



## Addressing the systemic causes of malnutrition: a nutrition-sensitive agriculture evidence gap map

Malnutrition represents a major public health crisis. Nutrition-related challenges have been exacerbated recently due to climate change, the COVID-19 pandemic, and the conflict in Ukraine. Addressing malnutrition requires action within health systems, food systems, and in fragile and emergency settings. Approaches to reduce malnutrition often focus on nutrition-sensitive approaches, which “address the underlying and systemic causes of malnutrition” (USAID 2014). To effectively address nutrition needs in fragile and emergency contexts, information must be accessible with regard to what works, for whom, and at what cost, and evidence gaps must be filled.

To address this need, the International Initiative for Impact Evaluation (3ie) was commissioned by USAID’s Bureau for Resilience and Food Security to develop an evidence gap map (EGM) that describes the available evidence on the effects of the following interventions across low- and middle-income countries: (1) production; (2) transport and distribution; (3) support for food processing, storage, and packaging; (4) fortification and reformulation; (5) pricing and profit initiatives; (6) market places; (7) voluntary adoption of standards and ethical practices; (8) women’s empowerment; and (9) consumer behavior. To the extent possible, interventions are categorized as: education interventions; direct provision of goods, services, or technologies; market-based approaches; or structural approaches.

### Highlights

- The EGM presents 1,952 impact evaluations and 155 systematic reviews.
- The most common interventions studied were educational support for agricultural production, direct provision of food, and nutrition classes.
- The most common outcomes were diet quality and adequacy.
- There are gaps in research considering structural approaches, the mobilization of public and private sector actors, and outcomes related to advertising and presentation and food movement and spoilage.
- Few identified studies adopted mixed-methods, equity-focused designs, cost evidence, or mediation analysis.



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## Main findings

Through a search strategy that initially identified 161,888 records, we found a total of 1,952 impact evaluations and 155 systematic reviews to be included in this map. The rate of publication in the sector increased steadily until 2019. The studies took place in over 100 low- and middle-income countries, with concentrations in India, Bangladesh, and Kenya.

**Interventions generally related to increasing consumer knowledge about nutrition, increasing the market competitiveness of foods, and strengthening maternal, infant, and young child feeding.** The most common interventions were educational support for agricultural production, direct provision of food, and nutrition classes. Other areas of current interest within the sector include the direct provision of credit, education for microfinance groups, and interventions that combine these two approaches. There are more than 15 impact evaluations but no up to date, medium- or high-confidence systematic reviews on: *education and market-based approaches for traders to move into new markets; education and direct provision of goods and services supporting food*

*processing, packaging, and storage (including on-farm, post-harvest processing); water access and management; and women's empowerment and gender equity.*

**Diet quality and adequacy was the most frequently evaluated outcome.** Specifically, measures of *dietary diversity* were those most studied, though *anthropometric* and economic measures were also common. The most studied anthropometric outcomes related to linear growth, weight relative to height, and weight. The most common economic outcomes were income and assets.

**Outcomes related to advertising, presentation, and regulations were least considered.** Only two impact evaluations considered efforts to facilitate an enabling environment for a sound food and health system.

**Few studies considered structural approaches or the mobilization of public and private sector actors.** The most common of these approaches were: mobilizing to develop relationships between producers of agricultural inputs and local farmers and businesses, competitive pricing initiatives, and mobilizing to support

local traders moving into new markets. Although there are no evaluations of interventions to mobilize actors for large- or small-scale food fortification, and only one evaluation of an intervention mobilizing market actors around biofortified foods, there are many evaluations of the effects of directly providing these products.

**Few studies adopted mixed methods, equity-focused research designs, cost evidence, or mediation analysis.** Most studies did not target specific populations or foods; those that did focus on infants from seven months to two years of age and fortified foods. Only 11 per cent of studies presented cost evidence, which can help decision makers to understand whether the intervention was cost-effective, and only 12 per cent used mixed methods, which are useful in understanding how and why interventions worked. Most impact evaluations did not consider equity or gender. Among those that did, the most common equity foci were sex, socioeconomic status, and age. Few studies considered key dimensions such as social capital, culture, caste, or HIV/AIDS.

## Implications for future nutrition programming and research

This EGM serves as a resource for decision makers and technical advisors by identifying and making available existing evidence on: (1) production; (2) transport and distribution; (3) support for food processing, storage, and packaging; (4) fortification and reformulation; (5) pricing and profit initiatives; (6) market places; (7) voluntary adoption of standards and ethical practices; (8) women's empowerment; and (9) consumer behavior. It does not provide information about the effects of interventions or the quality of the included impact evaluations. However, it does provide an easy way for decision makers to navigate the evidence. Analysis is uniquely organized around

programmatic and strategic approaches in the field.

The EGM's findings have the following implications:

- Although we identify 1,952 impact evaluations and 155 systematic reviews, decision makers may find a lack of cost evidence and mixed-methods research. Those interested in gender and equity issues may also find insufficient evidence.
  - The online, interactive version of this map is a useful tool for decision makers, practitioners, and researchers to quickly reference medium- and high-confidence systematic reviews on the effects of interventions of interest. Decision makers can consult individual impact
- evaluations to understand effects within specific contexts.
- Additional primary research, especially on national-level interventions and those considering mobilization or structural approaches, may be beneficial. These interventions are generally more challenging to evaluate and often cannot be randomized. Routine monitoring, big data, and remote sensing data can also be leveraged to facilitate these evaluations.
  - Researchers should consider the adoption of mixed methods, equity-focused research designs, cost evidence, and mediation analysis, as these are all relatively uncommon.



## How to read an evidence gap map

The International Initiative for Impact Evaluation (3ie) presents EGMs using an interactive online platform that allows users to explore the evidence base. Bubbles appearing at intersections between interventions and outcomes denote the existence of at least

one study or review. The larger the bubble, the greater the volume of evidence in that cell. The color of each bubble represents the type of evidence and, for a systematic review, a confidence rating (as indicated in the legend). In the online version, hovering over a bubble displays

a list of the evidence for that cell. The links for these studies lead to user-friendly summaries in the 3ie evidence database. Users can filter the evidence by type, confidence rating (for systematic reviews), region, country, study design, and population.

## What is a 3ie evidence gap map?

3ie EGMs are collections of evidence from impact evaluations and systematic reviews for a given sector or policy issue, organized according to the types of programs evaluated and the outcomes measured. They include an interactive online

visualization of the evidence base, displayed in a framework of relevant interventions and outcomes. They highlight where there are sufficient impact evaluations to support systematic reviews and where more studies are needed. These maps help

decision makers target their resources to fill these important evidence gaps and avoid duplication. They also facilitate evidence-informed decision-making by making existing research more accessible.







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**About this map**

This brief was developed by Fiona Kastel and is based on *Addressing the systemic causes of malnutrition: a nutrition-sensitive agriculture evidence gap map*, 3ie Evidence Gap Map Report 25 by Charlotte Lane, Ingunn Storhaug, Veronika Tree, Diana Cordova-Arauz, Carolyn Huang, Daniel

Frey, Faez Ahmed, Binyang Song, Kristen Marie Edwards, Jaron Porciello, and Birte Snilstveit. The authors identify, map, and describe the evidence base regarding the impacts of nutrition-sensitive agricultural interventions across food systems in low- and middle-income countries. The report

describes 1,952 completed impact evaluations and 155 systematic reviews, including nine systematic review protocols mapped on a framework of nine intervention types and 15 outcome groups, spanning more than 100 low- and middle-income countries.

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For more information on 3ie's evidence gap maps, contact [info@3ieimpact.org](mailto:info@3ieimpact.org) or visit our website.

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