




## SUPPLEMENT ARTICLE

# Engaging family members in maternal, infant and young child nutrition activities in low- and middle-income countries: A systematic scoping review

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## Abstract

The influence of fathers, grandmothers and other family members on maternal, infant and young child nutrition practices has been well documented for decades, yet many social and behavioural interventions continue to reach only mothers. While recent guidelines recommend involving fathers, grandmothers and other family members in maternal and child nutrition, we lack a comprehensive review of interventions that have engaged them. This scoping review aimed to address this gap by describing social and behavioural interventions to engage family members in maternal and child nutrition in low- and middle-income countries. We systematically searched PubMed, Scopus, Web of Science, Global Health and CINAHL for peer-reviewed studies meeting inclusion criteria. We screened 6,570 abstracts, evaluated 179 full-text articles, and included 87 articles from 63 studies. Studies reported a broad range of approaches to engage fathers, grandmothers and other family members to support maternal nutrition ( $n = 6$ ); breastfeeding ( $n = 32$ ); complementary feeding ( $n = 6$ ) and multiple maternal and child nutrition practices ( $n = 19$ ). Interventions were facility and community based; included individual and group-based interpersonal communication, community mobilization, mass media and mHealth; and reached mothers and family members together or separately. Most interventions were located within the health sector; rare exceptions included nutrition-sensitive agriculture, social protection, early child development and community development interventions. Few interventions addressed gender norms, decision-making, and family dynamics or described formative research or theories informing intervention design. These diverse studies can shed light on innovative programme approaches to increase family support for maternal and child nutrition.

## KEYWORDS

behavioural interventions, breastfeeding, complementary feeding, family influences, fathers, grandmothers, low income countries, maternal nutrition, nutritional interventions

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## 1 | INTRODUCTION

Undernutrition among women and children contributes to nearly half of deaths of children under 5 years in low- and middle-income countries (LMIC) (Bhutta et al., 2013). It is estimated that scaling up 10 maternal, infant and young child nutrition interventions could reduce these deaths by 15% (Bhutta et al., 2013; Keats et al., 2020). However, coverage and uptake of these critical interventions continues to be well below global targets (Gillespie et al., 2015; Keats et al., 2020). Maternal and child nutrition practices are influenced by multilevel factors including the social, economic, political and environmental context; service availability; and community, family, and individual factors (Bhutta et al., 2013; Gillespie et al., 2015).

While mothers are often the primary caregivers of infants and young children, family members are highly influential during pregnancy and early childhood, especially children's fathers and grandmothers (Sear, 2015). Family members influence decisions about women's and children's health and nutrition, participate in child care and feeding, and can provide informational, emotional, and instrumental support. During this period, their actions, advice and support, or lack thereof, influence maternal nutrition and infant and young child feeding behaviours as well as nutrition outcomes. When women are solely responsible for child care and feeding it can negatively impact women's caregiving practices, time pressure, and mental health (Ickes et al., 2017; Matare et al., 2020) and child health outcomes (Sear & Coall, 2011). Global recommendations suggest including fathers, grandparents, and other key influencers in maternal and child nutrition programmes (World Health Organization et al., 2018). There have also been calls for increased use of family-systems frameworks when designing maternal and child nutrition interventions (MacDonald et al., 2020; Nyoni et al., 2019). Despite this, most interventions continue to target the mother-child dyad, overlooking the roles and influence of key family members.

There is considerable evidence of the influence fathers, grandmothers, and other family members have on maternal nutrition and infant and young child feeding practices, and several reviews and meta-analyses have examined these relationships and interventions to increase family support (Abbass-Dick et al., 2019; Aubel, 2012; Kraft et al., 2014; Mahesh et al., 2018; Martin et al., 2020; Negin et al., 2016; Nyoni et al., 2019; Tadesse et al., 2018; Takah et al., 2017). Most reviews reported that engaging fathers or grandmothers can improve breastfeeding and other nutrition outcomes, although a few reported mixed (Aguiar & Jennings, 2015; Yourkavitch et al., 2017) or null results (Ambia et al., 2014). While essential for assessing the impact of similar interventions on shared outcomes, systematic reviews and meta-analyses' strict inclusion criteria limit the number of studies reviewed, can restrict geographic representation, and do not present the breadth of interventions and approaches that have been implemented to engage family members in maternal and child nutrition in LMICs. They also focus on interventions that engage only fathers or only grandmothers.

The objective of this scoping review was to identify the array of interventions and approaches that have been used to engage fathers,

### Key messages

- Studies describing interventions to engage family members in maternal and child nutrition have increased substantially since 2010.
- Delivery channels used to engage fathers, grandmothers, and other family members in these social and behavioural interventions include facility-based counselling and support groups, home-visits, community-based support groups, community mobilization mHealth and mass media.
- The majority of studies do not report formative research findings or the theoretical basis for intervention design, details of which could inform programming decisions.
- Future research should collect outcome and process data from all family members who are involved—not only mothers—to understand family experiences and responses to interventions.

grandmothers, and other family members in maternal and child nutrition in LMICs. Conducting a scoping review allowed us to explore a broad range of interventions focused on improving multiple nutrition behaviours and all influential family members. These diverse studies shed light on innovative programme approaches to engage family members in maternal and child nutrition.

## 2 | METHODS

This systematic scoping review was conducted alongside a mixed-methods systematic review (Martin et al., 2020). We followed the Joanna Briggs Institute guidelines for scoping reviews (Peters et al., 2017) and the PRISMA extension for scoping reviews (Supplementary Material).

### 2.1 | Eligibility criteria and search strategy

Studies were evaluated for eligibility based on our inclusion and exclusion criteria, structured according to participants, concept, context and studies (PCCS) criteria (Peters et al., 2017).

#### 2.1.1 | Participants

Participants included pregnant and lactating women, mothers with children under 2 years of age, women's male partners, infant's fathers, infant's grandmothers or other family members. The term 'grandmother' is defined broadly to include female elder relatives who influence maternal and child nutrition (Aubel, 2012; MacDonald et al., 2020).

## 2.1.2 | Concept

Studies were included if they described a social and behavioural intervention to improve one or more behaviours related to maternal nutrition or infant and young child feeding from birth to 2 years. Maternal nutrition included dietary intake or micronutrient supplementation during pregnancy or lactation. Infant and young child feeding included breastfeeding, complementary feeding, or micronutrient supplementation. Breastfeeding included early initiation, exclusive breastfeeding, and continued breastfeeding. Complementary feeding included any of the following: timely introduction of foods at 6 months in addition to breastmilk; adequate amount, frequency, diversity and consistency of foods to meet age-specific nutrient needs; responsive feeding; and the hygienic preparation of complementary foods (Dewey, 2003). Studies that examined feeding in the context of serious child illness (e.g., neonatal intensive units) or disability that would impact feeding practices were beyond the scope of this review and were excluded.

A key requirement for this review was that the intervention had to include a behavioural component that deliberately sought to engage fathers, grandmothers, or other family members. Several studies that were relevant to the wider literature on family influence and engagement, were excluded because they did not describe an intervention to explicitly engage other family members. These included studies that: reached other family members incidentally when visiting women at home, but did not state engaging family members as an objective (Nankunda et al., 2010); examined the influence of family members after a mother-focused intervention was completed (Scott et al., 2018); collected data from fathers or grandmothers but did not describe engaging them in interventions (Ruel-Bergeron et al., 2019); or measured if mothers shared information with family members (Meegan & Morley, 1999). Studies about interventions that occasionally included non-maternal primary caregivers (e.g., grandmothers and fathers) when mothers were not available but were not designed to engage additional family members were excluded (Farrelly & McLennan, 2009).

## 2.1.3 | Context

Studies were included if conducted in a country defined by the World Bank as low- or middle-income (<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>). There were no limitations on the intervention settings; they could be conducted in health facilities, other institutional settings, communities or households.

## 2.1.4 | Studies

We did not restrict studies based on study design. We included formative research papers that assessed the acceptability or feasibility of interventions or intervention components. We also included papers

that provided additional descriptions or analyses that supplemented the primary paper.

We did not employ date limits during the search. We excluded studies that did not meet the inclusion criteria, were not peer-reviewed, or if the full text article was not available in English. Protocol and review articles were excluded, but their reference lists were manually screened to identify additional references. We also screened reference lists of all included articles. Articles that were in press for this special issue were also screened for inclusion in this review.

We searched the following electronic databases: PubMed, Scopus, Web of Science, Global Health, and CINAHL on 16 March 2020 and re-ran the search November 23, 2020. The search strategy is presented in Table 1; search terms were adapted as necessary to correspond to database formatting.

## 2.2 | Review, extraction and synthesis

We used Covidence Online Software (<https://www.covidence.org>) to manage the review process. Four authors (KD, EG, SM and JM) individually screened then discussed the first 200 abstracts to ensure consistency across study selection. After reaching consensus, two authors (EG, JM) independently reviewed the remaining abstracts. All conflicts were resolved through discussion with KD and SM. Two reviewers independently assessed and voted on the selected full text articles according to inclusion and exclusion criteria. The study team discussed and resolved any voting inconsistencies.

All authors participated in data extraction, using a Qualtrics database to facilitate consistent reporting across reviewers. Data items included author; year of publication; country; population and sample size; study design; intervention components, participants, and duration; any theories that informed intervention design, whether interventions were based on formative research, and nutrition topics addressed by the intervention. At least two authors independently extracted information from each full-text article that met inclusion criteria. We combined data from multiple papers describing the same study. We compared extracted information across reviewers to ensure accuracy, completeness, and consistency. We summarized the data using spreadsheets and tables. We categorized studies based on the nutrition topic addressed (i.e., maternal nutrition, breastfeeding, complementary feeding and multiple nutrition practices), geographic location and the family member targeted (e.g., fathers, grandmothers). Following Joanna Briggs Institute guidelines for scoping reviews, we did not critically assess the quality of the included studies or exclude any studies based on quality.

We organized extracted data into a spreadsheet and summarized the results in tables and narrative. We summarized studies by nutrition focus and type of intervention, country, family members included, underlying theory, formative research conducted and nutrition topics addressed during the intervention.

**TABLE 1** Search strategy

Search domain	Search terms
Maternal and child nutrition	Breastfe* OR 'complementary feeding' OR 'breast feed' OR 'breast feeding' OR 'breast fed' OR wean* OR 'complementary food' OR 'complementary foods' OR 'infant feeding' OR 'infant and young child feeding' OR 'maternal nutrition' OR 'nutrition during pregnancy' OR 'nutrition in pregnancy' OR 'child feeding' OR 'child nutrition' OR 'infant nutrition' OR 'micronutrient supplement' OR 'micronutrient supplements' OR 'micronutrient supplementation' OR 'nutrient supplement' OR 'nutrient supplements' OR 'nutrient supplementation'
Family members	'Family member' OR 'family members' OR familial OR grandmother* OR father* OR parental OR 'family support' OR spouse* or parent* OR 'social support' OR 'male involvement' OR husband* OR partner OR grandparent* OR gender OR elder* OR grandfather* OR 'older women' OR relatives
Social and behavioural interventions	Program* OR intervention* OR project* OR 'health education' OR 'nutrition education' OR engage* OR 'behaviour change' OR 'behaviour change' OR 'behavioural change' OR 'behavioural change' OR implement* OR counsel*
Low- and middle-income countries	'Low-income countries' OR 'low-income country' OR 'middle-income country' OR 'middle-income countries' OR 'low- and middle-income country' OR 'low- and middle-income countries' OR 'developing country' OR 'developing countries' OR afghan* OR Albania* OR Algeria* OR 'American Samoa*' OR Angola* OR Armenia* OR Azerbaijan* OR Bangladesh OR Belarus OR byelarus OR belorussia OR Belize* OR Benin* OR Bhutan* OR Bolivia* OR bosnia* OR Botswan* OR Brazil* OR Bulgaria* OR burm* OR 'Burkina Faso' OR Burundi* OR 'Cabo Verde*' OR 'Cape Verde*' OR Cambodia* OR Cameroon* OR 'Central African Republic' OR Chad* OR China OR Chinese OR Colombia* OR Comoros OR comores OR comoro OR Congo OR 'Costa Rica*' OR 'Côte d'Ivoire' OR 'Ivory Coast' OR Cuba* OR Djibouti* OR Dominica* OR 'Dominican Republic' OR Ecuador OR Egypt* OR 'El Salvador*' OR Eritrea* OR Ethiopia* OR Fiji OR Gabon* OR Gambia* OR Gaza OR Georgia* OR Ghana* OR Grenada* OR grenadines OR Guatemala* OR Guinea* OR Guyana OR Haiti OR herzegovina OR hercegovina OR hondura* OR India* OR Indonesia* OR Iran* OR Iraq* OR Jamaica* OR Jordan* OR Kazakhstan* OR Kenya* OR Kiribati* OR Korea* OR kosov* OR kyrgyz OR kirghizia OR kirghiz OR kirgizstan OR Kyrgyzstan OR 'Lao PDR' OR Laos OR Lebanon OR Lesotho OR Liberia* OR Libya* OR Macedonia* OR Madagascar OR Malawi* OR malay OR malaya OR Malaysia* OR Maldives OR Mali OR 'Marshall Islands' OR Mauritania* OR Mauritius OR mexic* OR Micronesia* OR Moldova* OR Mongolia* OR monteneg* OR morocc* OR Mozambique OR Myanmar OR Namibia* OR Nepal OR Nicaragua OR Niger* OR Nigeria* OR Pakistan* OR Palau OR Panama* OR 'Papua New Guinea' OR Paraguay OR Peru* OR Philippines OR phillippines OR philippines OR phillippines OR Principe OR Romania OR Rwanda* OR ruanda OR Samoa* OR 'Sao Tome' OR Senegal* OR Serbia* OR 'Sierra Leone' OR 'Solomon Islands' OR Somalia OR 'South Africa*' OR 'South Sudan*' OR 'Sri Lanka*' OR 'St Lucia' OR 'St Vincent' OR Sudan* OR surinam OR Suriname OR Swaziland OR Syria* OR 'Syrian Arab Republic' OR Tajikistan OR Tadjikistan OR tadjikistan OR tadjhik OR Tanzania* OR thai* OR timor OR Togo OR Tonga OR Tunisia OR Turkey* OR Tuvalu OR Uganda* OR ukraine* OR uzbek OR Uzbekistan OR Vanuatu OR Vietnam* OR West Bank OR Yemen OR Zambia* OR Zimbabwe

### 3 | RESULTS

We identified 87 articles (Figure 1) from 63 studies; 77 of the 87 articles were published after 2010. Table 2 presents information on study country, design, participants, and intervention characteristics. Figure 2 presents the number of included papers categorized by nutrition behaviour, family members engaged, and geographic region. The largest category of studies included 29 studies to improve breastfeeding practices, particularly exclusive breastfeeding. Six studies addressed complementary feeding and seven addressed maternal nutrition. An additional 18 studies promoted multiple maternal and child nutrition behaviours (e.g., at least two of the following: maternal nutrition, breastfeeding, complementary feeding and micronutrient supplementation).

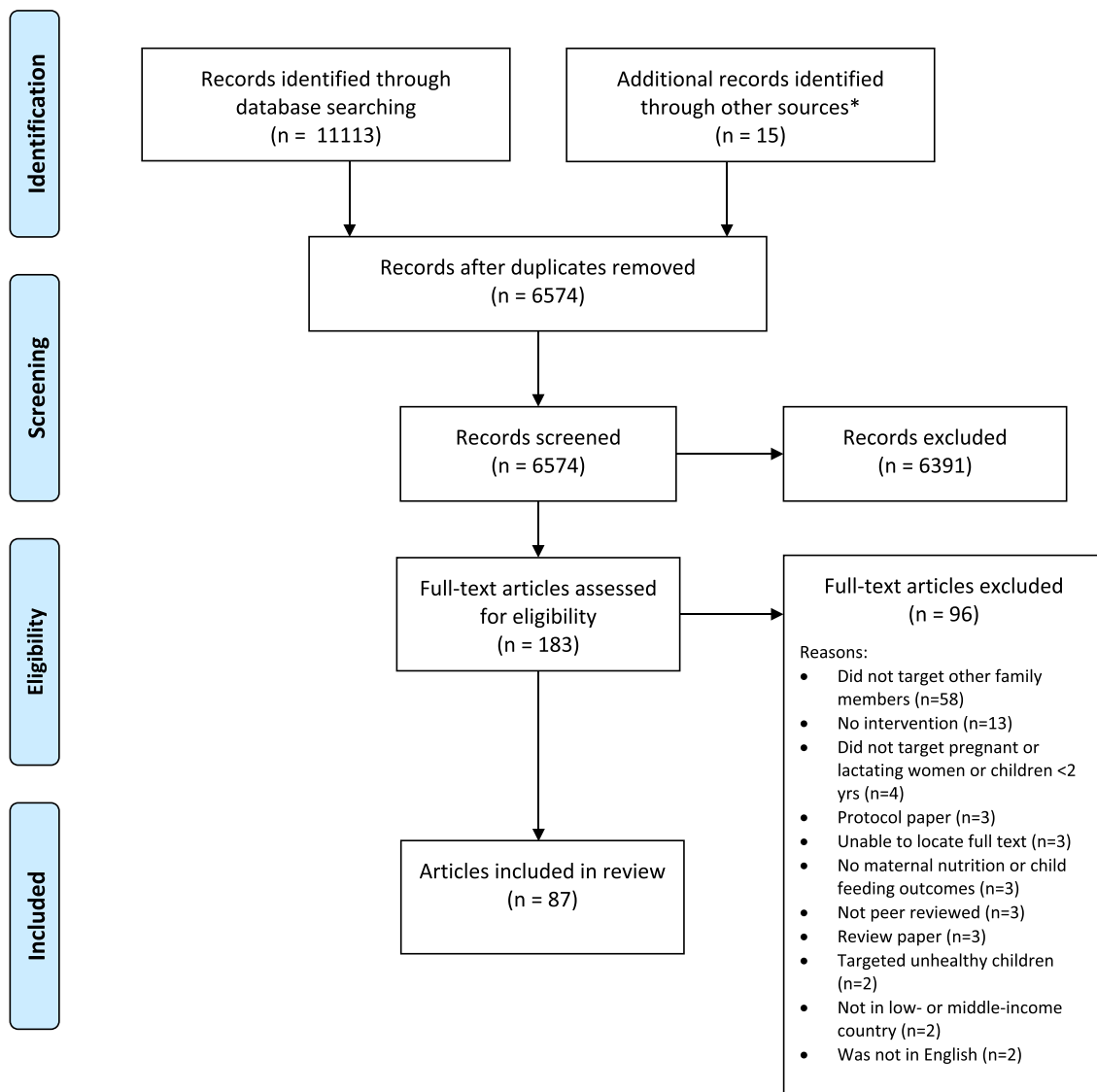
Among the 32 studies on breastfeeding, 16 engaged fathers; four engaged grandmothers; seven engaged either the father, grandmother or other family member who was accompanying or selected by the mother; and five reached the whole community although they targeted family members. The complementary feeding interventions included fathers or both grandmothers and fathers, and maternal nutrition interventions focused on fathers, grandmothers, the entire

family or asked mothers to choose a family member for support. Of the 18 interventions that addressed multiple maternal and child nutrition practices, nine engaged the entire family, seven engaged only fathers, one engaged only grandmothers and one engaged children. Of the 63 studies included, 29 collected data only from mothers.

All studies were conducted in LMICs. Figure 2 shows the distribution of studies by region. Almost half of the studies were conducted in sub-Saharan Africa, including the majority of the studies on complementary feeding and multiple nutrition practices. More than a quarter of the studies were conducted in Asia (many in middle-income countries), followed by the Middle East and North Africa, with only four in Latin America and the Caribbean.

#### 3.1 | How have maternal, infant, and young child nutrition social and behavioural interventions engaged family members?

The studies used varied approaches to engage family members and deliver interventions (Table 2). Figure 3 summarizes the intervention approaches used to reach each family member category. Approaches



**FIGURE 1** PRISMA flow diagram representing search, screening, and selection process

were facility and/or community based (including home visits) and included interpersonal communication, community mobilization, mass media and mobile health (mHealth). They reached mothers and family members together or separately, and in groups or as individual couples or families. The individual category describes delivery approaches that reach fathers, grandmothers, or individual mother–father dyads or mother–grandmother dyads on their own. Groups describe families, fathers, grandmothers or mother–father dyads or mother–grandmother dyads from multiple households meeting together.

Complexity of interventions ranged from single-component strategies to large-scale multicomponent, multilevel interventions. Most interventions sought to engage fathers, grandmothers, or both, and a few encouraged mothers to choose a family member or friend (Andreson et al., 2013; Gu et al., 2016; Martin et al., 2017; Namale-Matovu et al., 2018; Reimers et al., 2018). There was substantial heterogeneity in the intensity and length of interventions (Table 2). Some

interventions were developed specifically for the study while others integrated family members into ongoing nutrition activities or added nutrition to existing interventions for mothers and families (Flax et al., 2019). Interventions were largely nutrition specific and implemented as part of nutrition or broader maternal and child health (Tall et al., 2018) activities. There are examples of nutrition-sensitive interventions for early child development (Betancourt et al., 2020; Singla et al., 2015), agriculture (Bezner Kerr et al., 2011; Kumar et al., 2018), and prevention of mother-to-child transmission of HIV (Jones et al., 2018; Krakowiak et al., 2016).

Among the 63 studies included, 23 reported formative research conducted to inform intervention design, 16 specified theories or conceptual frameworks guiding the intervention, and 10 reported both. The formative research methods included focus group discussions, in-depth interviews, and Trials of Improved Practices. Four used the Theory of Planned Behaviour (Ajike et al., 2020; Downs et al., 2019;

**TABLE 2** Descriptions of interventions to engage fathers, grandmothers and other family members<sup>†</sup>

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
<b>Maternal nutrition interventions</b>						
(A. Alam, Chowdhury, et al., 2020; Chowdhury et al., 2017) <b>Bangladesh</b>	Qualitative: IDI, FGD, KI, observations	M: 16 IDI; 4 FGDs F: 1 FGD Gm: 1 FGD	<b>Home visits</b> during pregnancy, husbands, mothers, mothers-in-law were invited. Families were reached together		Yes	Maternal nutrition (balanced plate)
(M. Alam, Banwell, & Lokuge, 2020) <b>Bangladesh</b>	Cross-sectional survey	M: 459	<b>mHealth text messages</b> to pregnant women and new mothers and their families. Families reached separately and together.		Yes (Rajan et al., 2013)	Safe pregnancy, planning for delivery, maternal nutrition, WASH
(Doyle et al., 2014; Doyle et al., 2018) <b>Rwanda</b>	RCT qualitative: FGDs	F: 1195 n/a	<b>Community groups</b> for fathers; mothers invited to some. Fathers reached separately and as a couple.		Yes	Gender norms, couple communication, decision making, maternal and child health, childcare, parenting, violence
(Martin et al., 2018; Martin, Omotayo, Pelto, et al., 2017) <b>Kenya</b>	Secondary analysis C-RCT Qualitative: IDI	M: 1036 M: 32 F: 13 Gm: 7	<b>Facility-based individual</b> counselling during antenatal care. Family members reached through women.	Social support theoretical constructs	Yes (Martin, Omotayo, Chapleau, et al., 2017)	Calcium and iron-folic acid supplementation, adherence, social support
(Nguyen et al., 2018) <b>Bangladesh</b>	Secondary & path analysis of C-RCT; cross-sectional	M: 2000 F: 1307	<b>Home visits, community groups</b> (fathers forums), <b>community mobilization.</b> Couples reached together (counselling and community events) and separately (husband forum).	Theory of reasoned action	Yes	Diet quality and quantity, IFA and calcium supplements, optimal weight-gain, rest, father and family member support for maternal nutrition
(Surtimanah et al., 2019) <b>Indonesia</b>	Quasi-experimental	M: 60	<b>Facility-based group</b> sessions for pregnant women and husbands or other family member. Families reached together.		Yes	Iron supplementation during pregnancy
<b>Breastfeeding interventions</b>						
(Ajike et al., 2020) <b>Nigeria</b>	Quasi-experimental	F: 50	<b>Community group</b> for expectant fathers. Fathers reached separately.	Theory of planned behaviour		EBF, EBF support skills, connections to holy writings

TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Bich et al., 2014; Bich et al., 2016; Bich & Nguyen Manh, 2017) <b>Viet Nam</b>	Quasi-experimental	M: 469 F: 239	<b>Home visits, community groups for fathers, mass media (radio).</b> Fathers reached separately.			BF initiation, EBF, maternal nutrition, father support
(Bich et al., 2019; Rempel et al., 2020) <b>Viet Nam</b>	Quasi-experimental	M: 761 F: 396	<b>Home visits, community groups for fathers, community mobilization.</b> Couples participated for 1y. Fathers reached separately.	Theory of planned behaviour		BF initiation, EBF, maternal nutrition, father support,
(Daniele et al., 2018) <b>Burkina Faso</b>	RCT	M: 1101	<b>Facility-based individual and group</b> counselling for couples during antenatal and postnatal care. Couples reached together.			EBF, family planning
(Dehcheshmeh et al., 2014) <b>Iran</b>	RCT	M: 58	<b>Facility-based group</b> educational sessions. Couples reached together.			Health during pregnancy, maternal diet, BF initiation
(Haider & Thorley, 2019) <b>Bangladesh</b>	Longitudinal prospective study with interviews	M: 304 M: 48	<b>Home visits by peer counsellors; and community group meetings</b> with husbands, teachers, community leaders. Fathers reached separately.			Early initiation EBF, BF techniques, maternity care, IFA supplementation
(Jones et al., 2018) <b>South Africa</b>	2-phase RCT	M: 836	<b>Facility-based individual</b> counselling. Couples reached either together or separately.			PMTCT, stigma, disclosure; partner communication; violence; family planning; EBF, CF
(Krakowiak et al., 2016) <b>Kenya</b>	RCT: 2 arms	M: 502 F: 487	<b>Home visits</b> couples counselling during pregnancy and postpartum. Couples reached together.			HIV testing; EBF; family planning
(Özlüses & Çelebioglu, 2014) <b>Turkey</b>	Quasi-experimental	M: 117	<b>Facility-based individual</b> counselling couples reached separately.			BF
(Rabiepoor et al., 2019) <b>Iran</b>	RCT	M: 33 F: 33	<b>Facility-based group training</b> sessions; educational materials; telephone counselling service. Couples reached together.	Social cognitive theory		BF benefits, techniques, and continuation

(Continues)



TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Raeisi et al., 2014) Iran	RCT	M: 100 F: 100	<b>Facility-based group training</b> sessions for fathers during pregnancy. Couples reached separately.			Father support, BF
(Sahip & Turan, 2007) Turkey	Quasi-experimental Qualitative: FGD	F: 160 M: 19	<b>Worksite sessions</b> for expectant fathers. Fathers reached separately.			Maternal nutrition, infant feeding, EBF, health seeking, fatherhood, communication
(Su & Ouyang, 2016) China	Quasi-experimental	M: 72	<b>Facility-based group sessions</b> for couples during pregnancy and 6 m postpartum. Couples reached together.			BF; father involvement in decision-making, BF support
(Susin et al., 1999; Susin & Giugliani, 2008) Brazil	Quasi-experimental	M: 547 F: 547	<b>Facility-based group postnatal</b> counselling with video, pamphlets, and discussion. Couples reached together.			EBF, management of common BF problems, father support
(Turan et al., 2001) Turkey	RCT	M: 279 F: 253	<b>Facility-based group couple</b> education sessions, print material, and telephone counselling service during pregnancy and postpartum. Couples reached together.		Yes	Healthy pregnancy, safe birth, infant care and feeding, women's health
(Turan et al., 2001) Turkey	Community-based effectiveness trial	M: 142 F: 43	<b>Community-based group</b> educational programme for pregnant mothers with separate group educational programme for fathers. Fathers reached separately.		Yes	Healthy pregnancy, safe birth, infant care and feeding, women's health, support, communication
<b>Grandmothers</b>						
(Bang et al., 2005) India	Quasi-experimental	M: 913	<b>Home visits</b> by CHWs and <b>community group meetings</b> for pregnant women and grandmothers. Families reached together.		Yes	Nutrition during pregnancy, delivery, BF, neonatal care
(Bica & Giugliani, 2014; DeOliveira et al., 2012; DeOliveira et al., 2014; Nunes et al., 2011) Brazil	RCT	M: 323 Gm: 169	<b>Facility-based individual</b> counselling for adolescent mothers and grandmothers (separately); <b>home visits</b> counselling together.			EBF/BF importance, duration, and technique; avoidance of early introduction of food and liquids



TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Bootsri & Taneapanichskul, 2017) Thailand	Quasi-experimental	M: 84 Gm: 84	information booklet. Mothers and grandmothers reached separately and together. <b>Facility-based group training</b> for mothers of pregnant adolescents (grandmothers) during pregnancy and postpartum. Grandmothers reached separately. <b>Facility-based group</b> education sessions for mothers and grandmothers during pregnancy and before discharge. Mothers and grandmothers reached together	Experiential learning, empowerment, social support		Benefits breastfeeding, positioning and attachment, grandmothers' role
(Gharaei et al., 2020) Iran	Quasi-experimental	M: 64	<b>Facility-based group</b> education sessions for mothers and grandmothers during pregnancy and before discharge. Mothers and grandmothers reached together			EBF, support for breastfeeding mother
<b>Fathers and/or grandmothers or other family members</b> (Akbarzadeh et al., 2015) Iran	Quasi-experimental	M: 100 F: 19 Gm: 35	<b>Facility-based group</b> educational sessions with print materials and videos. Family members reached separately. <b>Facility-based individual</b> counselling for women and 'infant feeding buddy' during antenatal and postnatal visits. Mothers and buddies reached together. <b>Facility-based individual</b> counselling for women and 'infant feeding buddy' during antenatal and postnatal visits. Mothers and buddies reached together.	Beliefs, Attitudes, Subjective Norms and Enabling Factors (BASNEF) model.		BF benefits for children and mothers, milk sufficiency, pumping, infant growth and development
(Andreson et al., 2013; Reimers et al., 2018) South Africa	Qualitative pilot study Cluster-RCT	M: 12 F: 3 Gm: 2 O: 9 M: 550 Buddies: 273			Informed by pilot	PMTCT, EBF, formula feeding PMTCT, pregnancy, safe motherhood, EBF, CF, disclosure, adherence
(Gu et al., 2016) China	RCT	M: 285	<b>Facility-based individual and facility-based group</b> counselling sessions for women with husband or grandmother, with postnatal	Theory of planned behaviour		EBF benefits, EBF techniques/problems

(Continues)

TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Heidari et al., 2016; Kohan et al., 2019) Iran	RCT	M: 70	telephone counselling. Families reached together. <b>Facility-based group</b> education sessions with mothers and fathers/key family members during pregnancy and postpartum. <b>Postpartum telephone</b> counselling. Families reached together.		Yes	Benefits BF, BF techniques, BF problems treatment; expressing milk, nutrition during BF, family support
(Ke et al., 2018) China	Quasi-experimental	M: 59	<b>Home visits</b> when father or grandmother present, <b>telephone calls or text messages</b> during pregnancy and postpartum. Families reached together.			Detailed BF messages and support at key time points
(Namale-Matovu et al., 2018) Uganda	RCT	M: 218	<b>Facility-based group</b> sessions during pregnancy and postpartum. Families reached together.			EBF, BF, maternal nutrition, complementary feeding, food safety
(Smittenaar et al., 2020) India		M: 5,469 F: 3,064 G: 3,626	<b>Home visits</b> conducted by ASHAs (CHWs), <b>community mobilization</b> through village health and nutrition events. Families reached together.			Maternal and newborn health, early initiation, EBF
<b>Whole community</b>						
(Cresswell et al., 2019) Burkina Faso	Repeated cross-sectional C-RCT	M: 2253	<b>Community mobilization</b> included community events and facilitated group discussions for fathers and family members in public places (Alive & Thrive). Families reached together.			Early initiation, colostrum, avoiding water other liquids, EBF
(Harding et al., 2020) Ghana	Cross-sectional	Female: 280 Male: 171	<b>mHealth Breastfeed4Ghana</b> was a social media (Facebook and twitter) campaign with videos and a website. Family members reached individually or together.	Socioecological model	Message and material pretesting	EBF

TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Horii et al., 2016) Niger	Cross-sectional survey	M: 2091	Facility-based individual counselling, home visits, mass media. Families reached together (mass media) and separately (counselling and peer education).			EBF, complementary feeding
(Jenkins et al., 2012) Zimbabwe	Cross-sectional survey	M: 234 F: 228	Community mobilization social marketing activities included road shows with music, drama, dancing, and mass media materials. Reached whole community.		Yes	EBF, expressing and heat treating breast milk
(Susiloretni et al., 2013; Susiloretni et al., 2015) Indonesia	Quasi-experimental	M: 163 F: 163 Gm: 163 O: 110	Community group trainings for families (mothers, fathers, grandmothers); mass media posters, banners, brochures. Families reached together.	Socioecological orientation		EBF
<b>Complementary feeding interventions</b>						
(Abiyu & Belachew, 2020a, 2020b) Ethiopia	C-RCT	M: 612	Home visits from women development Army volunteers with mothers, fathers, and grandmothers. Families reached together			Complementary feeding; support to mothers
(Betancourt et al., 2020) Rwanda	Quasi-experimental pilot	M: 19 F: 10 Gm: 2	Home visits conducted by 'coaches' (university graduate students). Families reached together.			Child development, nutrition, hygiene, responsive parenting
(Dinga et al., 2018) Kenya	RCT FGD	M: 290 F: 290 n/a	Facility-based individual sessions for fathers and mothers. Provided pamphlet summarizing key messages. Couples reached together.			BF benefits; diet diversity; food prep; responsive feeding; father participation
(Martin et al., 2015; Mukuria et al., 2016; Thuita et al., under review) Kenya	Quasi-experimental Qualitative: IDI;FGD	M: 217 F: 138 Gm: 154 F: 7; 8 Gm: 10; 10	Community-based group peer education sessions for father groups and grandmother groups; community mobilization (family bazaars; fathers days at clinics). Family members	Socioecological model	Yes (Thuita et al., 2015)	Maternal nutrition and rest, EBF, CF, child health, HIV and IYCF, gender roles, family communication

(Continues)

TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Roy et al., 2007) Bangladesh	C-RCT Qualitative: FGD	M: 576	reached separately and together. <b>Community mobilization</b> activities for fathers, grandmothers, and other family members. Family members reached separately.		Yes	CF, child health, child interaction
(Singla et al., 2015) Uganda	C-RCT	M: 319	Home visits to mothers and fathers. Mothers and fathers reached together and separately.	Social cognitive theory	Yes	Diet diversity, child care and diet, maternal wellbeing, father involvement
<b>Interventions for multiple nutrition behaviours</b>						
(Afsana et al., 2014) Bangladesh	Implement-ation research	n/a	<b>Community mobilization</b> activities to promote micronutrient powders and infant feeding among family members and others. Families reached together.			Micronutrient supplementation, EBF, CF
(Aidam et al., 2020) Sierra Leone	Quasi-experimental	M: 392 G: 219	<b>Community-based group</b> dialogue sessions with grandmothers and intergenerational dialogue forums; <b>community mobilization</b> days of praise for grandmothers. Family members reached together and separately.	Family systems theory, community empowerment	Yes (MacDonald et al., 2020)	Grandmothers' roles, maternal nutrition, EBF, CF
(Aubel et al., 2004) Senegal	Quasi-experimental Qualitative: FGDs	WRA: 200 Gm: 150	<b>Community-based group</b> participatory nutrition education sessions for grandmothers mothers and grandmothers reached separately.	Transcultural approach to nutrition education; empowerment education, social network, self-efficacy	Yes	Maternal nutrition, EBF, CF
(Bezner Kerr et al., 2019) Malawi	Pre-post longitudinal study; qualitative	M: 352 IDI: 90 FGD: 29	<b>Community-based group</b> education meetings on agriculture and nutrition included discussions and community-based dialogue. Families reached together.			Farming practices, food security and dietary diversity, gender

TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Bezner Kerr et al., 2011; Satzinger et al., 2009) Malawi	Quasi-experimental Qualitative: IDI	Families: 160 M: 18 F: 17	<b>Community-based groups</b> discussed agriculture and nutrition with mothers, fathers, grandmothers, and other family members. Families reached both together and separately.		Yes	IYCF, sharing household resources, gender norms
(Brasington et al., 2016) Egypt	Quasi-experimental	M: 3445	<b>Community-based group</b> counselling by CHWs for pregnant women, grandmothers, and fathers. Family members reached separately.	Similar to a socioecological framework		Birth preparedness, BF, food selection, and growth monitoring
(Downs et al., 2019) Senegal	Pre/post Qualitative: FGDs	M: 47 F: 47 M: 24 F: 2	<b>mHealth</b> voice messaging intervention sent to mothers and fathers of children 6–23 m. mothers and fathers reached separately.	Theory of planned behaviour	Yes	Continued BF, diet diversity, consistency of porridge, handwashing
(Delorme et al., 2018; Fiorella et al., 2019) Kenya	Quasi-experimental FGD	Community members: 192 CHWs: 86 M: 28 F: 7	<b>Community-based group</b> facilitated by CHWs to engage social support networks, including fathers, grandparents, and other community members. Families reached together.	Constructs related to social networks/social support		IYCF, social support, family planning, safe pregnancy, food security
(Flax et al., 2019) Malawi	Qualitative: IDI Process data	M: 18 F: 7	<b>Community-based group</b> intervention for HIV positive women incorporated into village savings and loans association meetings; fathers invited to some sessions. Mothers and fathers reached together.		Yes	Early initiation of BF, EBF, breastfeeding on demand, continued BF, CF, food hygiene, and feeding during illness
(Hoddinott et al., 2018) Bangladesh	C-RCT	M: 2,341	<b>Community-based group</b> nutrition behaviour change sessions led by CHWs, husbands and mothers-in-law invited to certain sessions. Included monthly cash transfer and/or food rations made to mothers. Families reached together.	Theory of reasoned action; socio-ecological model	Yes	BF; CF; diet diversity; micronutrients; WASH, diarrhoea; maternal nutrition; homestead food production; women's status, family relationships

(Continues)

TABLE 2 (Continued)

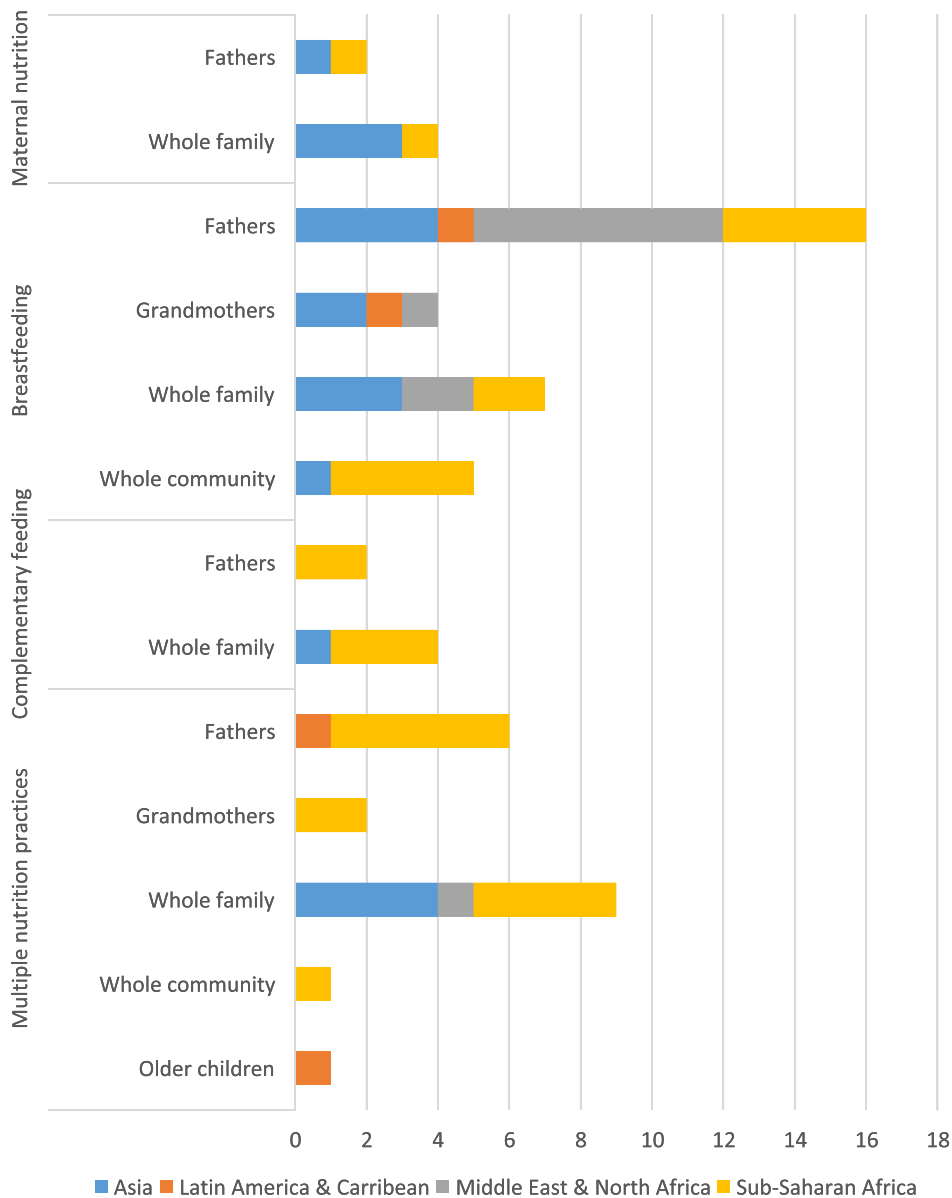
Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Knight et al., 1990) Jamaica	Quasi-experimental	M: 126 C: 622	<b>Child-to-child programme</b> delivered by teachers to schoolchildren who were encouraged to share with their parents. Children reached separately.			IYCF, WASH, early child development, child growth
(Kumar et al., 2015; Kumar et al., 2018; Rosenberg et al., 2018) Zambia	Pre/post repeated cross-sectional	M: 6580	<b>Community-based groups</b> led by female smallholder model farmers fathers invited to attend; <b>community mobilization</b> (drama), <b>mass media</b> (print, radio). Fathers and mothers reached together.	Similar to a socioecological framework		IYCF, WASH, crop diversity, gender equity, women's empowerment
(S. S. Kim, Nguyen, et al., 2018; S. S. Kim, Roopnaraine, et al., 2018; Menon et al., 2016; Nguyen et al., 2019; Sanghvi et al., 2013) Bangladesh	Cluster randomized, impact evaluation design	M: 4200 (endline) M: 2400 (2 y follow up)	<b>Home visits</b> from nutrition focused front line health workers and volunteers, <b>community mobilization</b> (theatre), and <b>mass media</b> (television) to engage other family members. Families reached together.	Stages of change, diffusion of innovations, and elements of theory of planned behaviour and social cognitive theory	Yes	EBF, CF
(Matare et al., 2019; Martin et al., 2021) Tanzania	Qualitative: Interviews and FGDs	EBF/CF M: 36/50 F: 30/40	<b>Home visits</b> (during household trials) with counselling for mothers and fathers. Couples reached separately.			EBF, CF, dietary diversity
(Salasibew et al., 2019) Ethiopia	Qualitative: FGDs and observations	M: 54 F: 54	<b>Home visits</b> by health and agriculture extension workers and <b>community-based group</b> meetings with programme households. Implemented for 3y. Mothers and fathers reached together.	Trans-theoretical model (stages of change)		EBF, CF, dietary diversity
(Selassie & Fantahun, 2011) Ethiopia	Cross-sectional survey	M/CG: 800	<b>Home visits</b> by CHWs trained on integrated Management of Neonatal and Childhood Illness. Families reached together.			BF initiation, prelacteal feeding, CF, vitamin A supplementation

TABLE 2 (Continued)

Author, country	Study design	Participants (n)	Intervention components	Theory	Formative research	Main topics
(Sloand et al., 2010) Haiti	Quasi-experimental	C = 559	<b>Community-based group</b> fathers' clubs held health education sessions (e.g. discussions, songs, skits). Fathers reached separately.			EBF, child nutrition, immunization, feeding during illness, supporting wives
(Tall et al., 2018) Senegal	Qualitative: FGDs, IDI	10 FGDs	<b>Community-based groups</b> included grandmother groups, pregnant Women's solidarity circles, future father groups. Family members reached separately.			Maternal and neonatal health, IFA supplementation, breastfeeding
(Cunningham et al., 2021) Nepal	Cross-sectional monitoring data	2017/2019 M:1850/1827 F:938/942	<b>Home visits</b> by frontline workers to all family members; <b>community mobilization</b> (food and handwashing demonstrations); <b>mass media</b> edutainment radio programme. Families reached together.		Yes	Maternal, newborn, and child nutrition

†A sub-sample of these interventions have also been presented in a mixed methods systematic review (Martin et al., 2020). Abbreviations: ANC, Antenatal care; BF, Breastfeeding; BRAC, an international development organization based in Bangladesh; EBF, Exclusive breastfeeding; C, children; CF, complementary feeding; CG, caregiver; CHW, community health workers and is used to denote village health worker, community resource person, community health volunteer; C-RCT, cluster randomized control trial; F, Fathers; FGD, focus group discussion; Gm, Grandmothers; IDI, In-depth Interview; IFA, Iron Folic Acid supplements; IYCF, infant and young child feeding; M, mothers; O, others; PMTCT, prevention of mother-to-child transmission; RCT, randomized control trial; WASH, water, sanitation, and hygiene; WRA, women of reproductive age.





**FIGURE 2** Interventions categorized by nutrition behavior, family members engaged, and geographic region

Gu et al., 2016; Rempel et al., 2017), two used the Theory of Reasoned Action (Hoddinott et al., 2018; Nguyen et al., 2018), two used Social Cognitive Theory (Rabiepoor et al., 2019; Singla et al., 2015), two used the socioecological model (DeLorme et al., 2018; Mukuria et al., 2016), two used theoretical concepts related to social support and social networks (Bootsri & Taneepanichskul, 2017; Martin et al., 2017), one used the transtheoretical model (Salasibew et al., 2019), and one used the Beliefs, Attitudes, Subjective Norms and Enabling Factors (BASNEF) model (Akbarzadeh et al., 2015). Four studies based intervention design on multiple theories and constructs (Aidam et al., 2020; Aubel, 2012; Hoddinott et al., 2018; H. S. Kim et al., 2016; Nguyen et al., 2019). Two studies did not explicitly state a theoretical orientation, but described designing their intervention in response to multiple levels of influence consistent with a socio-ecological framework (Brasington et al., 2016; Cresswell et al., 2019). Some studies also described the programme theory guiding their intervention

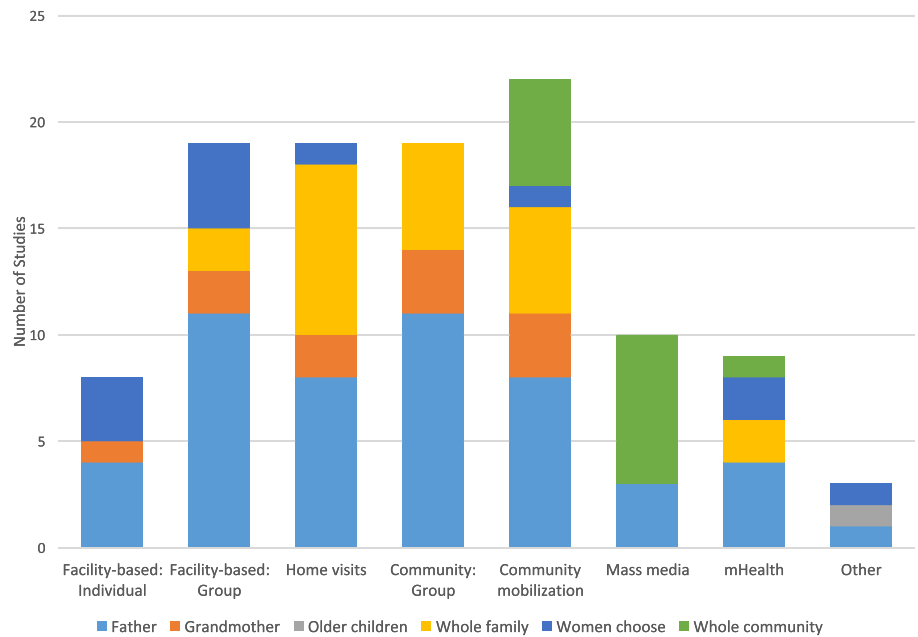
(Betancourt et al., 2020; Menon et al., 2016; Mukuria et al., 2016; Nguyen et al., 2019; Sahip & Turan, 2007).

## 3.2 | Intervention approaches

### 3.2.1 | Facility-based individual

Eight studies included health facility-based interventions that reached individual mothers and family members during antenatal care or at delivery, and to a lesser extent, during child health services. These typically focused on counselling about exclusive breastfeeding and how fathers, grandmothers, or other family members could support maternal and child nutrition (Andreson et al., 2013; Bich et al., 2014, 2019; DeOliveira et al., 2012; Jones et al., 2018; Özlüses & Çelebioglu, 2014).

**FIGURE 3** Intervention approaches used to engage each category of family member



### 3.2.2 | Facility-based group

Interventions that involved family members in group counselling and discussion/education sessions at health facilities were used in 19 studies. While these tended to be during pregnancy and at birth, some took place after birth. For example, monthly group counselling sessions for fathers were integrated into existing immunization and ANC services in Viet Nam (Bich et al., 2014, 2019), and ‘father days’, when fathers were encouraged to accompany mothers to the health facilities, were held in Kenya (Thuita et al., 2015).

### 3.2.3 | Community-based individual

At the community level, home visits were used by 19 studies to meet with individual mothers and family members and were conducted by community health workers (CHW) (DeLorme et al., 2018; Horii et al., 2016; Kumar et al., 2018; Nguyen et al., 2018; Selassie & Fantahun, 2011; Susiloretni et al., 2013, 2015), peer counsellors (Haider & Thorley, 2019) and health care providers (Nguyen et al., 2018). Other family members were sometimes counselled together with mothers (Nunes et al., 2011) or encouraged to participate if they were available during the home visit for the mother (Nguyen et al., 2018). In Ethiopia, health and agriculture extension workers jointly visited mothers and fathers together (Salasibew et al., 2019).

### 3.2.4 | Community-based groups

Support groups or similar types of community groups were used in 19 studies. Occasionally groups included mothers, fathers and

grandmothers and met together with other members of their community (DeLorme et al., 2018), but separate groups for fathers (Tall et al., 2018; Thuita et al., 2015) or grandmothers (Aidam et al., 2020; Aubel et al., 2004; Tall et al., 2018; Thuita et al., 2015) were more common. In Malawi, father or grandmother groups met separately and then came together with other family members during occasional meetings (Bezner Kerr et al., 2011). There were studies that formed new groups, while others built on existing groups and integrated nutrition content into ongoing activities. Group meetings were facilitated by Ministry of Health or NGO staff (Aubel et al., 2004), community health workers (DeLorme et al., 2018), village savings and loan association volunteer leaders (Flax et al., 2019), and father and grandmother peer educators (Bezner Kerr et al., 2011; Martin et al., 2015). A few studies reported facilitation approaches that informed how educational sessions were implemented, such as using principles of adult learning theory or focusing on dialogue and problem solving (Aubel et al., 2004; Bezner Kerr et al., 2019; Flax et al., 2019; Thuita et al., 2015).

### 3.2.5 | Community mobilization

Community events and mobilization activities to engage family members and the wider community were used in 21 studies. Community mobilization activities included father forums/meetings (Haider & Thorley, 2019; Nguyen et al., 2018); community theatre (Nguyen et al., 2018); ‘road shows’ that used music, drama, and games to encourage community discussion (Jenkins et al., 2012); and cooking demonstrations (Thuita et al., 2015). Activities that reached the entire community, or targeted community leaders, often covered multiple nutrition topics and sought to influence social and gender norms and increase support for maternal and child nutrition (Aubel et al., 2004; Kumar et al., 2018; Nguyen et al., 2018; Rosenberg et al., 2018).

Songs, dances and skits were also used as part of community-based interventions (Aidam et al., 2020; Aubel et al., 2004; Kumar et al., 2018; Thuita et al., 2015).

### 3.2.6 | Mass media

Ten studies used mass media, including community loud speakers, radio, television and print. While much of this content reached whole communities, some interventions designed messages specifically for male partners or other family members (Bich et al., 2014; S. S. Kim, Nguyen, et al., 2018; S. S. Kim, Roopnaraine, et al., 2018; Menon et al., 2016).

### 3.2.7 | mHealth

Nine studies used mHealth approaches. In Senegal, fathers and mothers received infant feeding recommendations through telephone voice messaging (Downs et al., 2019). Phone calls and text messages were also used to follow up with participants at home and reinforce other intervention components (Gu et al., 2016; Ke et al., 2018; Turan et al., 2001). In Iran, telephone-based counselling was available to participants (Rabiepoor et al., 2019). In Ghana, a social media campaign promoted breastfeeding (Harding et al., 2020).

### 3.2.8 | Other

Other approaches included a school-based intervention to encourage older children to share nutrition information with their mothers (Knight et al., 1990), a workplace-based intervention to engage fathers to support exclusive breastfeeding (Sahip & Turan, 2007) and take-home print materials for family members to support prenatal micronutrient supplementation (Martin et al., 2017).

## 4 | DISCUSSION

This scoping review identified a broad range of social and behavioural interventions to engage fathers, grandmothers and other family members in maternal and child nutrition in LMICs. This growing body of intervention research reflects increasing efforts to engage family members to support optimal nutrition practices. However, many of the studies identified in the search did not meet inclusion criteria because, although they acknowledged the role and influence of other family members and the importance of engaging them, they nevertheless designed their interventions only for mothers. Further, there is considerable variation in the location of this research. Many of the studies are from sub-Saharan Africa. Very few studies are from Latin America and the Caribbean. A recent systematic review examining factors that influence infant feeding practices in Guatemala, Honduras, and El Salvador described the considerable evidence of the

influence grandmothers and fathers, and the lack of interventions that engage them (Deeney & Harris-Fry, 2020).

The interventions identified in this review ranged from single-component interventions to increase father or grandmother support for breastfeeding at one health facility, to large-scale multicomponent multilevel interventions that included engaging family members to support several maternal and child nutrition behaviours. Multilevel, multicomponent interventions are implemented concurrently across levels (e.g., household, community, facility, policy and environment) and involve more than one intervention component (e.g. interpersonal counselling, text messages and cash transfers) (Mikkelsen et al., 2016). A review of interventions to improve breastfeeding found that multi-level, multicomponent interventions had a higher impact than interventions delivered independently in a single setting (Sinha et al., 2015). Studies of larger-scale complex interventions such as those engaging fathers in Viet Nam (Bich et al., 2014, 2019) demonstrate how it is feasible for multi-channel interventions to help shift gender norms. This is similar to findings from the Alive & Thrive project in Bangladesh, which also used large-scale multicomponent interventions to involve men in maternal nutrition (Nguyen et al., 2018).

Most of the studies focused on engaging family members to support exclusive breastfeeding, and several addressed multiple nutrition behaviours. It was less common to address prenatal micronutrient supplementation, maternal diet, and continued breastfeeding (after 6 months). This highlights neglected areas of research and intervention given the substantial influence family members have on maternal and child nutrition and their roles during pregnancy and the first 2 years of life. Promising examples of intervention approaches that engage family members in supporting early and exclusive breastfeeding can be extended to maintain family members' support for complementary feeding and continued breastfeeding, and can be expanded to include nutrition during pregnancy. Notably, none of the studies directly addressed obesity prevention, other than a follow-up study with participants from a breastfeeding intervention engaging grandmothers in Brazil (Schwartz et al., 2015). In high-income countries, there is growing attention to the need for interventions to engage fathers, and to a lesser extent grandparents and other family members, in obesity prevention interventions during the first 1,000 days (An et al., 2020; Ciampa et al., 2010; Davison et al., 2020; Jansen et al., 2018; Wasser et al., 2013). As the nutrition transition accelerates in LMICs and the double burden of malnutrition increases, expanding family support to address both undernutrition and overweight and obesity through double-duty actions for nutrition (Hawkes et al., 2020; World Health Organization, 2017) will be important (Williams et al., 2019).

Interventions typically engaged either fathers or father and grandmothers together. There were considerably fewer examples of interventions that engaged only grandmothers, and it was uncommon for mothers to be asked to identify who they would like to include. Mothers' family and household structures vary and interventions that include one specific family member may limit impact and reach. While many women live with husbands or partners, or with or near their in-laws or parents, there is considerable variation in individual

circumstances and cultural norms. There have been calls to design interventions using a family-systems framework that examines the roles and influence of other family members (Aubel, 2012; MacDonald et al., 2020). Mothers' nutrition and caregiving practices are situated within her larger family and social structure and qualitative formative research should be used to systematically investigate family members' roles related to maternal and child nutrition (MacDonald et al., 2020). Interventions that allow mothers a choice can be tailored to ensure that efforts to engage family members build on existing relationships that are positive and supportive.

Formative research is essential for designing contextually appropriate maternal and child nutrition social and behavioural interventions (Bentley et al., 2014; Fabrizio et al., 2014), especially when engaging family members who have not previously been a part of maternal and child nutrition programmes (Doyle et al., 2018; Kraft et al., 2014). Formative research can identify family members' roles in nutrition, relevant gender norms, barriers and facilitators to current practices, and whether and how mothers want other family members to be involved (WHO, 2015; Yourkavitch et al., 2017). Only one-third of the studies in this review reported using formative research to inform intervention design, and only a sub-sample of those described how findings shaped their intervention or published their findings (Aubel et al., 2004; Bezner Kerr et al., 2019; MacDonald et al., 2020; Martin, Omotayo, Pelto, et al., 2017; Sahip & Turan, 2007; Thuita et al., 2015; Turan et al., 2001).

Evidence suggests that social and behavioural interventions based on theory are more likely to be effective than those lacking a theoretical basis (Davis et al., 2015). In our review, only 21 of the 63 interventions explicitly stated the theoretical basis for their intervention. This is similar to findings from a meta-analysis of intervention studies, which reported only 23% of included studies used a behaviour change theory (Davies et al., 2010). The lack of theories in the design of social and behavioural interventions has also been identified previously for breastfeeding (Bai et al., 2019; Wood et al., 2016) and complementary feeding (Pelto et al., 2016; Webb-Girard et al., 2019) interventions. In order to increase the likelihood for success, future interventions to engage family members should be designed based on appropriate theories and models that explain behaviour and systems.

Addressing gender inequities is critical to improving maternal and child health and nutrition outcomes (Comrie-Thomson et al., 2015). Interventions that seek to engage family members have the potential to achieve larger and more sustainable impacts on maternal and child nutrition practices by directly addressing gender norms, women's empowerment, family communication and relationship dynamics (Doyle et al., 2018; Heckert et al., 2019). Only a few interventions explicitly addressed gender norms and family dynamics (Aubel et al., 2004; Bezner Kerr et al., 2019; Doyle et al., 2018; Kumar et al., 2018; Mukuria et al., 2016), although several promoted the involvement of fathers in supportive roles by focusing on behaviour change. This is similar to findings from a review of maternal and newborn health interventions, which found that most male engagement activities focused on changing behaviour rather than underlying gender norms that influence behaviour (Comrie-Thomson et al., 2015).

Given the strength of cultural norms and gender roles that can limit mothers' autonomy and contribute to overwhelming workloads, engaging fathers in some contexts may require complementary efforts to address social norms. For example, in Malawi, a nutrition-sensitive agriculture project used a transformative education approach that included community-based 'recipe days'. Multi-generational families, community volunteers and village leaders participated in facilitated discussions to reflect on child care, division of labor, decision making, gender roles and concepts of masculinity, as well as complementary feeding (Bezner-Kerr et al., 2016). Gender transformative interventions can increase male engagement, improve relationship dynamics and address inequitable gender norms, as well as positively impact nutrition behavioural outcomes (Doyle et al., 2018).

Despite the focus on engaging influential family members, almost half of the studies only collected data from mothers. In order to understand the experience and practices of family members, it is important to include them in data collection (Comrie-Thomson et al., 2015). Excluding fathers and grandmothers from data collection limits our understanding of intermediate outcomes that result from their participation and may mediate impacts on nutrition outcomes. This is especially true for interventions that seek to challenge gender norms, decision-making, and power dynamics. Our understanding of these interventions is further limited by the lack of process data describing attendance and coverage; fidelity of delivery; participant views on acceptability, quality, and relevance; and implementer views on feasibility. While a small number of studies explored these issues (Downs et al., 2019; Flax et al., 2019; Martin et al., 2015, 2018; Nguyen et al., 2018; Salasibew et al., 2019; Tall et al., 2018) these gaps highlight the importance of utilizing reporting guidelines for social and behavioural interventions and related implementation research to ensure transparency and replicability (Yousafzai et al., 2018). In addition to examining the impact of interventions, it is also important to assess their implementation by evaluating intervention acceptability, adoption, appropriateness, cost, feasibility, fidelity and sustainability (Proctor et al., 2011). More implementation research on engaging family members in maternal and child nutrition is needed (MacDonald et al., 2020; Martin et al., 2020). Fabrizio et al provide suggestions for reporting on the design and implementation of interventions to improve child nutrition (Fabrizio et al., 2014) that can be used to describe interventions that engage family members.

While current global movements encourage multisectoral nutrition approaches, most interventions in this review were located primarily within the health sector. Exceptions included the following nutrition-sensitive interventions: agriculture (Bezner Kerr et al., 2019; Kumar et al., 2018; Salasibew et al., 2019; Satzinger et al., 2009), cash transfer or food transfer (Hoddinott et al., 2018), parenting and early child development (Betancourt et al., 2020; Singla et al., 2015) and community development (Fiorella et al., 2019).

This scoping review, which included interventions to address multiple nutrition behaviours starting in pregnancy through age two, was not restricted to study designs that compared intervention impacts with and without family engagement. This allowed us to include a

broad range of interventions, particularly complementary feeding, multiple nutrition outcomes, and nutrition-sensitive interventions, but without evaluating impact. After completing this scoping review to identify *how* interventions engage family members, we conducted a mixed-methods systematic review of the subset of studies with quantitative or qualitative designs that examined the outcomes and effectiveness of these social and behavioural interventions (Martin et al., 2020). Consistent with previous systematic reviews, findings generally indicated benefits to engaging family members, but the need for comparative study designs assessing effectiveness limited that review to a smaller number of studies and it was not possible to assess effectiveness across different intervention approaches. The qualitative studies included in the mixed-methods systematic review reported improvements in nutrition knowledge and practices and increased family support for nutrition-related decisions and practices. Participants also reported improved relationships and communication between mothers and family members, suggesting that potential benefits to engaging family members extend beyond nutrition outcomes. Future research should include evaluation designs that assess the impact of engaging fathers, grandmothers and other family members on a wider range of outcomes throughout the first 1000 days (Martin et al., 2020).

#### 4.1 | Limitations

Although a scoping review allowed for greater inclusion of intervention approaches than previous systematic reviews with narrow foci or strict inclusion criteria, innovations and intervention strategies used in nutrition programmes are often not published in the peer-reviewed literature. This review did not include the 'grey' literature that describes interventions piloted or implemented around the world. While such reports have not undergone peer review, they are often based on formative research and contextual experience and provide valuable insights on intervention strategies and the responses of families, communities, and governments. See, for example, a programme to build family support in Kyrgyz Republic (SPRING Project, 2018), a nutrition-specific and nutrition-sensitive programme in Ethiopia that engaged family members (Abebe et al., 2020), and father-focused programmes in Senegal, Niger, and Ghana (Dougherty et al., 2017; SPRING Project, 2017a, 2017b).

Programmatic learning from this review was limited by lack of detail and clarity on intervention design and delivery, particularly on engagement of family members. Lack of intervention detail is a common limitation reported by other reviews of nutrition interventions, and others have called for increased sharing of information about intervention design, theoretical basis, and implementation (Webb-Girard et al., 2019). Future intervention studies should provide additional details about the intervention and describe standard intervention components such as using the Behavior Change Techniques (BCT) taxonomy (Michie et al., 2013). It was common for authors to describe participants as parents or caregivers but upon review they were overwhelmingly referring to mothers. Lack

of clarity around caregivers may have unintentionally excluded some intervention studies. As more programmes seek to engage other family members in addition to mothers, it is important to use specific terms to describe who is being included and how (May et al., 2017).

## 5 | CONCLUSION

This scoping review identified a range of social and behavioural interventions to engage fathers, grandmothers and other family members in maternal and child nutrition in LMICs. The most frequently used approaches were community mobilization and facility-based groups. Most of the interventions focused on breastfeeding and usually engaged fathers, and to lesser extent grandmothers. Interventions to engage family members in complementary feeding and maternal nutrition were less common. The influence of fathers (Engle, 1997) and grandmothers (Bedri, 1995) on maternal and child nutrition practices and the need to engage them in nutrition programmes has been recognized for decades, but examples of interventions were limited in the peer-reviewed literature. There has been a substantial increase in the number of studies published describing social and behavioural interventions to engage fathers, grandmothers and other family members in maternal and child nutrition. In fact, most of the articles included in this scoping review were published after 2010. However, despite this increase, most of the intervention studies initially reviewed for this review were excluded because, while they noted the influence of fathers, grandmothers and other family members on maternal and child nutrition, they did not design interventions to engage them. Implementation research and process data are also needed to better understand the experience of mothers, family members and programme implementers and how interventions to engage family members are being implemented.

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#### CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

## CONTRIBUTIONS

SLM conceived of this review. SLM and KLD designed the research and drafted the manuscript. SLM, JM, EG and KLD conducted the search. All authors participated in article review and data extraction and read, provided critical review and approved the final manuscript.

## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analysed in this study.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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