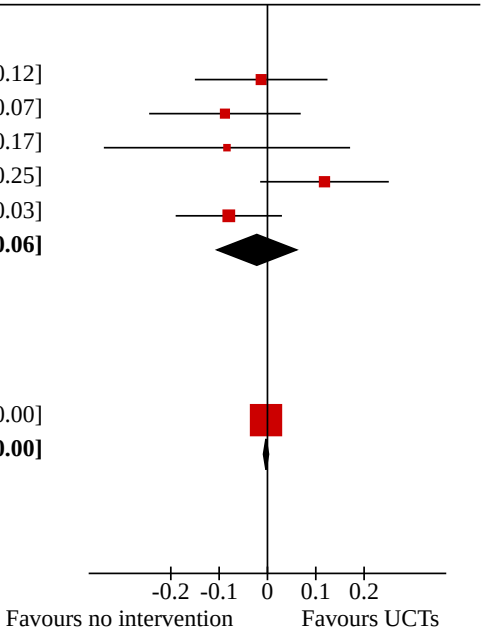
Test for subgroup differences: Chi² = 1.59, df = 1 (P = 0.21), I² = 37.1%



Footnotes
(1) Numbers of individuals per group not reported.
(2) n = 737
(3) n = 2299
(4) n = 1664
(5) n = 1196
(6) n=1250

Analysis 1.9. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 9: Weight-for-height z-score (WHZ)

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
1.9.1 Change in z-scores				
Ahmed 2019a (1)	-0.013	0.07	21.9%	-0.01 [-0.15 , 0.12]
Ahmed 2019b (1)	-0.088	0.08	18.5%	-0.09 [-0.24 , 0.07]
Asfaw 2014	-0.0838	0.13	8.8%	-0.08 [-0.34 , 0.17]
Daidone 2014	0.118	0.0679	22.8%	0.12 [-0.02 , 0.25]
Fenn 2015	-0.08	0.0561	28.1%	-0.08 [-0.19 , 0.03]
Subtotal (95% CI)			**100.0%**	**-0.02 [-0.10 , 0.06]**
Heterogeneity: Tau² = 0.00; Chi² = 6.24, df = 4 (P = 0.18); I² = 36%				
Test for overall effect: Z = 0.53 (P = 0.60)				
1.9.2 Change in z-scores/month				
Tonguet Papucci 2015	-0.003	0.0026	100.0%	-0.00 [-0.01 , 0.00]
Subtotal (95% CI)			**100.0%**	**-0.00 [-0.01 , 0.00]**
Heterogeneity: Not applicable				
Test for overall effect: Z = 1.15 (P = 0.25)				
Test for subgroup differences: Chi² = 0.21, df = 1 (P = 0.65), I² = 0%				

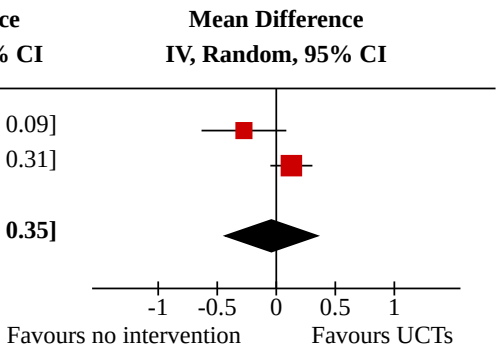


Footnotes

(1) Numbers of individuals per group not reported.

Analysis 1.10. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 10: Weight-for-age z-score (WAZ)

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Asfaw 2014 (1)	-0.274	0.1832	42.2%	-0.27 [-0.63 , 0.09]
Daidone 2014 (1)	0.128	0.0908	57.8%	0.13 [-0.05 , 0.31]
Total (95% CI)			**100.0%**	**-0.04 [-0.43 , 0.35]**
Heterogeneity: Tau² = 0.06; Chi² = 3.87, df = 1 (P = 0.05); I² = 74%				
Test for overall effect: Z = 0.21 (P = 0.83)				
Test for subgroup differences: Not applicable				



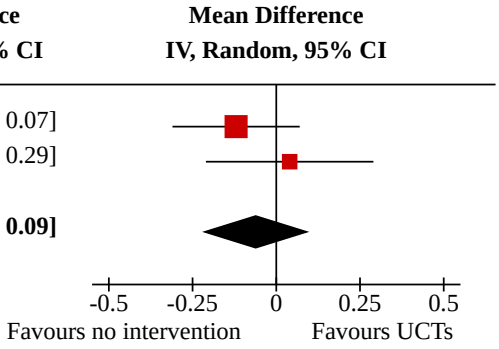
Footnotes

(1) Numbers of individuals per group not reported.

Analysis 1.11. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 11: Haemoglobin concentration (g/dL)

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Fenn 2015	-0.12	0.0969	63.4%	-0.12 [-0.31 , 0.07]
Fernald 2011 (1)	0.04	0.1276	36.6%	0.04 [-0.21 , 0.29]
Total (95% CI)			**100.0%**	**-0.06 [-0.21 , 0.09]**

Heterogeneity: Tau² = 0.00; Chi² = 1.00, df = 1 (P = 0.32); I² = 0%
Test for overall effect: Z = 0.80 (P = 0.43)
Test for subgroup differences: Not applicable



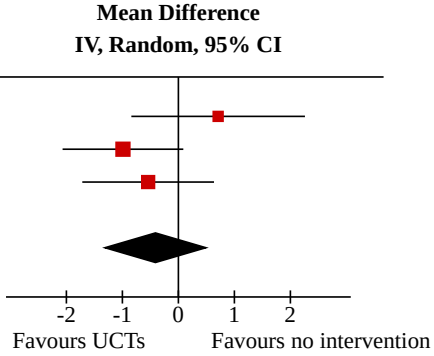
Footnotes

(1) Numbers of individuals per group not reported.

Analysis 1.12. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 12: Depression score (CES-D scale)

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Fernald 2011 (1)	0.71	0.7908	24.7%	0.71 [-0.84 , 2.26]
Haushofer 2013 (1)	-0.99	0.55	39.6%	-0.99 [-2.07 , 0.09]
Hjelm 2017 (1)	-0.54	0.6	35.7%	-0.54 [-1.72 , 0.64]
Total (95% CI)			**100.0%**	**-0.41 [-1.31 , 0.49]**

Heterogeneity: Tau² = 0.23; Chi² = 3.13, df = 2 (P = 0.21); I² = 36%
Test for overall effect: Z = 0.89 (P = 0.37)
Test for subgroup differences: Not applicable



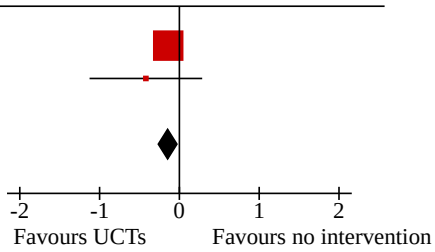
Footnotes

(1) Numbers of individuals per group not reported.

Analysis 1.13. Comparison 1: Unconditional cash transfers (UCT) versus no intervention, Outcome 13: Perceived Stress Scale (PSS)

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Haushofer 2013 (1)	-0.14	0.0602	97.3%	-0.14 [-0.26 , -0.02]
Hjelm 2017 (1)	-0.42	0.36	2.7%	-0.42 [-1.13 , 0.29]
Total (95% CI)			**100.0%**	**-0.15 [-0.26 , -0.03]**

Heterogeneity: Tau² = 0.00; Chi² = 0.59, df = 1 (P = 0.44); I² = 0%
Test for overall effect: Z = 2.49 (P = 0.01)
Test for subgroup differences: Not applicable



Footnotes

(1) Numbers of individuals per group not reported.

Comparison 2. Conditional cash transfers (CCT) versus no intervention

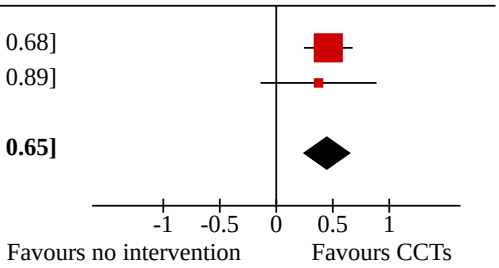
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1 Household Dietary Diversity Score (HDDS)	2		Mean Difference (IV, Random, 95% CI)	0.45 [0.25, 0.65]
2.2 Proportion stunted (height-for-age z-score (HAZ) < -2SD) – RCTs	3		Mean Difference (IV, Random, 95% CI)	-2.51 [-7.78, 2.75]
2.3 Proportion with severe stunting (HAZ < -3 SD) – RCTs	2		Mean Difference (IV, Random, 95% CI)	-3.05 [-17.63, 11.53]
2.4 HAZ – RCTs	5		Mean Difference (IV, Random, 95% CI)	0.09 [0.04, 0.15]
2.5 Proportion stunted (HAZ < -2 SD) – PCS	2		Mean Difference (IV, Random, 95% CI)	-5.63 [-26.59, 15.34]
2.6 HAZ – PCS	3		Mean Difference (IV, Random, 95% CI)	0.03 [-0.06, 0.12]
2.7 Proportion wasted (weight-for-height z-score (WHZ) < -2 SD) – RCTs	2		Mean Difference (IV, Random, 95% CI)	-2.50 [-8.04, 3.04]
2.8 WHZ – RCTs	2		Mean Difference (IV, Random, 95% CI)	0.17 [-0.11, 0.44]
2.9 Proportion underweight (weight-for-age z-score (WAZ) < -2SD) – RCTs	3		Mean Difference (IV, Random, 95% CI)	-4.87 [-8.65, -1.09]
2.10 Proportion severely underweight (WAZ < -3 SD) – RCTs	2		Mean Difference (IV, Random, 95% CI)	-1.08 [-4.73, 2.57]
2.11 WAZ – RCTs	3		Mean Difference (IV, Random, 95% CI)	0.04 [-0.03, 0.11]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.12 BMI-for-age z-score – PCS	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.13 Cognitive test scores – RCTs	2		Mean Difference (IV, Random, 95% CI)	0.13 [0.09, 0.18]
2.14 Proportion reporting being ill in past 4 weeks/parents seeking care for illness past 2 weeks – RCTs	3		Mean Difference (IV, Random, 95% CI)	-0.28 [-5.92, 5.35]
2.15 Overweight (BMI z-score > 2 SD)_PCS	2		Odds Ratio (IV, Random, 95% CI)	1.00 [0.59, 1.71]

Analysis 2.1. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 1: Household Dietary Diversity Score (HDDS)

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Hidrobo 2014 (1)	0.46	0.11	85.0%	0.46 [0.24 , 0.68]
Kurdi 2019	0.374	0.262	15.0%	0.37 [-0.14 , 0.89]
Total (95% CI)			**100.0%**	**0.45 [0.25 , 0.65]**

Heterogeneity: Tau² = 0.00; Chi² = 0.09, df = 1 (P = 0.76); I² = 0%
Test for overall effect: Z = 4.41 (P < 0.0001)
Test for subgroup differences: Not applicable



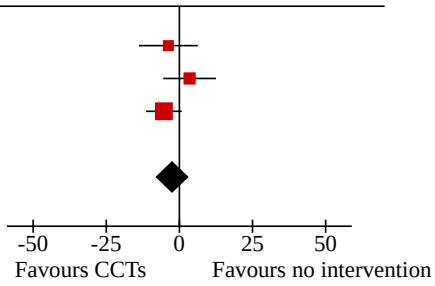
Footnotes

(1) Numbers of individuals per group not reported.

Analysis 2.2. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 2: Proportion stunted (height-for-age z-score (HAZ) < -2SD) – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Kandpal 2016 (1)	-3.768	5.1338	23.0%	-3.77 [-13.83 , 6.29]
Kusuma 2017a (1)	3.5	4.5919	27.7%	3.50 [-5.50 , 12.50]
Maluccio 2005 (1)	-5.3	3.1001	49.3%	-5.30 [-11.38 , 0.78]
Total (95% CI)			**100.0%**	**-2.51 [-7.78 , 2.75]**

Heterogeneity: Tau² = 5.04; Chi² = 2.57, df = 2 (P = 0.28); I² = 22%
Test for overall effect: Z = 0.94 (P = 0.35)
Test for subgroup differences: Not applicable

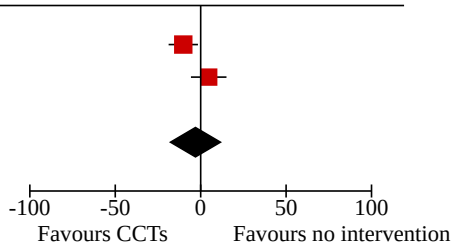


Footnotes
(1) Number of participants per group not reported.

Analysis 2.3. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 3: Proportion with severe stunting (HAZ < -3 SD) – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Kandpal 2016 (1)	-10.189	4.3776	52.0%	-10.19 [-18.77 , -1.61]
Kusuma 2017a (1)	4.7	5.3062	48.0%	4.70 [-5.70 , 15.10]
Total (95% CI)			**100.0%**	**-3.05 [-17.63 , 11.53]**

Heterogeneity: Tau² = 87.18; Chi² = 4.68, df = 1 (P = 0.03); I² = 79%
Test for overall effect: Z = 0.41 (P = 0.68)
Test for subgroup differences: Not applicable

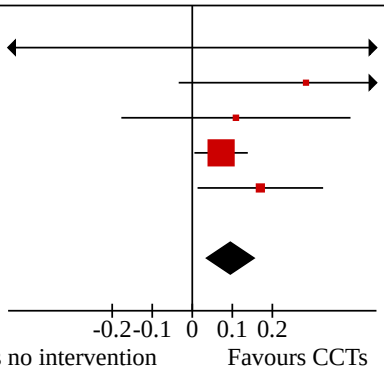


Footnotes
(1) Number of participants per group not reported.

Analysis 2.4. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 4: HAZ – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Evans 2014 (1)	0.86	1.55	0.0%	0.86 [-2.18 , 3.90]
Kandpal 2016 (1)	0.284	0.1622	3.4%	0.28 [-0.03 , 0.60]
Kurdi 2019 (1)	0.109	0.146	4.2%	0.11 [-0.18 , 0.40]
Macours 2012 (1)	0.072	0.034	78.2%	0.07 [0.01 , 0.14]
Maluccio 2005	0.17	0.08	14.1%	0.17 [0.01 , 0.33]
Total (95% CI)			**100.0%**	**0.09 [0.04 , 0.15]**

Heterogeneity: Tau² = 0.00; Chi² = 2.95, df = 4 (P = 0.57); I² = 0%
Test for overall effect: Z = 3.16 (P = 0.002)
Test for subgroup differences: Not applicable

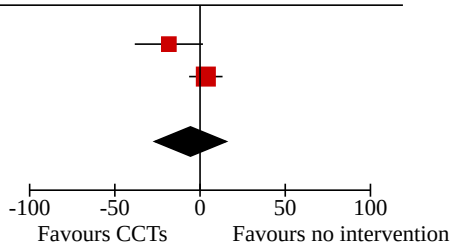


Footnotes
(1) Number of participants per group not reported.

Analysis 2.5. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 5: Proportion stunted (HAZ < -2 SD) – PCS

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Andersen 2015	-18.3	10.2043	41.6%	-18.30 [-38.30 , 1.70]
Ferre 2014	3.4	5	58.4%	3.40 [-6.40 , 13.20]
Total (95% CI)			**100.0%**	**-5.63 [-26.59 , 15.34]**

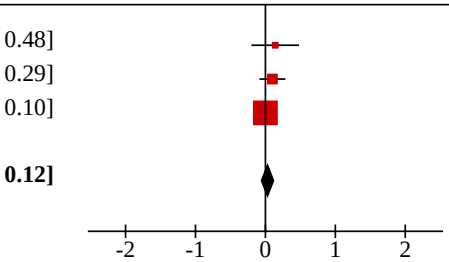
Heterogeneity: Tau² = 170.88; Chi² = 3.65, df = 1 (P = 0.06); I² = 73%
Test for overall effect: Z = 0.53 (P = 0.60)
Test for subgroup differences: Not applicable



Analysis 2.6. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 6: HAZ – PCS

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Andersen 2015 (1)	0.14	0.1735	6.3%	0.14 [-0.20 , 0.48]
Leroy 2008 (PROGRESA) (1)	0.1	0.0949	21.0%	0.10 [-0.09 , 0.29]
Lopez Arana 2016 (1)	0	0.051	72.7%	0.00 [-0.10 , 0.10]
Total (95% CI)			**100.0%**	**0.03 [-0.06 , 0.12]**

Heterogeneity: Tau² = 0.00; Chi² = 1.29, df = 2 (P = 0.52); I² = 0%
Test for overall effect: Z = 0.69 (P = 0.49)
Test for subgroup differences: Not applicable

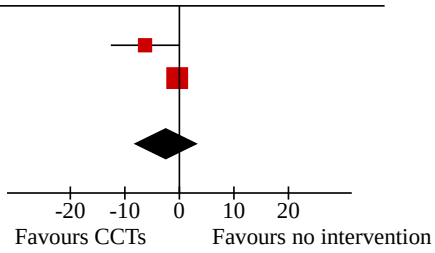


Footnotes
(1) Number of participants per group not reported.

Analysis 2.7. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 7: Proportion wasted (weight-for-height z-score (WHZ) < -2 SD) – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Kusuma 2017a (1)	-6.3	3.2	35.7%	-6.30 [-12.57 , -0.03]
Maluccio 2005	-0.4	0.5	64.3%	-0.40 [-1.38 , 0.58]
Total (95% CI)			**100.0%**	**-2.50 [-8.04 , 3.04]**

Heterogeneity: Tau² = 12.16; Chi² = 3.32, df = 1 (P = 0.07); I² = 70%
Test for overall effect: Z = 0.89 (P = 0.38)
Test for subgroup differences: Not applicable

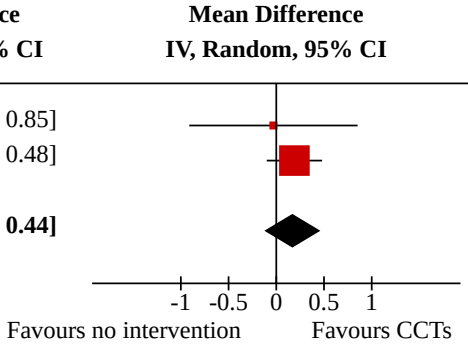


Footnotes
(1) Number of participants per group not reported.

Analysis 2.8. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 8: WHZ – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Evans 2014 (1)	-0.03	0.45	9.8%	-0.03 [-0.91 , 0.85]
Kurdi 2019 (1)	0.19	0.148	90.2%	0.19 [-0.10 , 0.48]
Total (95% CI)			**100.0%**	**0.17 [-0.11 , 0.44]**

Heterogeneity: Tau² = 0.00; Chi² = 0.22, df = 1 (P = 0.64); I² = 0%
Test for overall effect: Z = 1.20 (P = 0.23)
Test for subgroup differences: Not applicable

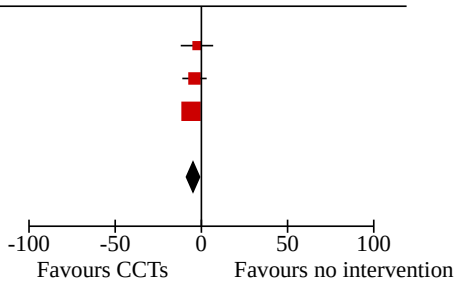


Footnotes
(1) Number of participants per group not reported

Analysis 2.9. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 9: Proportion underweight (weight-for-age z-score (WAZ) < -2SD) – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Kandpal 2016 (1)	-2.57	4.8011	16.2%	-2.57 [-11.98 , 6.84]
Kusuma 2017a (1)	-4	3.6	28.7%	-4.00 [-11.06 , 3.06]
Maluccio 2005 (1)	-6	2.6	55.1%	-6.00 [-11.10 , -0.90]
Total (95% CI)			**100.0%**	**-4.87 [-8.65 , -1.09]**

Heterogeneity: Tau² = 0.00; Chi² = 0.48, df = 2 (P = 0.79); I² = 0%
Test for overall effect: Z = 2.52 (P = 0.01)
Test for subgroup differences: Not applicable

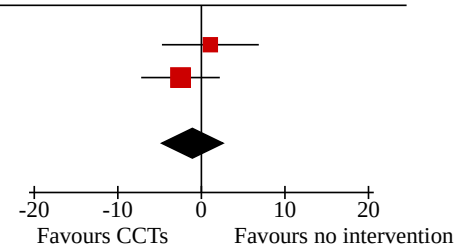


Footnotes
(1) Number of participants per group not reported.

Analysis 2.10. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 10: Proportion severely underweight (WAZ < -3 SD) – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Kandpal 2016 (1)	1.075	2.9567	39.7%	1.07 [-4.72 , 6.87]
Kusuma 2017a (1)	-2.5	2.4	60.3%	-2.50 [-7.20 , 2.20]
Total (95% CI)			**100.0%**	**-1.08 [-4.73 , 2.57]**

Heterogeneity: Tau² = 0.00; Chi² = 0.88, df = 1 (P = 0.35); I² = 0%
Test for overall effect: Z = 0.58 (P = 0.56)
Test for subgroup differences: Not applicable

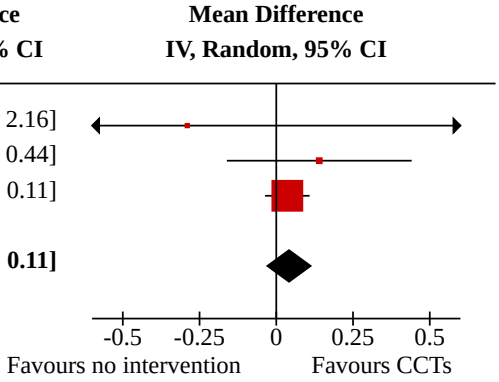


Footnotes
(1) Number of participants per group not reported.

Analysis 2.11. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 11: WAZ – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Evans 2014 (1)	-0.29	1.25	0.1%	-0.29 [-2.74 , 2.16]
Kandpal 2016 (1)	0.14	0.1536	5.5%	0.14 [-0.16 , 0.44]
Macours 2012 (1)	0.036	0.037	94.4%	0.04 [-0.04 , 0.11]
Total (95% CI)			**100.0%**	**0.04 [-0.03 , 0.11]**

Heterogeneity: Tau² = 0.00; Chi² = 0.50, df = 2 (P = 0.78); I² = 0%
Test for overall effect: Z = 1.15 (P = 0.25)
Test for subgroup differences: Not applicable

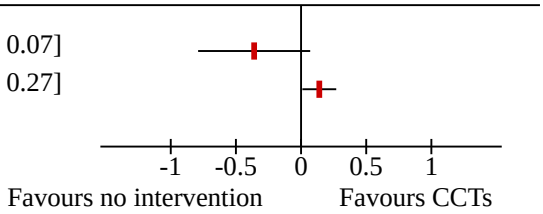


Footnotes
(1) Number of participants per group not reported.

Analysis 2.12. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 12: BMI-for-age z-score – PCS

Study or Subgroup	MD	SE	Mean Difference IV, Random, 95% CI
Andersen 2015	-0.36	0.2194	-0.36 [-0.79 , 0.07]
Lopez Arana 2016	0.14	0.0663	0.14 [0.01 , 0.27]

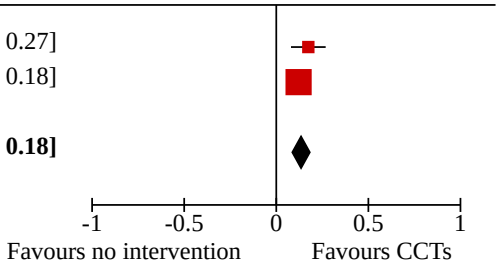
Test for subgroup differences: Not applicable



Analysis 2.13. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 13: Cognitive test scores – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Baird 2013 (1)	0.174	0.048	25.4%	0.17 [0.08 , 0.27]
Macours 2012 (1)	0.1211	0.028	74.6%	0.12 [0.07 , 0.18]
Total (95% CI)			**100.0%**	**0.13 [0.09 , 0.18]**

Heterogeneity: Tau² = 0.00; Chi² = 0.91, df = 1 (P = 0.34); I² = 0%
Test for overall effect: Z = 5.56 (P < 0.00001)
Test for subgroup differences: Not applicable

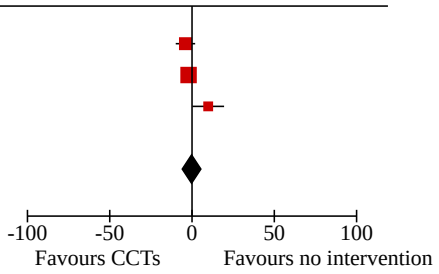


Footnotes
(1) Number of participants per group not reported.

Analysis 2.14. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 14: Proportion reporting being ill in past 4 weeks/parents seeking care for illness past 2 weeks – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Evans 2014 (1)	-4	3.0103	32.8%	-4.00 [-9.90 , 1.90]
Gertler 2000 (PROGRESA) (1)	-2.1	1.2245	46.8%	-2.10 [-4.50 , 0.30]
Kandpal 2016	9.83	4.9241	20.4%	9.83 [0.18 , 19.48]
Total (95% CI)			**100.0%**	**-0.28 [-5.92 , 5.35]**

Heterogeneity: Tau² = 16.16; Chi² = 6.17, df = 2 (P = 0.05); I² = 68%
Test for overall effect: Z = 0.10 (P = 0.92)
Test for subgroup differences: Not applicable

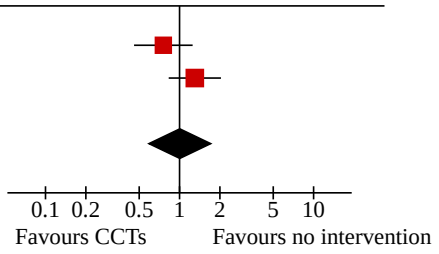


Footnotes
(1) Number of participants per group not reported.

Analysis 2.15. Comparison 2: Conditional cash transfers (CCT) versus no intervention, Outcome 15: Overweight (BMI z-score > 2 SD)_PCS

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Andersen 2015	-0.2784	0.2566	47.7%	0.76 [0.46 , 1.25]
Lopez Arana 2016 (1)	0.2624	0.2289	52.3%	1.30 [0.83 , 2.04]
Total (95% CI)			**100.0%**	**1.00 [0.59 , 1.71]**

Heterogeneity: Tau² = 0.09; Chi² = 2.47, df = 1 (P = 0.12); I² = 60%
Test for overall effect: Z = 0.02 (P = 0.99)
Test for subgroup differences: Not applicable



Footnotes
(1) Number of participants per group not reported.

Comparison 3. Income generation (IG) versus no intervention

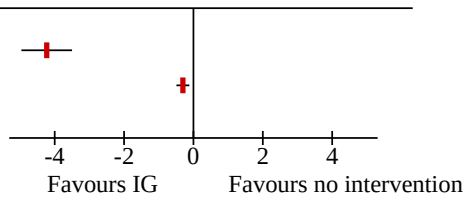
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1 HFIAS – PCS	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.2 HDDS – RCTs	2		Std. Mean Difference (IV, Random, 95% CI)	0.02 [-0.09, 0.13]
3.3 Minimum dietary diversity (MDD) – RCTs	3		Odds Ratio (IV, Random, 95% CI)	1.28 [1.11, 1.47]
3.4 HDDS – PCS	3		Mean Difference (IV, Random, 95% CI)	0.67 [0.29, 1.05]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.5 Proportion stunted (HAZ < -2 SD) – RCTs	2		Odds Ratio (IV, Random, 95% CI)	1.00 [0.84, 1.19]
3.6 HAZ – RCTs	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.7 Proportion wasted (WHZ < -2 SD) – RCTs	2		Odds Ratio (IV, Random, 95% CI)	1.13 [0.92, 1.40]
3.8 WHZ – RCTs	2		Mean Difference (IV, Random, 95% CI)	-0.05 [-0.25, 0.15]
3.9 Percentage underweight – RCTs	2		Odds Ratio (IV, Random, 95% CI)	1.06 [0.89, 1.26]
3.10 WAZ – RCTs	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.11 Percentage underweight – PCS	2		Odds Ratio (IV, Random, 95% CI)	0.83 [0.61, 1.12]
3.12 Proportion of women underweight – RCTs	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.13 BMI – RCTs	2		Mean Difference (IV, Random, 95% CI)	-0.02 [-0.28, 0.25]
3.14 Haemoglobin concentration (children) – RCTs	2		Mean Difference (IV, Random, 95% CI)	3.49 [3.25, 3.72]
3.15 Haemoglobin concentration (women) – RCTs	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.16 Prevalence of anaemia (children) – RCTs	2		Odds Ratio (IV, Random, 95% CI)	0.73 [0.61, 0.88]
3.17 Prevalence of anaemia (women) – RCTs	2		Odds Ratio (IV, Random, 95% CI)	1.06 [0.82, 1.38]

Analysis 3.1. Comparison 3: Income generation (IG) versus no intervention, Outcome 1: HFIAS – PCS

Study or Subgroup	MD	SE	Mean Difference IV, Random, 95% CI
Doocy 2017	-4.23	0.3725	-4.23 [-4.96 , -3.50]
Kangmennaang 2017	-0.304	0.095	-0.30 [-0.49 , -0.12]

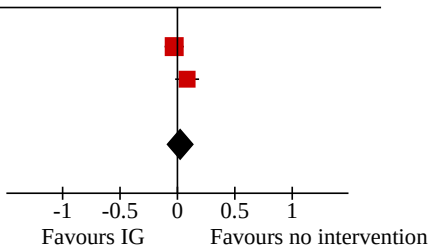
Test for subgroup differences: Not applicable



Analysis 3.2. Comparison 3: Income generation (IG) versus no intervention, Outcome 2: HDDS – RCTs

Study or Subgroup	SMD	SE	Weight	Std. Mean Difference IV, Random, 95% CI
Beegle 2017 (1)	-0.0281	0.0426	54.0%	-0.03 [-0.11 , 0.06]
Olney 2016 (2)	0.0844	0.0531	46.0%	0.08 [-0.02 , 0.19]
Total (95% CI)			**100.0%**	**0.02 [-0.09 , 0.13]**

Heterogeneity: Tau² = 0.00; Chi² = 2.73, df = 1 (P = 0.10); I² = 63%
Test for overall effect: Z = 0.42 (P = 0.67)
Test for subgroup differences: Not applicable

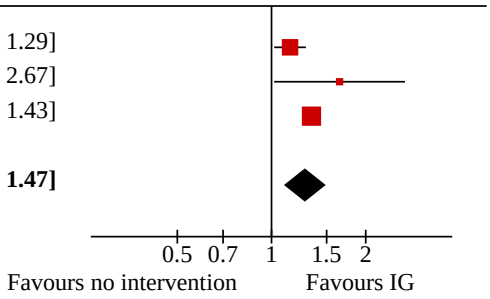


Footnotes
(1) n = 2201
(2) n = 1476

Analysis 3.3. Comparison 3: Income generation (IG) versus no intervention, Outcome 3: Minimum dietary diversity (MDD) – RCTs

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Darrouzet Nardi 2016 (1)	0.1363	0.0594	41.1%	1.15 [1.02 , 1.29]
Marquis 2018	0.5008	0.2454	7.7%	1.65 [1.02 , 2.67]
Olney 2016	0.294	0.031	51.2%	1.34 [1.26 , 1.43]
Total (95% CI)			**100.0%**	**1.28 [1.11 , 1.47]**

Heterogeneity: Tau² = 0.01; Chi² = 6.49, df = 2 (P = 0.04); I² = 69%
Test for overall effect: Z = 3.35 (P = 0.0008)
Test for subgroup differences: Not applicable

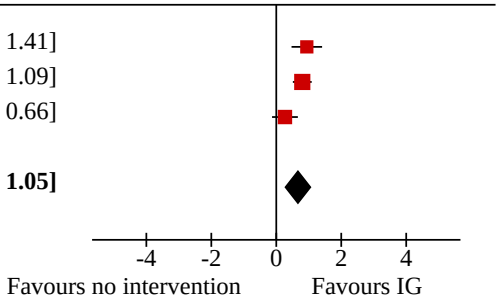


Footnotes
(1) Number of participants per group not reported.

Analysis 3.4. Comparison 3: Income generation (IG) versus no intervention, Outcome 4: HDDS – PCS

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Alaofe 2019	0.94	0.24	28.5%	0.94 [0.47 , 1.41]
Doocy 2017	0.8	0.148	39.0%	0.80 [0.51 , 1.09]
Jodlowski 2016	0.267	0.2026	32.5%	0.27 [-0.13 , 0.66]
Total (95% CI)			**100.0%**	**0.67 [0.29 , 1.05]**

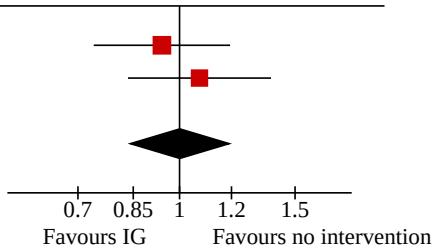
Heterogeneity: Tau² = 0.07; Chi² = 5.99, df = 2 (P = 0.05); I² = 67%
Test for overall effect: Z = 3.43 (P = 0.0006)
Test for subgroup differences: Not applicable



Analysis 3.5. Comparison 3: Income generation (IG) versus no intervention, Outcome 5: Proportion stunted (HAZ < -2 SD) – RCTs

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Osei 2017	-0.0619	0.1221	52.4%	0.94 [0.74 , 1.19]
Verbowski 2018	0.07	0.1281	47.6%	1.07 [0.83 , 1.38]
Total (95% CI)			**100.0%**	**1.00 [0.84 , 1.19]**

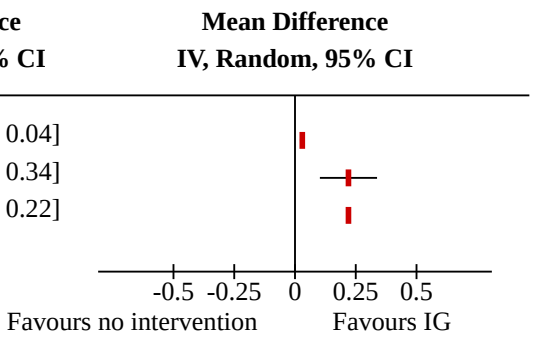
Heterogeneity: Tau² = 0.00; Chi² = 0.56, df = 1 (P = 0.46); I² = 0%
Test for overall effect: Z = 0.01 (P = 0.99)
Test for subgroup differences: Not applicable



Analysis 3.6. Comparison 3: Income generation (IG) versus no intervention, Outcome 6: HAZ – RCTs

Study or Subgroup	MD	SE	Mean Difference IV, Random, 95% CI
Darrouzet Nardi 2016	0.03	0.0049	0.03 [0.02 , 0.04]
Marquis 2018	0.22	0.06	0.22 [0.10 , 0.34]
Osei 2017	0.22	0.0012	0.22 [0.22 , 0.22]

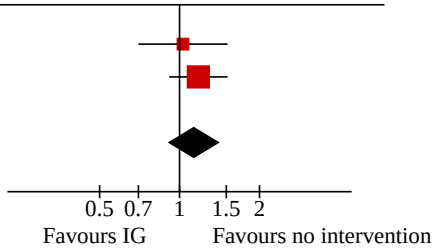
Test for subgroup differences: Not applicable



Analysis 3.7. Comparison 3: Income generation (IG) versus no intervention, Outcome 7: Proportion wasted (WHZ < -2 SD) – RCTs

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Osei 2017	0.0296	0.1971	30.0%	1.03 [0.70 , 1.52]
Verbowski 2018	0.163	0.1291	70.0%	1.18 [0.91 , 1.52]
Total (95% CI)			**100.0%**	**1.13 [0.92 , 1.40]**

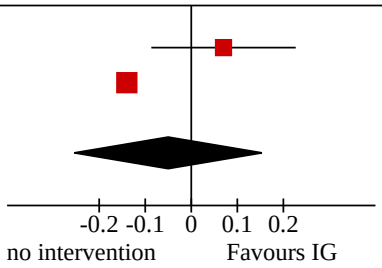
Heterogeneity: Tau² = 0.00; Chi² = 0.32, df = 1 (P = 0.57); I² = 0%
Test for overall effect: Z = 1.14 (P = 0.25)
Test for subgroup differences: Not applicable



Analysis 3.8. Comparison 3: Income generation (IG) versus no intervention, Outcome 8: WHZ – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Marquis 2018	0.07	0.08	42.7%	0.07 [-0.09 , 0.23]
Osei 2017	-0.14	0.0012	57.3%	-0.14 [-0.14 , -0.14]
Total (95% CI)			**100.0%**	**-0.05 [-0.25 , 0.15]**

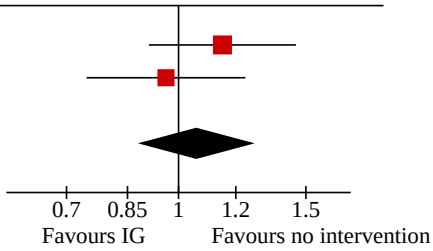
Heterogeneity: Tau² = 0.02; Chi² = 6.89, df = 1 (P = 0.009); I² = 85%
Test for overall effect: Z = 0.48 (P = 0.63)
Test for subgroup differences: Not applicable



Analysis 3.9. Comparison 3: Income generation (IG) versus no intervention, Outcome 9: Percentage underweight – RCTs

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Osei 2017	0.1398	0.1194	53.7%	1.15 [0.91 , 1.45]
Verbowski 2018	-0.04	0.129	46.3%	0.96 [0.75 , 1.24]
Total (95% CI)			**100.0%**	**1.06 [0.89 , 1.26]**

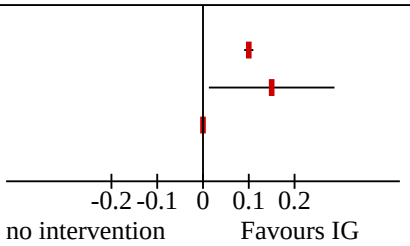
Heterogeneity: Tau² = 0.00; Chi² = 1.05, df = 1 (P = 0.31); I² = 4%
Test for overall effect: Z = 0.63 (P = 0.53)
Test for subgroup differences: Not applicable



Analysis 3.10. Comparison 3: Income generation (IG) versus no intervention, Outcome 10: WAZ – RCTs

Study or Subgroup	MD	SE	Mean Difference IV, Random, 95% CI
Darrouzet Nardi 2016	0.1	0.0051	0.10 [0.09 , 0.11]
Marquis 2018	0.15	0.07	0.15 [0.01 , 0.29]
Osei 2017	0	0.0012	0.00 [-0.00 , 0.00]

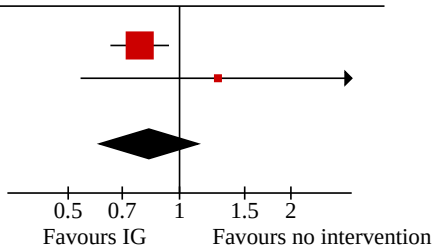
Test for subgroup differences: Not applicable



Analysis 3.11. Comparison 3: Income generation (IG) versus no intervention, Outcome 11: Percentage underweight – PCS

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Doocy 2017	-0.248	0.093	88.3%	0.78 [0.65 , 0.94]
Weinhardt 2017	0.239	0.4363	11.7%	1.27 [0.54 , 2.99]
Total (95% CI)			**100.0%**	**0.83 [0.61 , 1.12]**

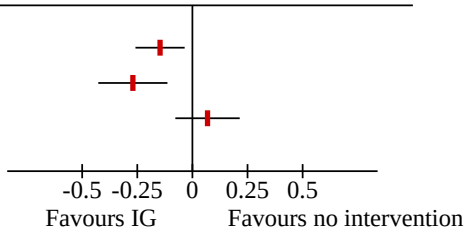
Heterogeneity: Tau² = 0.02; Chi² = 1.19, df = 1 (P = 0.27); I² = 16%
Test for overall effect: Z = 1.22 (P = 0.22)
Test for subgroup differences: Not applicable



Analysis 3.12. Comparison 3: Income generation (IG) versus no intervention, Outcome 12: Proportion of women underweight – RCTs

Study or Subgroup	SMD	SE	Std. Mean Difference IV, Random, 95% CI
Olney 2016	-0.1467	0.0569	-0.15 [-0.26 , -0.04]
Osei 2017	-0.27	0.08	-0.27 [-0.43 , -0.11]
Verbowski 2018	0.0686	0.0745	0.07 [-0.08 , 0.21]

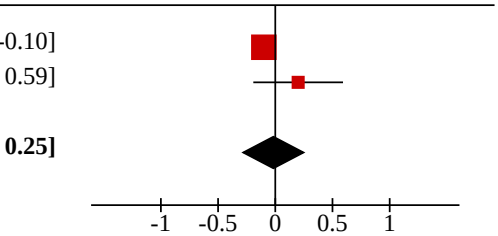
Test for subgroup differences: Not applicable



Analysis 3.13. Comparison 3: Income generation (IG) versus no intervention, Outcome 13: BMI – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Osei 2017	-0.1	0.002	72.2%	-0.10 [-0.10 , -0.10]
Olney 2016	0.2	0.2	27.8%	0.20 [-0.19 , 0.59]
Total (95% CI)			**100.0%**	**-0.02 [-0.28 , 0.25]**

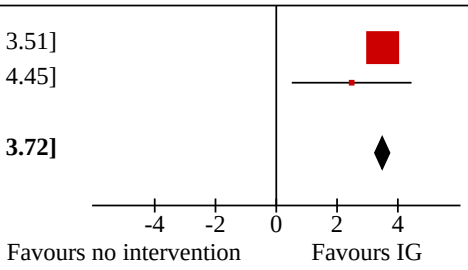
Heterogeneity: Tau² = 0.02; Chi² = 2.25, df = 1 (P = 0.13); I² = 56%
Test for overall effect: Z = 0.12 (P = 0.90)
Test for subgroup differences: Not applicable



Analysis 3.14. Comparison 3: Income generation (IG) versus no intervention, Outcome 14: Haemoglobin concentration (children) – RCTs

Study or Subgroup	MD	SE	Weight	Mean Difference IV, Random, 95% CI
Osei 2017	3.5	0.0039	98.5%	3.50 [3.49 , 3.51]
Verbowski 2018	2.48	1.0051	1.5%	2.48 [0.51 , 4.45]
Total (95% CI)			**100.0%**	**3.49 [3.25 , 3.72]**

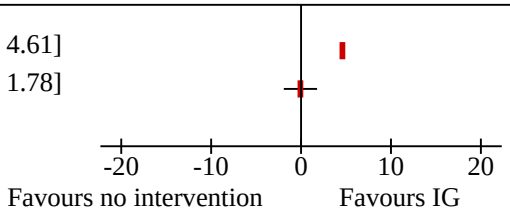
Heterogeneity: Tau² = 0.02; Chi² = 1.03, df = 1 (P = 0.31); I² = 3%
Test for overall effect: Z = 28.58 (P < 0.00001)
Test for subgroup differences: Not applicable



Analysis 3.15. Comparison 3: Income generation (IG) versus no intervention, Outcome 15: Haemoglobin concentration (women) – RCTs

Study or Subgroup	MD	SE	Mean Difference IV, Random, 95% CI
Osei 2017	4.6	0.0039	4.60 [4.59 , 4.61]
Verbowski 2018	-0.07	0.9439	-0.07 [-1.92 , 1.78]

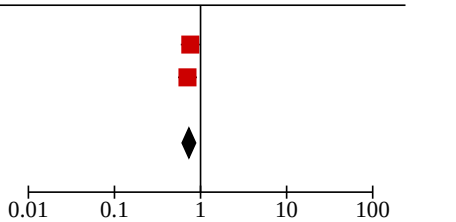
Test for subgroup differences: Not applicable



Analysis 3.16. Comparison 3: Income generation (IG) versus no intervention, Outcome 16: Prevalence of anaemia (children) – RCTs

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Osei 2017	-0.2744	0.1292	49.9%	0.76 [0.59 , 0.98]
Verbowski 2018	-0.35	0.129	50.1%	0.70 [0.55 , 0.91]
Total (95% CI)			**100.0%**	**0.73 [0.61 , 0.88]**

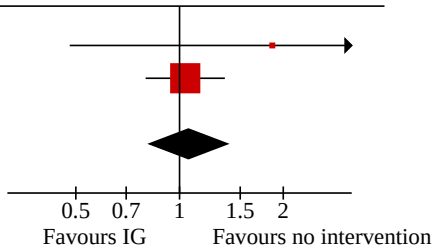
Heterogeneity: Tau² = 0.00; Chi² = 0.17, df = 1 (P = 0.68); I² = 0%
Test for overall effect: Z = 3.42 (P = 0.0006)
Test for subgroup differences: Not applicable



Analysis 3.17. Comparison 3: Income generation (IG) versus no intervention, Outcome 17: Prevalence of anaemia (women) – RCTs

Study or Subgroup	log[OR]	SE	Weight	Odds Ratio IV, Random, 95% CI
Osei 2017	0.62	0.6908	3.7%	1.86 [0.48 , 7.20]
Verbowski 2018	0.038	0.135	96.3%	1.04 [0.80 , 1.35]
Total (95% CI)			**100.0%**	**1.06 [0.82 , 1.38]**

Heterogeneity: Tau² = 0.00; Chi² = 0.68, df = 1 (P = 0.41); I² = 0%
Test for overall effect: Z = 0.45 (P = 0.65)
Test for subgroup differences: Not applicable



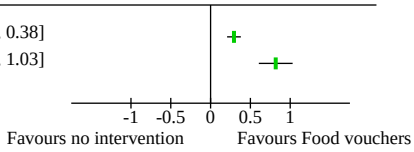
Comparison 4. Food vouchers vs no intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.1 Food consumption score	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only

Analysis 4.1. Comparison 4: Food vouchers vs no intervention, Outcome 1: Food consumption score

Study or Subgroup	Experimental Mean	Experimental SD	Experimental Total	Control Mean	Control SD	Control Total	Std. Mean Difference IV, Random, 95% CI
Hidrobo 2014	10.4	31.9786	1044	1	31.9786	1043	0.29 [0.21 , 0.38]
Ponce 2017	1.394	0.4806	171	1	0.4806	201	0.82 [0.61 , 1.03]

Test for subgroup differences: Not applicable



ADDITIONAL TABLES

Table 1. Summary of PICOS and of AMSTAR scores of included systematic reviews, and how existing reviews informed the PICOS of a new Cochrane Review

Domain	Finding	How it informed our review question or methods
Setting	• 12 reviews did not specify the setting • 11 reviews stated the community as the setting • 3 reviews stated the setting was LMICs • 3 reviews specified a school as the setting	We chose the community as the setting, defined as a group of people with diverse characteristics who were linked by social ties, share common perspectives and engage in joint action in geographical locations or settings (MacQueen 2001).
Participants	• 5 reviews did not specify the types of participants for inclusion • 11 reviews included infants and children (up to school-aged children)	As existing reviews specifically addressed specific high-risk groups, we did not focus on these. Instead, we included all individuals across all ages that belonged to the

Table 1. Summary of PICOS and of AMSTAR scores of included systematic reviews, and how existing reviews informed the PICOS of a new Cochrane Review *(Continued)*

	• 1 review included adults and adolescents • 6 reviews included pregnant women or mothers in the immediate postpartum period. 1 of these also targeted other adults who could be linked to women who may have breastfed. Many of these were assessing interventions on breastfeeding or complementary feeding. • 1 review included only parents of children aged 2–5 years, as it assessed influence of parenting practices on children's dietary habits • 2 reviews included all people living in a community • 3 reviews included only poor people who were recipients of some service, e.g. recipients of a government conditional cash-transfer programme	community where relevant interventions had been implemented.
Intervention (including its duration)	• 14 reviews addressed interventions related to the availability of food, 5 of which also assessed interventions influencing utilisation of food, such as nutrition education • 13 reviews assessed interventions addressing food utilisation • 7 reviews assessed interventions addressing access to food (2 of which had a low AMSTAR score of 4) • 28 reviews did not specify the duration of the intervention, and only 1 included interventions with a minimum duration of 3 months. As a result, the duration and the follow-up times of the interventions varied considerably within and across reviews	Of the 14 reviews that addressed food availability, 5 also assessed food utilisation (e.g. combination of community gardens and nutrition education). As fewer reviews addressed food access, we included interventions that had addressed this dimension of food security. We included interventions with any duration but extracted outcomes that were measured ≥ 3 months after implementation.
Control	• 18 reviews did not specify a control group • 6 reviews compared the intervention with either no intervention, an alternative intervention or placebo • 3 reviews did not have any control group • 2 reviews stated that included studies needed to have a control group, but did not specify further	We included studies in which these interventions, individually or in combination, were compared to no intervention or to other eligible intervention.
Outcomes assessed	The specific outcomes assessed across the included reviews varied considerably and often they were not clearly specified at the outset. The most common and important outcomes reported in these reviews were related to dietary intake, anthropometric measurements, and biochemical and clinical indicators, to describe the impact of the intervention on nutritional status. Other outcomes measured included food purchase or expenditure, food production, morbidity and mortality, and breastfeeding initiation rates or duration. Often, reviews measured the same outcome in different ways. For example, anthropometric indicators assessed differed, as did their classifications, across the included reviews. This makes it difficult to compare results across reviews and to reach a conclusion about the effectiveness of a specific intervention.	The most commonly specified outcomes measured food and nutrition security, and nutritional status. We also focused on these outcomes. Examples included: diet diversity scores and hunger measures; and anthropometric, biochemical and dietary intake indicators. We clearly defined, a priori, the specific outcome measures and metrics that we included in our review.
Study designs	• 11 reviews did not specify which study designs they would include • 3 reviews included only RCTs • 1 review included only CCTs	The study design labels used varied across included reviews and were not always clearly defined.

Table 1. Summary of PICOS and of AMSTAR scores of included systematic reviews, and how existing reviews informed the PICOS of a new Cochrane Review *(Continued)*

	• 1 review included only impact evaluations • 13 reviews included a variety of study designs, which included ≥ 2 of: RCTs, BAS, quasi-RCTs, analytical cohort studies, ITS, CCTs, randomised field trials and CSS However, the definitions of the study design labels used were not always clear and varied across the included reviews.	We included both randomised and non-randomised studies, as we expect that existing RCTs in the area of food security would be scarce. We wanted to include the best *available* evidence for our review question. We clearly defined the type of study designs included in our review.
Search strategies	Most reviews ran comprehensive searches. They used a comprehensive set of keywords and searched a variety of relevant databases. Only 5 reviews did not indicate search terms either in the text or in an appendix. • 2 reviews conducted searches until 2012 • 11 reviews searched until 2010–2011 • 9 reviews searched before 2010 • 7 reviews did not specify the date of the last search	Our review included updated searches across a variety of relevant databases and websites. We drew on common keywords used across these included reviews.
Reporting	The methods sections of most reviews were often not reported clearly. The reporting of results in these reviews, in terms of characteristics of included studies, was also poor.	Poor reporting of the characteristics of included studies makes it difficult to assess the context in which these results were obtained. Thus, it is difficult to generalise the results. We clearly reported on the characteristics of included studies, so that the context in which the interventions were implemented was clearly understood.
AMSTAR scores	• 9 reviews were of low quality (AMSTAR score: 0–4) • 11 reviews were of moderate quality (AMSTAR score: 5–8) • 8 reviews were of high quality (AMSTAR score: 9–11) • 1 review did not have a score as it did not include any studies	Of the 8 high-quality reviews, 5 assessed interventions that aimed to improve food availability or utilisation (or both), and 3 assessed interventions addressing food access. The other 2 included reviews that addressed food access were of low quality (AMSTAR = 4). We contributed to the evidence base on interventions addressing food access by producing a high-quality systematic review that assessed the effectiveness of the interventions on relevant outcomes, such as nutritional status.

BAS: before-and-after study; CCT: controlled clinical trial; CSS: cross-sectional study; ITS: interrupted time series; LMIC: low- and middle-income country; RCT: randomised controlled trial.

Table 2. Definition of interventions included in the review

Category of intervention	Definition	Types of interventions
Improve buying power	Interventions that generate/increase/maintain income to ensure economic access to food and other basic needs.	• Cash transfers (conditional or unconditional) • Other income generation interventions, e.g. • Cash-for-work programmes

Table 2. Definition of interventions included in the review *(Continued)*

		• Microcredit/microenterprise development – facilitation of small business development through credit-provision and training in specific business skills • Employment generating activities, that will generate/increase income • Agriculture-related interventions – training /cash cropping/livestock ownership/other. These interventions are only included if they aim to increase income of households. Agricultural interventions only aiming to increase/ensure enough food for consumption are excluded.
Food prices	Interventions that reduce price of food and thus increase economic access to food.	• Food stamps or vouchers (distribution of coupons or stamps that can be used to purchase foods in local markets, etc.) • Food subsidies/discounts • Policies/regulations that reduce/regulate food prices
Infrastructure/transport	Interventions that ensure people/communities have physical access to food/food outlets.	• Rural infrastructure development; e.g. roads that enable access to shops/ markets • Interventions that ensure affordable transportation to markets/food outlets • Adequate food storage facilities
Social environment/support	Interventions that ensure people have social support/support network they can resort to for money/food in times of need, or access to adequate storage facilities (e.g. shared fridge) or services (e.g. transport/childcare) – leading to increased economic or physical access to food Social support can be *instrumental, emotional, informational, or companionship*. We were interested in **instrumental social support,** i.e. practical help that can be accessed in times of need.	• Childcare so parents can go to work • Borrowing money/food from neighbours/relatives • Community fund/village savings loans • Shared fridge/storage facilities • Shared transport

Table 3. Summary of included studies

Intervention category	Intervention type	Studies and study designs
Improve buying power	Unconditional cash transfers	18 RCTs: Ahmed 2019a; Ahmed 2019b; Asfaw 2014; Baird 2013 [a]; Brugh 2018; Daidone 2014; Fenn 2015; Fernald 2011; Gangopadhyay 2015; Haushofer 2013; Hjelm 2017; Hoddinott 2013; Merttens 2013; Miller 2011; Pellerano 2014; Schwab 2013; Skoufias 2013; Tonguet Papucci 2015 3 prospective controlled studies: Aguero 2006; Breisinger 2018; Renzaho 2017
	Conditional cash transfers	9 RCTs: Baird 2013 [a]; Evans 2014; Gertler 2000 (PROGRESA); Hidrobo 2014 [c]; Kandpal 2016; Kurdi 2019; Kusuma 2017a; Macours 2012; Maluccio 2005 5 prospective controlled studies: Andersen 2015; Ferre 2014; Huerta 2006 (PROGRESA); Leroy 2008 (PROGRESA); Lopez Arana 2016

Table 3. Summary of included studies *(Continued)*

	Income generation[d]	6 RCTs: Beegle 2017; Darrouzet Nardi 2016; Marquis 2018; Olney 2016; Osei 2017; Verbowski 2018 11 prospective controlled studies: Alaofe 2016; Alaofe 2019; Asadullah 2015; Doocy 2017; Jodlowski 2016; Kangmennaang 2017; Katz 2001; Kennedy 1989; Murshed E Jahan 2011; Porter 2016 [e]; Weinhardt 2017
Food prices	Food vouchers	4 RCTs: Fenn 2015 [b]; Hidrobo 2014 [c]; Jensen 2011; Ponce 2017 0 prospective controlled studies
	Food rebates/subsidies	1 RCT: Chen 2019 3 prospective controlled study: Andaleeb 2016; Chakrabarti 2018; Sturm 2013
Infrastructure changes	—	0 identified
Social environment	Village savings and loans	1 RCT: Kusuma 2017b 1 prospective controlled study: Brunie 2014

[a]Baird 2013 assesses both conditional and unconditional cash transfers.
[b]Fenn 2015 assesses both unconditional cash transfers and food vouchers.
[c]Hidrobo 2014 assesses both conditional cash transfers and food vouchers.
[d]This includes different interventions that aimed to generate income of participants (e.g. integrated agricultural programmes, community development programmes).
[e]Porter 2016 assessed a public works (80%) (cash/food-for-work) or unconditional cash transfer government programme (20%). Results were reported for the entire population, not disaggregated according to intervention received.
RCT: randomised controlled trial.

Table 4. Description of included studies assessing the effects of Mexico's PROGRESA/Oportunidades conditional cash transfer programme

Study ID	Linked references	Study design and duration	Description of intervention	Sampling	Outcomes reported
Gertler 2000 (PROGRESA)	Gertler 2004; Hoddinott 2000; Hoddinott 2003a; Hoddinott 2004(?); Skoufias 2001; Skoufias 2007; Fernald 2008; Fernald 2009	**Cluster-RCT** conducted between 1998 and 2000, where communities were randomly allocated to either receive the intervention immediately (intervention group) or to receive the intervention 2 years later (control group). In reality, control communities started receiving the intervention in late 1999, about 1.5 years after the intervention communities. Timepoints of data collection (through household surveys – ENCEL): • March 1998 (pre-intervention) • October/November 1998 • May/June 1999	'Oportunidades' (previously called Progresa) is a conditional cash transfer programme implemented by the Mexican government since April 1998. Women in eligible households receive cash transfers every 2 months (a food and an education transfer) if they adhered to specific conditionalities: all family members attend preventive health services regularly; children	506/50,000 eligible **rural villages** were randomly selected based on the index level of community poverty. Of these, 320 communities were allocated to the intervention group and 186 to the control group. Within each community, households were selected by proxy means testing and selection validated in a community assembly. Some studies assessed outcomes in a subsample of the study population.	• Household food consumption (Hoddinott 2000) • Dietary diversity (Hoddinott 2000) • Total caloric availability (Hoddinott 2000; 2003a) • Morbidity (children aged 0–5 years) (Gertler 2004) • Fernald 2008 and Fernald 2009 only as-

Table 4. Description of included studies assessing the effects of Mexico's PROGRESA/Oportunidades conditional cash transfer programme *(Continued)*

		• October/November 1999 • September/December 2003 (follow-up) • September/December 2007 (follow-up)	aged 0–5 years and lactating mothers attended nutrition monitoring clinics for growth monitoring, immunisation, to obtain nutrition supplements, and for nutrition and hygiene education; pregnant women attend antenatal care, receive nutritional supplements and health education. The education transfers included scholarships for school attendance and school supplies, and was dependent on children's school attendance. The value of the transfers was about 20–30% to the household consumption expenditure preintervention.	Fernald 2008 followed up on a sample of children in 2003: children aged 24–72 months in the 'Early intervention' group (from 144 communities), and children aged 2–5 years in the 'Late intervention' group (from 108 communities). Fernald 2009, followed up a sample of children in 2007: 1093 children aged 8–10 years in the 'Early intervention' group, and 700 children aged 9–10 years in the 'Late intervention' group.	sessed data that included the period when both the control and intervention groups were receiving the intervention (i.e. early vs late intervention). These data were not extracted for the review but were mentioned in the Discussion.
Huerta 2006 (PROGRESA)	Rivera 2004; Gertler 2004; Behrman 2001	**Nested cohort study** conducted on a subset of the larger cRCT sample (described above), including a random selection of 205 of original intervention communities and 142 of original 186 control communities. Additional household surveys conducted on health and nutrition indicators. Time points of data collection: • August/September 1998 (i.e. no true baseline data available as by this time all intervention households were already receiving transfers); • September/December 1999; • November/December 2000 (both groups exposed	As above	Subsample of children selected. Behrman 2005 (?) Rivera 2004: children aged < 12 months (461 children from 175 communities in the intervention and 334 children from 107 communities in the control). Gertler 2004 and Huerta 2006: sample sizes not reported	• Height (Behrman 2005; Gertler 2004) • Stunting (Gertler 2004) • Anaemia (Gertler 2004) No outcome data reported for exposed vs non-exposed groups after 1 year of follow-up (Rivera 2004; Huerta 2006) (?).

Table 4. Description of included studies assessing the effects of Mexico's PROGRESA/Oportunidades conditional cash transfer programme *(Continued)*

		to the programme for approximately 1 year)			
Leroy 2008 (PROGRESA)	N/A	**CBA:** urban communities randomly selected for expansion of Oportunidades into 149 **urban areas**. The control group comprised eligible households that did not enrol in the programme. Time points of data collection through household surveys: • September/December 2002 (preintervention) • July/November 2004	As above	Children aged < 24 months in 2002: 574 in intervention and 159 in control	• Height • HAZ • Weight • WHZ

CBA: controlled before-after study; cRCT: cluster randomised controlled trial; HAZ: height-for-age z-score; N/A: not applicable/available; RCT: randomised controlled trial; WHZ: weight-for-height z-score.

Table 5. Income-generation interventions – overview of included studies

Study (country of conduct)	Study design	Overall risk of bias[a]	Other key details of intervention	Population (sample size at baseline: Intervention/ Control)	Outcome domains and measures with available data	Time point of measurement
Darrouzet Nardi 2016 (Nepal)	cRCT	Unclear	*Programme name:* Heifer training curriculum *Programme description and frequency:* participation in programme that focused on training regarding poverty alleviation, citizen empowerment, community development and optimisation of livestock management as means to generate income. *Provider:* NGO (Heifer International) *Delivery:* women's self-help groups which met with a trained facilitator, supplemented by specific interactive instruction, workshops, guidance, and training. Biweekly meetings *Co-interventions:* none reported	Rural farming communities; HHs: 201/214; children (aged 6–60 months): 283/324	Dietary diversity: • Household dietary diversity index • Child minimum dietary diversity Anthropometry • HAZ; • WAZ	1 and 2 years
Doocy 2017 (Democratic Republic of the Congo)	Prospective controlled study	High	*Programme name:* Intervention implemented as part of the Jenga Jamaa II project *Programme description and frequency:* WEGs met weekly and meetings served	Farming villages; HHs (WEG: 390/324; FFS: 338/324)	Food security: • HFIAS • Proportion of	3.5 years

Table 5. Income-generation interventions – overview of included studies *(Continued)*

			as a delivery mechanism for a variety of interventions including literacy and numeracy, business and marketing training, and income-generation activities. Savings and credit groups were started in each WEG. Beneficiaries were provided with a starter kit of basic materials for their income-generation activity. Many WEG participants also received goats and energy-efficient stoves. The FFS intervention provided farmers with experience-based education on farming practices and postharvest handling as well as business and natural resource management skills. Each FFS group received semi-monthly training sessions for 2 years. Each FFS group had a community demonstration plot, and group members also received starter packages of seeds and tools for use on individual farms. The FFS programmes focused on a variety of common crops in the region. The first year of training focused on knowledge of production systems and technologies; adoption of techniques and technologies and behaviour change were the focus in the second year *Provider:* ADRA *Delivery: FFS* – training sessions on agriculture techniques and other content by ADRA field agents. *Co-interventions:* after they finished the FFS intervention (2 years) some transitioned to farmer business associations, which were intended to improve access to credit and marketing opportunities.		HHs improving a HFIAS category Dietary diversity: • HDDS • Achieving target dietary diversity (based on HDDS)	
Weinhardt 2017 (Malawi)	Prospective controlled study (non-equivalent control group)	Unclear	*Programme name:* support to able-bodied vulnerable groups to achieve food security (SAFE) programme *Programme description and frequency:* programme comprised 4 components • Improving farming practices and sustainable agriculture through Farmer Field Schools • Increasing access to savings and investment through Village Savings and Loans Groups • Building capacity of local governance structures • Integrating HIV education and gender empowerment into programmes through training and education *Provider:* NGO (CARE Malawi)	Rural HHs (598/301)	Food security: • Mean number of months with less food than necessary to meet needs Anthropometry: • WAZ • HAZ • Moderate and severe underweight	18 and 36 months

Table 5. Income-generation interventions – overview of included studies *(Continued)*

			Delivery: community-based programme *Co-interventions:* agricultural education programme for a few intervention and control participants		(< –2SD WAZ) • Child BMI	
Jodlowski 2016 (Zambia)	Prospective controlled study	Low	*Programme name:* Copperbelt Rural Livelihoods Enhancement Support Project (CRLESP) *Programme description and frequency:* ongoing training and one-off transfer of livestock contingent on training participation. 1 female livestock offspring per transferred female had to be donated to a Pass-on-the-Gift HH. *Provider:* NGO (Heifer International) *Delivery:* NR *Co-interventions:* none reported	Rural households (105/178)	Dietary diversity: • Household Dietary Diversity Index • Probability weighted dietary diversity score	6, 12 and 18 months
Asadullah 2015 (Bangladesh)	Prospective controlled study	High	*Programme name:* challenging the frontiers of poverty reduction – targeting the ultra-poor (CFPR-TUP) *Programme description and frequency:* multicomponent intervention including orientation training, selection of income-generation microenterprise by female participants with one-off transfer of productive assets worth BDT 10,000 to support it (90% of households chose livestock combination), community savings, monthly health worker visits, weekly follow-up for technical advice, building social capital (village support networks and sponsorship of community leaders), and weekly stipends (BDT 70). *Provider:* NGO (Bangladesh Rural Advancement Committee (BRAC)) *Delivery:* NGO staff deliver training and assets *Co-interventions:* none reported	Ultra-poor households (2633/2993)	Food security • Proportion experiencing food deficit always Morbidity: • Perceived health status • Perceived health improvement	3, 6 and 9 years
Marquis 2018 (Ghana)	cRCT	Low	*Programme name:* Nutrition Links (NL) *Programme description and frequency:* 12-month intervention was an integrated package of agricultural inputs and training as well as education in nutrition, health care and child stimulation for participants. The intervention had 4 main components • Poultry for egg production • Home gardens	Mother–infant pairs in rural communities (287/213).	Dietary diversity • Minimal diet diversity Anthropometry: • WAZ; • LAZ/HAZ; • WLZ/WHZ	1 year

Table 5. Income-generation interventions – overview of included studies *(Continued)*

			• Weekly group education sessions throughout the year • Community-wide education *Provider:* "Heifer's Passing on the Gift (POG) community development programme, project staff, district agricultural extension officers, district government staff, University of Ghana's Nutrition Research and Training Centre *Delivery:* • 4-day training received chickens and initial feed for 1 month and vaccinations, and weekly technical assistance by the project staff • Training, received planting materials, and weekly technical assistance • Weekly group education sessions • Training that was accessible to all residents *Co-interventions:* none reported			
Olney 2016 (Burkina Faso)	cRCT	Unclear	*Programme name:* enhanced-homestead food production (EHFP) *Programme description and frequency:* integrated agriculture and nutrition programme. Agriculture interventions included provision of land with inputs (crops, animals and implements) and training. Nutrition intervention included behaviour change communication strategy for health and nutrition behaviours, delivered through visits by community volunteers twice per month. *Provider:* NGO (Helen Keller International – HKI) *Delivery:* agriculture interventions rolled out first to female village farm leaders, who then trained other mothers. Nutrition education carried out by older women leaders or health committee members. *Co-interventions:* none reported	Villages with agricultural homesteads (30/25). HHs: 514 (health committee); 512 (older women leaders); 741 (control)	Dietary diversity: • Household Dietary Diversity Index • Proportion of mothers consuming individual food groups in past 7 days Anthropometry: • BMI (adult) • Underweight (adults) (BMI < 18.5 kg/m^2)	2 years
Osei 2017 (Nepal)	cRCT	Unclear	*Programme name:* Enhanced Homestead Food Production (EHFP) programme *Programme description and frequency:* training in improved gardening and poul-	Homesteads: mothers (1055/1051),	Food security • Prevalence of	2.5 years

Table 5. Income-generation interventions – overview of included studies *(Continued)*

			try-rearing practices; hosting of a village model farm, which served as a site for purchasing inputs and ongoing training for all the beneficiary women. For every season (rainy and winter) of the first year, each woman was given a one-off free supply of seeds, saplings and locally bred chicks to establish their home gardens and poultry production. Throughout the period of the intervention, the women met monthly at the farm to refresh lessons on agriculture techniques and nutrition through social and behaviour change communications. During monthly home visits, the project staff and the female community health volunteers also reinforced the educational messages on breastfeeding and complementary feeding to all mothers. *Provider:* NGO (Helen Keller International – HKI) *Delivery:* 1 woman per group of intervention villages (5 or 6) was selected and trained by HKI and this woman then trained 20 other beneficiary women; meetings at farm; home visits by trained project staff, female community health volunteers and agriculture extension officers. *Co-interventions:* none reported.	children (1055/1051)	HH food insecurity Anthropometry: • HAZ • Stunting (HAZ < –2SD)WAZ • Underweight (child) (WAZ < –2SD) and mother (BMI < 18.5 kg/m^2) • WHZ • Wasting (WHZ < –2SD) • BMI (mother) Biochemical indicators: • Mean haemoglobin concentration (child and mother) Morbidity: • Prevalence of anaemia (child and mother)	
Verbowski 2018 (Cambodia)	cRCT	Unclear	*Programme name:* Fish on Farms (FoF) project using the Enhanced Homestead Food Production (EHFP) programme *Programme description and frequency:* basic agricultural inputs and training, and nutrition and hygiene education. The education focused on optimal nutrition for women and infants and young child practices, and the use of nutrient-dense produce grown by farmers were demonstrated. The purpose of EHFP was to increase production and intakes of various types of vegetables, herbs and tree fruit. The aquaculture intervention was designed to increase the production of 3	Rural HHs: EHFP + aquaculture (100), EHFP (100) and control (100)	Anthropometry: • Underweight (women) (BMI <18.5 kg/m^2) and children (WAZ < –2SD); • Stunting (HAZ < –2SD);	22 months

Table 5. Income-generation interventions – overview of included studies *(Continued)*

			types of small fish, which typically were consumed whole, as well as 3 types of large fish (typically sold for income or fillets consumed). *Provider:* NGO (Helen Keller International – HKI, local) *Delivery:* trained village health volunteers provided education sessions, through small group and 1-to-1 counselling. Cooking demonstrations were also conducted. Support was provided through village model farms (1 in each village). *Co-interventions:* none reported.		• Wasting (WHZ < –2SD) Biochemical indicators: • Haemoglobin (non-pregnant women) • Haemoglobin (children) Morbidity: • Anaemia (non-pregnant women) • Anaemia (children)	
Murshed E Jahan 2011 (Bangladesh)	Prospective controlled study	Unclear	*Programme name:* Development of Sustainable Aquaculture Project (DSAP) *Programme description and frequency:* farmers received support to efficiently implement integrated aquaculture-agriculture (IAA) approaches under 2 models – 1 with a one-off provision of a small grant for purchasing inputs (value not reported) and 1 without, with training provided (3 sessions in the first year, 2 in the second year and 1 in the third year). *Provider:* NGO; WorldFish Center *Delivery:* farmers trained in recording required information which was collected bi-monthly by research assistants. *Co-interventions:* none reported	Small-scale farmers (260/126). Within intervention farmers: 127 grant farmers, 133 non-grant farmers	Proportion of HH expenditure on food	3 years
Kennedy 1989 (Kenya)	Prospective controlled study	Unclear	*Programme name:* South Nyanza Sugar Factory (Sony) smallholder sugarcane outgrowers' scheme *Programme description and frequency:* farmers were enrolled into the scheme to provide sugarcane to a new factory, with payments to farmers after every harvest (24 months after planting) *Provider:* Kenyan government *Delivery:* contract agreement between farmers and factory. *Co-interventions:* none reported	Smallholder farm HHs (181/231). Within intervention: 139 sugar farmers and 42 new entrant	• Proportion of HH expenditure on food Adequacy of dietary intake • Percentage of HHs with caloric deficiency	2 years

Table 5. Income-generation interventions – overview of included studies *(Continued)*

					• Caloric adequacy of preschool children Anthropometry • WAZ • Underweight (< 80% of standard for WAZ) • HAZ • Stunted (< 90% of standard for HAZ) • WHZ • Wasting (< 90% of standard for WHZ) • BMI (adult) Morbidity: • Illness of women and children (all-cause and diarrhoea)	
Alaofe 2016 (Benin)	Prospective controlled study	Unclear	*Programme name:* Solar Market Gardens (SMG) *Programme description and frequency:* drip irrigation powered by solar water pump, using a perennial stream or borehole, with continued maintenance and training to farmers provided. *Provider:* NGO (Solar Electric Light Fund – SELF) *Delivery:* installation of system and training of local technicians carried. *Co-interventions:* women's agriculture group activities.	Rural HHs (116/98) In both intervention and control groups, HHs included women who participated in women's agriculture groups (59/38) or not (60/60)	Proportion of HH expenditure on food	1 year
Alaofe 2019 (Benin)	Prospective controlled study	Unclear	*Programme name:* Solar Market Garden (SMG)	Women in rural HHs (415/359).	Dietary diversity: • HDDS	1 year

Table 5. Income-generation interventions – overview of included studies *(Continued)*

			Programme description and frequency: Installation of a low-pressure drip irrigation system, combined with a solar-powered water pump in each intervention village. Each SMG was used jointly by 30–35 women belonging to the local women's agriculture group (each woman farmed her own land of 120 m^2). *Provider:* NGO (Solar Electric Light Fund – SELF) *Delivery:* expanded installation of SMG systems (from programme reported in Alaofe 2016). *Co-interventions:* women's agriculture group activities.	In both intervention and control groups, HHs included women who participated in women's agriculture groups (184/126) or not (228/233)	• Women's Dietary Diversity Score Anthropometry • BMI (adult); • Underweight (adult) (BMI <18.5 kg/m^2) Biochemical indictors: • Iron deficiency • Vitamin A deficiency Morbidity: • Anaemia • Iron-deficiency anaemia	
Kangmennaang 2017 (Malawi)	Prospective controlled study	High	*Programme name:* the Malawi Farmer to Farmer Agroecology project (MAFFA). *Programme description and frequency:* farmers do their own experimentation with agroecological methods. Farmers are also encouraged to share knowledge gained with other farmers. MAFFA encourages farmers to adopt a suit of innovations rather than just a single innovation and to encourage farmer-led learning. In addition to crop diversification, many farmers increased or began to apply compost and manure to their rain-fed fields. Some farmers also experimented with botanical pesticides. Also, MAFFA goes beyond agroecological training to focus on knowledge sharing, leadership support, nutrition and attention to social inequalities. *Provider:* Soils, Food and Healthy Communities organisation of Ekwendeni Hospital, Chancellor College, University of Malawi as well as Malawian and Canadian scientists. *Delivery:* training, educational activities, campaigns, provision of seeds. Farmers shared knowledge with other farmers.	Smallholder farm HHs (793/408)	Food security: • HFIAS score	About 2 years

Table 5. Income-generation interventions – overview of included studies *(Continued)*

			Co-interventions: none reported.			
Beegle 2017 (Malawi)	cRCT	High	*Programme name:* Malawi Social Action Fund's Public Works Programme (MASAF PWP). *Programme description and frequency:* the MASAF PWP aims to provide short-term labour-intensive activities. The programme was designed to be interlinked with Malawi's large-scale fertiliser input subsidy programme through the implementation of the PWP in the planting months of the main agricultural season when the fertiliser distribution also occurs. Projects were mostly road rehabilitation or construction, with some afforestation and irrigation projects. The wage rate was USD 0.92/day for a total payment of USD 11.01 for a 12-day wave, total of 4 waves. *Provider:* Malawi government *Delivery:* payments in the study districts were facilitated by the research team for the purposes of the evaluation, with physical delivery of the cash in conjunction with the district officials. *Co-interventions:* the national fertiliser subsidy programme provided fertiliser coupons that allow two bags of fertiliser to be purchased for MK 500 each. These coupons are more likely to be available to treated HHs.	10 poor and able-bodied HHs per community were offered the programme; communities (144/38)	Food security: • Food Security Score Dietary diversity: • Food Consumption Score • Number of food groups consumed • Food Security Score	3/4 months
Porter 2016 (Ethiopia)	Prospective controlled study	High	*Programme name:* Productive Safety Net Program (PSNP) *Programme description and frequency:* 80% public works programme (food/cash-for-work; USD 0.56/day in 2008) and 20% unconditional transfers to those unable to work (value NR). Programme operated seasonally but predictably, i.e. not emergency. *Provider:* Ethiopian government, with donor funding *Delivery:* centrally co-ordinated by Government *Co-interventions:* none reported	Poor and food insecure rural HHs (682/924)	Anthropometry (results presented for all programme participants; not disaggregated according to type of intervention received) • HAZ • WAZ	5 and 7 years
Katz 2001 (Nepal)	Prospective controlled study	High	*Programme name:* N/A *Programme description and frequency:* part-time (5 hours/week) employment for women; distributing weekly supplements to and recording data on married women	Women living in rural areas (350/520)	Anthropometry: • MUAC	2 years

Table 5. Income-generation interventions – overview of included studies *(Continued)*

		of child-bearing age in own or neighbouring communities. Monthly income valued at USD 15 *Provider:* Joint undertaking by USAID, academic institutions (Johns Hopkins University), NGOs (National Society for the Prevention of Blindness, Kedia Seva Mandir) and the Nepalese government *Delivery:* NR *Co-interventions:* approximately 31% of women employed by the project reported having additional cash employment, but amounts are unknown	

[a]Overall risk of bias based on risk for selection and attrition bias
ADRA: Adventist Development and Relief Agency; BDT: Bangladeshi taka; BMI: body mass index; FFS: Farmer Field School; HAZ: height-for-age z-score; HDDS: Household Dietary Diversity Score; HFIAS: Household Food Insecurity Access Scale; HH: household; LAZ: length-for-age z-score; MUAC: mid-upper arm circumference; NGO: non-governmental organisation; NR: not reported; RCT: randomised controlled trial; SD: standard deviation; WLZ: weight-for-length z-score; WAZ: weight-for-age z-score; WEG: Women Empowerment Group.

Table 6. Food security and dietary diversity indices reported by included studies

Index/scale (study ID of studies reporting this measure)	Definition	Interpretation	Reference cited
Household food security indices			
Household Food Insecurity Access Scale (HFIAS) (Daidone 2014; Hjelm 2017; Kangmennaang 2017) or **Household Food Insecurity Access Prevalence (HFIAP)** (Doocy 2017; Osei 2017; Weinhardt 2017)	**HFIAS:** sum of responses to 9 questions related to 4 domains of food security of a HH during the past 4 weeks. **HFIAP:** categorises HHs into 4 levels of HH food insecurity, based on the frequency and severity of food insecurity experienced by HHs.	**HFIAS:** score ranges from 0 to 27. The higher the score the more food insecure the HH. **HFIAP:** categorised as: food secure, and mild, moderately and severely food insecure.	Coates J, Swindale A, Bilinsky P. Household Food Insecurity Access Scale (HFIAS) for measurement of food access: indicator guide. Version 3. Washington, DC: Academy for Educational Development;2006
Food Security Score (Beegle 2017)	Scores HHs in terms of 4 levels of HH food insecurity, based on the frequency and severity of food insecurity experienced by HHs.	Ranges from –1 to –4; higher value indicates greater food security	World Food Programme
Resilience index (Beegle 2017)	Based on the World Food Program Coping Strategy Index. Weighted sum of the number of days in the past 7 days that HHs had to reduce the quantity and quality food consumed.	Higher values indicate food security	Maxwell D, Caldwell R. The Coping Strategies Index: Field methods Manual. Cooperative for Assistance and Relief Everywhere, Inc. (CARE), January 2008.

Table 6. Food security and dietary diversity indices reported by included studies *(Continued)*

Food Security Index (FSI) (Pellerano 2014)	Study authors adapted the food security component of the Bristol Child Deprivation Index. It is a simple mean of 3 questions related to child food security.	Severe food deprivation: FSI > 2.	Gordon D, Nandy S, Pantazis C, Pemberton S, Townsend P. (2003), the Distribution of Child Poverty in the Developing World, Policy Press, Centre for International Poverty Research, University of Bristol, July 2003.
Food Security Index (Haushofer 2013)	Weighted mean of 17 outcome measures of food security and hunger.	The higher the index, the greater the food security	No reference cited
HH**dietary diversity indices**			
HDDS (Alaofe 2019; Breisinger 2018; Brunie 2014; Daidone 2014; Hidrobo 2014; Jodlowski 2016 [a]; Kurdi 2019; Merttens 2013; Olney 2016 [b])	Sum of the number of *food groups* consumed by a HH during the past day or week, or longer (e.g. 2 or 4 weeks). Food groups included cereals, roots and tubers, vegetables (included vitamin A-rich vegetables and tubers, dark leafy vegetables and other), fruits (included vitamin A fruits and other), meat (includes organ meat and flesh meat), eggs, fish, pulses and legumes, fats and oil, sugar and sweets, milk and other milk product, and spices and beverages.	Score ranges from 0 to 12; higher score reflected higher level of dietary diversity.	Kennedy G, Ballard T, Dop M, 2011. Guidelines for Measuring Household and Individual Dietary Diversity. Food and Agriculture Organization, Rome. Swindale A, Bilinsky P. Household dietary diversity score (HDDS) for measurement of household food access: indicator guide (v.2). Washington (DC): FHI 360/FANTA; 2006.
Dietary Diversity Index (DDI) (Hoddinott 2013; Pellerano 2014) or **Dietary Diversity Score (DDS)** (Asfaw 2014) or **Food diversity composite score** (Miller 2011)	Sum of the number of *food groups* consumed by a HH during the past week. Food groups included main staples, pulses, vegetables, fruit, meat (or fish or egg); dairy products, sugar and oil.	Score ranges from 0 to 8; higher score reflects higher level of dietary diversity.	Ruel M. 2003. Operationalizing dietary diversity: a review of measurement issues and research priorities. Journal of Nutrition 133, 3911S–3926S.
Dietary Diversity Index (DDI) (Hoddinott 2013); or **Dietary Diversity Score (DDS)** (Hidrobo 2014; Schwab 2013)	Sum of the number of distinct *food items* consumed by a HH during the previous week. Depended on the number of food items included in the dietary questionnaire.	Score ranges from 0 to 25 (Hoddinott 2013); 0 to 40 (Hidrobo 2014); 0 to 39 (Schwab 2013); higher score reflects higher level of dietary diversity.	Ruel M. 2003. Operationalizing dietary diversity: a review of measurement issues and research priorities. Journal of Nutrition 133, 3911S–3926S.
Food Consumption Score (FCS)	Weighted sum of the consumption frequency of the 8 *food groups* consumed by a HH during the past week. Food groups include main staples,	Maximum score is 112 or 126.	WFP, 2008. Food consumption analysis: Calculation and use of the food consumption score

Table 6. Food security and dietary diversity indices reported by included studies *(Continued)*

(Ahmed 2019a; Ahmed 2019b; Beegle 2017; Hidrobo 2014; Hoddinott 2013; Pellerano 2014; Ponce 2017)	pulses, vegetables, fruit, meat (or fish or egg), dairy products, sugar and oil.	**Acceptable food consumption**: FCS ≥ 35; **Borderline food consumption:** FCS between 21 and 35; **Poor food consumption:** FCS < 35	in food security analysis. World Food Programme, Rome
Individual dietary diversity indices			
Individual Child Dietary Diversity score (IDDS) (Darrouzet Nardi 2016; Hoddinott 2013; Marquis 2018; Pellerano 2014; Skoufias 2013; Tonguet Papucci 2015)	Sum of number of *food groups* consumed by a *child* aged 6–23 months or a child aged < 5 years during the past 24 hours calculated from 17 foods, aggregated into 7 food groups: starchy staples (grains and white potatoes); vitamin A-rich fruits and vegetables; other fruits and vegetables; offal, meat, and fish; eggs; legumes, nuts, and seeds; milk and dairy products	Score ranges from 0 to 7; higher score reflects higher level of dietary diversity. **Minimum dietary diversity:** Dietary Diversity Score ≥ 4	World Health Organization, 2010. Indicators for Assessing Infant and Young Child Feeding Practices. World Health Organization, Geneva.
Individual Child Dietary Diversity Score (IDDS) (Brunie 2014)	Sum of the number of different *food groups* consumed during the past day by a *child* aged < 5 years (12 food groups).	Score ranges from 0 to 12; higher score reflects higher level of dietary diversity	Guidelines for measuring household and individual dietary diversity. FAO Nutrition – 2007 – FAO, Rome (Italy)
Women's Dietary Diversity Score (WDDS-10) (Alaofe 2019)	Sum of the number of food groups consumed during the past 24 hours calculated from the following food groups: starchy staples; beans and peas; nuts and seeds; dairy; flesh foods; eggs; vitamin A-rich dark green leafy vegetables; other vitamin A-rich vegetables and fruits; other fruits and other vegetables.	Score ranges from 0 to 10; higher score reflects higher level of dietary diversity	Kennedy G, Ballard T, Dop M, 2011. Guidelines for Measuring Household and Individual Dietary Diversity. Food and Agriculture Organization, Rome.

[a]Jodlowski 2016: modified HDDS to a total score out of 13.
[b]Olney 2016: the egg food group was not included because of an oversight during survey design.
HH: household.

Table 7. Summary of cognitive function indices reported by included studies

Index or scale	Definition/ measurement	Interpretation	Reference
Early Childhood Development Index (ECD) (Daidone 2014)	Measures 4 developmental domains of children aged 3–7 years: physical (both gross and fine motor), language and cognition, socioemotional and approaches to learning.	Maximum score of 10; the higher the score the better functioning	—
Raven's Colored Progressive Matrices test score	Non-verbal test that measures *abstract reasoning* of children aged ≥ 5 years.	Maximum test score 60; the higher the score the better the abstract reasoning.	—

Table 7. Summary of cognitive function indices reported by included studies *(Continued)*
(Baird 2013)

IDHC-B test score MacArthur-Bates Communicative Development Inventory (adapted Spanish version) (Fernald 2011)	Measures *early language skills* of children aged 12–35 months using parental report.	Scores range from 0 to 100 with 0 indicating that a child had not said any word on the checklist and 100 indicating that a child had said every word on the list.	Jackson-Maldonado D, Thal D, Marchman V, Newton T, Fenson L, Conboy B. (2003). MacArthur Inventarios del Desarrollo de Habilidades Comunicativas. User's Guide and Technical Manual. Baltimore: Brookes Publishing.
TVIP test score Peabody Picture Vocabulary Test (PPVT) (adapted Spanish version). (Fernald 2011)	Measures *receptive language*/vocabulary of children aged ≥ 36 months.	Age-adjusted norms: mean score of 100 and standard deviation of 15 at every age.	—
Woodcock-Johnson-Munoz battery test scores (Fernald 2011)	WJ1 test measures *long-term memory* in early childhood	Age-adjusted percentile score	Woodcock, Richard, and Ana Munoz-Sandoval. 1996. *BateríaWood-cock-Munoz Pruebas de Aprovechamiento-Revisada*. Chicago: Riverside.
	WJ2 test measures *short-term memory* or immediate recall in early childhood	Age-adjusted percentile score	
	WJ5 test measures *visual integration*, or visual-spatial processing in early childhood	Age-adjusted percentile score	

Table 8. Unconditional cash transfers – overview of included studies

Study ID (country)	Study design	Overall risk of bias[a]	Other key details of intervention	Population (sample size at baseline: intervention/control)	Outcome domains and measures with available data	Timepoint of measurement
UCTs vs no intervention						
Baird 2013 (Malawi)	cRCT	Low	*Programme name*: Schooling, Income, and Health Risks study (SIHR). Includes unconditional and conditional groups. *Amount and frequency of payments*: payments split between guardian and girl in each HH. HH amount varied randomly (USD 4, USD 6, USD 8, USD 10 per month). Amount paid to girl beneficiaries varied randomly (USD 1, USD 2, USD 3, USD 4, USD 5 per month).	Adolescent girls who were never married, aged 13–22 years, in urban and rural HHs (526/1495)	Cognitive function and development: • Raven's Coloured Progressive Matrices Anxiety and depression: • Psychological distress score (GHQ-12)	1 and 2 years

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

			Provider: NGOs *Delivery*: payments to girl beneficiaries at local distribution points *Co-interventions:* none reported			
Brugh 2018 (Malawi)	cRCT	Low	*Programme name*: Malawi Social Cash Transfer Scheme (SCTS) *Amount and frequency of payments*: about USD 40 (depending on HH size and number of school-aged children); monthly transfers. Top-up payments made for children at primary and secondary school. At follow-up, intervention HHs had received 5 or 6 bimonthly cash transfer payments, due to an administrative delay. *Provider*: Government *Delivery*: NR *Co-interventions:* None reported	Ultra-poor and labour constrained HHs (1561/1729 HHs; Mangochi and Salima districts	HH expenditure on food: • Proportion of total HH expenditure per year Food security: • Worried not enough food • Consume > 1 meal per day Dietary diversity: • Household Dietary Diversity Score (HDDS) Adequacy of dietary intake: • Food energy deficiency • Depth of hunger	1 year
Daidone 2014 (Zambia)	cRCT	Low	*Programme name*: Child Grant Programme (CGP) *Amount and frequency of payments*: about USD 12 per month, regardless of HH size; payments made every other month *Provider*: government *Delivery*: payments through local pay point manager *Co-interventions:* none reported	1260 HHs (7254 individuals)/1259 HHs (7091 individuals)	Food security: • Consuming > 1 meal/day • HFIAS Dietary diversity: • HDDS Anthropometry: • WAZ • HAZ • WHZ Cognitive function and development: • ECD index Morbidity: children aged 0–60 months • ARI	2 years

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

					• Diarrhoea	
Fenn 2015 (Pakistan)	cRCT	Low	*Programme name*: REFANI Pakistan standard cash transfer *Amount and frequency of payments*: PKR 1500 (about USD 14) disbursed monthly for 6 consecutive months. *Provider*: EU; DG ECHO; Action Against Hunger field staff. *Delivery*: mobile banks in a central location or central banks serving a number of villages. Verbal messaging from Action Against Hunger field staff at distribution that children should benefit from the transfers. *Co-interventions:* WINS programme in all villages – provided outpatient treatment for children aged 6 (SD 59) months with SAM, micronutrient supplementation (children, pregnant and lactating women), and behaviour change communication.	Poor and very poor agrarian HHs (standard cash group: 31 villages/632 HHs; Double cash group: 24 villages/600 HHs; fresh food voucher group: 31 villages/632 HHs; control group: 28 villages/632 HHs	Anthropometric indicators: • BMI (mothers) • HAZ • Stunting (HAZ < –2SD) and severe stunting (HAZ < –3SD) • WHZ • Wasting (WHZ < –2SD) and severe wasting (WHZ < –3SD) • MUAC Biochemical indicators: • Hb (children) • Hb (mothers) • anaemia (children) • anaemia (mothers) Morbidity: child: • ARIs • Diarrhoea	6 and 12 months
Pellerano 2014 (Lesotho)	cRCT	Low	*Programme name*: Lesotho Child Grants Programme (CGP) *Amount and frequency of payments*: about USD 12 per month every 3 months. From 2013 (after 2 years) transfer indexed to number of children in the HH. Payments not made as predicted; smaller number of payments made involving larger amounts. *Provider*: government; UNICEF-Lesotho *Delivery*: cash-in-transit firm provided payments at community pay points. *Co-interventions*: all CGP HHs received bi-monthly top-up for a specific period for a Food Emergency Grant.	Ultra-poor rural HHs with children 0–17 years (706/647 HHs)	Food security: • Severe food deprivation (FSI > 2) Dietary diversity: • FCS • Acceptable food consumption (FCS > 35) Anthropometry: • Underweight (WAZ < third percentile) Morbidity: children aged 0–5 years:	2 years

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

					• Any illness in previous month Adverse events: • Overweight (children)	
Tonguet Papucci 2015 (Burkina Faso)	cRCT	Low	*Programme name*: Moderate Acute Malnutrition Out (MAM'Out) project. *Amount and frequency of payments*: seasonal payments – about USD 17 from July to November. *Provider*: European Commission Humanitarian Aid (ECHO) trained project staff *Delivery*: mothers received card linked to electronic account and mobile phone. Payments provided via phones and cash withdrawal points. *Co-interventions*: ongoing national social protection policy that promoted social transfer mechanisms to the poorest and most vulnerable.	Poor rural HHs with ≥ 1 child aged < 1 year (644/634 children; 602/583 HHs)	Dietary diversity: • MDD • Minimum acceptable diet Anthropometric indicators: • WHZ • Stunting (HAZ < –2SD) • MUAC Morbidity: child: • Diarrhoea • ARIs	2.4 years
Ahmed 2019a; Ahmed 2019b (Bangladesh)	cRCT	Unclear	*Programme name*: Transfer Modality Research Initiative (TMRI) (2 trials implemented in the North and South of Bangladesh reported in the same paper). *Amount and frequency of payments*: Monthly payment of BDT 1500 (about USD 19) per HH. *Provider*: United Nations' World Food Program (WFP); NGO (Eco-Social Development Organization or ESDO) *Delivery*: a mobile phone was provided to the mother who collected payments from distribution sites using mobile verification of identity. *Co-interventions:* none reported	Rural HHs in the northwest and southern regions (North: 458/450; South: 454/464 HHs)	Dietary diversity: • FCS • Poor food consumption (FCS < 35) Adequacy of dietary intake: • Food poverty (daily caloric intake < 2122 kcal) Anthropometric indicators: • WHZ • WAZ Morbidity: children: • Diarrhoea in the previous 2 weeks	2 years
Fernald 2011 (Ecuador)	cRCT	Unclear	*Programme name*: Bono de Desarrollo Humano (BDH) programme	Rural and urban parishes; poor families who	Anthropometry: • HAZ Biochemical:	17 months

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

			Amount and frequency of payments: USD 15 per month; could accumulate payments for up to 4 months. *Provider*: government *Delivery*: payments to mothers via the banking system. *Co-interventions:* none reported	had children aged 0–6 years at baseline (1388/681 children)	• Hb Cognitive function and development: • Language (TVIP score) • Language (ID-HC-B score) Anxiety and Depression: • Mother's depression score (CES-D) • Mother's Perceived Stress Scale	
Haushofer 2013 (Kenya)	RCT	Unclear	*Programme name*: N/A *Amount and frequency of payments*: total amount of KES 25,200 (USD 404). Either monthly (for 9 months) or a lump-sum payment. A subgroup of intervention HHs received an additional KES 10,000 per month for 7 months (total KES 95,200 (USD 1525). *Provider*: NGO (GiveDirectly) *Delivery*: payments via mobile money service to recipients (women or men). *Co-interventions:* none reported	Poor villages and HHs (503/505 HHs)	Food security: • FSI Anthropometry: • MUAC Anxiety and depression: • Psychological well-being index	2 and 3 years
Hjelm 2017 (Zambia)	cRCT	Unclear	*Programme name*: Zambia Multiple Category Cash Transfer Program (MCP) *Amount and frequency of payments:* transfers made every second month. Monthly amount of transfer of ZMW 55,000 (USD 11), irrespective of HH size. *Provider*: government *Delivery*: payments made through a local paypoint manager. *Co-interventions*: none reported	Socially vulnerable HHs in 2 rural districts with extreme poverty (1571/1515 HHs)	HH expenditure on food: • Proportion of total per capita HH expenditure Food security: • HFIAS Anxiety/depression: • Cohen's Perceived Stress scale; • CES-D	2 and 3 years
Miller 2011 (Malawi)	cRCT	Unclear	*Programme name*: Malawi Social Cash Transfer Scheme (SCTS) *Amount and frequency of payments*: about USD 40 (depending on HH size	Ultra-poor and labour constrained	HH expenditure on food: • Proportion of total HH ex	6 months, 1 year

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

			and number of school aged children); monthly transfers. Top-up payments made for children at primary and secondary school. *Provider*: government *Delivery*: NR *Co-interventions:* none reported	HHs (366/386 HHs), Mchinji district	penditure per week Food security: • Consuming > 1 meal/day Dietary diversity: • Food diversity composite score	
Asfaw 2014 (Kenya)	cRCT	High	*Programme name*: Kenya Cash Transfer Programme for Orphans and Vulnerable Children (CT-OVC) *Amount and frequency of payments*: every 2 months (about USD 21) irrespective of HH size. *Conditionalities:* although the programme was unconditional, some districts imposed conditions (e.g. school attendance) and penalties *Provider*: Kenya government *Delivery*: payments made through local post offices. *Co-interventions:* none reported.	Ultra-poor HHs with orphans and vulnerable children (CT-OVC) (1542 HHs/755 HHs)	HH expenditure on food: • Proportion of total HH expenditure per month Dietary diversity: • DDS Anthropometric indicators: • HAZ • WAZ • WHZ • Stunting (HAZ < –2SD) • Underweight (WAZ < –2SD) • Wasting (WHZ < –2SD)	2 and 4 years
Gangopadhyay 2015 (India)	RCT	High	*Programme name*: N/A *Amount and frequency of payments:* monthly cash transfer of INR 1000 (about USD 18). *Provider*: researchers *Delivery*: transfers were made through bank accounts opened for women beneficiaries *Co-interventions:* none reported Note: comparison included control group with no bank account and not receiving transfer	100 HHs/100 HHs	NR	—
Mertens 2013 (Kenya)	cRCT	High	*Programme name*: Hunger Safety Net Programme (HSNP) pilot programme *Amount and frequency of payments*: transfer every 2 months of KES 2150	Impoverished rural HHs (1224/1212 HHs)	HH expenditure on food:	2 years

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

			(at commencement) which increased to KES 3500 by the end of the intervention period. Some HHs had multiple nominated beneficiaries; the effective value of the transfer per HH member was smaller for larger HHs *Provider*: Ministry of State for the Development of Northern Kenya and Other Arid Lands *Delivery*: cash was loaded onto a biometric smartcard which could be used to collect the cash transfer from a range of paypoints (usually small shops). Several services providers contracted. *Co-interventions:* none reported		• Proportion of total HH expenditure Dietary diversity: • DDS Anthropometric indicators: • Moderate (WHZ < –2SD) and severe wasting (WHZ < –3SD); • Moderate (HAZ < –2SD) and severe stunting (HAZ < –3SD); • Moderate (WAZ < –2SD) and severe underweight (WAZ < –3SD) Morbidity: HHs • Illness/injury in previous 3 months	
Skoufias 2013 (Mexico) Other papers: Ramirez-Luzuriaga 2016 Leroy 2010	cRCT	High	*Programme name*: food support programme (PAL, Programa de Apoyo Alimentario). Included in-kind and cash transfer groups. Health and nutrition education session offered but not compulsory. This review included cash + education group vs control group only. *Amount and frequency of payments*: about USD 14/month; disbursed every 2 months. Same amount for all HHs. *Provider*: Mexican Government's agency *Delivery*: distribution through stored of the government's agency DICONSA. *Co-interventions*: none reported	Poor rural HHs (1687/1663 HHs; 279/289 children)	Dietary diversity: • MDD Anthropometric indicators: • BMI	1 and 2 years
Aguero 2006 (South Africa)	Prospective cohort study	High	*Programme name*: Child Support Grant (CSG) *Amount and frequency of payments*: monthly payments made to the	30% of poorest children. subsample of African	Anthropometric indicators: • HAZ	6 years

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

			primary carer of the child, with no recording of what the carer used the money for. The initial monthly benefit was SAR 100 in 1998 and during the time of the 2004 survey it was SAR 170 (about USD 25). *Provider*: government *Delivery*: NR *Co-interventions:* none reported	and Indian HHs with ≥ 1 child. 245/154 children		
Breisinger 2018 (Egypt)	Prospective controlled study	High	*Programme name*: Takaful cash transfer programme *Amount and frequency of payments*: Payments changed from quarterly to monthly, originally starting from a basic amount of EGP 325 per HH, which increased depending on the number of children in the HHs and their educational level. *Conditionalities:* programme had been designed to be conditional but not enforced yet at the time of the evaluation *Provider*: government; World Bank *Delivery*: some beneficiaries had to travel to collect the money *Co-interventions*: none reported	Poor HHs in districts where poverty rate was ≥ 50% (2190 beneficiaries/3813 non-beneficiaries)	Diet diversity: • HDDS • Mother's DDS • Child's DDS Anthropometric indicators: • LAZ or HAZ • Wasting (WHZ < –2SD) • Overweight (children) Morbidity in children aged 0–5 years • Diarrhoea • Fever	11 months
Renzaho 2017 (Nepal)	Prospective controlled study	High	*Programme name*: Child Cash Grant (CCG) *Amount and frequency of payments*: NPR 200 per month for up to 2 children for poor families with children aged < 5 years, as a complement to other government grants. *Provider*: government; Asia Development Bank, UNICEF-Nepal *Delivery*: embedded within existing universal social transfer programmes *Co-interventions:* both intervention and control groups received targeted resources transfers from the government for senior citizens, single women, endangered communities and people with disabilities.	Poor communities and HHs with ≥ 1 child aged < 60 months (1500 HHs/1500 HHs)	Anthropometric indicators: • WAZ • Underweight (WAZ < –2SD) • WHZ • Wasting (WHZ < –2SD) • HAZ • Stunting (HAZ < –2SD)	5 years
UCTs vs food transfers						
Hoddinott 2013	cRCT	Unclear	*Programme name*: N/A	Poor rural HHs (total 2187)	Dietary diversity: • HDDS	3 months

Table 8. Unconditional cash transfers – overview of included studies *(Continued)*

(Niger)			*Amount and frequency of payments*: cash received for time worked for 3 months, followed by another 3 months where cash was received unconditionally. USD 2/day worked to maximum of USD 50/month. Transfers made twice monthly. *Provider*: Nigerian NGOs contracted out to handle food transport, storage, distribution and cash payments *Delivery*: public works committee set up in each village to liaise with NGOs. NGOs charged a fixed percentage of total cash amount distributed. *Co-interventions*: none reported but all receiving cash for work in previous 3 months		• FCS • DDI • CDS	
Schwab 2013 (Yemen)	cRCT	High	*Programme name:* N/A *Amount and frequency of payments:* HHs in cash group received 3 cash transfers of an amount equivalent to the local value of the food basket (about USD 50). *Provider:* transfers distributed in coordination with local partners: the Yemen Post and Postal Savings Corporation (PPSC) in the case of cash transfers and Ministry of Education in the case of food transfers. *Delivery:* collection of cash at any time up to 25 days after disbursement. Initial meetings with beneficiaries to sensitise beneficiaries to the programme objectives and logistics. For cash transfer group, a second resensitisation campaign held after funds were transferred to reinforce messages. Transfers given out at district branches of the PPSC. *Co-interventions:* none reported	Poor HHs in rural communities (982/1001 HHs).	Food security: • Number of days with HH reduced meal frequency (last week) • Number of days adults ate less food (last week) • Number days children ate less food (last week) • Number of months had difficulty meeting food needs Dietary diversity: • HDDS • DDI • FCS • Probability of a low FCS score	7 months

[a]Overall Risk of Bias based on risk of selection and attrition bias.
ARI: acute respiratory infection; BDT: Bangladeshi taka; BMI: body mass index; CDS: Child Diet Score; CES-D: Center for Epidemiologic Studies Depression Scale; cRCT: cluster randomised controlled trial; DDI: Dietary Diversity Index; DDS: Dietary Diversity Score; ECD: Early Childhood Development; EGP: Egyptian pound; FCS: Food Consumption Score; FSI: Food Security Index; GHQ-12: 12-item General Health Questionnaire; HAZ: height-for-age z-score; Hb: haemoglobin; HDDS: Household Dietary Diversity Score; HFIAS: Household Food Insecurity Access Scale; HH: household; IDHC-B: Inventario do Desenvolvemento de Habilidades Comunicativas – B; KES: Kenyan shilling; LAZ: length-for-age z-score; MDD: minimum dietary diversity; MUAC: mid-upper arm circumference; N/A: not applicable/available; NGO: non-governmental organisation; NPR: Nepalese rupee; PKR: Pakistani rupee; SAM: severe acute malnutrition; SAR: South African rand; SD: standard deviation; UCT: unconditional cash transfer; WAZ: weight-for-age z-score; WHZ; weight-for-height z-score; ZMW: Zambian kwacha.

Table 9. Unconditional cash transfers – results of included trials

Study ID (risk of bias)	Study design (n)	Unconditional cash transfers			No intervention			Effect measure (time point)	Effect direction[a]	Meta-analysis (yes/no)
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n			
Outcome 1.2: proportion of HH expenditure on food										
1.2.1 Outcome measure: proportion of total HH expenditure on food (weekly/monthly)										
Brugh 2018 (+)	cRCT (3290 HHs)	0.77 (0.11)	0.70 (0.11)	1561	0.77 (0.11)	0.72 (0.11)	1729	pp −2 (SE 1) 95% CI −3.96 to −0.4; P < 0.1 (1 year)	▲	Yes (excluding Merttens, Asfaw which are missing variance estimate)
Miller 2011 (?)	cRCT (HHs)	56%	68%	366 HHs	52%	48%	386 HHs	pp 12, P < 0.0001 (1 year), 95% CI 5.924 to 18.076, SE 3.1	▼	
Hjelm 2017 (?)	cRCT (3010 HHs)	74 (16)	—	—	77 (15)	—	—	pp 3.2, robust t-statistic 1.815, 95% CI −0.328 to 6.728, SE 1.8 (2 years)	▽	
	cRCT (2969 HHs)	74 (16)	74.5	1490 HHs	77 (15)	72.7	1479 HHs	pp 4.2 robust, SE 1.8, 95% CI 0.672 to 7.728, P < 0.05 (3 years)	▼	
Merttens 2013 (-)	cRCT (2436 HHs)	76.5%	77.3%	1224 HHs	79.8%	81%	1212 HHs	pp −0.4, P > 0.1 (1 year)	△	
Asfaw 2014 (-)	cRCT (1824 HHs)	63%	69.6%	1286 HHs	61%	68.6%	538 HHs	pp −0.95, P > 0.1 (2 years)	△	
Outcome 1.3: proportion of HHs who were food secure										
1.3.1 Food security										
1.3.1.1 *Outcome measure: proportion consuming > 1 meal/day*										
Brugh 2018 (+)	cRCT (3290 HHs)	0.79 (0.40)	0.94 (0.24)	1561	0.82 (0.39)	0.88 (0.34)	1729	DD 0.11, SE 0.03, pp 11, 95% CI 0.0512 to 0.1688, P < 0.001 (1 year)	▲	Yes
Miller 2011 [b] (?)	cRCT (752 HHs)	About 45%	About 85%	366 HHs	About 45%	About 45%	386 HHs	pp 42, P < 0.0001 (1 year), SE 10.7	▲	

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

								95% CI 21.028 to 62.972		
1.3.1.2 Outcome measure: mean food security scores (HFIAS[c]/FSI[d]) (mean, SD)										
Daidone 2014 (+) HFIAS/Food Security Scale	cRCT (2299 HHs)	—	9.63	1158 HHs	—	12.36	1141 HHs	MD 2.498, SE 0.59, 95% CI 1.3416 to 3.6544, P < 0.05, SE 1.3 (2 years)	▲	Yes
Haushofer 2013 (?) (FSI)	RCT (940 HHs)	—	—	471 HHs	—	Mean –0.00 (SE 1.00)	469 HHs	MD 0.25, 95% CI 0.13 to 0.37, P < 0.01 (2 years), SE 0.1	▲	
Hjelm 2017 (?) (HFIAS/food security scale)	cRCT (3010 HHs)	14.78 (5.49)	—	—	14.68 (5.71)	—	—	MD 1.78, robust t-statistic 3.76, 95% CI 0.8 to 2.76 P < 0.05 (2 years), SE 0.5	▲	
	cRCT (2970 HHs)	14.78 (5.49)	9.83	1490 HHs	14.68 (5.71)	12.47	1480 HHs	MD 2.69, robust t-statistic 4.94, 95% CI 1.71 to 3.67, P < 0.05 (3 years), SE 0.5	▲	
1.3.1.3 *Outcome measure: severe food deprivation (FSI > 2)*										
Pellerano 2014 (+)	cRCT (2220 children aged 0–5 years)	67.1%	53.4%	747 HHs	69.3%	72.2%	739 HHs	pp –16.63, P < 0.05 (2 years), SE 8.5	▲	N/A. Outcomes from same study.
Pellerano 2014 (+)	cRCT (5384 children aged 6–17 years)	67.8%	58.6%	747 HHs	73.9%	70.7%	739 HHs	pp –6.103, P < 0.1 (2 years), SE 3.7	▲	
1.3.2 Dietary diversity										
1.3.2.1 Outcome measure: dietary diversity scores, including composite FCS (weighted) (mean, SD) (scores refer to number food groups consumed; reference periods and scales vary)										
Daidone 2014 (+)	cRCT (2298 HHs)	—	6.73	1158	—	5.30	1141	MD 1.43 (2 years)	△	Yes (except for Daidone,

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

HDDS 0–12										Merttens, pellerano – missing variance estimate)
Pellerano 2014 (+) FCS 0–112	cRCT (1486 HHs)	28.7	31.2	747 HHs	28.9	30.4	739 HHs	MD 0.946, P > 0.1 (2 years)	△	
Brugh 2018 (+) HDDS 0–12	cRCT (3290 HHs)	5.63 (1.78)	5.85 (1.54)	1561	5.64 (1.87)	5.34 (1.44)	1729	MD 0.23 (SE 0.32), 95% CI –0.3972 to 0.8572, P > 0.05 (1 year)	△	
Miller 2011 (?) FDCS 1–8	cRCT (752 HHs)	5	7	366 HHs	5	4	386 HHs	MD 2.4, P < 0.0001 (1 year), SE 0.6. 95% CI 1.224 to 3.576	▲	
Ahmed 2019a (?) FCS 0–112	cRCT (HHs NR)	—	—	—	—	—	—	MD 6.84 points, SE 1.12, P < 0.01, 95% CI 4.6448 to 9.0352 (2 years)	▲	
Ahmed 2019b (?) FCS 0–112	cRCT (HHs NR)	—	—	—	—	—	—	MD 2.62 points, SE 1.04, P < 0.05, 95% CI 0.5816 to 4.6584 (2 years)	▲	
Merttens 2013 (-) DDS 0–12	cRCT (2436 HHs)	6.7	7.2	1224 HHs	6.1	6.2	1212 HHs	MD 0.3, P > 0.1 (1 year)	△	
Asfaw 2014 (-) DDS (0–8)	cRCT (2369 HHs)	5.225	6.177	1289 HHs	5.697	5.843	540 HHs	MD 0.821, SE 0.3, P < 0.01 (2 years)	▲	
1.3.2.2. Outcome measure: proportion with MDD (≥ 3–4 food groups)/acceptable food consumption (FCS > 35)										
Tonguet Papucci 2015 (+)	cRCT (322 children aged 14–27 months)	—	65.6%	160	—	39.5%	162	OR 2.95, 95% CI 1.86 to 4.68, P < 0.001 (2 years) SMD 0.6, SE 0.1	▲	Yes

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

Skoufias 2013 (-)	cRCT (568 children)	69.6%	66. 7%	279	72.7%	59.9%	289	pp 10.6, 95% CI −6.65 to 27.85, P > 0.05 (2 years), SE 8.8 SMD 0.1, SE 0.1	△	
1.4 Change in adequacy of dietary intake										
1.4.1 Food poverty (per capita daily caloric intake < 2122 calories; proportion)										
Ahmed 2019a (?)	cRCT (n NR)	—	—	—	—	—	—	MD −0.05, SE 0.03, 95% CI −0.1088 to 0.0088, P > 0.05 (2 years)	—	Yes
Ahmed 2019b (?)	cRCT (n NR)	—	—	—	—	—	—	MD −0.04, SE 0.04, P > 0.05, 95% CI −0.1184 to 0.0384 (2 years)	—	
1.4.2 Proportion food energy deficient (total HH caloric availability < total HH caloric requirements)										
Brugh 2018 (+)	cRCT (3290 HHs)	—	—	1561	—	—	1729	DD −0.1, SE 0.04, 95% CI −0.1784 to −0.0216; P < 0.05 (1 year)	▲	
1.5 Change in anthropometric indicators										
1.5.1 *Stunting* *(chronic undernutrition)*										
1.5.1.1 Outcome measure: proportion stunted (HAZ < −2SD)										
Tonguet Papucci 2015 (+)	cRCT	27.7%	—	630 children aged 0–15 months	27.2%	—	620 children aged 0–15 months	OR 0.73, 95% CI 0.47 to 1.14, P 0.17 (2 years)	△	Yes (except Asfaw, Merttens – no measure of variance)
Fenn 2015 (+)	cRCT (1683 children)	n (%): 457 (50.9)	NR	874 children	n (%): 437 (51.7)	NR	809 children	OR 0.36, 95% CI 0.22 to 0.59, P < 0.001 (6 months)	▲	
	cRCT (1664 children)	n (%): 457 (50.9)	NR	849 children	n (%): 437 (51.7)	NR	815 children	OR 0.54, 95% CI 0.36 to 0.81, P = 0.003 (12 months)	▲	

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

Merttens 2013 (-)	cRCT (1062 HHs)	26.7%	29.6%	—	35.6%	31.5%	—	pp 7.0, P > 0.1 (2 years)	▽	
Asfaw 2014 (-)	cRCT	41.5%	35.7%	442 children aged 0–59 months	44%	37%	295 children aged 0–59 months	pp –4.63, P > 0.1 (2 years)	△	
1.5.1.2 Outcome measure: proportion with severe stunting (HAZ < –3SD)										
Fenn 2015 (+)	cRCT (1683 children)	NR	NR	874 children	NR	NR	809 children	OR 0.47, 95% CI 0.28 to 0.77, P = 0.003 (6 months)	▲	No. SE not available for all studies.
	cRCT (1664 children)	NR	NR	849 children	NR	NR	815 children	OR 0.59, 95% CI 0.38 to 0.92, P = 0.02 (12 months)	▲	
Merttens 2013 (-)	cRCT (n = 1062)	11.6%	13.4%	—	15.2%	15.1%	—	pp 1.9, P > 0.1 (2 years)	▽	
1.5.1.3 Outcome measure: HAZ (mean, SD)										
Daidone 2014 (+)	cRCT (2299 children aged 0–60 months)	—	–1.445	1158	—	–1.491	1141	MD 0.066, 95% CI –0.116 to 0.248, P > 0.05 (2 years)	△	Yes
Tonguet Papucci 2015 (+)	cRCT (1250 children aged 0–15 months	–1.18 (1.44)	–1.96 (1.03)	630	–1.33 (1.24)	–1.99, SD 1.04)	620	MD –0.0005, 95% CI –0.004 to 0.003 z-score/month, P = 0.78	▽	
Fenn 2015 (+)	cRCT (1683 children)	–1.98 (1.65)	NR	874 children	–1.97 (1.75)	NR	809 children	MD 0.24, 95% CI 0.17 to 0.32, P < 0.001 (6 months)	▲	
	cRCT (1664 children)	–1.98 (1.65)	NR	849 children	–1.97 (1.75)	NR	815 children	MD 0.21, 95% CI 0.10 to 0.31, P < 0.001 (12 months)	▲	
Fernald 2011 (?)	cRCT (1196 children)	–0.5 (2.1)	–1.7 (1.2)	797	–0.7 (2.0)	–1.7 (1.2)	399	MD 0.01, 95% CI –0.18 to 0.19 (2 years)	△	

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

Ahmed 2019a (?)	cRCT (n NR)	—	—	—	—	—	—	MD 0.132, SE 0.08, 95% CI −0.0248 to 0.2888, P > 0.05 (2 years)	△	
Ahmed 2019b (?)	cRCT (n NR)	—	—	—	—	—	—	MD −0.097, SE 0.08, 95% CI −0.0598 to 0.2538, P > 0.05 (2 years)	△	
Asfaw 2014 (-)	cRCT (737 children aged 0–59 months)	−1.466	−1.279	442	−1.462	−1.248	295	MD −0.0272, 95% CI −0.503 to 0.449, P > 0.1 (2 years)	▽	
1.5.2 Wasting (acute undernutrition)										
1.5.2.1 Outcome measure: proportion wasted (WHZ < −2SD) (proportion)										
Tonguet Papucci 2015 (+)	cRCT (1250 children aged 0–15 months	26%	—	630	192%	—	620	IRR 0.92, 95% CI 0,64 to 1.32; P = 0.66 (2 years)	△	No. SE not available for all studies and different effect size for 1 study.
Fenn 2015 (+)	cRCT (1683 children)	n (%): 196 (22.0)	NR	874 children	n (%): 184 (21.9)	NR	874 children	OR 1.09, 95% CI 0.64 to 1.87, P = 0.75 (6 months)	▽	
	cRCT (1664 children)	n (%): 196 (22.0)	NR	849 children	n (%): 184 (21.9)	NR	849 children	OR 1.10, 95% CI 0.71 to 1.71, P = 0.66 (12 months)	▽	
Merttens 2013 (-)	cRCT (1062 children)	25.3%	23.1%	—	24.2%	17.3%	—	pp 4.7, P > 0.1	▽	
Asfaw 2014 (-)	cRCT (737 children aged 0–59 months)	6%	9%	648	9.4%	6.9%	341	pp 5.95, P > 0.1 (2 years)	▽	
1.5.2.2 Outcome measure: severe wasting (WHZ < −3SD) (proportion)										
Fenn 2015 (+)	cRCT (1683 children)	69 (7.7)	—	874 children	62 (7.4)	—	874 children	OR 0.98, 95% CI 0.38 to 2.54, P = 0.97 (6 months)	△	No. Variance only available for 1 of the 2 studies.
Merttens 2013 (-)	cRCT (1062 children)	6.8	6.2	—	8.0	3.5	—	pp 3.9, P > 0.1	▽	
1.5.2.3 Outcome measure: WHZ (mean, SD)										

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

Daidone 2014 (+)	cRCT (2299 children aged 0–69 months)	—	−0.0961	1158	—	−0.154	1141	MD 0.118, 95% CI −0.015 to 0.251 (2 years)	△	Yes
Tonguet Papucci 2015 (+)	cRCT (1250 children aged 0–15 months)	−1.24 (1.23)	−0.56 (0.95)	630	−1.07 (1.12)	−0.61 (0.93)	620	MD −0.003 z-score/month, 95% CI −0.008 to 0.0003, P = 0.07 (2 years)	▽	
Fenn 2015 (+)	cRCT (1683 children)	−1.11 (1.34)	NR	874 children	−1.15 (1.30)	NR	874 children	MD 0.04, 95% CI −0.07 to 0.14, P = 0.5 (6 months)	△	
	cRCT (1664 children)	−1.11 (1.34)	NR	849 children	−1.15 (1.30)	NR	849 children	MD −0.08, 95% CI −0.19 to 0.04, P = 0.21 (12 months)	▽	
Ahmed 2019a (?)	cRCT (n NR)	—	—	—	—	—	—	Coefficient −0.013, SE 0.07, 95% CI −0.1502 to 0.1242, P > 0.05 (2 years)	▽	
Ahmed 2019b (?)	cRCT (n NR)	—	—	—	—	—	—	Coefficient −0.088, SE 0.08, P > 0.05, 95% CI −0.2448 to 0.0688 (2 years)	▽	
Asfaw 2014 (-)	cRCT (737 children aged 0–59 months)	−0.017	−0.332	442	0.065	−0.166	295	MD −0.0838, 95% CI −0.339 to 0.171, P > 0.1 (2 years)	▽	
1.5.3 Underweight										
1.5.3.1 Weight for age z-score										
1.5.3.1.1 Outcome measure: proportion underweight (WAZ < −2SD)										
Pellerano 2014 (+)	cRCT (total n: 6 month old 474; 12 month old 293)	6 month old: 29.2; 12 month old: 36.6	6 month old: 10.6; 12 month old: 16.4	—	6 month old: 11.0; 12 month old: 39.7	6 month old: 8.4 12 month old: 23.3	—	6 month old: pp −15.60, P < 0.05 12 month old: pp −3.637, P > 0.05 (2 years)	6 month old: ▲ 12 month old: △	No. Variance not available for all studies.
Merttens 2013 (-)	cRCT (1062)	30.7	24.9	—	33.7	24	—	pp 3.9, P > 0.1	▽	

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

Asfaw 2014 (-)	cRCT (1435)	20.6	21	—	19.6	19.1	—	pp −0.62, P = 0.901 (2 years)	△	
1.5.3.1.2 Outcome measure: proportion severely underweight (WAZ < −3SD)										
Merttens 2013 (-)	cRCT (1062)	9.8	8.9	—	10.9	6.9	—	pp 3.2, P > 0.1	▽	N/A
1.5.3.1.3 Outcome measure: mean WAZ										
Daidone 2014 (+)	cRCT (6825 children)	—	−0.900	—	—	−0.963	—	MD 0.128, 95% CI −0.05 to 0.261, P > 0.05 (2 years)	△	Yes
Asfaw 2014 (-)	cRCT 752 children aged 0–59 months)	−0.879	−1.034	456	−0.923	−0.804	296	MD −0.274, 95% CI −0.633 to 0.085, P > 0.1 (2 years)	▽	
1.5.3.2 BMI (mean, SD)										
Fenn 2015 (+)	cRCT 1208 HHs/mothers (flow diagram)	Median (IQR) 20.4 (18.3 to 23.5)	NR	607	median (IQR) 20.0 (18.1 to 22.7)	NR	601	Beta-coefficient −0.10, 95% CI −0.36 to 0.16, P = 0.45 (6 months)	▽	
1.5.5 Mid-upper arm circumference (MUAC) (mean, SD)										
Fenn 2015 (+)	cRCT (1208 HHs/mothers)	24.4 (3.4)	NR	607	24.3 (3.2)	NR	601	Beta-coefficient 0.09, 95% CI −0.13 to 0.30, P = 0.41 (6 months)	△	
	cRCT (1683 children)	13.5 (1.3)	NR	874	13.5 (1.2)	NR	809	beta-coefficient 0.06, 95% CI −0.02 to 0.15, P = 0.15 (6 months)	△	
1.6 Change in biochemical indicators										
1.6.1 Outcome measure: haemoglobin concentration (g/dL) (mean, SD)										
Fenn 2015 (+)	cRCT (1208 HHs/mothers)	mean 103 (SD 18)	NR	607 mothers	mean 100 (SD 19)	NR	601 mothers	MD −0.42, 95% CI −0.63 to −0.20, P < 0.001 (6 months)	▼	

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

	cRCT (1683 children)	mean 89 (17)	NR	874 children	mean 88 (16)	NR	809 children	MD −0.12, 95% CI −0.31 to 0.08, P = 0.24 (6 months)	▽	Yes
Fernald 2011 (?)	cRCT (922 children)	9.7 (1.3)	10.4 (1.5)	—	9.5 (1.3)	10.3 (1.3)	—	MD 0.04, 95% CI −0.21 to 0.29, P > 0.1	△	
1.7 Cognitive function and development										
1.7.1 Outcome measure: cognitive and development scales/indices (mean, SD)										
Baird 2013 (+)	cRCT (RCPM; 2057 adolescents)	—	—	—	—	—	—	MD 0.136, SE 0.119, 95% CI −0.097 to 0.369, P > 0.1 (2 years)	△	No (no n to calculate SMD)
Daidone 2014 (+)	cRCT (ECD Index; 5670 children)	—	5.174	—	—	4.926	—	MD 0.311, 95% CI −0.065 to 0.687, P > 0.1 (2 years)	△	
1.7.2 Outcome measure: Individual cognitive function measures scores (mean, SD)										
Fernald 2011 (?)	cRCT (Language: TVIP; 1894 children 36 months and older)	—	—	—	—	—	—	MD 0.013, 95% CI −0.076 to 0.102, P > 0.1 (2 years)	△	N/A
	Language: IDHC-B 1192 children aged 12–35 months)	—	45.0 (35.1)	—	—	42.3 (32.2)	—	MD 2.43, 95% CI −1.01 to 5.86, P > 0.1 (2 years)	△	
1.8 Change in proportion of anxiety and depression										
1.8.1 Outcome measure: depression score (CES-D scale) (mean change in score, SD)										
Fernald 2011 (?)	cRCT (1430 mothers)	—	19.6 (11.1)	—	—	18.9 (10.6)	—	MD 0.71, 95% CI −0.84 to 2.25, P > 0.1 (2 years)	▽	Yes
Haushofer 2013 (?)	RCT (2140 adults)	—	—	471 HHs	—	26.48 (9.31)	469 HHs	MD −0.99, 95% CI −1.54 to −0.44, P < 0.1 (3 years)	▲	

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

Hjelm 2017 (?)	cRCT (1765 HHs with adolescents)	—	—	—	—	—	—	Effect estimate 0.00, robust t-statistic 0.00, P not significant (2 years)	—	
	cRCT (2217 HHs with adolescents)	—	—	—	—	19.24	—	Effect estimate −0.54, 95% CI −1.80028 to 0.72028 (3 years)	△	
1.8.2 Outcome measure: Perceived Stress Scale (mean, SD)										
Fernald 2011 (?)	cRCT (n = 1430)	—	—	—	—	—	—	Top 3 income quartiles: MD 0.045, 95% CI −0.112 to 0.202, P > 0.1. Bottom income quartile: MD 0.177, 95% CI −0.017 to 0.371, P < 0.1 (2 years)	▽	Yes
Haushofer 2013 (?)	RCT (2140 adults)	—	—	—	—	0.00 (1.00)	—	MD −0.14, 95% CI −0.258 to −0.022, P < 0.05 (3 years)	▲	
Hjelm 2017 (?)	cRCT (2490 HHs)	—	9.58 (4.64)	—	—	9.92 (4.73)	—	Effect estimate −0.42, 95% CI −1.12364 to 0.28364 (3 years)	△	
1.8.3 Outcome measure: proportion with psychological distress (psychological distress, anxiety and depression, social dysfunction, loss of confidence)										
Baird 2013 (+)	cRCT (2089 adults)	—	—	—	—	0.374	—	pp −14.3, 95% CI −21.0 to −7.6, P < 0.001 (1 year)	▲	N/A
		—	—	—	—	0.308	—	pp −3.8, 95% CI −13.14 to 5.8 P > 0.1 (2 years)	△	
1.8.4 Outcome measure: Psychological Well-being Score (mean, SD)										
Haushofer 2013 (?)	RCT (2140 adults)	—	—	—	—	−0.00 (1.00)	—	Coefficient 0.20 SD, 95% CI 0.082 to 0.318, P < 0.1 (2 years)	▲	N/A
1.9 Morbidity										

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

1.9.1 Outcome measure: incidence of respiratory infections (reference period: 1 and 2 weeks)

Daidone 2014 (+)	cRCT Proportion children aged 0–60 months with ARI in previous 2 weeks (n = 7232)	—	0.0511	—	—	0.0832	—	pp −3.6, 95% CI −8.6 to 14.0, P > 0.05 (2 years)	△	No. 2 different measures of effect that could not be compared (IRR vs OR/pp).
Fenn 2015 (+)	cRCT (1683 children)	n (%): 310 (34.3)	NR	874 children	n (%): 273 (32.2)	NR	809 children	OR, 0.73, 95% CI 0.51 to 1.03, P = 0.07 (6 months)	△	
Tonguet Papucci 2015 (+)	cRCT Episodes/child-month (1250 children aged 0–15 months)	—	N 0.87, 95% CI 0.84 to 0.89	—	—	N 0.95, 95% CI 0.92 to 0.97	—	IRR 0.79, 95% CI 0.78 to 0.81, P < 0.001 (2 years)	▲	
Asfaw 2014 (-)	cRCT 957 children aged 0–7 years)	—	—	613 children	—	—	344 children	IRR 0.556, t-statistics –2.40, P < 0.05 (2 years)	—	

1.9.2 Outcome measure: incidence diarrhoeal disease

Fenn 2015 (+)	cRCT (1683 children)	n (%): 228 (25.2)	NR	874 children	n (%): 298 (35.0)	NR	809 children	OR 1.05, 95% CI 0.67 to 1.63, P = 0.84 (6 months)	▽	No. Different measure of effect for one study (IRR vs OR/pp)
Daidone 2014 (+)	cRCT Proportion children aged 0–60 months with diarrhoea in previous 2 weeks (n = 7232)	—	0.0684	—	—	0.0925	—	pp −4.9, 95% CI −8.9 to –0.9, P < 0.05 (2 years)	▲	
Tonguet Papucci 2015 (+)	cRCT Episodes/child/month (1250	—	n 0.85, 95% CI 0.82 to 0.88	—	—	n 0.83, 95% CI 0.80 to 0.85	—	IRR 1.00, 95% CI 0.97 to 1.03, P = 0.89 (2 years)	□	

Table 9. Unconditional cash transfers – results of included trials *(Continued)*

	children aged 0–15 months)									
Ahmed 2019a (?)	cRCT (n NR)	—	—	—	—	—	—	Coefficient −0.003, pp −0.3, SE 0.02, 95% CI −0.0422 to 0.0362, P > 0.05 (2 years)	△	
Ahmed 2019b (?)	cRCT (n NR)	—	—	—	—	—	—	Coefficient −0.009, pp −0.9, SE 0.02, 95% CI −0.0482 to 0.0302, P > 0.05	△	
1.9.3 Outcome measure: proportion with any illness in previous reference period (1 month/3 months)										
Pellerano 2014 (+)	cRCT (1996 children aged 0–5 years)	38.9	31.4	—	36.7	45.3	—	pp −15.38, P < 0.1 (2 years)	▲	No. Variance estimates not available for all studies.
Merttens 2013 (-)	cRCT (n = 14,342) (includes injury)	22.5	12.1	—	23.1	11.7	—	pp 1.0, P > 0.05 (2 years)	▽	
1.9.4 Proportion with anaemia (any)										
Fenn 2015 (+)	cRCT (1683 children)	—	—	874 children	—	—	809 children	OR 1.13, 95% CI 0.68 to 1.86, P = 0.64 (6 months)	—	N/A
	cRCT (1208 mothers)	—	—	607 mothers	—	—	601 mothers	OR 1.34, 95% CI 0.82 to 2.18, P = 0.24 (6 months)	—	
1.10 Adverse events: proportion who were overweight (according to International standards and Bukana Health Card)										
Pellerano 2014 (+)	cRCT (total n: 6 months old: 474; 12 months old: 293)	6 months old: 4.5; 12 months old: 6.0	6 months old: 2.2; 12 months old: 0.0	—	6 months old: 0.8; 12 months old: 0.0	6 months old: 2.0; 12 months old: 0.0	—	6 months old: pp −5.082, P > 0.05; 12 months old: pp −6.461, P > 0.05 (2 years)	△	N/A

[a]Each triangle represents one study; [b]Values are derived from graphs
▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0; □: Effect measure is the null; (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias. FDCS: Food diversity consumption score; FCS: Food consumption score.

ARI: acute respiratory infection; CES-D: Center for Epidemiologic Studies Depression Scale; CI: confidence interval; cRCT: cluster randomised controlled trial; DD: Diet diversity; DDS: Dietary Diversity Score; ECD: Early Childhood Development; FCS: Food Consumption Score; FDCS: Food Diversity Composite Score; FSI: Food Security Index; HAZ: height-for-age z-score; HDDS: Household Dietary Diversity Score; HFIAS: Household Food Insecurity Access Scale; HH: household; IDHC-B: Inventario do Desenvolvemento de Habilidades Comunicativas-B; IQR: interquartile range; IRR: incidence rate ratio; MD: mean difference; MDD: minimum dietary diversity; n: number; NR: not reported; OR: odds ratio; pp: percentage point; RCPM: Ravens Coloured Progressive Matrices ; RCT: randomised controlled trial; SD: standard deviation; SE: standard error; SMD: standardised mean difference; TVIP: Test de Vocabulario en Imagenes Peabody; WHZ: weight-for-height z-score.

Table 10. Unconditional cash transfers – results of included prospective controlled studies

Study ID (risk of bias)	Study design (n)	Unconditional cash transfers			No intervention			Effect measure (time point)	Effect direction[a]	Meta-analysis (yes/no)
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n			
1.3.2 Dietary diversity										
1.3.2.1 Outcome measure: Dietary diversity scores, including composite Food Consumption Score (FCS) (weighted) (mean, SD) (scores refer to number food groups consumed; reference periods and scales vary)										
Breisinger 2018 (-)	PCS (6003 HHs) – HDDS	NR	9.58 (1.38)	2190?	NR	9.48 (1.55)	3813?	MD (SE) 0.16 (0.117), 95% CI −0.06932 to 0.38932, P > 0.1 (1 year??)	△	N/A
Breisinger 2018 (-)	PCS (5799 HHs) – mother DDS)	NR	4.21 (1.28)	2190?	NR	4.04 (1.26)	3813?	MD 0.011 (SE 0.100), 95% CI −0.185 to 0.207, P > 0.1 (1 year?),	△	
Breisinger 2018 (-)	PCS (1684 HHs) DDS children aged 6–23 months	NR	3.35 (1.73)	2190?	NR	3.39 (1.61)	3813?	MD −0.342 (SE 0.209) 95% CI −0.752 to 0.068, P > 0.1 (1 year)	▽	
Breisinger 2018 (-)	PCS (3202 HHs) DDS children aged 24–59 months	NR	5.09 (1.37)	2190?	NR	4.89 (1.40)	3813?	MD −0.057 (SE 0.144) 95% CI −0.33924 to 0.22524, P > 0.1 (1 year)	▽	
1.5 Change in anthropometric indicators										
1.5.1 *Height-for-age z-scores; chronic undernutrition)*										
1.5.1.1 Outcome measure: proportion stunted (HAZ < −2SD)										

Table 10. Unconditional cash transfers – results of included prospective controlled studies *(Continued)*

Renzaho 2017 (-)	Prospective controlled study (n = 1491)	66.7	59.8	748	63	52.9	743	Adjusted DID (pp): −5.16, 95% CI −9.55 to −0.77 (5 years), SE 2.2	▲	—
1.5.1.3 Outcome measure: HAZ (mean, SD)										
Aguero 2006 (-)	PCS	—	−0.84		—	−1.08	—	NR (MD 0.15 at 45%, and 0.25 at 80% of nutritional window; data derived from graph (6 years))	△	No. SE not available for all studies.
Renzaho 2017 (-)	PCS (1491 children)	−2.6 (1.4)	−2.2 (1.4)	748	−2.3 (1.3)	−2.1 (1.3)	743	Adjusted DID: 0.18, 95% CI 0.09 to 0.27 (5 years)	▲	
1.5.2 WHZ; acute undernutrition/wasting										
1.5.2.1 Outcome measure: proportion wasted (WHZ < −2SD) (proportion)										
Renzaho 2017 (-)	PCS (1491 children)	12.7	5.7	748	5.8	6.4	743	Adjusted DID: pp −2.84, 95% CI −5.58 to −0.1 (5 years)	▲	
1.5.2.3 Outcome measure: WHZ (mean, SD)										
Renzaho 2017 (-)	PCS (1491 children)	−0.8 (1.1)	−0.4 (1.0)	748	−0.5 (0.9)	−0.4 (1.1)	743	Adjusted DID: MD 0.19, 95% CI 0.09 to 0.3 (5 years)	▲	
1.5.3 Weight-for-age z-score (WAZ; underweight)										
1.5.3.1 Outcome measure: proportion underweight (WAZ < −2SD)										
Renzaho 2017 (-)	PCS (1491 children)	50.7	34.8	748	37.3	28.9	743	Adjusted DID: pp −7.35, 95% CI −11.62 to −3.08 (5 years)	▲	N/A
1.5.3.3 Outcome measure: mean WAZ										
Renzaho 2017 (-)	PCS (1491 children)	−2.1 (1.1)	−1.6 (1.1)	748	−1.7 (1.0)	−1.4 (1.1)	743	Adjusted DID: 0.22, 95% CI 0.15 to 0.29 (5 years)	▲	N/A

[a]Each triangle represents one study.
▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0. (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias.
DDS: Dietary Diversity Score; DID: difference in differences; HAZ: height-for-age z-score; HH: household; MD: mean difference; n: number; N/A: not applicable/available; NR: not reported; PCS: prospective controlled study; SD: standard deviation; SE: standard error; WAZ: weight-for-age z-score; WHZ: weight-for-height z-score.

Table 11. Conditional cash transfers – overview of included studies

Study name (year) country of conduct	Study design	Overall risk of bias[a]	Other key detail of intervention	Population (sample size at baseline: intervention/ control)	Outcome domains and measures with available data	Timepoint of measurement
Baird 2013 (Malawi)	cRCT	Low	*Programme name*: Schooling, Income, and Health Risks study (SIHR). Includes unconditional and conditional groups. *Type, amount and frequency of payments*: payments were split between guardian and girl in each HH. HH amount varied randomly from USD 4, USD 6, USD 8, to USD 10 per month. Amount paid to girl beneficiaries varied randomly from USD 1, USD 2, USD 3, USD 4, to USD 5 per month. *Conditionalities:* school attendance for 80% of the days during the previous month. *Provider*: 2 NGOs *Delivery*: payments to girl beneficiaries at local distribution points *Co-interventions:* NR	Adolescent girls who were never married from urban and rural HHs (1211/1495 girls)	Cognitive function and development: • Cognitive test score (Raven's Coloured matrices and other) Anxiety/depression: • Psychological distress test score (GHQ-12)	1 and 2 years
Macours 2012 (Nicaragua)	cRCT	Low	*Programme name*: Atención a Crisis *Amount and frequency of payments*: Standard payment of USD 145 per HH every 2 months. 3 intervention groups: 1. Standard transfer + education: additional USD 145 per HH and USD 25 per child for HHs with children aged 7–15 years; 2. Standard transfer + scholarship for vocational training; and 3. Standard transfer + lump sum to start non-agricultural activity. *Conditionalities:* 1. Regular health check-ups for children aged 0–5 years, school enrolment; 2. regular attendance, however not monitored in practice; and 3. developing a business plan. *Provider*: government *Delivery*: payments to child's primary carer. *Co-interventions:* NR	Poor rural HHs with 2377 children aged < 6 years (3002/1019 HHs)	HH expenditure on food: • Percentage of total expenditure Anthropometric indicators: • WAZ • HAZ Anxiety/depression: • Depression score (CES-D) Cognitive function and development: • Language test score (TVIP score)	9 months (12 months for CES-D)

Table 11. Conditional cash transfers – overview of included studies *(Continued)*

					Morbidity – child • Number of days ill in bed in the past month	
Maluccio 2005 (Nicaragua)	cRCT	Low	*Programme name*: Red de Protección Social *Amount and frequency of payments*: amount NR; payments every 2 months. *Conditionalities:* school attendance; preventive health care visits for children for growth and development monitoring, vaccination, and provision of antiparasites, vitamins, and iron supplements. *Provider*: government. Preventive health services provided by private healthcare providers. *Delivery*: NR *Co-interventions:* NR	Poor, rural HHs (1396 HHs)	HH expenditure on food: • Percentage of total expenditure Anthropometric indicators: • HAZ • WAZ • WHZ	1 and 2 years
Kusuma 2017a (Indonesia)	cRCT	Unclear	*Programme name*: Program Keluarga Harapan (PKH) *Amount and frequency of payments*: USD 60–220 per HH per year, depending on the number and age of children in the HH. *Conditionalities:* health: pre- and postnatal visits, iron supplementation and assisted deliveries for pregnant women, growth monitoring, immunisation and vitamin A supplementation of children aged < 5 years. Education: primary and junior secondary school enrolment and attendance rates of 85%. *Provider*: government *Delivery:* payment to mothers through local post offices *Co-interventions:* NR	Very poor urban HHs with children aged 24–36 months (1395 HHs)	Anthropometry: • Underweight (WAZ < –2SD) • Severe underweight (WAZ < –3SD) • Wasting (WHZ < –2SD) • Severe wasting (WHZ < –3SD) • Stunting (HAZ < –2SD) • Severe stunting (HAZ < –3SD)	2 years
Gertler 2000 (PROGRESA) (Mexico)	cRCT	Unclear	*Programme name*: Oportunidades (previously known as PROGRESA) *Type, amount and frequency of payments*: scholarships of up to MXN 490 (January–June 98) and MXN 625 per HH (July–December 1999), every 2 months;	Poor rural HHs (506 villages; 320/186)	Anthropometric indicators: • HAZ • Stunting (HAZ < –2SD)	8, 12, 15, 20 months, 10 years

Table 11. Conditional cash transfers – overview of included studies *(Continued)*

			payments for school supplies; and monthly payments for food. *Conditionalities:* health: attendance of preventive health services by every family member; growth monitoring and immunisation of children aged 0–5 years; nutrition supplements (for lactating women, children aged 6–23 months or low-weight children), antenatal care for pregnant women. Education: school enrolment and school attendance > 85%. *Provider*: government *Delivery*: lump sum payment to mothers once completed forms were submitted by HHs to verify school attendance. *Co-interventions:* NR		• BMIZ Biochemical indicators: • Anaemia Cognitive function and development: • Cognitive test scores (verbal, cognitive, behavioural) Morbidity – Child • Illness during past 4 weeks	
Evans 2014 (Tanzania)	cRCT	High	*Programme name*: N/A *Amount and frequency of payments*: USD 12–36, depending on the number of people in the HH, every 2 months. *Conditionalities:* education: primary school enrolment and attendance for children aged 7–15 years; health: health facility visits for growth monitoring 6 times a year for children aged 0–5 years; vaccination and growth monitoring for children 0–2 years; yearly visit to health facility for elderly people (aged ≥ 60 years). *Provider*: Tanzania Social Action Fund (TASAF), World bank *Delivery*: payments disbursed by TASAF to bank accounts managed by local government authorities. Funds disbursed directly to community-managed accounts who made payments to mothers. *Co-interventions:* transfers from government/TASAF or from NGOs/religious organisation	Poor HHs with vulnerable children or elderly people, or both (80 villages; 40/40)	Anthropometric indicators: NR	30 and 42 month
Hidrobo 2014 (Colombia)	cRCT	High	*Programme name*: N/A *Amount and frequency of payments*: USD 40 per month per HH. *Conditionalities:* attendance of monthly nutrition sensitisation training sessions by HH members.	Poor urban HHs (2357 HHs)	HH expenditure on food: • Proportion of total expenditure per month	7 months

Table 11. Conditional cash transfers – overview of included studies *(Continued)*

			Provider: World Food Programme (NPO) *Delivery*: money transferred on to pre-programmed debit cards. *Co-interventions:* NR		Dietary diversity: • DDI • HDDS • FCS	
Kandpal 2016 (Philippines)	cRCT	High	*Programme name*: Pantawid Pamilyang Pilipino Programme *Type, amount and frequency of payments*: health grant of PHP 500 (USD 11) per HH per month; education grant of PHP 300 (USD 6.50) per child per month for ≤ 10 months/year, and for ≤ 3 children in the HH. Payments every 2 months. *Conditionalities:* health: clinic visits for immunisation and vaccination, growth monitoring, and management of childhood disease in children aged < 5 years; antenatal care for pregnant women, starting from the first trimester; school-aged children (6–14 years) to receive deworming tablets 2 times/year; and HHs with children 0–14 years, the HH grantee (mother) or spouse (or both) had to attend family development sessions monthly. Education: enrolment of children aged 6–14 years in primary or secondary school and 85% school attendance every month. *Provider*: government *Delivery*: NR *Co-interventions:* NR	Poor HHs with children aged 0–14 years or pregnant women (714/ 704 HHs)	Anthropometric indicators: • WAZ • Underweight (WAZ < –2SD) • Severely underweight (WAZ < –3SD) • HAZ • Stunted (HAZ < –2SD) • Severely stunted (HAZ < –3SD) Morbidity – child: • Seeking treatment for child for fever, cough or diarrhoeal disease in past 2 weeks	36 months
Kurdi 2019 (Yemen)	cRCT	High	*Programme name:* Cash for Nutrition programme *Amount and frequency of payments:* payments every 3 months (YER 30,000 per month for 9 months in 2015; YER 10,000 (USD 30) per month for 12 months in 2016/2017) to mothers of children aged 2 years of age and pregnant women. *Conditionalities: a*ttending monthly nutrition-focused trainings, complying with child monitoring and treatment of malnutrition. Attendance tracked but conditionality not strictly enforced. *Provider*: government, Yemen Emergency Crisis Response Project (funded	Women from poor and vulnerable (1001/999 women)	Diet diversity: • HDDS Anthropometric indicators: • HAZ • WHZ	2.5 years

Table 11. Conditional cash transfers – overview of included studies *(Continued)*

			Delivery: nutrition sessions delivered by trained local women. Details of cash transfer not reported. *Co-interventions:* unspecified other food distribution programmes.			
Andersen 2015 (Peru)	Prospective controlled study	High	*Programme name*: Juntos *Amount and frequency of payments*: PEN 100 (30 US dollars) each month regardless of HH composition. *Conditionalities:* regular health visits for children aged < 5 years, or pregnant and lactating women. Children aged 6–14 years with primary school attendance ≥ 85%. *Provider*: Peruvian government *Delivery*: NR *Co-interventions:* NR	Poor HHs with children aged 6–18 months (374/586 children)	Anthropometric indicators: • HAZ • Stunting (HAZ < –2SD) • BMIZ Cognitive function and development: • Language (TVIP) score • Grade attainment Adverse effects: • Overweight (BMIZ > 2SD)	< 2 years and ≥ 2 years
Ferre 2014 (Bangladesh)	Prospective controlled study	High	*Programme name*: Shombhob project *Amount and frequency of payments*: BDT 400 per months for HHs with children 0–36 months and BDT 400 per month for HHs with primary school children (6–15 years). *Conditionalities:* Health: Attending growth monitoring of children aged 0 – 36 months, and nutrition session for mother/carer. Education: school attendance of at least 80% every month. *Provider*: Government *Delivery*: Cash cards provided to beneficiary mothers. Electronic transfer to their accounts with the Bangladesh Post Office (BPO). Withdrawal from mobile machines on a designated day during each payment cycle in each village, or from Upazila BPO branch office at any time point.	Rural HHs (700/1587)	HH expenditure on food: • Proportion of total expenditure Dietary diversity: • MDD Anthropometric indicators: • Stunting (HAZ < –2SD) • Wasting (WHZ < –2SD) • Underweight (WAZ < –2SD)	13 months
Huerta 2006 (PROGRESA) (Mexico)	Prospective controlled study	High	*Programme name*: Oportunidades (previously known as PROGRESA)	Poor rural HHs with ≥ 1 child aged	Anthropometric indicators: • LAZ or HAZ	14 and 26 months

Table 11. Conditional cash transfers – overview of included studies *(Continued)*

			Type, amount and frequency of payments: *See* Gertler 2000 (PROGRESA) *Conditionalities: see* Gertler 2000 (PROGRESA) *Provider*: Mexican government *Delivery*: see Gertler 2000 (PROGRESA) *Co-interventions:* NR	< 5 years (205/142 communities)	• WAZ • WLZ or WHZ Biochemical indicators: • Anaemia • Hb Morbidity – child: • Respiratory infection during the past 2 weeks • Diarrhoeal disease during the past 2 weeks	
Leroy 2008 (PROGRESA) (Mexico)	Prospective controlled study	High	*Programme name*: Oportunidades (previously known as PROGRESA) *Type, amount and frequency of payments*: USD 32.5–41.3 per month (see Gertler 2000 (PROGRESA)) *Conditionalities: see* Gertler 2000 (PROGRESA) *Provider*: government of Mexico *Delivery*: see Gertler 2000 (PROGRESA) *Co-interventions:* NR	Poor and vulnerable urban HHs (733 children aged 0–24 months)	Anthropometric indicators: • HAZ • WHZ	2 years
Lopez Arana 2016 (Colombia	Prospective controlled study	High	*Programme name*: Familias en Acción *Type, amount and frequency of payments*: COP 40,000 for children aged < 7 years; COP 14,000 per primary school and COP 28,000 per secondary school child. Periodic payments. *Conditionalities:* children aged < 7 years to attend vaccination programmes and growth and development check-ups regularly; children aged 7–17 years to attend ≥ 80% of school lessons. *Provider*: government, World Bank and Inter-American Development Bank *Delivery*: transfer of cash to mothers into the HH bank account.	Poor HHs with children aged 0–17 years (9293/4424)	Anthropometric indicators: • HAZ • Stunting (HAZ < –2SD) • BMIZ • Thinness (BMIZ < –2SD) Adverse events: • Overweight (BMIZ > 1) • Obesity (BMIZ > 2)	About 4 years

Table 11. Conditional cash transfers – overview of included studies *(Continued)*

		Co-interventions: some children participated in a childcare supplementary nutrition and psychosocial stimulation programme (Hogares Comunitarios programme).

[a]Overall Risk of Bias based on risk of selection and attrition bias.
BMIZ: body mass index-for-age z-score; CES-D: Center for Epidemiologic Studies Depression Scale; COP: Colombian peso; cRCT: cluster randomised controlled trial; DDI: Dietary Diversity Index; FCS: Food Consumption Score; GHQ-12: 12-item General Health Questionnaire; HAZ: height-for-age z-score; Hb: haemoglobin; HDDS: Household Dietary Diversity Score; HH: household; LAZ: length-for-age z-score; MXN: Mexican peso; N/A: not applicable/available; non-governmental organisation; NPO: non-profit organisation; NR: not reported; PEN: Yemeni rial; PHP: Philippine peso; TVIP: Test de Vocabulario en Imagenes Peabody; WAZ: weight-for-age z-score; WHZ: weight-for-height z-score; WLZ: weight-for-length z-score; YER: Yemeni rial.

Table 12. Conditional cash transfers – results of included trials

Study ID (risk of bias)	Study design (n)	Conditional cash transfers			No intervention			Effect measure (time point)	Effect direction[a]	Meta-analysis (yes/no)
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n			
Primary outcomes										
2.2: Proportion of HH expenditure on food										
2.2.1 *Outcome measure: proportion of HH expenditure on food (weekly/monthly)*										
Maluccio 2005 (+)	cRCT (1490 HHs)	69.8	70	766	70.2	66.5	724	pp 3.9, SE 1.7, 95% CI 0.568 to 7.232, P < 0.01 (1 year)	▼	N/A
	cRCT (1434 HHs)	—	—	722	—	—	712	pp 4.1, SE 1.3, 95% CI 1.552 to 6.648, P < 0.01 (2 years)	▼	
2.2.2 Outcome measure: proportion of food in total expenditures (SDs)										
Macours 2012 (+)	cRCT (3326 HHs)	—	—	—	70%	70.7%		Effect 0.005, SD, SE 0.009, 95% CI –0.013 to 0.023, P > 0.1 (9 months)	▽	
2.3: Proportion of HHs who were food secure										
2.3.2 Dietary diversity										
2.3.2.2 Outcome measure: HDDS (0–12) (mean)										
Hidrobo 2014 (-)	cRCT (2087 HHs)	9.23	—	—	9.11	—	—	MD 0.46, SE 0.11, 95% CI 0.244 to 0.676, P < 0.01 (7 months)	▲	Yes
Kurdi 2019 (-)	cRCT (1850 HHs)	—	—	935 HHs	—	—	915 HHs	MD 0.374, SE 0.262, 95% CI –0.13952 to 0.88752 (2.5 years)	△	
Secondary outcomes										
2.5 Change in anthropometric indicators										

Table 12. Conditional cash transfers – results of included trials *(Continued)*

2.5.1 Stunting (chronic undernutrition)

2.5.1.1 Outcome measure: proportion stunted (HAZ < –2SD)										
Maluccio 2005 (+)	cRCT (722 children aged < 5 years)	41.9	37.1	—	40.9	41.5	—	pp –5.3, 95% CI –11.376 to 0.776, P < 0.1 (2 years)	△	Yes; this subset. This was entered as MD: difference in percentage stunted
Gertler 2000 (PROGRESA) (?)	cRCT (n at follow-up 1062)	—	0.396	—	—	0.410	—	OR 0.914, P = 0.495 (20 months)	△	
Kusuma 2017a (?)	cRCT (1394 children aged 24–36 months)	—	—	—	—	mean 0.55	—	DID 0.035, SE 0.046, 95% CI –0.05516 to 0.12516 pp 3.5, 95% CI –5.5 to 12.5, P > 0.05 (2 years)	▽	Yes; this subset. This was entered as MD: difference in percentage stunted
Kandpal 2016 (-)	cRCT (351 children aged < 36 months)	—	—	—	—	49.701	—	pp –3.768, 95% CI –13.830 to 6.294, P > 0.1 (36 months)	△	
2.5.1.2 Outcome measure: proportion with severe stunting (HAZ < –3SD)										
Kusuma 2017a (?)	cRCT (1394 children aged 24–36 months)	—	—	—	—	mean 0.29	—	DID 0.047, SE 0.053, 95% CI –0.05688 to 0.15088. pp 4.7, 95% CI –5.7 to 15.1, P > 0.05 (2 years)	▽	Yes
Kandpal 2016 (-)	cRCT (351 children aged < 36 months)		–10.189			23.952		pp –10.189, 95% CI –18.769 to –1.607 (3 years)	▲	
2.5.1.3 Outcome measure: HAZ (mean, SD)										

Table 12. Conditional cash transfers – results of included trials *(Continued)*

Maluccio 2005 (+)	cRCT (1036 children aged < 5 years)	−1.79 (1.14)	−1.65 (1.15)	479	−1.76 (1.15)	−1.80 (1.18)	557	MD 0.17, 95% CI 0.0132 to 0.327, P < 0.05 (2 years)	▲	Yes
Macours 2012 (+)	cRCT (3082 children aged < 6 years)	−1.27[b]	—	—	−1.08[b]	—	—	MD 0.072, 95% CI 0.005 to 0.139, P < 0.05 (9 months)	▲	
Evans 2014 (-)	cRCT (102 children aged 0–4 years)	—	—	—	—	—	—	MD 0.86, 95% CI −2.358 to 3.718, P > 0.1 (1.5 years)	△	
Kandpal 2016 (-)	cRCT (351 children)	—	0.284	—	—	−1.903	—	MD 0.284, 95% CI −0.034 to 0.600, P < 0.1 (3 years)	△	
Kurdi 2019 (-)	cRCT (1048 children)	—	—	—	—	—	—	MD 0.109, SE 0.146, 95% CI −0.18 to 0.395 (2.5 years)	△	
2.5.2 Wasting (acute undernutrition)										
2.5.2.1 Outcome measure: proportion wasted (WHZ < −2SD)										
Maluccio 2005 (+)	cRCT (722 children aged < 5 years)	1.0%	0.4%	479	0.3	0.2	557	pp −0.4, SE 0.5, 95% CI −1.38 to 0.58, P > 0.1 (2 years)	△	Yes
Kusuma 2017a (?)	cRCT (1394 children aged 24–36 months)	—	—	—	—	Mean 0.19	—	DID −0.063, SE 0.032, 95% CI −0.12572 to −0.00028, P < 0.05	▲	
2.5.2.2 Outcome measure: proportion severely wasted (WHZ < −3SD										
Kusuma 2017a (?)	cRCT (1394 children aged 24–36 months)	—	—	—	—	Mean 0.09	—	Beta −0.037, SE 0.022, 95% CI −0.08012 to 0.00612, P < 0.1	△	
2.5.2.3 Outcome measure: WHZ (mean, SD)										
Evans 2014 (-)	cRCT (63 children aged 0–4 years)	—	—	—	—	—	—	MD −0.03, SE 0.45, 95% CI −0.9120 to 0.852, P > 0.1 (1.5 years)	▽	Yes

Table 12. Conditional cash transfers – results of included trials *(Continued)*

Kurdi 2019 (-)	cRCT (1048 children)	—	—	—	—	—	—	MD 0.190, SE 0.148, 95% CI −0.10008 to 0.48008 (2.5 years)	△	
2.5.3 Underweight										
2.5.3.1 Outcome measure: proportion underweight (WAZ < −2SD)										
Maluccio 2005 (+)	cRCT (722 children aged < 5 years)	15.3	10.4	—	14.7	15.8	—	pp −6, SE 2.6, P < 0.05 (2 years)	▲	Yes
Kusuma 2017a (?)	cRCT (1394 children aged 24–36 months)	—	—	—	—	Mean 0.38	—	DID −0.040, SE 0.036, 95% CI −0.11056 to 0.03056, P > 0.05	△	
Kandpal 2016 (-)	cRCT (390 children aged < 36 months)	—	—	—	—	28.72	—	pp −2.57, 95% CI −11.980 to 6.839 (3 years)	△	
2.5.3.2 Outcome measure: proportion severely underweight (WAZ < −3SD)										
Kusuma 2017a (?)	cRCT (1394 children aged 24–36 months)	—	—	—	—	Mean 0.10	—	DID −0.025, SE 0.024, 95% CI −0.07204 to 0.02204	△	
Kandpal 2016 (-)	cRCT (390 children aged < 36 months)	—	—	—	—	8.51	—	pp 1.075, 95% CI −4.72 to 6.87, P > 0.1 (3 years)	▽	Yes
2.5.3.3 Outcome measure: weight-for-age z-score (WAZ) (mean standard deviation)										
Macours 2012 (+)	cRCT (3082 children aged < 6 years)	−1.06	—	—	−0.88	—	—	MD 0.036, SE 0.037, 95% CI −0.037 to 0.109, P > 0.1 (9 months)	△	Yes
Evans 2014 (-)	cRCT (76 children 0–4 years)	—	—	—	—	—	—	MD −0.29, SE 1.25, 95% CI −2.74 to 2.16, P > 0.1 (1.5 years)	▽	
Kandpal 2016 (-)	cRCT (390 children < 36 months)	—	0.14	—	—	—	—	MD 0.140, 95% CI −0.161 to 0.438, P > 0.1 (3 years)	△	

Table 12. Conditional cash transfers – results of included trials *(Continued)*

2.5.3.4 Outcome measure: BMI-for-age z-score										
Evans 2014 (-)	cRCT (64 children aged 0–4 years)	—	—	—	—	—	—	MD −1.55, 95% CI −4.43 to 1.33, P > 0.1 (1.5 years)	▽	
2.7 Cognitive function and development										
2.7.1 Outcome measure: cognitive test scores/cognitive and socioemotional outcomes (mean, SD)										
Macours 2012 (+)	cRCT (3326 children)	—	—	—	—	—	—	MD 0.1211, SE 0.028, 95% CI 0.066 to 0.176 P < 0.01 (9 months)	▲	Yes
Baird 2013 (+)	cRCT (2057 schoolgirls)	—	—	—	—	—	—	MD 0.174, 95% CI 0.0799 to 0.268, SE 0.048, P < 0.01 (2 years)	▲	
2.8 Change in proportion of anxiety and depression										
2.8.1 Outcome measure: proportion with psychological distress										
Baird 2013 (+)	cRCT (2089 schoolgirls)	—	—	—	—	Mean 0.374, SE 0.02, P < 0.01	—	pp −0.063, SE 0.03, P < 0.05 (1 year)	▲	N/A
		—	—	—	—	Mean 0.308, SE 0.017, P < 0.01	—	pp −0.039, SE 0.047, P > 0.1 (2 years)	△	
2.9 Morbidity										
2.9.1 Outcome measure: proportion reporting being ill in past 4 weeks/parents seeking care for illness in past 2 weeks										
Gertler 2000 (PROGRESA) (?)	cRCT (7703 children aged 0–35 months)	—	—	—	—	—	—	OR 0.777, P = 0.000 (20 months)	▲	Yes. Gertler subgroup 3–5 years selected as converting OR to SMD
	cRCT (19,939 children aged	0.280	0.097	—	0.263	0.127	—	Estimate −0.021, 95% CI −0.045 to 0.003 (20 months)	△	

Table 12. Conditional cash transfers – results of included trials *(Continued)*

	3–5 years at baseline)									not possible due to missing group sizes.
Evans 2014 (-)	cRCT (18,192 participants)	—	—	—	—	—	—	Estimate –0.04, 95% CI –0.099 to 0.019, P > 0.1 (32 months)	△	
Kandpal 2016 (-)	cRCT (456 children aged 6–36 months)	—	—	229	—	41.85	227	pp 9.830, 95% CI 0.179 to 19.481, P < 0.05 (36 months)	▼	
2.9.2 Outcome measure: number of days ill in bed (SD)										
Macours 2012 (+)	cRCT (3326 children)	—	—	—	—	0.669	—	MD –0.357 SD, SE 0.133, 95% CI –0.6178 to –0.096, P < 0.01 (9 months)	▲	
2.9.3 Outcome measure: proportion with anaemia										
Gertler 2000 (PROGRESA) (?)	cRCT (2010 children)	—	0.410	—	—	0.483	—	OR 0.745, P = 0.012 (20 months)	▲	

[a]Each triangle represents one study.
[b]Values derived from graphs
▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0. (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias.
CI: confidence interval; cRCT: cluster randomised controlled trial; DID: difference in differences; HAZ: height-for-age z-score; HDDS: Household Dietary Diversity Score; HH: household; MD: mean difference; n: number; N/A: not applicable/available; OR: odds ratio; pp: percentage point; SD: standard deviation; SE: standard error; SMD: standardised mean difference; WAZ: weight-for-age z-score; WHZ: weight-for-height z-score.

Table 13. Conditional cash transfers – results of included prospective controlled studies

Study ID (risk of bias)	Study design (n)	Conditional cash transfers			No intervention			Effect measure (time point)	Effect direction[a]	Meta-analysis (yes/no)
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n			
Primary outcomes										
2.2 Proportion of HH expenditure on food										

Table 13. Conditional cash transfers – results of included prospective controlled studies *(Continued)*

2.2.1 Outcome measure: proportion of HH expenditure on food (weekly/monthly)										
Ferre 2014 (-)	PCS (n NR)	3168/5548 = 0.57	—	—	3153/5780 = 0.55	—	—	Proportion after study period is 337.0/378.8 = 0.89 (not impact) (13 months)	—	N/A
2.3: Proportion of HHs who were food secure										
2.3.2 Dietary diversity										
2.3.2.1 Proportion with MDD										
Ferre 2014 (-)	Prospective controlled study (n = 1318 children)	12.1	—	—	12.5	—	—	MD 0.031, SE 0.05, 95% CI −0.067 to 0.129 (13 months)	△	
Secondary outcomes										
2.5 Change in anthropometric indicators										
2.5.1 Stunting (chronic undernutrition)										
2.5.1.1 Outcome measure: proportion stunted (HAZ < −2SD)										
Ferre 2014 (-)	Prospective controlled study (1580 children)	47.2	—	—	43.3	—	—	MD 0.034, SE 0.05, 95% CI −0.064 to 0.132 (13 months)	▽	Yes. Subset. (except Lopez-Arana as OR could not be converted to SMD due to missing group sizes)
Andersen 2015 (-)	Prospective controlled study (n = 188 children)	91 (48.4%)	72 (38.3%)	—	80 (42.6%)	76 (40.4%)	—	Treatment effect: −7.98, 95% CI −22.3 to 6.34, P = 0.27 (< 2 years)	△	
	Prospective controlled study (n = 169 children)	101 (59.8%)	67 (39.6%)	—	84 (49.7%)	81 (47.9%)	—	Treatment effect −18.3, 95% CI −38.3 to 1.59, P = 0.07 (≥ 2 years)	△	
Lopez Arana 2016 (-)	Prospective controlled study (2874 children)	391 (30.3%)	—	—	442 (27.9%)	—	—	OR 0.92, 95% CI 0.82 to 1.05, P > 0.05 (4 years)	△	
2.5.1.2 Outcome measure: height-for-age z-score (HAZ) (mean, SD)										

Table 13. Conditional cash transfers – results of included prospective controlled studies *(Continued)*

Leroy 2008 (PROGRESA) (-)	Prospective controlled study (432 children)	−1.29 (1.36)	—	—	−1.4 (1.16)	—	—	MD 0.1, 95% CI −0.086 to 0.306, P = 0.13 (2 years)	△	Yes
Andersen 2015 (-)	Prospective controlled study (n = 188 children)	−1.97 (1.1)	−1.76 (0.864)	—	−1.80 (1.02)	−1.71 (0.757)	—	MD 0.12, 95% CI −0.10 to 0.33, P = 0.28 (< 2 years)	△	
	Prospective controlled study (n = 169 children)	−2.11 (1.24)	−1.85 (0.829)	—	−2.08 (1.12)	−1.95 (0.813)	—	MD 0.14, 95% CI −0.20 to 0.49, P = 0.41 (≥ 2 years)	△	
Lopez Arana 2016 (-)	Prospective controlled study (2874 children)	−1.47 (1.21)	—	—	−1.42 (1.13)	—	—	MD 0.00, 95% CI −0.10 to 0.11, P > 0.05 (4 years)	—	
2.5.2: Wasting (acute undernutrition)										
2.5.2.1 Outcome measure: proportion wasted (WHZ < −2SD)										
Ferre 2014 (-)	Prospective controlled study (2244 children)	27.8	—	—	22.9	—	—	MD/DID −0.036, SE 0.04, 95% CI −0.1144 to 0.0424 (ages 22–46 months when enrolled) MD −0.125, SE 0.07, 95% CI −0.2622 to 0.0122 (aged 10–22 months when enrolled) pp −12.5 (13 months)	△	No. Lopez-Arana/ Ferre 2014 could not be converted to SMD due to missing group sizes.
Lopez Arana 2016 (-)	Prospective controlled study (2874 children)	25 (1.9%)	—	—	14 (0.9%)	—	—	OR 0.25, 95% CI 0.09 to 0.74, P < 0.05 (4 years)	▲	
2.5.2.2 Outcome measure: WHZ (mean, SD)										
Leroy 2008 (PROGRESA) (-)	Prospective controlled study (432 children)	0.30 (1.07)	—	—	0.33 (1.00)	—	—	MD 0.085, 95% CI −0.113 to 0.283, P = 0.2 (2 years)	△	
2.5.3 Underweight										

Table 13. Conditional cash transfers – results of included prospective controlled studies *(Continued)*

2.5.3.1 Outcome measure: proportion underweight (WAZ < –2SD)										
Ferre 2014 (-)	Prospective controlled study (1638 children)	47.1	—	—	42.9	—	—	MD/DID 0.046, SE 0.05, 95% CI –0.052 to 0.144 pp 4.6 (13 months)	▽	N/A
2.5.3.2 Outcome measure: BMIZ (mean, SD)										
Andersen 2015 (-)	Prospective controlled study (n = 188 children)	0.527 (1.15)	0.145 (0.833)	—	0.790 (0.986)	0.436 (0.739)	—	MD –0.028, 95% CI –0.31 to 0.25, P = 0.84 (< 2 years)	▽	Yes
	Prospective controlled study (n = 169 children)	0.613 (1.23)	0.248 (0.788)	—	0.622 (1.3)	0.622 (0.773)	—	MD –0.36, 95% CI –0.79 to 0.06, P = 0.09 (≥ 2 years)	▽	
Lopez Arana 2016 (-)	Prospective controlled study (2874 children)	—	—	—	—	—	—	MD 0.14, 95% CI 0.00 to 0.27, P < 0.05 (4 years)	△	
2.7 Cognitive function and development										
2.7.1 Outcome measure: language score (TVIP) (mean, SD)										
Andersen 2015 (-)	Prospective controlled study (n = 243 children)	–0.538 (0.782)	–0.718 (0.959)	—	–0.531 (0.761)	–0.552 (1.03)	—	Coefficient –0.15, 95% CI –0.37 to 0.066, P = 0.17 (≥ 2 years)	▽	N/A
2.10: Adverse outcomes: overweight/obesity										
2.10.1 Outcome measure: overweight (BMI z-score > –2SD)										
Andersen 2015 (-)	Prospective controlled study (n = 188 children)	n = 65, 34.6%	n = 24, 12.8%	—	n = 81, 43.1%	n = 34, 18.1%	—	pp 3.19, 95% CI –9.93 to 16.3, P = 0.63 (< 2 years)	▽	Yes
	Prospective controlled study (n = 169 children)	n = 65, 37.9%	n = 28, 16.6%	—	n = 64, 37.9%	n = 42, 24.9%	—	pp –8.89, 95% CI –24.7 to 7.0, P = 0.27 (≥ 2 years); log OR –0.2784	△	

Table 13. Conditional cash transfers – results of included prospective controlled studies *(Continued)*

Lopez Arana 2016 (-)	Prospective controlled study (2874 children)	—	—	—	—	—	—	OR 1.30, 95% CI 0.83 to 2.03, P > 0.05 (4 years)	▽
2.10.2 Obesity									
Lopez Arana 2016 (-)	Prospective controlled study (2874 children)	41 (3.2%)	—	—	37 (2.3%)	—	—	OR 0.56, 95% CI 0.20 to 1.53, P > 0.05	△

[a]Each triangle represents one study.
▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0. (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias.
BMIZ: body mass index-for-age z-score; CI: confidence interval; DID: difference in differences; HAZ: height-for-age z-score; HH: household; MD: mean difference; n: number; N/A: not applicable/available; NR: not reported; OR: odds ratio; PCS: prospective controlled study; SD: standard deviation; SE: standard error; TVIP: Test de Vocabulario en Imagenes Peabody; WAZ: weight-for-age z-score; WHZ: weight-for-height z-score.

Table 14. Income-generation interventions – results of included trials

Study ID (risk of bias)	Study design (n)	Income-generation interventions			No intervention			Effect measure (time point)	Effect direction	Meta-analysis (yes/no)
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n			
Primary outcomes										
3.3 Proportion of HHs who were food secure										
3.3.1 Food security										
3.3.1.1 Outcome measure: proportion experiencing food security (based on HFIAS)										
Osei 2017 (?)	cRCT (2614 HHs)	79.7, 95% CI 77.2 to 82.0	53.6, 95% CI 51.0 to 56.1	—	87.4, 95% CI 85.3 to 89.3	78.3, 95% CI 76.0 to 80.4	—	— (2.5 years)	—	No n for individual groups to calculate MD.

Table 14. Income-generation interventions – results of included trials *(Continued)*

3.3.1.2 Outcome measure: HH food security score (mean, SD)										
Beegle 2017 (-)	RCT (2193 HHs)	—	—	1083 HHs	—	-3.12 (1.29)	1110 HHs	MD –0.060, SE 0.080, 95% CI –0.2168 to 0.0968 (3/4 months)	▽	
3.3.1.3 Outcome measure: Resilience Index (mean, SD)										
Beegle 2017 (-)	RCT (2195 participants)	—	—	—	—	-9.32 (9.84)	—	MD –0.224, SE 0.630 (3/4 months)	▽	
3.3.1.4 Outcome measure: Principal Components Analysis index (mean, SD)										
Beegle 2017 (-)	RCT (2123 participants)	—	—	—	—	0.15 (2.08)	—	MD –0.029, SE 0.135 (3/4 months)	▽	
3.3.2 Dietary diversity										
3.3.2.1 *Outcome measure: odds of consuming an additional food group based on the DDS*										
Darrouzet Nardi 2016 (?) (DDS 0–7)	cRCT (2584 children)	—	—	—	—	—	—	OR 1.524, 95% CI 1.45 to 4.38, P = 0.001 (2 years)	▲	
3.3.2.2 *Outcome measure: HDDS (mean, SD)/Food Consumption Score*										
Olney 2016 (?) (HDDS 0–11)	cRCT (1476 HHs)	5.6 (1.93)	5.6 (2.07)	880 HHs	5.8 (1.70)	5.2 (2.11)	596 HHs	MD 0.7, SE 0.44, 95% CI –0.1624 to 1.5624, P = 0.17 (2 years)	△	Yes. SMD.
Beegle 2017 (-) (FCS 0–126)	RCT (2201 HHs)	—	—	1191 HHs	—	38.82 (16.01)	1110 HHs	MD –0.708, SE 1.072, 95% CI –2.80912 to 1.39312 (3/4 months)	▽	
3.3.2.3 Outcome measure: MDD (n, %)										

Table 14. Income-generation interventions – results of included trials *(Continued)*

Marquis 2018 (+)	cRCT (428 children)	30.9	80.2	247	33.8	69.5	181	OR 1.65, SE 0.41, 95% CI 0.8464 to 2.4536, P < 0.05 (12 months)	▲	Yes. Olney groups combined.
Darrouzet Nardi 2016 (?)	cRCT (2604 children)	—	—	—	—	—	—	OR 1.146, 95% CI 1.02 to 1.29, P = 0.021 (2 years)	▲	
Olney 2016 (?)	cRCT (758 children)	OWL: 7 (3.0) HC: 4 (1.7)	OWL: 35 (15.0) HC: 43 (18.2)	OWL: 220 HC: 231	8 (2.6)	20 (6.3)	307	OWL villages vs control: pp 8.3, P = 0.17 HC villages vs control: pp 12.6, P = 0.08 (2 years) Combined effect: MD pp 10.08, 95% CI 1.02 to 19.14	▲	
Secondary outcomes										
3.5 Change in anthropometric indicators										
3.5.1 Stunting										
3.5.1.1 Outcome measure: Height-for-Age z-score (HAZ) (mean, SD or SE)										
Marquis 2018 (+)	cRCT (428 children)	−0.88 (1.27)	—	247	−0.78 (1.30)	—	181	MD 0.22, SE 0.06, P < 0.01, 95% CI 0.10 to 0.34 (12 months)	▲	No. Effect sizes calculated for Darrouzet (2 years) and Osei from group estimates.
Darrouzet Nardi 2016 (?)	cRCT (303 children)	−1.47 (0.07)	−1.38 (0.06)	—	−1.48 (0.06)	−1.41 (0.06)	—	MD 0.109, 95% CI 0.000 to 0.218, P = 0.048 (12 months)	△	
	609 children	−1.47 (0.07)	−1.30 (0.06)	305	−1.48 (0.06)	−1.33 (0.06)	304	MD 0.03, SE 0.0049, 95% CI 0.020 to 0.040 (2 years)	▲	
Osei 2017 (?)	cRCT (2569 children)	−2.23 (0.03)	−2.1 (0.03)	1299	−2.4 (0.04)	−2.32 (0.03)	1297	MD 0.22, SE 0.0012, 95% CI 0.218 to 0.222 (2.5 years)	▲	
3.5.1.2 Outcome measure: proportion stunted (HAZ < −2SD) (CI)										

Table 14. Income-generation interventions – results of included trials *(Continued)*

Osei 2017 (?)	cRCT (2569 children)	57.7	55.1	1299	65.8	63.5	1297	OR 0.94, 95% CI 0.74 to 1.19 (2.5 years)	△	Yes. Verbowski groups combined
Verbowski 2018 and aquaculture (?)	cRCT (597 children)	27.9	29.9	299	29.3	32.0	298	MD pp –0.62, P = 0.927 (1.8 years)	MD pp 2.2, 95% CI –5.64 to 10.05	▽	
Verbowski 2018 (?)	cRCT (598 children)	22.7	28.9	300	29.3	32.0	298	MD pp 3.73, P = 0.453 (1.8 years)			
3.5.2 Wasting										
3.5.2.1 Outcome measure: WHZ (mean, SD or SE)										
Marquis 2018 (+)	cRCT (428 children)	–0.37 (1.08)	—	247	–0.31 (1.24)	—	181	MD 0.07, SE 0.08, 95% CI –0.087 to 0.227, P > 0.10 (12 months)		△	No. Effect for Osei calculated from group estimates.
Osei 2017 (?)	cRCT (2603 children)	–0.91 (0.03)	–0.85 (0.03)	1300	–0.93 (0.03)	–0.71 (0.03)	1303	MD –0.14, SE 0.0012, 95% CI –0.142 to –0.138 (2.5 years)		▼	
3.5.2.2 Outcome measure: proportion wasted (WHZ < –2SD)										
Osei 2017 (?)	cRCT (2603 children)	10.6	10.5	1300	10.1	9.7	1303	OR 1.03, 95% CI 0.70 to 1.52 (2.5 years)		▽	Yes. Verbowski groups combined.
Verbowski 2018 and aquaculture (?)	cRCT (597 children)	6.7	10.2	299	8.3	8.9	298	MD pp 2.75, P = 0.424 (22 months)	MD pp 3.19, 95% CI –1.95 to 8.33	▽	
Verbowski 2018 (?)	cRCT (598 children)	8.4	13.0	300	8.3	8.9	298	MD pp 3.80, P = 0.348 (22 months)			
3.5.3 Underweight										

Table 14. Income-generation interventions – results of included trials *(Continued)*

3.5.3.1 Outcome measure: Weight-for-age z-score (WAZ) (mean, SD or SE)										
Marquis 2018 (+)	cRCT (428 children)	−0.78 (1.12)	—	247	−0.68 (1.27)	—	181	MD 0.15, SE 0.07, P < 0.05 (12 months)	▲	Yes. Effect estimates calculated using group estimates.
Darrouzet Nardi 2016 (?)	cRCT (634 children)	−2.04 (0.07)	−1.97 (0.06)	301	−1.94 (0.06)	−1.89 (0.06)	333	NR (1 year)	—	
		−2.04 (0.07)	−1.97 (0.06)		−1.94 (0.06)	−2.07 (0.06)		MD 0.10, 95% CI 0.09 to 0.11 (2 years)	▲	
Osei 2017 (?)	cRCT (2613 children)	−1.87 (0.03)	−1.77 (0.03)	1306	−1.97 (0.03)	−1.77 (0.03)	1307	MD 0.00, 95% CI −0.00 to 0.00 (2.5 years)	—	
3.5.3.2 Outcome measure: percentage underweight (WAZ < 80% standard/ < −2SD) (includes severe underweight)										
Osei 2017 (?)	cRCT (2613 children)	43.4	41.0	1306	48.0	40.6	1307	OR 1.15, 95% CI 0.91 to 1.46 (2.5 years)	▽	Yes. Verbowski groups combined.
Verbowski 2018 and aquaculture (?)	cRCT (597 children)	23.5	32.0	299	23.0	28.8	298	MD pp 2.75, P = 0.670 (22 months)	MD pp −1.16, 95% CI −9.02 to 6.70 △	
Verbowski 2018 (?)	cRCT (598 children)	26.1	28.8	300	23.0	28.8	298	MD pp −3.63, P = 0.479 (22 months)		
3.5.3.3 Outcome measure: BMI (kg/m^2) (mean, SD or SE)										
Olney 2016 (?)	cRCT (1297 women)	20.2 (2.22)	20.7 (2.34)	787	20.6 (2.27)	21.1 (2.70)	510	MD 0.2, 95% CI −0.192 to 0.592, SE 0.20, P = 0.26 (2 years)	△	Yes. Effect estimate for Osei calculated from group estimates.
Osei 2017 (?)	cRCT (2614 mothers)	19.6 (0.07)	19.8 (0.05)	1182	20.1 (0.06)	19.9 (0.05)	1303	MD −0.10, 95% CI −0.10 to −0.10 (2.5 years)	▼	
3.5.3.4 Proportion of women who were underweight (BMI < 18.5 kg/m^2)										

Table 14. Income-generation interventions – results of included trials *(Continued)*

Olney 2016 (?)	cRCT (1297 women)	23	15	787	15	16	510	pp –8.7, P = 0.01 (2 years)		▲		No. Verbowski groups combined.
Osei 2017 (?)	cRCT (2614 mothers)	28.2	28.6	1182	17.5	19.9 (0.05)	1303	OR 0.61, 95% CI 0.46 to 0.82 (2.5 years)		▲		
Verbowski 2018 and aquaculture (?)	cRCT (541 women)	14.2	9.0	270	16.6	9.4	271	MD pp 1.19, P = 0.920 (22 months)	MD 3.88, 95% CI –4.36 to 12.12	▽		
Verbowski 2018 (?)	cRCT (541 women)	13.4	13.5	270	16.6	9.4	271	MD pp 4.27, P = 0.347 (22 months)				
3.6 Change in biochemical indicators												
3.6.1 Mean haemoglobin concentration (children) (mean, SE)												
Osei 2017 (?)	cRCT (2614 children)	115.3 (0.1)		114.3 (0.1)	1307	113.6 (0.1)	110.8 (0.1)	1307	MD 3.5, SE 0.0039, 95% CI 3.492 to 3.507 (2.5 years)		▲		Yes. Verbowski groups combined.
Verbowski 2018 and aquaculture (?)	cRCT (597 children)	104.5 (13.7)		108.4 (13.1)	298	105.7 (13.6)	107.1 (12.9)	299	MD 2.54, SE 1.43, P = 0.076 (22 months)	MD 2.48, 95% CI 0.51 to 4.46	▲		
Verbowski 2018 (?)	cRCT (597 children)	104.1 (13.8)		108.0 (12.3)	298	105.7 (13.6)	107.1 (12.9)	299	MD 2.43, SE 1.42, P = 0.088 (22 months)				
3.6.2 Mean haemoglobin concentration (women) (mean, SD or SE)												
Osei 2017 (?)	cRCT (2614 mothers)	129.3 (0.1)		126.5 (0.1)	1307	129.6 (0.1)	121.9 (0.1)	1307	MD 4.6, SE 0.0039, 95% CI 4.592 to 4.608 (2.5 years)		▲		Yes. Verbowski groups

Table 14. Income-generation interventions – results of included trials *(Continued)*

Verbowski 2018 and aquaculture (?)	cRCT (541 women)	122.4 (12.1)	122.9 (12.9)	270	121.5 (12.5)	121.1 (12.1)	271	MD 0.49, SE 1.33, P = 0.714 (22 months)	MD −0.07, 95% CI −1.92 to 1.78	▽	combined.
Verbowski 2018 (?)	cRCT (541 women)	121.7 (13.7)	121.0 (11.9)	270	121.5 (12.5)	121.1 (12.1)	271	MD −0.63, SE 1.34, P = 0.637 (22 months)			
3.9 Morbidity											
3.9.1 Prevalence of anaemia (children)											
Osei 2017 (?)	cRCT (2614 children)	28.2	30.8	1307	31.6	42.5	1307	OR 0.76, 95% CI 0.59 to 0.98 (2.5 years)		▲	Yes. Verbowski groups combined.
Verbowski 2018 and aquaculture (?)	cRCT (597 children)	63.1	54.3	298	59.2	59.5	299	MD pp −9.74, P = 0.119 (22 months)	MD pp −11.90, 95% CI −20.47 to −3.33	▲	
Verbowski 2018 (?)	cRCT (597 children)	65.4	52.6	298	59.2	59.5	299	MD pp −14.0, P = 0.023 (22 months)			
3.9.2 Prevalence of anaemia (women)											
Osei 2017 (?)	cRCT (2614 mothers)	19.6	24.6	1307	21.1	35.8	1307	OR 0.62, 95% CI 0.48 to 0.82 (2.5 years)		▲	Yes. Verbowski groups combined.
Verbowski 2018 and aquaculture (?)	cRCT (541 women)	38.9	35.8	270	40.4	38.7	271	MD pp −1.10, P = 0.865 (22 months)	MD pp 1.34, 95% CI −7.94 to 10.61	▽	
Verbowski 2018 (?)	cRCT (541 women)	41.9	43.5	270	40.4	38.7	271	MD pp 4.14, P = 0.551 (22 months)			

[a]Each triangle represents one study.

(+): low overall risk of bias; **(?)**: unclear overall risk of bias; **(-)**: high overall risk of bias. ▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0.
BMI: body mass index; cRCT: cluster randomised controlled trial; CI: confidence interval; DDS: Dietary Diversity Score; EHFP: enhanced homestead food production; FCS: Food Consumption Score; HAZ: height-for-age z-score; HC: health committee; HDDS: Household Dietary Diversity Score; HFIAS: Household Food Insecurity Score; HH: household; MD: mean difference; MDD: Minimum Dietary Diversity; n: number; NR: not reported; OR: odds ratio; OWL: older women leaders; pp: percentage point; SD: standard deviation; SE: standard error; SMD: standardised mean difference; WAZ: weight-for-age z-score; WHZ: weight-for-height z-score.

Table 15. Income-generation interventions – results of included prospective controlled studies

Study ID (risk of bias)	Study design (n)	Income-generation interventions			No intervention			Effect measure (time point)	Effect of combined groups/ calculated effect	Effect direction[a]	Meta-analysis (yes/no)
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n				
Primary outcomes											
3.2: Proportion of HH expenditure on food											
3.2.1 *Outcome measure: proportion of HH expenditure on food*											
Kennedy 1989 (?)	Prospective controlled study (378 HHs)	—	—	—	—	—	—	— (2 years)	—	—	N/A
Alaofe 2016 (?)	Prospective controlled study (56 HHs)	—	—	—	—	—	—	— (1 year)	—	—	
3.3: Proportion of HHs who were food secure											
3.3.1 Food security											
3.3.1.1 Outcome measure: proportion experiencing food security (0 months with insufficient food in past 12 months)/ Doocy: based on HFIAS											
Weinhardt 2017 (?)	Prospective controlled study (827 participants)	165/564 (29.3%)	309/564 (54.8%)	564	71/262 (27.1%)	117/263 (44.5%)	263	OR 1.36, 95% CI 0.93 to 1.97, P = 0.108 (1.5 years)	—	△	N/A no effect measure for Doocy
		165/564 (29.3%)	36 months:		71/262 (27.1%)	129/245 (52.7%)		OR 1.12, 95% CI 0.75 to 1.67, P = 0.585 (3 years)	—	△	

Table 15. Income-generation interventions – results of included prospective controlled studies *(Continued)*

			308/531 (58.0%)								
Doocy 2017 – FFS (-)	Prospective controlled study (571 HHs)	1.90%	27.80%	317 HHs	0.40%	14.60%	254 HHs	— (3.5 years)	—	—	
Doocy 2017– WEG (-)	Prospective controlled study (548 HHs)	0,3%	29.9%		0.4%	14.6%		— (3.5 years)	—	—	
3.3.1.2 Proportion experiencing food deficit always											
Asadullah 2015 (-)	Prospective controlled study (4038 HHs)	60.1	15.3	2098	41.91	28.87	1940	pp –28.85, P < 0.01 (3 years)	—	▲	—
		60.1	21.02		41.91	28.45		pp –17.15, P < 0.01 (6 years)	—	▲	—
		60.1	42.9		41.91	44.38		pp –13.91, P < 0.01 (9 years)	—	▲	—
3.3.1.3 Outcome measure: HFIAS (mean, SD or SE)											
Doocy 2017 – FFS (-)	Prospective controlled study (571 HHs)	14.4 (4.6)	5.7 (5.1)	317	14.8 (5.3)	10.1 (6.1)	254	MD –4.6, 95% CI –5.0 to –4.2, P < 0.001 (3.5 years)	MD –4.23, 95% CI –4.96 to –3.49	▲	No
Doocy 2017 – WEG (-)	Prospective controlled study (548 HHs)	15.3 (5.3)	6.3 (5.5)	294	14.8 (5.3)	10.1 (6.1)	254	MD –3.85, 95% CI –4.26 to –3.43, P < 0.01 (3.5 years)			
Kangmennaang 2017 (-)	Prospective controlled study (1000 HHs)	1.255 (0.029)	1.173 (0.033)	571	1.136 (0.044)	1.359 (0.071)	429	MD –0.304, SE 0.095, P < 0.01 (about 2 years)	—	▲	
3.3.1.4 Outcome measure: proportion of HHs improving a HFIAS category (95% CI)											
Doocy 2017 – FFS (-)	Prospective controlled study (571 HHs)	—	55.3 (48.8 to 61.9)	317	—	32.4 (24.6 to 40.3)	254	MD 22.9, 95% CI 12.7 to 33.1, P < 0.001 (3.5 years)	MD pp 24.21, 95% CI 16.67 to 31.76	▲	N/A

Table 15. Income-generation interventions – results of included prospective controlled studies *(Continued)*

Doocy 2017 – WEG (-)	Prospective controlled study (548 HHs)	—	59.5	294	—	31.5	254	MD 25.8, 95% CI 14.6 to 36.9, P < 0.001 (3.5 years)			
3.3.2 Dietary diversity											
3.3.2.1 Outcome measure: probability weighted DDS (mean, SD)											
Jodlowski 2016 (+)	Prospective controlled study (283 HHs)	—	—	105 HHs	—	—	178 HHs	MD –0.123, 95% CI –0.43 to 0.18, P > 0.1 (18 months)	—	▽	—
3.3.2.2 *Outcome measure: HDDS (mean, SD)*											
Jodlowski 2016 (+)	Prospective controlled study (283 HHs)	5.86 (1.848)	—	105 HHs	5.747 (1.774)	—	178 HHs	MD 0.267, 95% CI –0.13 to 0.66, P > 0.1 (18 months)	—	△	Yes. (Doocy groups combined)
Alaofe 2019 [b] (?)	Prospective controlled study (423 HHs)	6.07 (1.26)	6.50 (1.23)	282	6.05 (1.26)	6.24 (1.24)	214	MD 0.94, SE 0.24, 95% CI 0.4696 to 1.4104, P < 0.01 (1 year)	—	▲	
Doocy 2017 – FFS (-)	Prospective controlled study (571 HHs)	3.4 (1.4)	3.4 (1.5)	317	3.4 (1.5)	4.8 (2.1)	254	MD 0.9, 95% CI 0.5 to 1.3, P < 0.001 (3.5 year)	MD 0.80, 95% CI 0.51 to 1.09	▲	
Doocy 2017 – WEG (-)	Prospective controlled study (548 HHs)	3.4 (1.7)	5.5 (2.2)	294	3.4 (1.5)	4.8 (2.1)	254	MD 0.69, 95% CI 0.27 to 1.10, P = 0.001 (3.5 year)			
3.3.2.3 *Outcome measure: Women's Household Dietary Diversity Score (WDDS-10) (mean, SD)*											
Alaofe 2019 [b] (?)	Prospective controlled study (430 women)	4.58 (1.04)	4.91 (0.97)	286	4.83 (0.97)	4.01 (1.12)	220	MD 0.83, SE 0.19, P < 0.01, 95% CI 0.46 to 1.20 (1 year)	—	▲	—
3.3.2.4 *Outcome measure: proportion achieving target dietary diversity at endline according to HDDS*											
Doocy 2017 – FFS (-)	Prospective controlled study (571 HHs)	21.3	69.7	317	18.1	67.6	254	MD 21.7, 95% CI 12.3 to 31.1, P < 0.001 (3.5 year)	MD 17.03, 95% CI 7.81 to 26.24	▲	N/A

Table 15. Income-generation interventions – results of included prospective controlled studies *(Continued)*

Doocy 2017 – WEG (-)	Prospective controlled study (548 HHs)	18.7	62.2	294	18.1	67.6	254	MD 12.3, 95% CI 2.8 to 21.8, P = 0.011 (3.5 years)			
3.4 Change in adequacy of dietary intake											
3.4.1 Outcome measure: percentage of calorie-deficient HHs (< 80% of caloric requirement/adult equivalent)											
Kennedy 1989 (?)	Prospective controlled study (374 HHs)	30.7	28.1	—	30	28.7	—	— (2 years)	—	—	—
3.4.2 Outcome measure: percentage of preschool-aged children meeting caloric requirements											
Kennedy 1989 (?)	Prospective controlled study (1297 children)	69	66	—	58	62	—	— (2 years)	—	—	—
Secondary outcomes											
3.5Change in anthropometric indicators											
3.5.1 Stunting											
3.5.1.1 Outcome measure: HAZ (mean, SD or SE)											
Kennedy 1989 (?)	Prospective controlled study (746 children)	−1.34	−1.67	—	−1.50	−1.76	—	NR (2 years)	—	—	—
3.5.1.2 Outcome measure: proportion stunted (HAZ < −2SD) (CI)											
Kennedy 1989 (?)	Prospective controlled study (222 children)	—	25.3	94	—	25.7	128	NR (2 years)	—	—	N/A
Doocy 2017 – FFS (-)	Prospective controlled study (471 children)	—	60.2 (50.8 to 69.6)	265	—	58.8 (50.1 to 67.5)	206	(adjusted) MD 1.4, 95% CI −10.7 to 13.6, P = 0.81 (3.5 year)	—	▽	
3.5.2: Wasting											
3.5.2.1 Outcome measure: WHZ (mean, SD or SE)											

Table 15. Income-generation interventions – results of included prospective controlled studies *(Continued)*

Kennedy 1989 (?)	Prospective controlled study (651 children)	−0.22	−0.15	—	−0.31	−0.04	—	NR (2 years)	—	—	—
3.5.2.2 Outcome measure: proportion wasted (WHZ < −2SD)											
Kennedy 1989 (?)	Prospective controlled study (118 children)	—	13.0	48	—	14.1	70	NR (2 years)	—	—	—
3.5.3 Underweight											
3.5.3.1 Outcome measure: WAZ (mean, SD or SE)											
Kennedy 1989 (?)	Prospective controlled study (198 children)	−1.03	−1.14	—	−1.17	−1.10	—	NR (2 years)	—	—	—
3.5.3.2 Outcome measure: percentage underweight (WAZ < 80% standard/ < −2SD) (includes severe underweight)											
Kennedy 1989 (?)	Prospective controlled study (198 children)	—	19.7	74	—	24.1	124	NR (2 years)	—	—	No. Subset. Except Kennedy – effect could not be calculated.
Weinhardt 2017 (?)	Prospective controlled study (509 children)	14.8%	16.8%	322	22.5%	19.8%	187	OR 1.52, 95% CI 0.80 to 2.90, P = 0.205 (1.5 years)	—	▽	
	Prospective controlled study (538 children)	14.8%	18.6%	344	22.5%	24.2%	194	OR 1.27, 95% CI 0.54 to 3.01, P = 0.585 (3 years)	—	▽	
Doocy 2017 – FFS (-)	Prospective controlled study (471 children)	—	22.3 (14.8 to 29.8)	265	—	29.8 (22.0 to 37.7)	206	(adjusted) MD −7.6, CI −17.7 to 2.5, P = 0.13 (3.5 year)	—	△	
3.5.3.3 Outcome measure: BMI (kg/m^2) (mean, SD or SE)											
Kennedy 1989 (?)	Prospective controlled study (753 women)	—	22.3	—	—	22.2	—	NR (2 years)	—	—	No. No effect estimate for Kennedy

Table 15. Income-generation interventions – results of included prospective controlled studies *(Continued)*

Alaofe 2019 b (?)	Prospective controlled study (359 women)	23.01 (2.94)	22.95 (3.73)	256	22.03 (3.14)	21.69 (3.24)	167	MD 0.43, SE 0.24, 95% CI −0.0504 to 0.8904, P < 0.1 (1 year)	—	△	and variance estimate cannot be calculated for Asadullah (missing group sizes)
Asadullah 2015 (-)	Prospective controlled study (3547 women)	19.0	18.95	—	19.17	18.98	—	MD 0.14, P = 0.29	—	△	
3.5.3.4 Proportion of women who were underweight (BMI < 18.5 kg/m^2)											
Alaofe 2019 b (?)	Prospective controlled study (359 women)	4.88	3.10	256	6.57	14.08	167	MD −0.22, SE 0.27, 95% CI −0.749 to 0.309, P > 0.1 (1 year)	—	△	—
3.5.3.5 Outcome measure: mid-upper arm circumference (mean, SD)											
Katz 2001 (-)	Prospective controlled study (718 women)	22.8 (2.0)	—	335	23.0 (2.2)	—	383	MD in intervention group −0.20 cm MD in control group −0.25 cm, P = 0.67 (2 years)	—	—	—
3.6 Change in biochemical indicators											
3.6.1 Proportion with iron deficiency											
Alaofe 2019 b (?)	Prospective controlled study (68 women)	15.3%	13.5%	—	17.9%	12.8%	—	DID −0.11, SE 0.83, 95% CI −0.94 to 0.72, P > 0.05 (1 year)	—	△	—
3.6.2 Proportion with vitamin A deficiency											
Alaofe 2019 b (?)	Prospective controlled study (60 women)	14.3%	5.8%	—	20.2%	10.8%	—	DID 0.54, SE 0.95, 95% CI −0.41 to 1.49, P > 0.05 (1 year)	—	▽	—
3.9 Morbidity											

Table 15. Income-generation interventions – results of included prospective controlled studies *(Continued)*

3.9.1 Outcome measure: proportion seriously ill in past year											
Asadullah 2015 (-)	Prospective controlled study (4038 HHs)	23.38%	15.89	—	24.24	17.17	—	pp −1.72, P > 0.1 (3 years)	—	△	—
		23.38	12.93	—	24.24	12.53	—	pp −0.78, P > 0.1 (6 years)	—	△	—
		23.38	22.16	—	24.24	22.37	—	pp −0.70, P > 0.1 (9 years)	—	△	—
3.9.2 Outcome measure: % time ill											
Kennedy 1989 (?)	Prospective controlled study (1055 children)	—	29.8	—	—	31.2	—	NR (2 years)	—	—	—
	Prospective controlled study (420 women)	—	23.8	—	—	24.3	—	NR (2 years)	—	—	—
3.9.3 Outcome measure: % time ill with diarrhoea											
Kennedy 1989 (?)	Prospective controlled study (1055 children)	—	4.6	—	—	4.0	—	NR (2 years)	—	—	—
3.9.4 Prevalence of anaemia (women)											
Alaofe 2019 [b] (?)	Prospective controlled study (126 women)	49.3%	36.9%	—	49%	53.2%	—	MD −1.25, SE 0.58, 95% CI −1.83 to −0.67, P < 0.05 (1 year)	—	▲	—
3.9.5 Prevalence of iron-deficiency anaemia (women)											
Alaofe 2019 [b] (?)	Prospective controlled study (564 women)	6.6%	4.2%	—	13.8%	8.4%	—	MD −0.99, SE 1.40, 95% CI −2.39 to 0.41, P > 0.05 (1 year)	—	△	—

[a]Each triangle represents one study.
[b]This study also has a component comparing the intervention plus a working group versus a comparison group with a working group. Results are not presented here.

(+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias; ▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0.
CI: confidence interval; DDS: Dietary Diversity Score; DID: difference in differences; FFS: Farmer Field School; HAZ: height-for-age z-score; HDDS: Household Dietary Diversity Score; HFIAS: Household Food Insecurity Scale; HH: household; MD: mean difference; N/A: not applicable/available; NR: not reported; OR: odds ratio; PCS: prospective controlled study; SD: standard deviation; SE: standard error; WAZ: weight-for-age z-score; WEG: Women Empowerment Group; WHZ: weight-for-height z-score.

Table 16. Food vouchers, subsidies, social support: overview of included studies

Study ID (country)	Study design	Overall risk of bias[a]	Other key details of intervention	Population (sample size at baseline: intervention/ control)	Outcome domains and measures with available data	Timepoint of measurement
Comparison 4: food vouchers						
Fenn 2015 (Pakistan)	cRCT	Low	*Programme name:* REFANI Pakistan *Intervention description and frequency: 3* intervention groups all disbursed at the same time every month for 6 consecutive months: • Unconditional transfer (see OSIS Table comparison 1); • Unconditional transfer (see OSIS table comparison 2) and • Fresh food vouchers with a cash value of PKR 1500 (approximately USD 14), which could be exchanged for specified fresh foods (fruits, vegetables, milk and meat) in nominated shops. *Provider:* Action Against Hunger field staff *Delivery:* food vouchers disbursed monthly at distribution points. Verbal messaging from Action Against Hunger field staff at distribution that children should benefit from the transfers. *Co-interventions:* WINS programme in all villages provided outpatient treatment for children aged 6 (SD 59) months with SAM, micronutrient supplementation (children, pregnant and lactating women), and behaviour change communication.	Poor and very poor HHs in agrarian district (food voucher intervention/control: 632/632 HHs)	Anthropometric indicators: • Wasting (WHZ < –2SD) • Severe wasting (WHZ < –3SD) • WHZ • Stunting (HAZ < –2SD) • Severe stunting (HAZ < –3SD) • HAZ • MUAC • BMI Biochemical indicators: • Hb Morbidity: • ARI • Diarrhoea • Anaemia	6 and 12 months
Jensen 2011 (China)	RCT	Unclear	*Programme name*: N/A *Intervention description and frequency*: 1-month supply of vouchers entitling HHs to a price reduction of CNY 0.10, CNY 0.20 or CNY 0.30 (Rmb; 1 Rmb = USD 0.13) off the price of 1 jin (1 jin = 500 g) of the local staple (rice or wheat flour) to the value of 750 g per person per day.	Poor urban HHs (969/324)	Adequacy of dietary intake • Mineral Sufficiency index • Vitamin Sufficiency index	6–7 months

Table 16. Food vouchers, subsidies, social support: overview of included studies *(Continued)*

			Provider: employees of the provincial-level agencies of the Chinese National Bureau of Statistics. *Delivery*: printed vouchers redeemed by HHs at local grain shops. Shop owners reimbursed for the cost of the vouchers and given a fixed payment for complying with implementation guidelines. Re-sale of vouchers or goods purchased with vouchers not permitted. *Co-interventions:* NR			
Hidrobo 2014 (Ecuador)	cRCT	High	*Programme name*: N/A *Intervention description and frequency*: included a CCT group (see OSIS table comparison 2) and a food voucher group. Value of USD 40 per month per HH, given in denominations of USD 20. Participants were required to attend monthly nutrition sensitisation training sessions by HH members. *Provider*: World Food Programme (NPO) *Delivery*: printed serialised vouchers redeemed at central supermarkets in urban centres for a list of nutritionally approved foods, within 30 days of receipt. *Co-interventions:* NR	Poor urban HHs (2087 HHs)	Dietary diversity: • DDI; • HDDS; • FCS	7 months
Ponce 2017 (Ecuador)	cRCT	High	*Programme name: N*/A *Intervention description and frequency: 2* intervention groups: • HHs received a food voucher of USD 40 monthly; • HHs received a food voucher of USD 40 monthly + monthly training sessions on topics that included malnutrition, food preparation, children's health, mother's health, women's rights and women's empowerment. *Provider:* NR *Delivery:* NR *Co-interventions:* NR	HHs based in 3 provinces in Ecuador (food voucher only group/food voucher + training on health and nutrition/control: 171/401/201 HHs)	Dietary diversity: • FCS	12 months
Comparison 5: food and nutrition subsidies						
Chen 2019 (China)	cRCT	High	*Programme name: N*/A *Intervention description and frequency:* Schools in 2 intervention groups received a one-off nutrition subsidy with a monetary equivalent of CNY 225 (USD 33) per enrolled student. Schools could use these	Primary schools in rural areas (nutritional subsidy only/nutritional sub-	Dietary diversity: • Dietary Diversity Score	6 months

Table 16. Food vouchers, subsidies, social support: overview of included studies *(Continued)*

			for nutrition-related expenses, e.g. buying food. Schoolmasters received information about the proportion of enrolled students who were anaemic, elective methods for reducing iron-deficient anaemia, and details about anaemia's relation with school attendance, educational performance, and cognitive development. Schoolmasters in treatment group 1 were given a general policy target of 'malnutrition reduction' and in treatment group 2 a specific policy target of 'anaemia reduction', with a potential monetary bonus tied to a reduction in anaemia prevalence (CNY 150/ USD 22 per student whose anaemia status changed). *Provider:* project team and local government *Delivery:* CNY 225 (equivalent to USD 33) per student was transferred into the school's bank account. Incentive payment for treatment group 2 was only calculated and transferred after the intervention period. *Co-interventions:* NR	sidy + monetary incentive/control: 15/15/29 schools)	Anthropometric indicators: • BMIZ • Underweight Biochemical indicators: • Hb Morbidity: • Anaemia	
Andaleeb 2016 (India)	Prospective controlled study	High	*Programme name:* PDS *Intervention description and frequency:* universal access to the PDS. All HHs that possess a ration card were eligible for 25 kg of subsidised rice, whether they are the poorest of the poor, below the poverty line or above the poverty line. *Provider:* state government *Delivery:* a ration card was a document issued by the government which entitled an individual/family to purchase from the PDS. Ration cards classified HHs based upon their poverty status and were also used as an identity card to avail many of the other government schemes. *Co-interventions:* other government schemes (not specified)	Rural HHs (3819 HHs)	Adequacy of dietary intake • Ratio of nutrient intake to RDA	7 years
Chakrabarti 2018 (India)	Prospective controlled study	High	*Programme name:* PDS *Intervention description and frequency:* subsidising a variety of pulses in different districts as part of the PDS, in addition to the usual subsidising of rice, wheat, sugar and kerosene oil. *Provider:* state governments (subsiding of pulses) and central Indian govern-	Rural and urban HHs in selected states (23,558/101,086 HHs)	No relevant outcome measures reported	5 years

Table 16. Food vouchers, subsidies, social support: overview of included studies *(Continued)*

			ment (subsiding of rice, wheat, sugar and kerosene). *Delivery:* government-issued ration cards are given to poor HHs enabling them to purchase from the PDS. *Co-interventions:* NR			
Sturm 2013 (South Africa)	Prospective controlled study	High	*Programme name*: HealthyFood Program *Intervention description and frequency:* provided a rebate of up to 25% on healthy food purchases in > 400 designated supermarkets across South Africa, for members of the private Discovery Health Insurance and their Vitality programme. *Provider*: Discovery Health Insurance company in collaboration with Pick n Pay (brand) supermarkets. *Delivery*: members had specific Discovery credit cards that they use for shopping. Scanner data from pay points available every time the card was swiped when purchasing certain healthy food items at Pick n Pay supermarket. These data were collated monthly. *Co-interventions:* NR	169,485 Discovery Vitality members who shopped at Pick n Pay supermarkets with linkable purchasing data (100,344 activated participants and 69,141 non-participants, i.e. who were not actively using their benefits.)	Proportion of HH expenditure on food • Ratio of healthy to total food expenditure: for 10%/25% rebate group compared to control	Maximum 28 months (period November 2009 to March 2012)
Comparison 6: Social support interventions						
Kusuma 2017b (Indonesia)	cRCT	Unclear	*Programme name*: Generasi *Intervention description and frequency:* block payments to villages of USD 8500 (2007) and USD 18200 (2009) per village. *Provider:* government *Delivery:* trained facilitators advised village management team on allocation of funds (41% villages implemented financial incentives for health worker outreach, 79% villages implemented SFP, and 96% villages implemented financial assistance for mothers) *Co-interventions:* NR	Rural HHs 1481 children aged 24–36 months	Anthropometric indicators: • Stunting (HAZ < –2SD) • Severe stunting (HAZ < –3SD) • Wasting (WHZ < –2SD) • Severe wasting (WHZ < –3SD) • Underweight (WAZ < –2SD) • Severe underweight	1 year

Table 16. Food vouchers, subsidies, social support: overview of included studies *(Continued)*

				(WAZ < –3SD)		
Brunie 2014 (Mozambique)	Prospective controlled study	High	*Programme name*: VSL or a combination of VSL and Ajuda Mútua. *Intervention description and frequency:* VSLs are self-managed and capitalised microfinance programmes where members pool savings and can borrow from the pool and repay with interest. Programmes work in cycles which terminate in paying out the accumulated savings and interest to members proportional to their initial deposit. The Ajuda Mútua rotating labour scheme operates with groups of HHs working together on each family's land or enterprise on a rotational basis. *Provider*: Save the Children (NGO) *Delivery*: NR *Co-interventions:* SANA (Segurança Alimentar de Nutrição e Agricultura) – food security through nutrition and agriculture multiyear assistance programme targeting aspects of food utilisation. Communities are mobilised to adopt good nutrition practices, and pregnant women and carers are taught to prevent malnutrition in young children.	Interested HHs in randomised district (VSL: 395; VSL+Ajuda Mútua: 401; control: 480)	Food security: • Self-reported months of food sufficiency in previous year Dietary diversity: • HDDS • IDDS Anthropometric indicators: • WAZ	3 years

[a]Overall risk of bias based on key domains: selection and attrition bias. If any of these were high, overall risk of bias was considered high.
ARI: acute respiratory infection; BMI: body mass index; BMIZ: body mass index-for-age z-score; CCT: conditional cash transfer; CNY: Chinese yuan; cRCT: cluster randomised controlled trial; DDI: Dietary Diversity Index; FCS: Food Consumption Score; HAZ: height-for-age z-score; Hb: haemoglobin; HDDS: Household Dietary Diversity Score; HH: household; IDDS: Individual Dietary Diversity Score; MUAC: mid-upper arm circumference; N/A: not applicable/available; NPO: non-profit organisation; NR: not reported; PDS: Public Distribution System; PKR: Pakistani rupee; RCT: randomised controlled trial; RDA: recommended daily allowance; SAM: severe acute malnutrition; SD: standard deviation; SFP: Supplementary Feeding Programme; VSL: village savings and loan; WAZ: weight-for-age z-score; WINS: Women and Children/Infants Improved Nutrition in Sindh; WHZ: weight-for-height z-score.

Table 17. Food vouchers – results of included trials

Study ID (risk of bias)	Study design (n)	Food vouchers			No intervention			Effect measure (time point)	Effect direction [a]	Meta-analysis	Notes
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n				
Primary outcomes											
4.3 Proportion of HHs who were food secure											
4.3.1 Dietary diversity											
4.3.1.1 *Outcome measure: Food Consumption Score (mean): different scales (out of 112 and 8)*											
Hidrobo 2014 (-)	cRCT (2087 HHs)	59.75	—	—	59.05	—	—	Coefficient 9.40, 95% CI 6.6 to 12.2, P < 0.01 (7 months)	▲	No. SMD needed as scales are different. SMD could not be calculated due to missing group sizes for Hidrobo – MV to email authors.	SE calculated from CI
Ponce 2017 food voucher alone (-)	cRCT (372 HHs)	5.96	NR	171 HHs	5.89	NR	201 HHs	Coefficient 0.394, SE 0.05, 95% CI 0.296 to 0.492, P < 0.01 (1 year)	▲		SE available
Ponce 2017 food voucher + education (-)	cRCT (602 HHs)	5.83	NR	401 HHs	5.89	NR	201 HHs	Coefficient 0.291, SE 0.081, P < 0.01 (1 year)	▲		SE available
Secondary outcomes											
4.4 Change in adequacy of dietary intake											
4.4.1 Outcome measure: Mineral Sufficiency Index (mean, SD)											
Jensen 2011 (?)	RCT (1265 HHs)	1.02 (0.36)	—	969	1.00 (0.34)	—	—	% change –0.061, 95% CI –0.219 to 0.098 (5 months)	▽	—	—
4.4.2 Outcome measure: Vitamin Sufficiency Index (mean, SD)											

Table 17. Food vouchers – results of included trials *(Continued)*

Jensen 2011 (?)	RCT (1265 HHs)	1.2 (0.44)	—	—	1.17 (0.38)	—	—	% change –0.051, 95% CI –0.218 to 0.116 (5 months)	▽	—	—
4.5 Change in anthropometric indicators											
4.5.1 Stunting											
4.5.1.1 Outcome measure: % stunted (HAZ < –2SD), n (%)											
Fenn 2015 (+)	cRCT (1643 children)	473 (54.9)	NR	834 children	437 (51.7)	NR	809 children	OR 0.41, 95% CI 0.25 to 0.67, P < 0.001 (6 months)	▲	—	—
Fenn 2015 (+)	cRCT (1633 children)	473 (54.9)	NR	818 children	437 (51.7)	NR	815 children	OR 0.48, 95% CI 0.31 to 0.73, P = 0.001 (12 months)	▲	—	—
4.5.1.2 Outcome measure: % severely stunted (HAZ < –3SD)											
Fenn 2015 (+)	cRCT (1643 children)	NR	NR	834 children	NR	NR	809 children	OR 0.38, 95% CI 0.23 to 0.63, P < 0.001 (6 months)	▲	—	—
Fenn 2015 (+)	cRCT (1633 children)	NR	NR	818 children	NR	NR	815 children	OR 0.51, 95% CI 0.33 to 0.79, P = 0.003 (12 months)	▲	—	—
4.5.1.3 Outcome measure: HAZ, mean (SD)											
Fenn 2015 (+)	cRCT (1643 children)	–2.12 (1.69)	NR	834 children	–1.97 (1.75)	NR	809 children	Beta-coefficient 0.27, 95% CI 0.19 to 0.34, P < 0.001 (6 months)	▲	—	—
Fenn 2015 (+)	cRCT (1633 children)	–2.12 (1.69)	NR	818 children	–1.97 (1.75)	NR	815 children	Beta-coefficient 0.29, 95% CI 0.19 to 0.40, P < 0.001 (12 months)	▲	—	—
4.5.2 Wasting											
4.5.2.1 Outcome measure: % wasted (WHZ < –2SD), n (%)											

Table 17. Food vouchers – results of included trials *(Continued)*

Fenn 2015 (+)	cRCT (1643 children)	165 (19.3)	NR	834 children	184 (21.9)	NR	809 children	OR 1.16, 95% CI 0.67 to 2.01, P = 0.6 (6 months)	▽	—	—
Fenn 2015 (+)	cRCT (1633 children)	165 (19.3)	NR	818 children	184 (21.9)	NR	815 children	OR 1.17, 95% CI 0.75 to 1.82, P = 0.5 (12 months)	▽	—	—
4.5.2.2 Outcome measure: % severely wasted (WHZ) < –3SD											
Fenn 2015 (+)	cRCT (1643 children)	46 (5.4)	NR	834 children	62 (7.4)	NR	809 children	OR 1.27, 95% CI 0.45 to 3.55, P = 0.66 (6 months)	▽	—	—
4.5.2.3 Outcome measure: WHZ, mean (SD)											
Fenn 2015 (+)	cRCT (1643 children)	–1.08 (1.14)	NR	834 children	–1.15 (1.30)	NR	809 children	Beta-coefficient 0.16, 95% CI 0.05 to 0.26, P = 0.004 (6 months)	▲	—	—
Fenn 2015 (+)	cRCT (1633 children)	–1.08 (1.14)	NR	818 children	–1.15 (1.30)	NR	815 children	Beta-coefficient 0.02, 95% CI –0.10 to 0.14, P = 0.79 (12 months)	△	—	—
4.5.3 Underweight											
4.5.3.1 Outcome measure: MUAC, mean (SD)											
Fenn 2015 (+)	cRCT (1643 children)	13.8 (1.2)	NR	834 children	13.5 (1.2)	NR	809 children	Beta-coefficient –0.05, 95% CI –0.14 to 0.04, P = 0.27 (6 months)	—	—	—
Fenn 2015 (+)	cRCT (1204 women)	25.2 (3.2)	NR	603 mothers	24.3 (3.2)	NR	601 mothers	Beta-coefficient –0.16, 95% CI –0.38 to 0.05, P = 0.14 (6 months)	—	—	—
4.5.3.2 Outcome measure: BMI, mean (SD)											
Fenn 2015 (+)	cRCT (1204 women)	20.8 (18.5 ± 24.0)	NR	603 mothers	20.0 (18.1 ± 22.7)	NR	601 mothers	Beta-coefficient 0.29, 95% CI 0.03 to 0.54, P = 0.03 (6 months)	—	—	—

[a]Each triangle represents one study.

▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0. (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias.
CI: confidence interval; cRCT: cluster randomised controlled trial; FCS: Food Consumption Score; HAZ: height-for-age z-score; HH: household; MUAC: mid-upper arm circumference; n: number; NR: not reported; OR: odds ratio; RCT: randomised controlled trial; SD: standard deviation; SE: standard error; SMD: standardised mean difference.

Table 18. Food and nutrition subsidies – results of included trials

Study ID (risk of bias)	Study design (n)	Food rebate/subsidy			No intervention			Effect measure (timepoint)	Effect direction	Meta-analysis
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n			
Primary outcomes										
5.3 Proportion of HHs who were food secure										
5.3.1 Dietary diversity										
5.3.1.1 Outcome measure: DDS for nutrition subsidy only (general target: malnutrition reduction) group vs control (mean, SD)										
Chen 2019 – nutrition subsidy (-) DDS 0–10	cRCT (656 students)	4.75 (2.17)	5.21 (2.18)	219 students	5.33 (2.32)	4.82 (2.36)	437 students	MD 0.956, robust SE 0.255, 95% CI 0.4562 to 1.4558, P < 0.01 (6 months)	▲	N/A
Chen 2019 – nutrition subsidy+monetary incentive (-)	cRCT	4.65 (2.20)	5.32 (2.09)	210 students	5.33 (2.32)	4.82 (2.36)	437 students	Mean score 1.263, robust SE 0.224, P < 0.01 (6 months)	▲	
Secondary outcomes										
5.5 Change in anthropometric indicators										
5.5.1 Outcome measure: BMI-for-age z-score (mean, SD)										
Chen 2019 – nutrition subsidy (-)	cRCT	−0.70 (0.91)	−0.71 (0.95)	219 students	−0.68 (0.94)	−0.76 (0.97)	437 students	Mean score 0.080, robust SE 0.058	△	N/A

Table 18. Food and nutrition subsidies – results of included trials *(Continued)*

								No significant difference from control (6 months)		
Chen 2019 – nutrition subsidy+monetary incentive (-)	cRCT	−0.63 (0.91)	−0.60 (0.89)	210 students	−0.68 (0.94)	−0.76 (0.97)	437 students	Mean score 0.123, robust SE 0.047, P < 0.01 (6 months)	▲	
5.5.2 Outcome measure: proportion underweight (mean, SD)										
Chen 2019 – nutrition subsidy (-)	cRCT	0.07 (0.25)	0.07 (0.26)	219 students	0.08 (0.26)	0.11 (0.32)	437 students	Mean proportion −0.032, robust SE 0.024, 95% CI −0.079 to 0.015 (6 months)	Δ	N/A
Chen 2019 – nutrition subsidy+monetary incentive (-)	cRCT	0.06 (0.24)	0.06 (0.23)	210 students	0.08 (0.26)	0.11 (0.32)	437 students	Mean proportion −0.041, robust SE 0.022, 95% CI −0.084 to 0.002 (6 months)	Δ	
5.6 Change in biochemical indicators										
5.6.1 Outcome measure: haemoglobin concentration in children in nutrition subsidy only (general target: malnutrition reduction) group vs control (mean, SD)										
Chen 2019 – nutrition subsidy (-)	cRCT	128.51 (12.63)	128.11 (15.86)	219 students	128.03 (12.95)	127.93 (14.86)	437 students	Mean concentration 0.512, robust SE 1.348, 95% CI −2.130 to 3.154 (6 months)	△	N/A
Chen 2019 – nutrition subsidy+monetary incentive (-)	cRCT	127.84 (12.80)	130.95 (15.66)	210 students	128.03 (12.95)	127.93 (14.86)	437 students	Mean concentration 4.490, robust SE 1.241, 95% CI 2.058 to 6.922, P < 0.01 (6 months)	▲	
5.9 Morbidity										
5.9.1 Outcome measure: proportion of anaemic children in nutrition subsidy only (general target: malnutrition reduction) group vs control (mean, SD)										

Table 18. Food and nutrition subsidies – results of included trials *(Continued)*

Chen 2019 – nutrition subsidy (-)	cRCT	0.18 (0.38)	0.22 (0.42)	219 students	22 (0.42)	0.23 (0.42)	437 students	Mean proportion −0.005, robust SE 0.048, 95% CI −0.099 to 0.089, P > 0.01 (6 months)	△	N/A
Chen 2019 – nutrition subsidy+monetary incentive (-)	cRCT	0.23 (0.42)	0.16 (0.36)	210 students	0.22 (0.42)	0.23 (0.42)	437 students	Mean proportion −0.120, robust SE 0.046, 95% CI −0.210 to −0.029, P < 0.01 (6 months)	▲	

cRCT: cluster randomised controlled trial; DDS: Dietary Diversity Score; MD: mean difference; n: number; N/A: not applicable/available; SD: standard deviation; SE: standard error.

Table 19. Food and nutrition subsidies – results of included prospective controlled studies

Study ID (risk of bias)	Study design (n)	Food rebate			No intervention			Effect measure (time point)	Effect direction[a]
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n		
Primary outcomes									
5.2 Proportion of HH expenditure on food									
5.2.1 *Outcome measure: ratio of healthy to total food expenditure (mean, SD)*									
Sturm 2013 – 10% rebate (-)	Prospective controlled study (169,485 HHs)	0.21 (0.11)	—	67,343 HHs	0.17 (0.13)	—	69,141 HHs	Increase by 6.0%, 95% CI 5.3% to 6.8% (3 years)	▲
Sturm 2013 – 25% rebate (-)	Prospective controlled study (136,484 HHs)	0.21 (0.12)	—	—	0.17 (0.13)	—	—	Increase by 9.3%, 95% CI 8.5% to 10.0% (2 years and 4 months)	▲
5.4 Change in adequacy of dietary intake									
5.4.1 Outcome measure: ratio of current caloric intake to the RDA (multiplied by 100)									
Andaleeb 2016 (-)	Controlled before-after study	NR	NR	1134 HHs	NR	NR	NR	DID estimate 2.55, SE 1.31, 95% CI −0.018 to 5.118, P < 0.1 (7 years)	△

Table 19. Food and nutrition subsidies – results of included prospective controlled studies *(Continued)*

5.4.2 Outcome measure: ratio of current protein intake to the RDA (multiplied by 100)									
Andaleeb 2016 (-)	Controlled before-after study	NR	NR	1134 HHs	NR	NR	NR	DID estimate 3.75, SE 1.65, 95% CI 0.516 to 6.984, P < 0.05 (7 years)	▲
5.4.3 Outcome measure: ratio of current fat intake to the RDA (multiplied by 100)									
Andaleeb 2016 (-)	Controlled before-after study	NR	NR	1134 HHs	NR	NR	NR	DID estimate –0.1, SE 0.00, P > 0.1 (7 years)	▽

[a]Each triangle represents one study.
▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0. (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias.
CI: confidence interval; DID: difference in differences; HH: household; n: number; NR: not reported; RDA: recommended daily allowance; SD: standard deviation; SE: standard error.

Table 20. Social support interventions – results of included trials

Study ID (risk of bias)	Study design (n)	Village savings/grants			No intervention			Effect measure (time point)[a]	Effect direction
		Results at baseline	Results at follow-up	n	Results at baseline	Results at follow-up	n		
Secondary outcomes									
6.5 Change in anthropometric indicators									
6.5.1 Stunting									
6.5.1.1 *Outcome measure: proportion stunted (HAZ < –2SD)*									
Kusuma 2017b (?)	cRCT (1481 children aged 24–36 months)	—	—	—	—	Mean 0.48	—	DID 0.034, SE 0.055, 95% CI –0.074 to 0.142, P > 0.05 (2 years)	▽
1.1.2 *Outcome measure: proportion severely stunted (HAZ < –3SD)*									
Kusuma 2017b (?)	cRCT (1481 children aged 24–36 months)	—	—	—	—	Mean 0.29	—	DID –0.06, SE 0.053, 95% CI –0.164 to 0.044, P > 0.05 (2 years)	△

Table 20. Social support interventions – results of included trials *(Continued)*

6.5.2 Wasting									
6.5.2.1 Outcome measure: proportion wasted (WHZ < –2SD)									
Kusuma 2017b (?)	cRCT (1481 children aged 24–36 months)	—	—	—	—	Mean 0.19	—	DID –0.010, SE 0.035, 95% CI –0.079 to 0.059 pp –1.0, 95% CI –7.86 to 5.86, P > 0.05 (2 years)	△
6.5.2.2 Outcome measure: proportion severely wasted (WHZ < –3SD)									
Kusuma 2017b (?)	cRCT (1481 children aged 24–36 months)	—	—	—	—	Mean 0.10	—	DID –0.021, SE 0.025, 95% CI –0.07 to 0.028, P > 0.05 (2 years)	△
6.5.3 Underweight									
6.5.3.1 *Outcome measure: proportion underweight (WAZ < –2SD)*									
Kusuma 2017b (?)	cRCT (1481 children aged 24–36 months)	—	—	—	—	Mean 0.34	—	Beta –0.020, SE 0.051, 95% CI –0.120 to 0.080, P > 0.05 (2 years)	△
6.5.3.2 Outcome measure: proportion severely underweight (WAZ < –3SD)									
Kusuma 2017b (?)	cRCT (1481 children aged 24–36 months)	—	—	—	—	Mean 0.12	—	Beta –0.056, SE 0.034, 95% CI –0.123 to 0.011, P < 0.1 (2 years)	△

[a]Each triangle represents one study.
▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0. (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias.
DID: difference in differences; HAZ: height-for-age z-score; n: number; pp: percentage point; SD: standard deviation; SE: standard error; WAZ: weight-for-age z-score; WHZ: weight-for-height z-score.

Table 21. Social support interventions – results of included prospective controlled studies

Study ID (risk of bias)	Study design (n)	Village savings/grants			No intervention			Effect measure (time point)[a]	Combined group effect	Effect direction	Meta-analysis
		Results	Results	n	Results	Results	n				

Table 21. Social support interventions – results of included prospective controlled studies *(Continued)*

		at baseline	at follow-up		at baseline	at follow-up					
Primary outcomes											
6.3 Proportion of HH who were food secure											
6.3.1 Food security											
6.3.1.1 Outcome measure: self-reported months of food sufficiency in previous year (mean, SD)											
Brunie 2014 – VSL (-)	Prospective controlled study (851 HHs)	10.41	10.52	—	10.58	10.21	—	DID estimate 0.47, 95% CI –0.04 to 0.98, P < 0.1 (3 years)	MD 1.25, 95% CI –0.28 to 2.79	△	N/A
Brunie 2014 – VSL+AM (-)	836 HHs	9.27	11.18	—	10.47	10.35	—	DID estimate 2.04, 95% CI 1.53 to 2.55, P < 0.1 (3 years)		▲	
6.3.2 Dietary diversity											
6.3.2.1 Outcome measure: HDDS (mean, SD)											
Brunie 2014 – VSL (-)	Prospective controlled study (802 HHs)	4.06	5.44	—	3.73	4.84	—	DID estimate 0.27, 95% CI –0.16 to 0.70, P > 0.1 (3 years)	MD –0.30, 95% CI –1.46 to 0.87	△	N/A
Brunie 2014 – VSL+AM (-)	813 HHs	4.2	4.56	—	3.82	5.11	—	DID estimate −0.92, 95% CI –1.567 to –0.273, P < 0.001		▽	
6.3.2.2 *Outcome measure: IDDS (mean, SD)*											
Brunie 2014 – VSL (-)	Prospective controlled study (542 children)	2.51	3.43	—	2.87	2.97	—	DID estimate 0.81, 95% CI 0.36 to 1.26, P < 0.01 (3 years)	MD 0.52, 95% CI –0.18 to 1.23	▲	N/A
Brunie 2014 – VSL+AM (-)	(579 children)	2.99	3.46	—	2.82	3.22	—	DID estimate 0.07, 95% CI –0.7532 to 0.8932, P > 0.01 (3 years)		△	
Secondary outcomes											

Table 21. Social support interventions – results of included prospective controlled studies *(Continued)*

6.5 Change in anthropometric indicators

6.5.1 *Outcome measure: weight-for-age z-scores (WAZ)*											
Brunie 2014 – VSL (-)	Prospective controlled study (503 children)	−1.21	−0.91	—	−1.25	−0.83	—	DID estimate −0.11, 95% CI −0.561 to 0.341, P > 0.1 (3 years)	MD 0.05, 95% CI −0.37 to 0.48	▽	N/A
Brunie 2014 – VSL+AM (-)	(550 children)	−0.96	−0.93	—	−1.15	−0.78	—	DID estimate 0.34, 95% CI −0.31 to 0.99, P > 0.01		△	

[a]Each triangle represents one study.
▲ = Favours the intervention, 95% CI excludes 0; △ = Unclear effect potentially favouring the intervention, 95% CI includes zero; ▼ = Favours the control, 95% CI excludes 0; ▽ = Unclear effect potentially favouring the control, 95% CI includes 0. (+): low overall risk of bias; (?): unclear overall risk of bias; (-): high overall risk of bias.
AM: Ajuda Mútua; CI: confidence interval; DID: difference in differences; HDDS: Household Dietary Diversity Score; HH: household; IDDS: Individual Dietary Diversity Score; MD: mean difference; n: number; N/A: not applicable/available; SD: standard deviation; VSL: village savings and loan; WAZ: weight-for-age z-score.

APPENDICES

Appendix 1. Search strategies for search update in February 2020

Ovid MEDLINE(R) ALL 1946 to 13 February 2020		
14 February 2020		
#	**Searches**	**Results**
1	*Nutritional Status/	24020
2	*Diet/	75748
3	*Body Mass Index/	20334
4	*Food Supply/	8018
5	*Nutrition Assessment/	7302
6	(nutrition* or food? or diet*).ti.	379668
7	((diet* or food? or nutrition*) adj (status or consumption or diversity)).ab.	44392
8	((improv* or increas* or enhanc* or influenc*) adj3 (diet* or food? or nutrition*) adj3 (health* or access* or consum*)).ab.	5207
9	or/1-8	453177
10	*Social Welfare/	5470
11	*Community Health Services/	19647
12	*Public Assistance/	1679
13	*Financing, Government/	8775
14	*Government Programs/	2776
15	*Community Participation/	9614
16	((social or economic or welfare or agricultural or labo?r or antipoverty or anti-poverty) adj (program* or service? or support or intervention*)).ti,ab.	49542
17	((food? or diet* or nutrition* or vegetable? or fruit? or agricultural) adj (class* or session* or program* or service? or production)).ti,ab.	15688
18	or/10-17	110111
19	9 and 18	8935
20	((food or nutrition*) adj (secur* or insecur* or poverty or sufficien* or insufficien*)).mp.	9377

(Continued)

21	((food or foods or foodstuff* or fruit? or vegetable? or grocer* or nutrition*) adj1 (budget* or shopping or purchas* or expend* or spend* or spent or buy* or acquisition or acquir*)).mp.	3022
22	((tax or taxes or taxation or subsidy or subsidies or subsidi?ed or voucher* or coupon* or discount* or stamp?) adj2 (food or foods or foodstuff* or grocer* or fruit* or vegetable* or nutrition* or meal or meals)).mp.	907
23	((cash or in-kind or price) adj (transfer* or subsidy or subsidies)).mp.	733
24	(food adj (assistance or aid)).mp.	1570
25	Food Assistance/	976
26	Food/ec [Economics]	1172
27	Diet/ec [Economics]	987
28	or/19-27	23384
29	exp animals/ not humans/	4673892
30	28 not 29	22037
31	(Afghan* or Bangladesh* or Benin* or Burkina Faso or Burkinabe or Burundi* or Cambodia* or Central African Republic or Central African* or Chad* or Comoros or Comorian* or Congo* or Eritrea* or Ethiopia* or Gambia* or Ghana* or Guinea-Bissau* or Haiti* or Kenya* or Kyrgyz Republic or Kyrgyzstani or Lao* or Liberia* or Madagascar or Malagasy or Malawi* or Mali* or Mauritania* or Mozambique or Mozambican or Myanmar* or Burma or Burmese or Nepal* or Niger* or Rwanda* or Sierra Leone* or Solomon Islands or Solomon Islanders or Somali* or Tajikistan* or Tanzania* or Togo* or Uganda* or Zambia* or Zimbabwe*).mp.	840737
32	(Angola* or Armenia* or Belize* or Bhutan* or Bolivia* or Cameroon* or Cape Verd* or China or Chinese or Cote dIvoire or Ivorian or Djibouti or Ecuador* or Egypt* or El Salvador or Salvadoran or Guatemala* or Guyana or Guyanese or Hondura* or India* or Indonesia* or Iraq* or Jordan* or Kiribati or Kosov* or Lesotho or Mosotho or Basotho or Maldiv* or Marshall Islands or Marshallese or Micronesia* or Moldova* or Mongolia* or Morocc* or Nicaragua* or Nigeria* or Pakistan* or Papua New Guinea* or Paraguay* or Philippines or Filipino or Samoa* or Senegal* or Sri Lanka* or Sudan* or Swaziland or Swazi or Syrian Arab Republic or Syria* or Thailand or Thai or Timor Leste or East Timorese or Tonga* or Tunisia* or Turkmen* or Tuvalu* or Ukrain* or Uzbekistan* or Uzbek or Vanuatu or Vietnam* or West Bank or Gaza or Palestinian* or Yemen*).mp.	920050
33	(Albania* or Algeria* or American Samoa or Antigua* or Barbuda* or Argentin* or Azerbaijan* or Belarus* or Bosnia* or Herzegovin* or Botswana or Motswana or Batswana or Brazil* or Bulgaria* or Chile* or Colombia* or Costa Rica* or Cuba* or Dominica* or Dominican Republic or Fiji* or Gabon* or Grenad* or Iran* or Jamaica* or Kazakhstan* or Leban* or Libya* or Lithuania* or Macedonia* or Malaysia* or Mauriti* or Mayotte or Mahoran or Mexic* or Montenegr* or Namibia* or Palau* or Panama* or Peru* or Romania* or Russia* or Serbia* or Seychell* or South Africa* or St Lucia* or Suriname* or Turk* or Uruguay* or Venezuela*).mp.	625717
34	Developing Countries/	73775

(Continued)

35	(lmic or lmics).mp.	4361
36	((low income or medium income) adj5 (country or countries or nation or nations or state or states)).mp.	8741
37	(least developed adj (country or countries or nation or nations or state or states)).mp.	257
38	(developing adj (countr* or nation? or state?)).mp.	125319
39	((united nations or world health organization or world bank or unicef) and ((food or nutrition*) adj3 (program* or project* or fund))).mp.	340
40	or/31-39	2305368
41	30 and 40	7034
42	(randomized controlled trial or controlled clinical trial).pt.	589397
43	random*.mp.	1339226
44	comparative study.pt.	1854534
45	control groups/ or control group*.mp. or follow-up studies/ or follow-up stud*.mp. or follow-up assessment.mp. or prospective studies/ or prospectiv*.mp. or non-random*.mp. or nonrandom*.mp.	1813129
46	(before after stud* or (time and series) or retrospective* or longitud* or (controlled and cohort* and stud*)).mp.	1459595
47	"before and after".mp.	266393
48	(controlled before or pre test or pretest or posttest or post test or pre intervention or post intervention).mp.	43847
49	controlled before-after studies/ or interrupted time series analysis/	1253
50	or/42-49	5401950
51	41 and 50	1621
52	limit 51 to yr="1980 -Current"	1615

Cochrane Library

14 February 2020

ID	Search	Hits
#1	[mh ^"Nutritional Status"[mj]]	8
#2	[mh ^diet[mj]]	15

(Continued)

#3	[mh ^"Body Mass Index"[mj]]	5
#4	[mh ^"Food Supply"[mj]]	2
#5	[mh ^"Nutrition Assessment"[mj]]	1
#6	(nutrition* or food? or diet*):ti and (intervention* or program* or service*):ti,ab,kw	15540
#7	((diet* or food? or nutrition*) NEXT (status or diversity)):ab,kw	6376
#8	((improv* or increas* or enhanc* or influenc*) NEAR/3 (diet* or food? or nutrition*) NEAR/3 (health* or access* or consum*)):ab	903
#9	{or #1-#8}	20869
#10	[mh ^"Social Welfare"[mj]]	3
#11	[mh ^"Community Health Services"[mj]]	6
#12	[mh ^"Public Assistance"[mj]]	0
#13	[mh ^"Financing, Government"[mj]]	2
#14	[mh ^"Government Programs"[mj]]	0
#15	[mh ^"Community Participation"[mj]]	4
#16	((social or economic or welfare or agricultural or labo?r or antipoverty or poverty) NEXT (program* or service? or support or intervention*)):ti,ab,kw	8910
#17	((food? or diet* or nutrition* or vegetable? or fruit? or agricultural) NEXT (class* or session* or program* or service?)):ti,ab,kw	1489
#18	{or #10-#17}	10351
#19	#9 and #18	1084
#20	((food or nutrition*) NEXT (secur* or insecur* or poverty or sufficien* or insufficien*)):ti,ab,kw	557
#21	((food or foods or foodstuff* or fruit? or vegetable? or grocer* or nutrition*) NEAR/1 (budget* or shopping or purchas* or expend* or spend* or spent or buy* or acquisition or acquir*)):ti,ab,kw	409
#22	((tax or taxes or taxation or subsidy or subsidies or subsidi?ed or voucher* or coupon* or discount* or stamp?) NEAR/2 (food or foods or foodstuff* or grocer* or fruit* or vegetable* or nutrition* or meal or meals)):ti,ab,kw	143
#23	((cash or "in kind" or price) NEXT (transfer* or subsidy or subsidies)):ti,ab,kw	308
#24	(food NEXT (assistance or aid)):ti,ab,kw	161
#25	[mh ^"Food Assistance"]	63
#26	{or #19-#25}	2353

(Continued)

#27	(Afghan* or Bangladesh* or Benin* or "Burkina Faso" or Burkinabe or Burundi* or Cambodia* or "Central African*" or Chad* or Comoros or Comorian* or Congo* or Eritrea* or Ethiopia* or Gambia* or Ghana* or Guinea-Bissau* or Haiti* or Kenya* or Kyrgyz* or Lao* or Liberia* or Madagascar or Malagasy or Malawi* or Mali* or Mauritania* or Mozambique or Mozambican or Myanmar* or Burma or Burmese or Nepal* or Niger* or Rwanda* or "Sierra Leone*" or "Solomon Island*" or Somali* or Tajikistan* or Tanzania* or Togo* or Uganda* or Zambia* or Zimbabwe*)	53980
#28	(Angola* or Armenia* or Belize* or Bhutan* or Bolivia* or Cameroon* or "Cape Verd*" or China or Chinese or "Cote d'Ivoire" or Ivorian or Djibouti or Ecuador* or Egypt* or "El Salvador" or Salvadoran or Guatemala* or Guyana or Guyanese or Hondura* or India* or Indonesia* or Iraq* or Jordan* or Kiribati or Kosov* or Lesotho or Mosotho or Basotho or Maldiv* or "Marshall Islands" or Marshallese or Micronesia* or Moldova* or Mongolia* or Morocc* or Nicaragua* or Nigeria* or Pakistan* or "Papua New Guinea*" or Paraguay* or Philippines or Filipino or Samoa* or Senegal* or "Sri Lanka*" or Sudan* or Swaziland or Swazi or Syrian or Syria* or Thailand or Thai or Timor* or Tonga* or Tunisia* or Turkmen* or Tuvalu* or Ukrain* or Uzbekistan* or Uzbek or Vanuatu or Vietnam* or "West Bank" or Gaza or Palestinian* or Yemen*)	151389
#29	(Albania* or Algeria* or Samoa or Antigua* or Barbuda* or Argentin* or Azerbaijan* or Belarus* or Bosnia* or Herzegovin* or Botswana or Motswana or Batswana or Brazil* or Bulgaria* or Chile* or Colombia* or Costa Rica* or Cuba* or Dominica* or "Dominican Republic" or Fiji* or Gabon* or Grenad* or Iran* or Jamaica* or Kazakhstan* or Leban* or Libya* or Lithuania* or Macedonia* or Malaysia* or Mauriti* or Mayotte or Mahoran or Mexic* or Montenegr* or Namibia* or Palau* or Panama* or Peru* or Romania* or Russia* or Serbia* or Seychell* or "South Africa*" or "St Lucia*" or Suriname* or Turk* or Uruguay* or Venezuela*)	87980
#30	[mh "developing countries"]	836
#31	(lmic or lmics):ti,ab,kw	351
#32	(("low income" or "medium income") near/5 (country or countries or nation or nations or state or states)):ti,ab,kw	875
#33	("least developed" next (country or countries or nation or nations or state or states)):ti,ab,kw	4
#34	(developing next (country or countries or nation or nations or state or states)):ti,ab,kw	4015
#35	("united nations" or "world health organization" or "world bank" or unicef):ti,ab,kw and ((food or nutrition*) near/3 (program* or project* or fund)):ti,ab,kw	48
#36	{or #27-#35}	276771
#37	#26 and #36 with Publication Year from 1980 to 2020, in Trials	931

Web of Science

(Continued)

14 February 2020

Set	Results	Search
# 1	28774	TS=((food OR nutrition*) NEAR/1 (secur* OR insecur* OR poverty OR sufficien* OR insufficien*))
# 2	7900	TS=((food OR foods OR foodstuff* OR fruit$ OR vegetable$ OR grocer* OR nutrition*) NEAR/1 (budget* OR shopping OR purchas* OR expend* OR spend* OR spent OR buy* OR acquisition OR acquir*))
# 3	2186	TS=((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidi$ed OR voucher* OR coupon* OR discount* OR stamp$) NEAR/2 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition* OR meal OR meals))
# 4	3476	TS=((cash OR "in-kind" OR price) NEAR/1 (transfer* OR subsidy OR subsidies))
# 5	1840	TS= (food NEAR/1 (assistance OR aid))
# 6	1302	TI=(nutrition* OR food* OR diet*) AND TS=((social OR economic OR welfare OR agricultural OR labo$r OR antipoverty OR anti-poverty) NEAR/1 (program* OR service* OR support OR intervention*))
# 7	920	TI=("nutrition program*" OR "food program*")
# 8	43727	#7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1
# 9	959932	TS=(afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*)
# 10	1680193	TS=(angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen*)
# 11	1279195	TS=(albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru*

(Continued)

		OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)
# 12	3653	TS=(lmic OR lmics)
# 13	8152	TS=(("low income" OR "medium income") NEAR/1 (country OR countries OR nation OR nations OR state OR states))
# 14	803	TS=("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states))
# 15	112430	TS=("developing countr*" OR "developing nation$" OR "developing state$")
# 16	290	TS=(("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund)))
# 17	3722287	#16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9
# 18	18310	#17 AND #8
# 19	2489418	TS=((compar* OR control*) NEAR/10 (study OR trial OR program* OR evaluat* OR assess*))
# 20	2076881	TS=(random* OR "control group*" OR "control subject*")
# 21	969070	TS=("follow up" OR "long-term impact" OR "long-term effect*")
# 22	902125	TS=((prospectiv* OR non-random* OR nonrandom* OR retrospectiv* OR longitud*) NEAR/6 (stud* OR trial* OR evaluat* OR assess*))
# 23	176785	TS=("before after stud*" OR "time series")
# 24	21621	TS=((control* OR compar*) NEAR/6 cohort* NEAR/6 (stud* OR trial* OR assess* OR evaluat*))
# 25	263527	TS=("before and after")
# 26	619042	TS=("pre test" OR pretest OR posttest OR "post test" OR "pre intervention" OR "post intervention" OR baseline)
# 27	5729458	#26 OR #25 OR #24 OR #23 OR #22 OR #21 OR #20 OR #19
# 28	3226	#27 AND #18
# 29	2747	#27 AND #18 Refined by: [excluding] WEB OF SCIENCE CATEGORIES: (PARASITOLOGY OR VIROLOGY OR ENTOMOLOGY OR REMOTE SENSING OR ZOOLOGY OR MEDICINE RESEARCH EXPERIMENTAL OR ENERGY FUELS OR PLANT SCIENCES OR IMAGING SCIENCE PHOTOGRAPHIC TECHNOLOGY OR GEOGRAPHY PHYSICAL OR SOIL SCIENCE OR EVOLUTIONARY BIOLOGY OR VETERINARY SCIENCES OR HISTORY PHILOSOPHY OF SCIENCE OR OPTICS OR GEOGRAPHY OR SURGERY) Indexes=SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH Timespan=1980-2020

Global Health (EBSCO)			
14 February 2020			
#	Query	Limiters/Expanders	Results
S1	(DE "food security") OR (DE "food policy") OR (DE "food aid" OR DE "food distribution programs")	Search modes - Boolean/Phrase	14661
S2	(food OR nutrition*) W0 (secur* OR insecur* OR poverty OR sufficien* OR insufficien*)	Search modes - Boolean/Phrase	18939
S3	(food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) N1 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)	Search modes - Boolean/Phrase	5072
S4	(foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket OR supermarkets OR grocery store OR grocery stores OR food store OR food stores OR food shop OR food shops OR corner store OR corner stores OR cafeteria OR cafeterias OR canteen* OR food outlet*) N2 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)	Search modes - Boolean/Phrase	896
S5	(tax OR taxes OR taxation OR subsidy OR subsidies OR subsidi*ed OR voucher* OR coupon* OR discount* OR stamp*) N2 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition* OR meal OR meals)	Search modes - Boolean/Phrase	1205
S6	(cash OR in-kind OR price) W1 (transfer* OR subsidy OR subsidies)	Search modes - Boolean/Phrase	704
S7	food W1 (assistance OR aid)	Search modes - Boolean/Phrase	6607
S8	TI (nutrition* OR food* OR diet*) AND ((social OR economic OR welfare OR agricultural OR labo#r OR antipoverty OR anti-poverty OR poverty) N1 (program* OR service* OR support OR intervention*))	Search modes - Boolean/Phrase	2515
S9	TI (nutrition program* OR food program*)	Search modes - Boolean/Phrase	2827
S10	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9	Search modes - Boolean/Phrase	31469
S11	DE "Developing Countries" OR DE "Least Developed Countries"	Search modes - Boolean/Phrase	822999
S12	Afghan* OR Bangladesh* OR Benin* OR Burkina Faso OR Burkinabe OR Burundi* OR Cambodia* OR Central African Republic OR Central African* OR Chad* OR Comoros OR Comorian* OR Congo* OR Eritrea* OR Ethiopia* OR Gambia* OR Ghana* OR Guinea-Bissau* OR Haiti* OR Kenya* OR Kyrgyz Republic OR Kyrgyzstani OR Lao* OR Liberia* OR Madagascar OR Malagasy OR Malawi* OR Mali* OR Mauritania* OR Mozambique OR Mozambican OR Myanmar* OR Burma OR Burmese OR Nepal*	Search modes - Boolean/Phrase	251085

(Continued)

	OR Niger* OR Rwanda* OR Sierra Leone* OR Solomon Islands OR Solomon Islanders OR Somali* OR Tajikistan* OR Tanzania* OR Togo* OR Uganda* OR Zambia* OR Zimbabwe*		
S13	Angola* OR Armenia* OR Belize* OR Bhutan* OR Bolivia* OR Cameroon* OR Cape Verd* OR China OR Chinese OR Cote dIvoire OR Ivorian OR Djibouti OR Ecuador* OR Egypt* OR El Salvador OR Salvadoran OR Guatemala* OR Guyana OR Guyanese OR Hondura* OR India* OR Indonesia* OR Iraq* OR Jordan* OR Kiribati OR Kosov* OR Lesotho OR Mosotho OR Basotho OR Maldiv* OR Marshall Islands OR Marshallese OR Micronesia* OR Moldova* OR Mongolia* OR Morocc* OR Nicaragua* OR Nigeria* OR Pakistan* OR Papua New Guinea* OR Paraguay* OR Philippines OR Filipino OR Samoa* OR Senegal* OR Sri Lanka* OR Sudan* OR Swaziland OR Swazi OR Syrian Arab Republic OR Syria* OR Thailand OR Thai OR Timor Leste OR East Timorese OR Tonga* OR Tunisia* OR Turkmen* OR Tuvalu* OR Ukrain* OR Uzbekistan* OR Uzbek OR Vanuatu OR Vietnam* OR West Bank OR Gaza OR Palestinian* OR Yemen*	Search modes - Boolean/Phrase	872351
S14	Albania* OR Algeria* OR Samoa OR Antigua* OR Barbuda* OR Argentin* OR Azerbaijan* OR Belarus* OR Bosnia* OR Herzegovin* OR Botswana OR Motswana OR Batswana OR Brazil* OR Bulgaria* OR Chile* OR Colombia* OR Costa Rica* OR Cuba* OR Dominica* OR Dominican Republic OR Fiji* OR Gabon* OR Grenad* OR Iran* OR Jamaica* OR Kazakhstan* OR Leban* OR Libya* OR Lithuania* OR Macedonia* OR Malaysia* OR Mauriti* OR Mayotte OR Mahoran OR Mexic* OR Montenegr* OR Namibia* OR Palau* OR Panama* OR Peru* OR Romania* OR Russia* OR Serbia* OR Seychell* OR South Africa* OR St Lucia* OR Suriname* OR Turk* OR Uruguay* OR Venezuela*	Search modes - Boolean/Phrase	681016
S15	(lmic OR lmics)	Search modes - Boolean/Phrase	1967
S16	(low income OR medium income) N1 (country OR countries OR nation OR nations OR state OR states)	Search modes - Boolean/Phrase	11661
S17	least developed countr* OR least developed nation* OR least developed state*	Search modes - Boolean/Phrase	99060
S18	developing countr* OR developing nation* OR developing state*	Search modes - Boolean/Phrase	832983
S19	(united nations OR world health organization OR world bank OR unicef) AND ((food OR nutrition*) N3 (program* OR project* OR fund))	Search modes - Boolean/Phrase	1412
S20	S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19	Search modes - Boolean/Phrase	1546628
S21	S10 AND S20	Search modes - Boolean/Phrase	17162
S22	(DE "clinical trials" OR DE "controls (experimental)") OR (DE "time series") OR DE "program evaluation"	Search modes - Boolean/Phrase	23578
S23	(compar* OR control*) N10 (study OR trial OR program* OR evaluat* OR assess*)	Search modes - Boolean/Phrase	348370

(Continued)

S24	random* OR control group* OR control subject*	Search modes - Boolean/Phrase	322654
S25	"follow up" OR long-term impact OR long-term effect*	Search modes - Boolean/Phrase	120166
S26	(prospectiv* OR non-random* OR nonrandom* OR retrospectiv* OR longitud*) N6 (stud* OR trial* OR evaluat* OR assess*)	Search modes - Boolean/Phrase	150119
S27	before after stud* OR time series	Search modes - Boolean/Phrase	10227
S28	(control* OR compar*) N6 cohort* N6 (stud* OR trial* OR assess* OR evaluat*)	Search modes - Boolean/Phrase	6599
S29	"before and after"	Search modes - Boolean/Phrase	41781
S30	pre test OR pretest OR posttest OR post test OR pre intervention OR post intervention OR baseline	Search modes - Boolean/Phrase	106600
S31	experiment* OR (evaluat* N1 (program* OR impact*))	Search modes - Boolean/Phrase	299118
S32	S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31	Search modes - Boolean/Phrase	1015368
S33	S21 AND S32	Search modes - Boolean/Phrase	3316
S34	S33	Limiters - Publication Year: 1980-2020	3282

Sociological Abstracts (ProQuest)

14 February 2020

Set	Query	Result
S1	ab((food OR nutrition*) PRE/0 (secur* OR insecur* OR poverty OR sufficien* OR insufficien* OR access*)) OR ti((food OR nutrition*) PRE/0 (secur* OR insecur* OR poverty OR sufficien* OR insufficien* OR access*))	2351
S2	ti((food OR foods OR foodstuff* OR fruit* OR vegetable* OR grocer* OR nutrition*) NEAR/1 (budget* OR shopping OR purchas* OR expend* OR spend* OR spent OR buy* OR acquisition OR acquir*)) OR ab((food OR foods OR foodstuff* OR fruit* OR vegetable* OR grocer* OR nutrition*) NEAR/1 (budget* OR shopping OR purchas* OR expend* OR spend* OR spent OR buy* OR acquisition OR acquir*))	736
S3	ti((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidi*ed OR voucher* OR coupon* OR discount* OR stamp OR stamps) NEAR/2 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition* OR meal OR	452

(Continued)

	meals)) OR ab((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidi*ed OR voucher* OR coupon* OR discount* OR stamp OR stamps) NEAR/2 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition* OR meal OR meals))	
S4	ti((cash OR in-kind OR price) PRE/0 (transfer* OR subsidy OR subsidies)) OR ab((cash OR in-kind OR price) PRE/0 (transfer* OR subsidy OR subsidies))	611
S5	ti((food) PRE/0 (assistance OR aid)) OR ab((food) PRE/0 (assistance OR aid))	354
S6	ti(nutrition* OR food* OR diet*) AND ((social OR economic OR welfare OR agricultural OR labor OR labour OR antipoverty OR poverty) NEAR/1 (program* OR service* OR support OR intervention*))	773
S7	ti((nutrition* OR food*) NEAR/1 program*)	159
S8	ti((nutrition* OR food*) NEAR/1 program*)MAINSUBJECT.EXACT("Food Stamps") OR MAINSUBJECT.EXACT("Food Security")	1399
S9	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8	4732
S10	(afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)	474017
S11	MAINSUBJECT.EXACT("Developing Countries")	8796
S12	lmic OR lmics	179
S13	(("low income" OR "medium income") PRE/1 (country OR countries OR nation OR nations OR state OR states))	1879
S14	("least developed" PRE/1 (country OR countries OR nation OR nations OR state OR states))	575

(Continued)

S15	(developing PRE/1 (country OR countries OR nation OR nations OR state OR states))	30594
S16	("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund))	1133
S17	10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16	483676
S18	9 AND 17	2664
S21	18 AND yr(1980-2029)	2632
S22	(SU.EXACT("Cohort Analysis") OR SU.EXACT("Research Subjects") OR SU.EXACT("Time Series Analysis") OR SU.EXACT("Random Samples") OR SU.EXACT("Comparative Analysis") OR SU.EXACT("Longitudinal Studies"))	14062
S23	ti(random* OR trial OR study OR evaluation OR controlled OR compar*)	117165
S24	"pre test" OR pretest OR posttest OR "post test" OR "pre intervention" OR "post intervention" OR baseline OR "follow up" OR "long-term impact" OR "long-term effect*" OR "before after stud*" OR "time series" OR "before and after" OR random* OR ("control group" OR "control groups") OR ("control subject" OR "control subjects")	111057
S25	cohort* OR prospectiv* OR retrospectiv* OR longitudinal	101579
S26	22 OR 23 OR 24 OR 25	279265
S27	21 AND 26	746

International Clinical Trials Registry Platform	
14 February 2020	
98 records for 98 trials found for:	food secur* OR food insecur* OR food access OR food poverty OR food sufficienc* OR food insufficienc* OR nutrition secur*

Appendix 2. Search strategies for original search (2016)

MEDLINE: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present

1 (food secur* or food insecur* or food poverty or food sufficien* or food insufficien* or food desert*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]

2 ((food or foods or foodstuff* or fruit or fruits or vegetable or vegetables or grocer*) adj5 (budget* or shopping or purchase or purchasing or purchases or expenditure or expenditures or spend or spent or spending or buy or buying or acquisition or acquire or acquiring)).mp.

3 ((foodstuff* or fruit? or vegetable? or grocer* or supermarket? or food store? or food shop? or corner store? or cafeteria? or canteen* or food outlet*) adj5 (access or accessibility or cost or costs or price or prices or pricing)).mp.

4 food system*.mp. and ((fresh or health or healthy or nutrition or nutritional or nutritive or nutrient rich or nutrient dense or adequate or quality or sufficient or insufficient or secure or insecure or safe).mp. or diet/)

5 ((policy or policies) adj5 (food or foods or fruit or fruits or vegetable or vegetables or nutrition or grocer* or meal or meals)).mp.

6 ((council or councils or coalition or coalitions or co-op or co-ops or co-operative*) adj5 (food or foods or fruit or fruits or vegetable or vegetables or nutrition or grocer*)).mp.

7 (access* adj3 food).mp.

8 or/1-7

9 ((deliver or delivery or deliveries or transport or transportation or distribute or distributes or distribution) adj3 (grocer* or meal or meals or fruit or fruits or vegetable? or food?)).mp.

10 (outreach or service or services or scheme or schemes or program or programs or programme or programmes or policy or policies or project or projects or nutrition or nutritional or home or home-based or homes or community or communities or neighbor or neighborhood or neighbour or neighbourhood or rural or urban or provide or provision or choice or control).mp.

11 social welfare/

12 9 and 10

13 9 and 11

14 ((public transport or transport service* or transportation service* or transport scheme or travel or travelling or infrastructure or access) adj5 (food store* or food shop* or food retail* or food outlet or supermarket or grocer*)).mp.

15 ((payment or payments or benefit or benefits or money or purchase or purchasing or purchases or buy or buying or welfare or financing or cash or income) adj5 (food? or foodstuff* or grocer* or fruit? or vegetable? or nutrition or nutritional or meal?) adj10 (supplement or supplementation or assist or assistance or extra or aid or support or help)).mp.

16 ((tax or taxes or taxation or subsidy or subsidies or subsidized or subsidised or voucher* or coupon* or discount*) adj5 (food or foods or foodstuff* or grocer* or fruit* or vegetable* or nutrition or nutritional or meal or meals)).mp.

17 ((Cash transfer* or social protection) and (food or foods or foodstuff* or grocer* or fruit* or vegetable* or nutrition or nutritional or meal or meals)).mp.

18 ((community nutrition or public health nutrition or food access) and (project* or program*)).mp.

19 food assistance/

20 Food/ec [Economics]

21 exp Diet/ec [Economics]

22 8 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21

23 exp animals/ not humans/

24 22 not 23

25 (Afghan* or Bangladesh* or Benin* or Burkina Faso or Burkinabe or Burundi* or Cambodia* or Central African Republic or Central African* or Chad* or Comoros or Comorian* or Congo* or Eritrea* or Ethiopia* or Gambia* or Ghana* or Guinea-Bissau* or Haiti* or Kenya* or Kyrgyz Republic or Kyrgyzstani or Lao* or Liberia* or Madagascar or Malagasy or Malawi* or Mali* or Mauritania* or Mozambique or Mozambican or Myanmar* or Burma or Burmese or Nepal* or Niger* or Rwanda* or Sierra Leone* or Solomon Islands or Solomon Islanders or Somali* or Tajikistan* or Tanzania* or Togo* or Uganda* or Zambia* or Zimbabwe*).mp.

26 (Angola* or Armenia* or Belize* or Bhutan* or Bolivia* or Cameroon* or Cape Verd* or China or Chinese or Cote dIvoire or Ivorian or Djibouti or Ecuador* or Egypt* or El Salvador or Salvadoran or Guatemala* or Guyana or Guyanese or Hondura* or India* or Indonesia* or Iraq* or Jordan* or Kiribati or Kosov* or Lesotho or Mosotho or Basotho or Maldiv* or Marshall Islands or Marshallese or Micronesia* or Moldova* or Mongolia* or Morocc* or Nicaragua* or Nigeria* or Pakistan* or Papua New Guinea* or Paraguay* or Philippines or Filipino or Samoa* or Senegal* or Sri Lanka* or Sudan* or Swaziland or Swazi or Syrian Arab Republic or Syria* or Thailand or Thai or Timor Leste or East Timorese or Tonga* or Tunisia* or Turkmen* or Tuvalu* or Ukrain* or Uzbekistan* or Uzbek or Vanuatu or Vietnam* or West Bank or Gaza or Palestinian* or Yemen*).mp.

27 (Albania* or Algeria* or American Samoa or Antigua* or Barbuda* or Argentin* or Azerbaijan* or Belarus* or Bosnia* or Herzegovin* or Botswana or Motswana or Batswana or Brazil* or Bulgaria* or Chile* or Colombia* or Costa Rica* or Cuba* or Dominica* or Dominican Republic or Fiji* or Gabon* or Grenad* or Iran* or Jamaica* or Kazakhstan* or Leban* or Libya* or Lithuania* or Macedonia* or Malaysia* or Mauriti* or Mayotte or Mahoran or Mexic* or Montenegr* or Namibia* or Palau* or Panama* or Peru* or Romania* or Russia* or Serbia* or Seychell* or South Africa* or St Lucia* or Suriname* or Turk* or Uruguay* or Venezuela*).mp.

28 developing countries/

29 (lmic or lmics).mp.

30 ((low income or medium income) adj5 (country or countries or nation or nations or state or states)).mp.

31 (least developed adj (country or countries or nation or nations or state or states)).mp.

32 (developing adj (country or countries or nation or nations or state or states)).mp.

33 (united nations or world health organization or world bank or unicef or ((food or nutrition*) adj3 (program* or project* or fund))).mp.

34 or/25-33

35 24 and 34

36 (randomized controlled trial or controlled clinical trial).pt.

37 (randomized or placebo or (random* and trial* and group*)).mp.

38 comparative study.pt.

39 control groups/ or control group*.mp. or follow-up studies/ or follow-up stud*.mp. or follow-up assessment.mp. or prospective studies/ or prospectiv*.mp. or non-random*.mp. or nonrandom*.mp.

40 (before after stud* or (time and series) or retrospective* or longitud* or (controlled and cohort* and stud*)).mp.

41 "before and after".mp.

42 (controlled before or pre test or pretest or posttest or post test or pre intervention or post intervention).mp.

43 or/36-42

44 35 and 43

45 limit 44 to yr="1980 -Current"

46 remove duplicates from 45

Cochrane Central Register of Controlled Trials: Issue 8 of 12, August 2016

#1 ("food secur*" or "food insecur*" or "food poverty" or "food sufficien*" or "food insufficien*" or "food desert*"):ti,ab,kw

#2 ((food or foods or foodstuff* or fruit or fruits or vegetable or vegetables or grocer*) near/5 (budget* or shopping or purchase or purchasing or purchases or expenditure or expenditures or spend or spent or spending or buy or buying or acquisition or acquire or acquiring)):ti,ab,kw

#3 ((foodstuff* or fruit or fruits or vegetable or vegetables or grocer* or supermarket* or "food store*" or "food shop*" or "corner store*" or cafeteria* or canteen* or "food outlet*") near/5 (access or accessibility or cost or costs or price or prices or pricing)):ti,ab,kw

#4 food system*:ti,ab,kw and ((fresh or health or healthy or nutrition or nutritional or nutritive or "nutrient rich" or "nutrient dense" or adequate or quality or sufficient or insufficient or secure or insecure or safe):ti,ab,kw or diet:kw)

#5 ((policy or policies) near/5 (food or foods or fruit or fruits or vegetable or vegetables or nutrition or grocer* or meal or meals)):ti,ab,kw

#6 ((council or councils or coalition or coalitions or co-op or co-ops or co-operative*) near/5 (food or foods or fruit or fruits or vegetable or vegetables or nutrition or grocer*)):ti,ab,kw

#7 (access* near/3 food):ti,ab,kw

#8 {or #1-#7}

#9 ((deliver or delivery or deliveries or transport or transportation or distribute or distributes or distribution) near/3 (groceries or meal or meals or fruit or fruits or vegetable or vegetables or food or foods)):ti,ab,kw

#10 (outreach or service or services or scheme or schemes or program or programs or programme or programmes or policy or policies or project or projects or nutrition or nutritional or home or home-based or homes or community or communities or neighbor or neighborhood or neighbour or neighbourhood or rural or urban or provide or provision or choice or control):ti,ab,kw

#11 social welfare:kw

#12 #9 and (#10 or #11)

#13 (("public transport" or "transport service*" or "transportation service*" or "transport scheme" or travel or travelling or infrastructure or access) near/5 ("food store*" or "food shop*" or "food retail*" or "food outlet" or supermarket or grocer*)):ti,ab,kw

#14 ((payment or payments or benefit or benefits or money or purchase or purchasing or purchases or buy or buying or welfare or financing or cash or income) near/5 (food or foods or foodstuff* or groceries or fruit or fruits or vegetable or vegetables or nutrition or nutritional or meal or meals) near/10 (supplement or supplementation or assist or assistance or extra or aid or support or help)):ti,ab,kw

#15 ((tax or taxes or taxation or subsidy or subsidies or subsidized or subsidised or voucher* or coupon* or discount*) near/5 (food or foods or foodstuff* or grocer* or fruit* or vegetable* or nutrition or nutritional or meal or meals)):ti,ab,kw

#16 (("Cash transfer*" or "social protection") and (food or foods or foodstuff* or grocer* or fruit* or vegetable* or nutrition or nutritional or meal or meals)):ti,ab,kw

#17 (("community nutrition" or "public health nutrition" or "food access") and (project* or program*)):ti,ab,kw

#18 [mh "food assistance"]

#19 [mh ^Food/ec]

#20 [mh Diet/ec]

#21 {or #12-#20}

#22 #8 or #21

#23 (Afghan* or Bangladesh* or Benin* or "Burkina Faso" or Burkinabe or Burundi* or Cambodia* or "Central African*" or Chad* or Comoros or Comorian* or Congo* or Eritrea* or Ethiopia* or Gambia* or Ghana* or Guinea-Bissau* or Haiti* or Kenya* or Kyrgyz* or Lao* or Liberia* or Madagascar or Malagasy or Malawi* or Mali* or Mauritania* or Mozambique or Mozambican or Myanmar* or Burma or Burmese or Nepal* or Niger* or Rwanda* or "Sierra Leone*" or "Solomon Island*" or Somali* or Tajikistan* or Tanzania* or Togo* or Uganda* or Zambia* or Zimbabwe*)

#24 (Angola* or Armenia* or Belize* or Bhutan* or Bolivia* or Cameroon* or "Cape Verd*" or China or Chinese or "Cote d'Ivoire" or Ivorian or Djibouti or Ecuador* or Egypt* or "El Salvador" or Salvadoran or Guatemala* or Guyana or Guyanese or Honduras* or India* or Indonesia* or Iraq* or Jordan* or Kiribati or Kosov* or Lesotho or Mosotho or Basotho or Maldiv* or "Marshall Islands" or Marshallese or Micronesia* or Moldova* or Mongolia* or Morocc* or Nicaragua* or Nigeria* or Pakistan* or "Papua New Guinea*" or Paraguay* or Philippines or Filipino or Samoa* or Senegal* or "Sri Lanka*" or Sudan* or Swaziland or Swazi or Syrian or Syria* or Thailand or Thai or Timor* or Tonga* or Tunisia* or Turkmen* or Tuvalu* or Ukrain* or Uzbekistan* or Uzbek or Vanuatu or Vietnam* or "West Bank" or Gaza or Palestinian* or Yemen*)

#25 (Albania* or Algeria* or Samoa or Antigua* or Barbuda* or Argentin* or Azerbaijan* or Belarus* or Bosnia* or Herzegovin* or Botswana or Motswana or Batswana or Brazil* or Bulgaria* or Chile* or Colombia* or Costa Rica* or Cuba* or Dominica* or "Dominican Republic" or Fiji* or Gabon* or Grenad* or Iran* or Jamaica* or Kazakhstan* or Leban* or Libya* or Lithuania* or Macedonia* or Malaysia* or Mauriti* or Mayotte or Mahoran or Mexic* or Montenegr* or Namibia* or Palau* or Panama* or Peru* or Romania* or Russia* or Serbia* or Seychell* or "South Africa*" or "St Lucia*" or Suriname* or Turk* or Uruguay* or Venezuela*)

#26 [mh "developing countries"]

#27 (lmic or lmics):ti,ab,kw

#28 (("low income" or "medium income") near/5 (country or countries or nation or nations or state or states)):ti,ab,kw

#29 ("least developed" next (country or countries or nation or nations or state or states)):ti,ab,kw

#30 (developing next (country or countries or nation or nations or state or states)):ti,ab,kw

#31 ("united nations" or "world health organization" or "world bank" or unicef):ti,ab,kw and ((food or nutrition*) near/3 (program* or project* or fund)):ti,ab,kw

#32 {or #23-#31}

#33 #22 and #32

#34 #33 in Trials

#35 #34 Publication Year from 1980 to 2016

Embase Session Results (16 Sep 2016)

#1 'food security'/exp OR 'food availability'/exp

#2 'food insecurity'/exp

#3 'food secur*':ab,ti OR 'food insecur*':ab,ti OR 'food poverty':ab,ti OR 'food sufficien*':ab,ti OR 'food insufficien*':ab,ti OR 'food desert*':ab,ti OR (access* NEAR/3 food):ab,ti

#4 ((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)):ab,ti

#5 ((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer* OR supermarket* OR 'food store*' OR 'food shop*' OR 'corner store*' OR cafeteria* OR canteen* OR 'food outlet*') NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)):ab,ti

#6 'agrifood system*':ab,ti OR 'food system*':ab,ti AND (fresh:ab,ti OR health:ab,ti OR healthy:ab,ti OR nutrition:ab,ti OR nutritional:ab,ti OR nutritive:ab,ti OR 'nutrient rich':ab,ti OR 'nutrient dense':ab,ti OR adequate:ab,ti OR quality:ab,ti OR sufficient:ab,ti OR insufficient:ab,ti OR secure:ab,ti OR insecure:ab,ti OR safe:ab,ti OR 'diet'/de)

#7 ((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)):ab,ti

#8 ((council OR councils OR coalition OR coalitions OR 'co op' OR 'co ops' OR 'co operative*') NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)):ab,ti

#9 ((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)):ab,ti

#10 outreach:ab,ti OR service:ab,ti OR services:ab,ti OR scheme:ab,ti OR schemes:ab,ti OR program:ab,ti OR programs:ab,ti OR programme:ab,ti OR programmes:ab,ti OR policy:ab,ti OR policies:ab,ti OR project:ab,ti OR projects:ab,ti OR nutrition:ab,ti OR nutritional:ab,ti OR home:ab,ti OR 'home based':ab,ti OR homes:ab,ti OR community:ab,ti OR communities:ab,ti OR neighbor:ab,ti OR neighborhood:ab,ti OR neighbour:ab,ti OR neighbourhood:ab,ti OR rural:ab,ti OR urban:ab,ti OR provide:ab,ti OR provision:ab,ti OR choice:ab,ti OR control:ab,ti

#11 'social welfare'/exp

#12 #9 AND (#10 OR #11)

#13 (('public transport' OR 'transport service*' OR 'transportation service*' OR 'transport scheme' OR travel OR travelling OR infrastructure OR access) NEAR/5 ('food store*' OR 'food shop*' OR 'food retail*' OR 'food outlet' OR supermarket OR grocer*)):ab,ti

#14 ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)):ab,ti

#15 ((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)):ab,ti

#16 'cash transfer*':ab,ti OR 'social protection':ab,ti AND (food:ab,ti OR foods:ab,ti OR foodstuff*:ab,ti OR grocer*:ab,ti OR fruit*:ab,ti OR vegetable*:ab,ti OR nutrition:ab,ti OR nutritional:ab,ti OR meal:ab,ti OR meals:ab,ti)

#17 'community nutrition':ab,ti OR 'public health nutrition':ab,ti OR 'food access':ab,ti AND (project*:ab,ti OR program*:ab,ti)

#18 'food assistance'/exp

#19 #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18

#20 afghan*:de,ab,ti OR bangladesh*:de,ab,ti OR benin*:de,ab,ti OR 'burkina faso':de,ab,ti OR burkinabe:de,ab,ti OR burundi*:de,ab,ti OR cambodia*:de,ab,ti OR 'central african*':de,ab,ti OR chad*:de,ab,ti OR comoros:de,ab,ti OR comorian*:de,ab,ti OR congo*:de,ab,ti OR eritrea*:de,ab,ti OR ethiopia*:de,ab,ti OR gambia*:de,ab,ti OR ghana*:de,ab,ti OR 'guinea bissau*':de,ab,ti OR haiti*:de,ab,ti OR kenya*:de,ab,ti OR kyrgyz*:de,ab,ti OR lao*:de,ab,ti OR liberia*:de,ab,ti OR madagascar:de,ab,ti OR malagasy:de,ab,ti OR malawi*:de,ab,ti OR mali*:de,ab,ti OR mauritania*:de,ab,ti OR mozambique:de,ab,ti OR mozambican:de,ab,ti OR myanmar*:de,ab,ti OR burma:de,ab,ti OR burmese:de,ab,ti OR nepal*:de,ab,ti OR niger*:de,ab,ti OR rwanda*:de,ab,ti OR 'sierra leone*':de,ab,ti OR 'solomon island*':de,ab,ti OR somali*:de,ab,ti OR tajikistan*:de,ab,ti OR tanzania*:de,ab,ti OR togo*:de,ab,ti OR uganda*:de,ab,ti OR zambia*:de,ab,ti OR zimbabwe*:de,ab,ti

#21 angola*:de,ab,ti OR armenia*:de,ab,ti OR belize*:de,ab,ti OR bhutan*:de,ab,ti OR bolivia*:de,ab,ti OR cameroon*:de,ab,ti OR 'cape verd*':de,ab,ti OR china:de,ab,ti OR chinese:de,ab,ti OR (cote NEXT/1 ivoire):de,ab,ti OR ivorian:de,ab,ti OR djibouti:de,ab,ti OR ecuador*:de,ab,ti OR egypt*:de,ab,ti OR 'el salvador':de,ab,ti OR salvadoran:de,ab,ti OR guatemala*:de,ab,ti OR guyana:de,ab,ti OR guyanese:de,ab,ti OR hondura*:de,ab,ti OR india*:de,ab,ti OR indonesia*:de,ab,ti OR iraq*:de,ab,ti OR jordan*:de,ab,ti OR kiribati:de,ab,ti OR kosov*:de,ab,ti OR lesotho:de,ab,ti OR mosotho:de,ab,ti OR basotho:de,ab,ti OR maldiv*:de,ab,ti OR 'marshall islands':de,ab,ti OR marshallese:de,ab,ti OR micronesia*:de,ab,ti OR moldova*:de,ab,ti OR mongolia*:de,ab,ti OR morocc*:de,ab,ti OR nicaragua*:de,ab,ti OR nigeria*:de,ab,ti OR pakistan*:de,ab,ti OR 'papua new guinea*':de,ab,ti OR paraguay*:de,ab,ti OR philippines:de,ab,ti OR filipino:de,ab,ti OR samoa*:de,ab,ti OR senegal*:de,ab,ti OR 'sri lanka*':de,ab,ti OR sudan*:de,ab,ti OR swaziland:de,ab,ti OR swazi:de,ab,ti OR syrian:de,ab,ti OR syria*:de,ab,ti OR thailand:de,ab,ti OR thai:de,ab,ti OR timor*:de,ab,ti OR tonga*:de,ab,ti OR tunisia*:de,ab,ti OR turkmen*:de,ab,ti OR tuvalu*:de,ab,ti OR ukrain*:de,ab,ti OR uzbekistan*:de,ab,ti OR uzbek:de,ab,ti OR vanuatu:de,ab,ti OR vietnam*:de,ab,ti OR 'west bank':de,ab,ti OR gaza:de,ab,ti OR palestinian*:de,ab,ti OR yemen*:de,ab,ti

#22 albania*:de,ab,ti OR algeria*:de,ab,ti OR samoa:de,ab,ti OR antigua*:de,ab,ti OR barbuda*:de,ab,ti OR argentin*:de,ab,ti OR azerbaijan*:de,ab,ti OR belarus*:de,ab,ti OR bosnia*:de,ab,ti OR herzegovin*:de,ab,ti OR botswana:de,ab,ti OR motswana:de,ab,ti OR batswana:de,ab,ti OR brazil*:de,ab,ti OR bulgaria*:de,ab,ti OR chile*:de,ab,ti OR colombia*:de,ab,ti OR costa:de,ab,ti AND rica*:de,ab,ti OR cuba*:de,ab,ti OR dominica*:de,ab,ti OR 'dominican republic':de,ab,ti OR fiji*:de,ab,ti OR gabon*:de,ab,ti OR grenad*:de,ab,ti OR iran*:de,ab,ti OR jamaica*:de,ab,ti OR kazakhstan*:de,ab,ti OR leban*:de,ab,ti OR libya*:de,ab,ti OR lithuania*:de,ab,ti OR macedonia*:de,ab,ti OR malaysia*:de,ab,ti OR mauriti*:de,ab,ti OR mayotte:de,ab,ti OR mahoran:de,ab,ti OR mexic*:de,ab,ti OR montenegr*:de,ab,ti OR namibia*:de,ab,ti OR palau*:de,ab,ti OR panama*:de,ab,ti OR peru*:de,ab,ti OR romania*:de,ab,ti OR russia*:de,ab,ti OR serbia*:de,ab,ti OR seychell*:de,ab,ti OR 'south africa*':de,ab,ti OR 'st lucia*':de,ab,ti OR suriname*:de,ab,ti OR turk*:de,ab,ti OR uruguay*:de,ab,ti OR venezuela*:de,ab,ti

#23 'developing country'/exp

#24 lmic:ab,ti OR lmics:ab,ti

#25 (('low income' OR 'medium income') NEAR/5 (country OR countries OR nation OR nations OR state OR states)):ab,ti

#26 ('least developed' NEXT/1 (country OR countries OR nation OR nations OR state OR states)):ab,ti

#27 (developing NEXT/1 (country OR countries OR nation OR nations OR state OR states)):ab,ti

#28 'united nations':ab,ti OR 'world health organization':ab,ti OR 'world bank':ab,ti OR unicef:ab,ti AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund)):ab,ti

#29 #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28

#30 #19 AND #29

#31 'animal'/exp NOT 'human'/exp

#32 #30 NOT #31

#33 [controlled clinical trial]/lim OR [randomized controlled trial]/lim

#34 randomized:de,ab,ti OR placebo:de,ab,ti OR (random*:de,ab,ti AND trial*:de,ab,ti AND group*:de,ab,ti)

#35 random*:de,ab,ti OR placebo:de,ab,ti OR (random*:de,ab,ti AND trial*:de,ab,ti AND group*:de,ab,ti)

#36 'comparative study'/de

#37 'control group'/exp OR 'follow up'/exp OR 'prospective study'/exp OR 'epidemiology'/de OR 'time series analysis'/exp OR 'retrospective study'/exp OR 'longitudinal study'/exp OR 'pretest posttest control group design'/exp

#38 'control group*':ab,ti OR 'follow up':ab,ti OR prospectiv*:ab,ti OR 'non random*':ab,ti OR nonrandom*:ab,ti

#39 'before after stud*':ab,ti OR 'before and after':ab,ti OR 'time series':ab,ti OR retrospective*:ab,ti OR longitud*:ab,ti

#40 controlled:de,ab,ti AND cohort*:de,ab,ti AND stud*:de,ab,ti

#41 'controlled before':ab,ti OR 'pre test':ab,ti OR pretest:ab,ti OR posttest:ab,ti OR 'post test':ab,ti OR 'pre intervention':ab,ti OR 'post intervention':ab,ti

#42 #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41

#43 #32 AND #42

#44 #43 AND [1980-2016]/py

#45 #44 AND [embase]/lim

GreenFILE 16 September 2016

#	Query	Limiters/Expanders
S1	DE "FOOD consumption"	Search modes - Boolean/Phrase
S2	(food secur* OR food insecur* OR food poverty OR food sufficien* OR food insufficien* OR food desert*)	Search modes - Boolean/Phrase
S3	((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) N5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))	Search modes - Boolean/Phrase
S4	((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket OR supermarkets OR grocery store OR grocery stores OR food store OR food stores OR food shop OR food shops OR corner store OR corner stores OR cafeteria OR cafeterias OR canteen* OR food outlet*) N5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))	Search modes - Boolean/Phrase
S5	food system* AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR nutrient rich OR nutrient dense OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe OR diet)	Search modes - Boolean/Phrase
S6	((policy OR policies) N5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))	Search modes - Boolean/Phrase
S7	((council OR councils OR coalition OR coalitions OR co-op OR co-ops OR co-operative*) N5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))	Search modes - Boolean/Phrase
S8	(access* N3 food)	Search modes - Find all my search terms
S9	(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) N3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) AND ((outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR home-based OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control OR welfare))	Search modes - Boolean/Phrase

(Continued)

S10	((public transport OR transport service* OR transportation service* OR transport scheme OR travel OR travelling OR infrastructure OR access) N5 (food store* OR food shop* OR food retail* OR food outlet OR supermarket OR grocer*))	Search modes - Boolean/Phrase
S11	((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) N5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) N10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help))	Search modes - Boolean/Phrase
S12	((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) N5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))	Search modes - Boolean/Phrase
S13	((Cash transfer* OR social protection) AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))	Search modes - Boolean/Phrase
S14	((community nutrition OR public health nutrition OR food access) AND (project* OR program*))	Search modes - Boolean/Phrase
S15	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14	Search modes - Find all my search terms
S16	(Afghan* OR Bangladesh* OR Benin* OR Burkina Faso OR Burkinabe OR Burundi* OR Cambodia* OR Central African Republic OR Central African* OR Chad* OR Comoros OR Comorian* OR Congo* OR Eritrea* OR Ethiopia* OR Gambia* OR Ghana* OR Guinea-Bissau* OR Haiti* OR Kenya* OR Kyrgyz Republic OR Kyrgyzstani OR Lao* OR Liberia* OR Madagascar OR Malagasy OR Malawi* OR Mali* OR Mauritania* OR Mozambique OR Mozambican OR Myanmar* OR Burma OR Burmese OR Nepal* OR Niger* OR Rwanda* OR Sierra Leone* OR Solomon Islands OR Solomon Islanders OR Somali* OR Tajikistan* OR Tanzania* OR Togo* OR Uganda* OR Zambia* OR Zimbabwe*)	Search modes - Boolean/Phrase
S17	(Angola* OR Armenia* OR Belize* OR Bhutan* OR Bolivia* OR Cameroon* OR Cape Verd* OR China OR Chinese OR Cote dIvoire OR Ivorian OR Djibouti OR Ecuador* OR Egypt* OR El Salvador OR Salvadoran OR Guatemala* OR Guyana OR Guyanese OR Hondura* OR India* OR Indonesia* OR Iraq* OR Jordan* OR Kiribati OR Kosov* OR Lesotho OR Mosotho OR Basotho OR Maldiv* OR Marshall Islands OR Marshallese OR Micronesia* OR Moldova* OR Mongolia* OR Morocc* OR Nicaragua* OR Nigeria* OR Pakistan* OR Papua New Guinea* OR Paraguay* OR Philippines OR Filipino OR Samoa* OR Senegal* OR Sri Lanka* OR Sudan* OR Swaziland OR Swazi OR Syrian Arab Republic OR Syria* OR Thailand OR Thai OR Timor Leste OR East Timorese OR Tonga* OR Tunisia* OR Turkmen* OR Tuvalu* OR Ukrain* OR Uzbekistan* OR Uzbek OR Vanuatu OR Vietnam* OR West Bank OR Gaza OR Palestinian* OR Yemen*)	Search modes - Boolean/Phrase
S18	(Albania* OR Algeria* OR American Samoa OR Antigua* OR Barbuda* OR Argentin* OR Azerbaijan* OR Belarus* OR Bosnia* OR Herzegovin* OR Botswana OR Motswana OR Batswana OR Brazil* OR Bulgaria* OR Chile* OR Colombia* OR Costa Rica* OR Cuba* OR Dominica* OR Dominican Republic OR Fiji* OR Gabon* OR Grenad* OR Iran* OR Jamaica* OR Kazakhstan* OR Leban* OR Libya* OR Lithuania* OR Macedonia* OR Malaysia* OR Mauriti* OR Mayotte OR Mahoran OR Mexic* OR Montenegr* OR Namibia* OR Palau* OR Panama* OR Peru* OR Romania* OR Russia* OR Serbia* OR Seychell* OR South Africa* OR St Lucia* OR Suriname* OR Turk* OR Uruguay* OR Venezuela*)	Search modes - Boolean/Phrase

(Continued)

S19	(lmic OR lmics)	Search modes - Find all my search terms
S20	((low income OR medium income) N5 (country OR countries OR nation OR nations OR state OR states))	Search modes - Boolean/Phrase
S21	(least developed N1 (country OR countries OR nation OR nations OR state OR states))	Search modes - Boolean/Phrase
S22	(developing N1 (country OR countries OR nation OR nations OR state OR states))	Search modes - Boolean/Phrase
S23	(united nations OR world health organization OR world bank OR unicef OR ((food OR nutrition*) N3 (program* OR project* OR fund)))	Search modes - Boolean/Phrase
S24	S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23	Search modes - Find all my search terms
S25	S15 AND S24	Limiters - Publication Date: 19800101-20161231
S26	compar* AND (study OR trial OR program*)	Search modes - Boolean/Phrase
S27	random* OR controlled OR placebo OR control group*	Search modes - Boolean/Phrase
S28	follow up	Search modes - Boolean/Phrase
S29	prospectiv* OR non-random* OR nonrandom*	Search modes - Boolean/Phrase
S30	before after stud* OR (time AND series) OR retrospectiv* OR longitud*	Search modes - Boolean/Phrase
S31	control* AND cohort* AND study	Search modes - Boolean/Phrase
S32	"before and after"	Search modes - Boolean/Phrase
S33	pre test OR pretest OR posttest OR post test OR pre intervention OR post intervention	Search modes - Boolean/Phrase
S34	S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33	Search modes - Find all my search terms
S35	S25 AND S34	Search modes - Boolean/Phrase

AfricaBib 15 July 2016

(Continued)

Field	Search	Mode
Title	food security	exact phrase
Title	food insecurity	exact phrase
Title	food access	whole words
Title	food poverty	exact phrase
Title	food sufficiency	exact phrase
Title	nutrition security	exact phrase
Title	food insufficiency	exact phrase
Title	healthy food	whole field
Title	nutritious food	whole field
Subject	food security	whole words
Subject	food insecurity	whole words
Subject	food access	whole field
Subject	food poverty	whole words
Subject	food sufficiency	whole words
Subject	nutrition security	whole words
Subject	food insufficiency	whole words
Subject	healthy food	whole field
Subject	nutritious food	whole field
Abstract	food security	exact phrase
Abstract	food insecurity	exact phrase
Abstract	healthy food access	whole words
Abstract	nutritious food access	whole words
Abstract	food poverty	exact phrase
Abstract	food sufficiency	exact phrase
Abstract	nutrition security	exact phrase
Abstract	food insufficiency	exact phrase

AGRIS (16 September 2016)

(""food security"" OR ""food insecurity"" OR ""food poverty"" OR ""food sufficiency"" OR ""food insufficiency"" OR ""food desert"" OR ""food access"" OR ""nutrition security"" OR ""food purchase"") AND ((random* OR controlled OR placebo OR ""control group"" OR ""follow up"" OR prospectiv* OR non-random* OR nonrandom* OR ""before and after"" OR ""time series"" OR retrospective* OR longitud* OR ""pre test"" OR pretest OR posttest OR ""post test"" OR ""pre intervention"" OR ""post intervention"") OR (control* AND cohort* AND study)) OR (compar* AND (study OR trial OR program*)) +publicationDate:[1980 TO 2016]

Agricola 16 September 2016

Database Name: Article Citation Database

Search Request: Command = (T000 OR U000) AND ("food supply" OR "food insecurity" OR "food secure" OR "food purchase" OR "food access" OR "food price" OR "food environment" OR "food security" OR "nutrition security" OR "food purchase")

Published after 1979

Search Results: 975 entries.

Subject category codes

Human Nutrition (T000)

Home Economics and Human Ecology (U000)

Africa-Wide Information (Ebsco) 17 September 2016

#	Query	Limiters/Expanders
S1	(food secur* OR food insecur* OR food poverty OR food sufficien* OR food insufficien* OR food desert* OR nutrition secur*)	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S2	((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) N5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S3	((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer* OR supermarket* OR food store* OR food shop* OR corner store* OR cafeteria* OR canteen* OR food outlet*) N5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S4	food system* AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR nutrient rich OR nutrient dense OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S5	((policy OR policies) N5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online

(Continued)

S6	((council OR councils OR coalition OR coalitions OR co-op OR co-ops OR co-operative*) N5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR grocer*))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S7	(access* N3 food)	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S8	(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) N3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) AND ((outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR home-based OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control OR welfare))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S9	((public transport OR transport service* OR transportation service* OR transport scheme OR travel OR travelling OR infrastructure OR access) N5 (food store* OR food shop* OR food retail* OR food outlet OR supermarket* OR grocer*))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S10	((payment* OR benefit* OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) N5 (food OR foods OR foodstuff* OR grocer* OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) N10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S11	((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) N5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S12	((Cash transfer* OR social protection) AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S13	((community nutrition OR public health nutrition OR food access) AND (project* OR program*))	Limiters - Data Contributor: AFRICAN HEALTHLINE, ...African Journals Online
S14	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13	Limiters - Year Published: 1980-2015
S15	compar* AND (study OR trial OR program*)	Search modes - Boolean/Phrase
S16	random* OR controlled OR placebo OR control group*	Search modes - Boolean/Phrase
S17	follow up	Search modes - Boolean/Phrase

(Continued)

S18	prospectiv* OR non-random* OR nonrandom*	Search modes - Boolean/ Phrase
S19	before after stud* OR (time AND series) OR retrospectiv* OR longitud*	Search modes - Boolean/ Phrase
S20	control* AND cohort* AND study	Search modes - Boolean/ Phrase
S21	"before and after"	Search modes - Boolean/ Phrase
S22	pre test OR pretest OR posttest OR post test OR pre intervention OR post intervention	Search modes - Boolean/ Phrase
S23	S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22	Search modes - Boolean/ Phrase
S24	S14 AND S23	Search modes - Boolean/ Phrase

Trials Register of Promoting Health Interventions (TRoPHI) 17 September 2016

1 Freetext (All but Authors): "secur*" OR "insecur*" OR "access*" OR "purchas*" OR "expen*" OR "price*" OR "availab*"

2 Focus of the report: healthy eating

3 In which country/countries was the study carried out?: Developing countries

4 1 AND 2 AND 3

5 Freetext (All but Authors): "food security" OR "food insecurity" OR "nutrition security"

6 Freetext (All but Authors): "food" NEAR "access*"

7 4 OR 5 OR 6

WHO Global Index Medicus (17 September 2016)

(ti:((food* OR fruit* OR vegetable* OR nutrition*) AND (secur* OR access* OR supply OR price* OR insecur* OR purchas*))) AND (instance:"ghl") AND (db:("LILACS" OR "WPRIM" OR "IMSEAR" OR "IMEMR" OR "WHOLIS" OR "BDENF"))

tw:("food security" OR "food insecurity" OR "food poverty" OR "food sufficiency" OR "nutrition security" OR "food insufficiency" OR "food insufficience") AND (instance:"ghl") AND (db:("LILACS" OR "WPRIM" OR "IMSEAR" OR "IMEMR" OR "WHOLIS" OR "BDENF"))

mh:("Food and Nutrition Security" OR "World Food Programme") AND (instance:"ghl") AND (db:("LILACS" OR "WPRIM" OR "IMSEAR" OR "IMEMR" OR "WHOLIS" OR "BDENF"))

Web of Science 17 September 2016

1 TOPIC: ("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/2 food))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

2 TS=((food* OR fruit* OR vegetable* OR grocer* OR meal OR diet) NEAR/4 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

3 TOPIC: (((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/4 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

4 TS=(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe OR diet))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

5 TOPIC: (((policy OR policies) NEAR/4 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

6 TOPIC: (((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/4 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

7 TOPIC: (((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/2 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

8 TOPIC: ((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/4 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

9 TOPIC: (((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/4 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/9 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

10 TOPIC: (((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/4 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

11 TS=(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

12 TS=(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

13 #12 OR #11 OR #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

14 TOPIC: (afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*)

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

15 TOPIC: (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands"

OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen*)

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

16 TOPIC: (albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

17 TOPIC: (lmic OR lmics)

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

18 TS=((("low income" OR "medium income") AND (country OR countries OR nation OR nations OR state OR states)))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

19 TS=("developing countr*" OR "developing nation*" OR "developing state*")

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

20 TS=("least developed countr*" OR "least developed nation*" OR "least developed state*")

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

21 TS=(("united nations" OR "world health organization" OR "world bank" OR unicef) AND (food OR nutrition*) AND (program* OR project* OR fund))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

22 #21 OR #20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

23 #22 AND #13

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

24 TOPIC: (compar* AND (study OR trial OR program*))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

25 TOPIC: (random* OR controlled OR placebo OR "control group*")

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

26 TOPIC: ("follow up")

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

27 TOPIC: (prospectiv* OR non-random* OR nonrandom*)

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

28 TOPIC: (("before after stud*" OR "time series" OR retrospectiv* OR longitud*))

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

29 TOPIC: (control* AND cohort* AND study)

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

30 TOPIC: ("before and after")

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

31 TOPIC: ("pre test" OR pretest OR posttest OR "post test" OR "pre intervention" OR "post intervention")

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

32 #31 OR #30 OR #29 OR #28 OR #27 OR #26 OR #25 OR #24

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

33 #32 AND #23

Indexes=SCI-EXPANDED, SSCI, CPCI-S Timespan=1980-2016

Refined by: [excluding] WEB OF SCIENCE CATEGORIES: (PLANT SCIENCES OR ZOOLOGY OR VETERINARY SCIENCES)

34 #32 AND #23

Sociological Abstracts (ProQuest)

September 17 2016 15:06

S1 SU.EXACT("Food Security")

S2 ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))

S3 ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))

S4 ab(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))) OR ti(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)))

S5 ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))

S6 ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))

S7 ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))

S8 ((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND SU.EXACT("Social Welfare")

S9 ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))

S10 ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help))

S11 ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))

S12 ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))

S13 ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*))

S14 SU.EXACT("Food Security") OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))) OR ti(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND SU.EXACT("Social Welfare")) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))) OR (ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional

OR meal OR meals))) OR (ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)))

S15 (afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)

S16 SU.EXACT("Developing Countries")

S17 lmic OR lmics

S18 (("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states))

S19 ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states))

S20 (developing NEAR/1 (country OR countries OR nation OR nations OR state OR states))

S21 ("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund))

S22 ((afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)) OR SU.EXACT("Developing Countries") OR (lmic OR lmics) OR (("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund)))

S23 (SU.EXACT("Food Security") OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))) OR ti(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food

shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND SU.EXACT("Social Welfare")) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))) OR (ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR (ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)))) AND (((afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)) OR SU.EXACT("Developing Countries") OR (lmic OR lmics) OR (("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund))))

S24 (SU.EXACT("Food Security") OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(((foodstuff* OR

fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))) OR ti(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND SU.EXACT("Social Welfare")) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))) OR (ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR (ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)))) AND (((afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino 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(country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund)))) AND pd(19800101-20161231)

S25 (compar* AND (study OR trial OR program*)) OR ((random* OR controlled OR placebo OR "control group*") OR ("follow up")) OR ((prospectiv* OR non-random* OR nonrandom*) OR ("before after stud*" OR (time AND series) OR retrospectiv* OR longitud*)) OR ((control* AND cohort* AND study) OR ("before and after")) OR ("pre test" OR pretest OR posttest OR "post test" OR "pre intervention"

OR "post intervention") OR (SU.EXACT("Cohort Analysis") OR SU.EXACT("Research Subjects") OR SU.EXACT("Time Series Analysis") OR SU.EXACT("Random Samples") OR SU.EXACT("Comparative Analysis") OR SU.EXACT("Longitudinal Studies"))

S26 ((SU.EXACT("Food Security") OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))) OR ti(((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket* OR "grocery store*" OR "food store*" OR "food shop*" OR "corner store*" OR cafeteria* OR canteen* OR "food outlet*") NEAR/5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND SU.EXACT("Social Welfare")) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR 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OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st

lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)) OR SU.EXACT("Developing Countries") OR (lmic OR lmics) OR (("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR (("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund)))) AND pd(19800101-20161231)) AND ((compar* AND (study OR trial OR program*)) OR ((random* OR controlled OR placebo OR "control group*") OR ("follow up")) OR ((prospectiv* OR non-random* OR nonrandom*) OR ("before after stud*" OR (time AND series) OR retrospectiv* OR longitud*)) OR ((control* AND cohort* AND study) OR ("before and after")) OR ("pre test" OR pretest OR posttest OR "post test" OR "pre intervention" OR "post intervention") OR (SU.EXACT("Cohort Analysis") OR SU.EXACT("Research Subjects") OR SU.EXACT("Time Series Analysis") OR SU.EXACT("Random Samples") OR SU.EXACT("Comparative Analysis") OR SU.EXACT("Longitudinal Studies")))

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September 17 2016 16:28

S1 SU.EXACT("Food security") OR SU.EXACT("Food safety") OR SU.EXACT("Food policy") OR SU.EXACT("Food price policy")

S2 ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))

S3 ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))

S4 ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))

S5 ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))

S6 ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))

S7 ((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND (SU.EXACT("Social Welfare") OR SU.EXACT("Social support"))

S8 ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))

S9 ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help))

S10 ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))

S11 ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))

S12 ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*))

S13 (SU.EXACT("Food security") OR SU.EXACT("Food safety") OR SU.EXACT("Food policy") OR SU.EXACT("Food price policy")) OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND (SU.EXACT("Social Welfare") OR SU.EXACT("Social support"))) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))) OR (ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR (ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)))

S14 (afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR

grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)

S15 SU.EXACT("Developing countries") OR SU.EXACT("Less developed countries") OR SU.EXACT("Developing areas")

S16 (lmic OR lmics) OR ((("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states))) OR ((developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR ("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund)))

S17 ((afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)) OR (SU.EXACT("Developing countries") OR SU.EXACT("Less developed countries") OR SU.EXACT("Developing areas")) OR ((lmic OR lmics) OR ((("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states))) OR ((developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR ("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund))))

S18 ((SU.EXACT("Food security") OR SU.EXACT("Food safety") OR SU.EXACT("Food policy") OR SU.EXACT("Food price policy")) OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND (SU.EXACT("Social Welfare") OR SU.EXACT("Social support"))) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR

foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))) OR (ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR (ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*))))) AND (((afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)) OR (SU.EXACT("Developing countries") OR SU.EXACT("Less developed countries") OR SU.EXACT("Developing areas")) OR ((lmic OR lmics) OR ((("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states))) OR ((developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR ("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund)))))

S19 ((SU.EXACT("Food security") OR SU.EXACT("Food safety") OR SU.EXACT("Food policy") OR SU.EXACT("Food price policy")) OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND (SU.EXACT("Social Welfare") OR SU.EXACT("Social support"))) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR

foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))) OR (ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR (ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*))))) AND (((afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)) OR (SU.EXACT("Developing countries") OR SU.EXACT("Less developed countries") OR SU.EXACT("Developing areas")) OR ((lmic OR lmics) OR (("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states))) OR ((developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR ("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund))))) AND pd(19800101-20161231)

S20 SU.EXACT("Comparative analysis") OR SU.EXACT("Long-term analysis") OR SU.EXACT("Time series") OR SU.EXACT("Random sampling") OR SU.EXACT("Control groups") OR SU.EXACT("Cohort analysis")

S21 (compar* AND (study OR trial OR program*)) OR ((random* OR controlled OR placebo OR "control group*") OR ("follow up")) OR ((prospectiv* OR non-random* OR nonrandom*) OR ("before after stud*" OR (time AND series) OR retrospectiv* OR longitud*)) OR ((control* AND cohort* AND study) OR ("before and after")) OR ("pre test" OR pretest OR posttest OR "post test" OR "pre intervention" OR "post intervention")

S22 (SU.EXACT("Comparative analysis") OR SU.EXACT("Long-term analysis") OR SU.EXACT("Time series") OR SU.EXACT("Random sampling") OR SU.EXACT("Control groups") OR SU.EXACT("Cohort analysis")) OR ((compar* AND (study OR trial OR program*)) OR ((random* OR controlled OR placebo OR "control group*") OR ("follow up")) OR ((prospectiv* OR non-random* OR nonrandom*) OR ("before after stud*" OR (time AND series) OR retrospectiv* OR longitud*)) OR ((control* AND cohort* AND study) OR ("before and after")) OR ("pre test" OR pretest OR posttest OR "post test" OR "pre intervention" OR "post intervention"))

S23 (((SU.EXACT("Food security") OR SU.EXACT("Food safety") OR SU.EXACT("Food policy") OR SU.EXACT("Food price policy")) OR (ab("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food)) OR ti("food secur*" OR "food insecur*" OR "food poverty" OR "food sufficien*" OR "food insufficien*" OR "food desert*" OR (access* NEAR/3 food))) OR (ab(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))) OR ti(((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) NEAR/5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring)))) OR (ab(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)) OR ti(("agrifood system*" OR "food system*") AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR "nutrient rich" OR "nutrient dense" OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe))) OR (ab(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))) OR ti(((policy OR policies) NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals)))) OR (ab(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))) OR ti(((council OR councils OR coalition OR coalitions OR "co op" OR "co ops" OR "co operative*") NEAR/5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries)))) OR (((ab(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) OR ti(((deliver OR delivery OR

deliveries OR transport OR transportation OR distribute OR distributes OR distribution) NEAR/3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods)))) OR (ab(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control) OR ti(outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR "home based" OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control))) AND (SU.EXACT("Social Welfare") OR SU.EXACT("Social support"))) OR (ab((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*))) OR ti((("public transport" OR "transport service*" OR "transportation service*" OR "transport scheme" OR travel OR travelling OR infrastructure OR access) NEAR/5 ("food store*" OR "food shop*" OR "food retail*" OR "food outlet" OR supermarket OR grocer*)))) OR ((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) NEAR/5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) NEAR/10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help)) OR (ab(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR ti(((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) NEAR/5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)))) OR (ab(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals)) OR ti(("cash transfer*" OR "social protection") AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))) OR (ab(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)) OR ti(("community nutrition" OR "public health nutrition" OR "food access") AND (project* OR program*)))) AND (((afghan* OR bangladesh* OR benin* OR "burkina faso" OR burkinabe OR burundi* OR cambodia* OR "central african*" OR chad* OR comoros OR comorian* OR congo* OR eritrea* OR ethiopia* OR gambia* OR ghana* OR "guinea bissau*" OR haiti* OR kenya* OR kyrgyz* OR lao* OR liberia* OR madagascar OR malagasy OR malawi* OR mali* OR mauritania* OR mozambique OR mozambican OR myanmar* OR burma OR burmese OR nepal* OR niger* OR rwanda* OR "sierra leone*" OR "solomon island*" OR somali* OR tajikistan* OR tanzania* OR togo* OR uganda* OR zambia* OR zimbabwe*) OR (angola* OR armenia* OR belize* OR bhutan* OR bolivia* OR cameroon* OR "cape verd*" OR china OR chinese OR (cote NEAR/1 ivoire) OR ivorian OR djibouti OR ecuador* OR egypt* OR "el salvador" OR salvadoran OR guatemala* OR guyana OR guyanese OR hondura* OR india* OR indonesia* OR iraq* OR jordan* OR kiribati OR kosov* OR lesotho OR mosotho OR basotho OR maldiv* OR "marshall islands" OR marshallese OR micronesia* OR moldova* OR mongolia* OR morocc* OR nicaragua* OR nigeria* OR pakistan* OR "papua new guinea*" OR paraguay* OR philippines OR filipino OR samoa* OR senegal* OR "sri lanka*" OR sudan* OR swaziland OR swazi OR syrian OR syria* OR thailand OR thai OR timor* OR tonga* OR tunisia* OR turkmen* OR tuvalu* OR ukrain* OR uzbekistan* OR uzbek OR vanuatu OR vietnam* OR "west bank" OR gaza OR palestinian* OR yemen* OR albania* OR algeria* OR samoa OR antigua* OR barbuda* OR argentin* OR azerbaijan* OR belarus* OR bosnia* OR herzegovin* OR botswana OR motswana OR batswana OR brazil* OR bulgaria* OR chile* OR colombia* OR costa AND rica* OR cuba* OR dominica* OR "dominican republic" OR fiji* OR gabon* OR grenad* OR iran* OR jamaica* OR kazakhstan* OR leban* OR libya* OR lithuania* OR macedonia* OR malaysia* OR mauriti* OR mayotte OR mahoran OR mexic* OR montenegr* OR namibia* OR palau* OR panama* OR peru* OR romania* OR russia* OR serbia* OR seychell* OR "south africa*" OR "st lucia*" OR suriname* OR turk* OR uruguay* OR venezuela*)) OR (SU.EXACT("Developing countries") OR SU.EXACT("Less developed countries") OR SU.EXACT("Developing areas")) OR ((lmic OR lmics) OR ((("low income" OR "medium income") NEAR/5 (country OR countries OR nation OR nations OR state OR states)) OR ("least developed" NEAR/1 (country OR countries OR nation OR nations OR state OR states))) OR ((developing NEAR/1 (country OR countries OR nation OR nations OR state OR states)) OR ("united nations" OR "world health organization" OR "world bank" OR unicef) AND ((food OR nutrition*) NEAR/3 (program* OR project* OR fund))))) AND pd(19800101-20161231)) AND ((SU.EXACT("Comparative analysis") OR SU.EXACT("Long-term analysis") OR SU.EXACT("Time series") OR SU.EXACT("Random sampling") OR SU.EXACT("Control groups") OR SU.EXACT("Cohort analysis")) OR ((compar* AND (study OR trial OR program*)) OR ((random* OR controlled OR placebo OR "control group*") OR ("follow up")) OR ((prospectiv* OR non-random* OR nonrandom*) OR ("before after stud*" OR (time AND series) OR retrospectiv* OR longitud*)) OR ((control* AND cohort* AND study) OR ("before and after")) OR ("pre test" OR pretest OR posttest OR "post test" OR "pre intervention" OR "post intervention")))

Global Health (Ebsco) 17 September 2016

#	Query	Limiters/Expanders
S1	(DE "food security") OR (DE "food policy") OR (DE "food aid" OR DE "food distribution programs")	Search modes - Boolean/Phrase

(Continued)

S2	(food secur* OR food insecur* OR food poverty OR food sufficien* OR food insufficien* OR food desert*)	Search modes - Boolean/Phrase
S3	((food OR foods OR foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR grocer*) N5 (budget* OR shopping OR purchase OR purchasing OR purchases OR expenditure OR expenditures OR spend OR spent OR spending OR buy OR buying OR acquisition OR acquire OR acquiring))	Search modes - Boolean/Phrase
S4	((foodstuff* OR fruit OR fruits OR vegetable OR vegetables OR groceries OR supermarket OR supermarkets OR grocery store OR grocery stores OR food store OR food stores OR food shop OR food shops OR corner store OR corner stores OR cafeteria OR cafeterias OR canteen* OR food outlet*) N5 (access OR accessibility OR cost OR costs OR price OR prices OR pricing))	Search modes - Boolean/Phrase
S5	food system* AND (fresh OR health OR healthy OR nutrition OR nutritional OR nutritive OR nutrient rich OR nutrient dense OR adequate OR quality OR sufficient OR insufficient OR secure OR insecure OR safe)	Search modes - Boolean/Phrase
S6	((policy OR policies) N5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries OR meal OR meals))	Search modes - Boolean/Phrase
S7	((council OR councils OR coalition OR coalitions OR co-op OR co-ops OR co-operative*) N5 (food OR foods OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR groceries))	Search modes - Boolean/Phrase
S8	(access* N3 food)	Search modes - Boolean/Phrase
S9	(((deliver OR delivery OR deliveries OR transport OR transportation OR distribute OR distributes OR distribution) N3 (groceries OR meal OR meals OR fruit OR fruits OR vegetable OR vegetables OR food OR foods))) AND ((outreach OR service OR services OR scheme OR schemes OR program OR programs OR programme OR programmes OR policy OR policies OR project OR projects OR nutrition OR nutritional OR home OR home-based OR homes OR community OR communities OR neighbor OR neighborhood OR neighbour OR neighbourhood OR rural OR urban OR provide OR provision OR choice OR control OR welfare))	Search modes - Boolean/Phrase
S10	((public transport OR transport service* OR transportation service* OR transport scheme OR travel OR travelling OR infrastructure OR access) N5 (food store* OR food shop* OR food retail* OR food outlet OR supermarket OR grocer*))	Search modes - Boolean/Phrase
S11	((payment OR payments OR benefit OR benefits OR money OR purchase OR purchasing OR purchases OR buy OR buying OR welfare OR financing OR cash OR income) N5 (food OR foods OR foodstuff* OR groceries OR fruit OR fruits OR vegetable OR vegetables OR nutrition OR nutritional OR meal OR meals) N10 (supplement OR supplementation OR assist OR assistance OR extra OR aid OR support OR help))	Search modes - Boolean/Phrase
S12	((tax OR taxes OR taxation OR subsidy OR subsidies OR subsidized OR subsidised OR voucher* OR coupon* OR discount*) N5 (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))	Search modes - Boolean/Phrase
S13	((Cash transfer* OR social protection) AND (food OR foods OR foodstuff* OR grocer* OR fruit* OR vegetable* OR nutrition OR nutritional OR meal OR meals))	Search modes - Boolean/Phrase

(Continued)

S14	((community nutrition OR public health nutrition OR food access) AND (project* OR program*))	Search modes - Boolean/Phrase
S15	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14	Search modes - Boolean/Phrase
S16	DE "Developing Countries" OR DE "Least Developed Countries"	Search modes - Boolean/Phrase
S17	(Afghan* OR Bangladesh* OR Benin* OR Burkina Faso OR Burkinabe OR Burundi* OR Cambodia* OR Central African Republic OR Central African* OR Chad* OR Comoros OR Comorian* OR Congo* OR Eritrea* OR Ethiopia* OR Gambia* OR Ghana* OR Guinea-Bissau* OR Haiti* OR Kenya* OR Kyrgyz Republic OR Kyrgyzstani OR Lao* OR Liberia* OR Madagascar OR Malagasy OR Malawi* OR Mali* OR Mauritania* OR Mozambique OR Mozambican OR Myanmar* OR Burma OR Burmese OR Nepal* OR Niger* OR Rwanda* OR Sierra Leone* OR Solomon Islands OR Solomon Islanders OR Somali* OR Tajikistan* OR Tanzania* OR Togo* OR Uganda* OR Zambia* OR Zimbabwe*)	Search modes - Boolean/Phrase
S18	(Angola* OR Armenia* OR Belize* OR Bhutan* OR Bolivia* OR Cameroon* OR Cape Verd* OR China OR Chinese OR Cote dIvoire OR Ivorian OR Djibouti OR Ecuador* OR Egypt* OR El Salvador OR Salvadoran OR Guatemala* OR Guyana OR Guyanese OR Hondura* OR India* OR Indonesia* OR Iraq* OR Jordan* OR Kiribati OR Kosov* OR Lesotho OR Mosotho OR Basotho OR Maldiv* OR Marshall Islands OR Marshallese OR Micronesia* OR Moldova* OR Mongolia* OR Morocc* OR Nicaragua* OR Nigeria* OR Pakistan* OR Papua New Guinea* OR Paraguay* OR Philippines OR Filipino OR Samoa* OR Senegal* OR Sri Lanka* OR Sudan* OR Swaziland OR Swazi OR Syrian Arab Republic OR Syria* OR Thailand OR Thai OR Timor Leste OR East Timorese OR Tonga* OR Tunisia* OR Turkmen* OR Tuvalu* OR Ukrain* OR Uzbekistan* OR Uzbek OR Vanuatu OR Vietnam* OR West Bank OR Gaza OR Palestinian* OR Yemen*)	Search modes - Boolean/Phrase
S19	(Albania* OR Algeria* OR American Samoa OR Antigua* OR Barbuda* OR Argentin* OR Azerbaijan* OR Belarus* OR Bosnia* OR Herzegovin* OR Botswana OR Motswana OR Batswana OR Brazil* OR Bulgaria* OR Chile* OR Colombia* OR Costa Rica* OR Cuba* OR Dominica* OR Dominican Republic OR Fiji* OR Gabon* OR Grenad* OR Iran* OR Jamaica* OR Kazakhstan* OR Leban* OR Libya* OR Lithuania* OR Macedonia* OR Malaysia* OR Mauriti* OR Mayotte OR Mahoran OR Mexic* OR Montenegr* OR Namibia* OR Palau* OR Panama* OR Peru* OR Romania* OR Russia* OR Serbia* OR Seychell* OR South Africa* OR St Lucia* OR Suriname* OR Turk* OR Uruguay* OR Venezuela*)	Search modes - Boolean/Phrase
S20	(lmic OR lmics)	Search modes - Boolean/Phrase
S21	((low income OR medium income) N5 (country OR countries OR nation OR nations OR state OR states))	Search modes - Boolean/Phrase
S22	(least developed N1 (country OR countries OR nation OR nations OR state OR states))	Search modes - Boolean/Phrase
S23	(developing N1 (country OR countries OR nation OR nations OR state OR states))	Search modes - Boolean/Phrase
S24	(united nations OR world health organization OR world bank OR unicef OR ((food OR nutrition*) N3 (program* OR project* OR fund)))	Search modes - Boolean/Phrase

(Continued)

S25	S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24	Search modes - Boolean/Phrase
S26	S15 AND S25	Search modes - Boolean/Phrase
S27	S26	Limiters - Publication Year: 1980-2016
S28	(DE "clinical trials" OR DE "controls (experimental)") OR (DE "time series")	Search modes - Boolean/Phrase
S29	compar* N6 (study OR trial OR program*)	Search modes - Boolean/Phrase
S30	random* OR controlled OR placebo OR control group*	Search modes - Boolean/Phrase
S31	follow up AND (study OR trial)	Search modes - Boolean/Phrase
S32	prospectiv* OR non-random* OR nonrandom*	Search modes - Boolean/Phrase
S33	before after stud* OR (time N2 series) OR ((retrospectiv* OR longitud*) AND study)	Search modes - Boolean/Phrase
S34	control* AND cohort* AND study	Search modes - Boolean/Phrase
S35	"before and after"	Search modes - Boolean/Phrase
S36	pre test OR pretest OR posttest OR post test OR pre intervention OR post intervention	Search modes - Boolean/Phrase
S37	S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36	Search modes - Boolean/Phrase
S38	S27 AND S37	Search modes - Boolean/Phrase

ClinicalTrials.gov 17 September 2016

78 studies found for "food security" OR "food insecurity" OR "food access" OR "food poverty" OR "food sufficiency" OR "food insufficiency" OR "nutrition security"

International Clinical Trials Registry Platform 17 September 2016

42 records for 42 trials found for: food secur* OR food insecur* OR food access OR food poverty OR food sufficienc* OR food insufficienc* OR nutrition secur*

Appendix 3. Record of communication with authors of included studies

Study ID	References to other relevant studies	Correspondence required (yes or no, and why)	Further study information requested	Correspondence received (from whom, what, when)	Information used in review
Neufeld 2013	—	Abstract, requested full text	MV emailed author on 10 April 2018	Received email from Lynnette Neufeld <lneufeld@gainhealth.org> on 12 April 2018, who provided 2 full texts.	Screened 2 full texts provided
Shamah-Levy 2015	—	Abstract, requested full text	MV emailed author on 10 April 2018	Received email from Elsa Berenice Gaona Pineda <berenicegp.insp@gmail.com> on 10 April 2018 with full text	Screened 1 full text provided
Wood	—	Abstract, requested full text	MRC library requested dissertation requested on 12 April 2018	No response	None
Kusuma 2016	—	Method of randomisation of village clusters not clear, data from nutrition and food security intervention comparisons required, treatment regimen of control group unclear	AS emailed author about outcomes on 6 February 2018 (follow-up on 13 February 2018 and 13 March 2018). Authors only nutrition outcomes is whether mothers took supplements therefore review excluded on the basis of no relevant outcomes	No response from dkusuma@mail.harvard.edu	None
Murshed E Jahan 2011	—	Baseline data	MV emailed author on 22 March 2018	No response from 'k.jahan@cgiar.org'; d.pemsl@cgiar.org	None
Skoufias 2013	—	Additional outcome data, requested study report	MV emailed author on 8 June 2018	Received email from Emmanuel skoufias <eskoufias@worldbank.org on 8 June 2018	Need to screen 1 full text in Spanish
Asadullah 2015	—	nrs LTFU unclear and nrs of participants do not match between tables in paper; unclear units of measurement and measure of central tendency; data duplicated for two outcomes	SD emailed author Mohammad N. Asadullah about nrs LTFU and participant numbers on 31 July 18; AB emailed author on two additional email addresses on 7 February 2019 to follow-up SD queries and additional issues identified in outcome extraction. AB followed up on 18 February 19.	Author responded on 6 March 19 from m.niaz@um.edu.my and endeavoured to provide further information	None yet
Asfaw 2014	—	Mean monthly food consumption ex-	AB emailed author Patrick Ward on 28 January 19 to determine	Author responded on 19 Feb-	None yet

(Continued)

		penditure exceeds mean total monthly household consumption expenditure (defined as including all household expenses)	whether mean household food consumption expenditure is not included in mean total monthly household expenditure and, if not the case, why this sub-category exceeds the category total. AB followed up on 18 February 19.	ruary 19 from patrick.ward@opml.co.uk and endeavoured to provide further information, requested from Aly Visram (co-author; aly.visram@opml.co.uk) on 28 February 2019	
Weinhardt 2017	—	yes. Information re clarification of outcome malnutrition in paper and what it means exactly	SD emailed Weinhardt and Alice Yan about clarification of table 3 malnutrition outcome and whether there are separate results for stunting and wasting	No response	—
Darrouzet-Nardi 2016	—	yes. Information re correct data for HAZ in table 4 of Miller 2014	SD emailed both Darrouzet-Nardi and Miller on 25 September 2019 re this issue	No response	—
Seidenfeld 2013	Daidone 2014	yes. Effect measure and narrative description of result on food security scale discrepant.	SD emailed 14 October 2019	Response on 18 December 2019, responding to query.	Correct effect direction confirmed and used in the review
Nkonya 2019	—	Yes.	AB emailed 1 April 2020 to clarify study design eligibility.	Yes	Study excluded
Hidrobo 2014	—	Yes	MV emailed 29 April 2020. Request for number of participants analysed per group	No response	—
Osei 2017	—	Yes	MV emailed 30 April 2020. Request for number of participants analysed per group	No response	—
Beegle 2017	—	Yes	MV emailed 30 April 2020. Request for number of participants analysed per group	Yes. Provided required information.	Enabled meta-analysis to be carried out

Appendix 4. Sensitivity analysis for outcomes with five or more studies

Outcome (analysis)	All studies (primary analysis)	Studies at low risk of bias (sensitivity analysis)
HAZ (Analysis 1.8)	MD 0.07, 95% CI −0.04 to 0.18	MD 0.16, 95% CI 0.02 to 0.29
WHZ (Analysis 1.9)	MD −0.02, 95% CI −0.10 to 0.06	MD 0.02, 95% CI −0.18 to 0.21
HAZ – RCTs (Analysis 2.4)	MD 0.09, 95% CI 0.04 to 0.15	MD 0.09, 95% CI 0.01 to 0.17

CI: confidence interval; HAZ: height-for-age z-score; MD: mean difference; WHZ: weight-for-height z-score.

WHAT'S NEW

Date	Event	Description
4 August 2020	New citation required but conclusions have not changed	Project funding added and review altered to Gold Open Access

HISTORY

Protocol first published: Issue 2, 2015
Review first published: Issue 7, 2020

Date	Event	Description
3 August 2020	Amended	Project funding added and review altered to Gold Open Access

CONTRIBUTIONS OF AUTHORS

SD initiated the review idea with support from BK.

SD drafted the review and all other authors contributed to finalise it. All authors approved the final manuscript.

SD, AS, VR, MV, BS, AB and JO screened records against eligibility criteria and carried out data extraction and risk of bias assessments. YB checked all data extractions and calculations related to outcomes.

SD carried out the initial analyses, YB checked these, and all other authors contributed to the interpretation of the analyses.

SD, AS and MV carried out the GRADE assessment and compiled the 'Summary of findings' tables.

EK helped resolve some disagreements during study selection and reviewed the manuscript.

SD will be responsible for updating the review.

DECLARATIONS OF INTEREST

SD: none.

MV: none.

VR: none.

JO: none.

BS: none.

YB: none.

AB: none.

EK: none.

AS: none.

SOURCES OF SUPPORT

Internal sources

- South African Cochrane Centre, South African Medical Research Council, South Africa

External sources

- Department for International Development, UK

Project number 300342-104

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Although we aimed to follow the methods prespecified in our protocol (Durao 2015), we implemented some necessary changes to methods as we worked on the review. The changes and the reasons for them are detailed below.

We had specified in the protocol that we would include non-randomised studies including controlled before-after studies (CBAs) and prospective analytical cohort studies. However, after identification of eligible studies, it was difficult to clearly identify the distinction between these two study designs; in both study designs, observations are made before and after an intervention has been implemented or an exposure has occurred, both in an intervention and a control group. They also have similar issues regarding potential biases due to using non-randomised methods, such as selection bias. Therefore, we made a pragmatic decision to keep these studies in the same category, namely 'prospective controlled studies'.

A number of databases proposed in the protocol were removed from the initial search in 2016, as they were redundant, the content was not relevant or we did not have access to the databases. They are listed below, with reasons:

- Cochrane Public Health Group Specialized Register: included in CENTRAL;
- African Index Medicus: included in African Healthline;
- CINAHL (via EBSCOhost), PsycINFO: not relevant to the topic;
- Food Science and Technology Abstracts, CAB Abstracts: no access.

After the evaluating the 2016 search results regarding number of relevant and eligible articles retrieved by each database, the following databases were omitted from the 2019 update of the search:

- Embase (Elsevier);
- GreenFILE (EBSCO);
- AfricaBib (africabib.org);
- AGRIS;
- AGRICOLA;
- AFRICAN HEALTHLINE, African Journals Online (via Africa-Wide Information, EBSCO);
- Trials Register of Promoting Health Interventions (TRoPHI);
- WHO Global Index Medicus;
- International Bibliography of the Social Sciences (IBSS) (ProQuest);
- ClinicalTrials.gov.

In the protocol, we had planned to also search the top five journals in which the included studies are most frequently published and to contact the authors of included studies and undertake citation tracking of these studies, as well as handsearch reference lists of identified relevant systematic reviews. These additional steps to identify studies were not undertaken. Our search of electronic databases was very comprehensive and already retrieved a very large yield to screen. This made it unfeasible to handsearch individual journals. The electronic database search included grey literature databases and we found many reports from organisations working in this field, that are not from peer-reviewed journals. Therefore, we considered that the results retrieved from the search conducted was likely to identify all relevant articles.

We had planned that one review author would initially screen the first batch of search results for obviously irrelevant titles, as a way to manage the large number of results expected. This was not done as, after the initial search was revised, the number of records retrieved were manageable for duplicate screening.

We had planned to search the reference lists of the included studies for other relevant studies, and to search for unpublished studies in the grey literature database OpenGREY and on websites of relevant organisations, such as Eldis, International Food Policy Research Institute (IFPRI), World Bank, Global Alliance for Improved Nutrition (GAIN) and Science Development Net. However, given that electronic database searches already included sources of unpublished literature, and given the very high number of search results, we decided not to search these databases. It is important to note that results from the electronic database searching did retrieve reports published by the World Bank and IFPRI, for example, therefore, we believe we have not missed important studies by not carrying out this additional searching of grey literature databases or websites of relevant organisations.

We had planned to contact experts working in various areas related to food security for relevant studies. However, given the number of results retrieved, of both published and unpublished studies, we did not think it was necessary to carry this out. We did contact authors of included studies, who sometimes sent other papers linked to a study identified through the search strategy.

We had planned to meta-analyse as our main synthesis method. Due to unavailability of relevant data from many studies we had to use other synthesis methods, namely vote counting based on effect direction.

We added a clarification that we also excluded interventions where food was provided in the form of food baskets or in-kind transfers of food. These types of interventions, according to our logic model, fall under the groups of interventions addressing availability and were, therefore, excluded.

We used a definition (that was not included in the protocol) for overall risk of bias to facilitate decisions for downgrading the evidence during our GRADE assessment. We also selected the key outcomes for the GRADE 'Summary of findings' tables after the protocol was published.

INDEX TERMS

Medical Subject Headings (MeSH)

Cognition; Community Participation [*economics] [methods]; *Developing Countries; Diet; Food Assistance [*economics]; Food Supply [*economics] [methods]; Growth Disorders [prevention & control]; *Income; Malnutrition [epidemiology] [*prevention & control]; Randomized Controlled Trials as Topic; Social Support; Wasting Syndrome [prevention & control]

MeSH check words

Adult; Child; Humans