

## Original Article

## Using implementation research for evidence-based programme development: a case study from Kenya

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## Abstract

The few available studies of programme effectiveness in nutrition find that programmes are less effective than would be predicted from the efficacy trials that are the basis for evidence-based programming. Some of these are due to gaps in utilisation within households. To a greater extent, these gaps can be attributed to problems in programme design and implementation. 'Implementation research in nutrition' is an emerging area of study aimed at addressing this problem, by building an evidence base and a sound theory to design and implement programmes that will effectively deliver nutrition interventions. The purpose of this supplement to *Maternal & Child Nutrition* is to contribute to this growing area of implementation research. The series of papers presented and the reflections for policymaking and programmes, combined with the reflections on the application of ethnography to this area of inquiry, illustrate the value of systematic research undertaken for the purpose of supporting the design of nutrition interventions that are appropriate for the specific populations in which they are undertaken.

**Keywords:** implementation research, ethnography, landscape analysis, infant and young child nutrition, dietary recommendations, multisectoral interventions.

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The importance of improving child nutrition for reducing mortality and stunting is well established (Bhutta *et al.* 2013) and has become a motivation for investing in nutrition intervention programmes in low-income and middle-income countries. However, the few available studies of nutrition programme effectiveness find that programmes are usually less effective than would be predicted from the efficacy trials that are the basis for evidence-based programming. Some of these are due to gaps in utilisation by households. Problems in programme design and implementation (Shekar *et al.* 2006; Leroy & Menon 2008; Bhutta *et al.* 2013), including inadequate adaptation to translate programmes to fit local contexts and conditions, are also major factors. This is of particular concern given the current emphasis on scaling up efficacious nutrition interventions, and methodologies to support both the appropriate selection of interventions and their adaptation for different national and subnational contexts are required (United Nations Standing Committee on Nutrition 2010).

Implementation research in nutrition is an emerging area of study aimed at addressing this problem, by building an evidence base and a sound theory to design and implement programmes that will effectively deliver nutrition interventions (Garrett 2008; Pelletier *et al.* 2013; Habicht & Peltó 2014; Menon *et al.* 2014). There is a growing literature aimed at developing implementation science in nutrition (Avula *et al.* 2013; Mbuya *et al.* 2013; Rawat *et al.* 2013; Fabrizio *et al.* 2014; Nguyen *et al.* 2014; Pérez-Escamilla *et al.* 2014), beginning at the stage of identifying interventions that are suited to a population and that address its particular needs. The purpose of this supplement to *Maternal & Child Nutrition* is to contribute to this growing area of implementation research. The first, second and third papers in the supplement describe an innovative approach to landscape analysis that combined quantitative analysis using recently developed linear programming software, Optifood (Daelmans *et al.* 2013), and application of the *Focused Ethnographic Study of*

*Infant and Young Child Feeding 6–23 Months: Behaviors, Beliefs, Contexts and Environments (FES)* (Pelto & Armar-Klemesu 2014) to identify a suite of strategies that would contribute to improving the nutrient adequacy of infant and young child (IYC) diets in Kenya. In the fourth paper, the authors step back to consider the importance of local knowledge for effective implementation, and the role of ethnography in generating it. The latter paper draws broadly on historic and contemporary examples to illustrate the value of ethnography in implementation research.

In rural Kenya, IYC diets are largely plant-based and contain limited animal-source foods that are rich in essential micronutrients (KNBS & ICF Macro 2010). Moreover, only about half of children 6–23 months of age living in rural areas consume the minimum number of food groups deemed necessary for a nutritionally adequate diet (WHO 2008; KNBS & ICF Macro 2010). Recognising the need to improve the nutritional quality of IYC diets, the United States Government's Feed the Future Initiative made dietary improvement of infants and young children a central component in its strategy for Kenya (United States Government Feed the Future 2011). Subsequently, the U.S. Agency for International Development (USAID), which was charged with implementing the Feed the Future strategy in Kenya, requested that the Global Alliance for Improved Nutrition (GAIN) conduct a landscape analysis to identify a suite of strategies that would contribute to improving the nutrient adequacy of IYC diets and could be initiated or strengthened through USAID programming.

A wide spectrum of dietary improvement strategies was potentially available for consideration, including both 'nutrition-specific' interventions (interventions that have a direct impact on the prevention and treatment of malnutrition) and 'nutrition-sensitive' interventions (interventions that have an indirect impact on nutritional status)

(Black *et al.* 2013; Ruel & Alderman 2013; UNICEF 2013). Nutrition-sensitive approaches affect the underlying determinants of nutrition, including poverty, food insecurity and scarcity of access to adequate care resources and to health, water and sanitation services. Feed the Future is built on a value chain framework, seeking nutrition-sensitive agriculture interventions with potential for nutrition impacts, including those that involve investments in increasing and diversifying agricultural production as a means to improving food security. A critical part of this work requires understanding the constraints to improved dietary intake, particularly among the most vulnerable groups, specifically women, infants and young children, and assessment of the extent to which Feed the Future projects might address those constraints.

Based on USAID's directive, we identified two main challenges that needed to be addressed in the Kenya landscape analysis: (1) identifying nutrient requirements that are currently not being met in IYC diets, together with the potential of local foods to improve the nutrient quality of their diets; and (2) identifying cultural-ecological determinants of IYC feeding that serve as facilitators or barriers for the implementation of dietary improvement strategies. Examination of these two challenges required different study designs and methods. Therefore, we created two streams of inquiry: (1) nutrient gap analysis and development of food-based recommendations (FBR) using the linear programming software Optifood; and (2) examination of socioecological determinants using the GAIN-initiated FES of the determinants of IYC feeding. Two Feed the Future focal counties were selected for the landscape analysis: Vihiga in western Kenya and Kitui in southern Kenya. They were chosen to represent distinct agro-ecological zones.

To inform population-specific FBR, a mathematical approach based on Optifood has been recently

### Key messages

- Programs delivering nutrition interventions are usually less effective than predicted from the efficacy trials.
- Systematic research is needed to inform the design and implementation of programs that appropriately address contextual factors that might influence effective delivery of nutrition interventions.
- Designing, implementing and evaluating interventions requires knowledge about the populations and communities which interventions are situated, including the perspective of the potential beneficiaries themselves.

developed (Daelmans *et al.* 2013). Optifood is a powerful software tool that can help the public health nutrition community to identify FBR and evaluate the cost of meeting nutrient requirements for specific populations using locally available foods. It has been predominantly used to design and evaluate FBR during the period of complementary feeding but can be used for all age groups and populations (FANTA 2013; Skau *et al.* 2014).

The first paper in the supplement, *Zinc, iron and calcium are major limiting nutrients in the complementary diets of rural Kenyan children*, presents the Optifood results and identifies an initial set of locally appropriate, low-cost FBR to optimise the adequacy of nutrient intakes among infants and young children 6–23 months of age living in Vihiga and Kitui counties, as well as identifying nutrients for which intake requirements cannot be met through realistic modifications to the diet.

The second paper, *Identifying interventions to help rural Kenyan mothers cope with food insecurity: results of a focused ethnographic study*, presents the ethnographic assessment using an FES. The FES manual was developed by the paper's authors, with support from GAIN, to obtain localised knowledge for programme planning and development challenges related to IYC feeding (Pelto & Armar-Klemesu 2014). This tool provides in-depth insights into the drivers of IYC feeding decisions and the social, cultural and other constraints to their modification. The results of the FES carried out in Vihiga and Kitui, which present data from the lived experience of caregivers, help uncover the realities of household and community conditions. The results provide qualitative evidence about facilitators and constraints to IYC nutrition in the two geographical areas and document their interconnections. The paper provides empirical ethnographic support for arguments concerning the importance of combining nutrition-specific and nutrition-sensitive interventions through a multisectoral, integrated approach to improve nutrition of infants and young children in low-income, resource-constrained populations.

In the third paper, *Constraints and opportunities for implementing nutrition-specific, agricultural and market-based approaches to improve nutrient intake adequacy among infants and young children in two regions of rural Kenya*, the authors bring the results of the Optifood

analysis and FES to bear to identify opportunities and constraints in applying the FBR, including perceptions of cost, convenience, accessibility and appropriateness of the recommended foods for IYC diets and other social or physical factors that determine accessibility of these foods. The authors also present a set of context-appropriate strategies to increase the accessibility and utilisation of the foods with most potential to help fill identified IYC nutrient intake gaps, including the following: (1) behaviour change interventions to increase their acceptability and utilisation, (2) agronomic interventions to increase their productivity, (3) market-level interventions to increase their local trade capacity and accessibility and (4) processor-level interventions to increase the availability of fortified or unfortified, but nutritious, processed foods.

In the fourth paper, *Using ethnography in implementation research to improve nutrition interventions in populations*, the authors present a framework for implementation research in nutrition, discuss the role of ethnography in this type of research and provide case study examples. The basic premise of the paper is that interventions are always situated in a sociocultural context, and therefore, knowledge about that context is a fundamental prerequisite for planning and implementing effective programmes. They review the central purpose of ethnography – to obtain the emic view (the insider's perspective) – and discuss how it has historically interfaced with nutrition. Ethnography provides the methods to understand insider perspectives on features of local life and conditions that relate to intervention actions. The authors present examples of ethnographic studies in relation to an analytic framework of the implementation process, situating them with respect to landscape analysis, formative research, process evaluation and impact evaluation. These examples, conducted in different parts of the world by different investigators, demonstrate how ethnography provided important, often indispensable, insights that influenced programming decisions or explained programme outcomes.

Nutrition has long benefited from a strong evidence base about what biological interventions are effective in malnourished populations. However, the research necessary to support the design and implementation of programmes to deliver these biological interventions has been neglected. Applying a high standard of

inquiry to identifying gaps in current programmes and to understanding the challenges and factors that need to be addressed in intervention design is a critical aspect of to improving the potential impact of nutrition programmes. The series of papers presented here and the reflections for policymaking and programmes illustrate the value of systematic research undertaken for the purpose of supporting the design of nutrition interventions that are appropriate for the specific populations in which they are undertaken, including the perspective of the potential beneficiaries themselves. The emphasis here is on landscape analysis, but all of the stages of the implementation process require the same level of systematic attention.

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## Conflicts of interest

The authors declare that they have no conflicts of interest.

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