Food Systems and Nutrition Evidence Gap Map

Update #1 (May 2020 – June 2021)

Highlights

- We have added 74 studies to the map. Most of the new studies focused on the food supply chain (n=52), specifically the production system (n=42). There were 18 new studies related to consumer behaviour.
- Seven studies evaluated national level policies. One new study considered the use of subsidies (governmental manipulations of price).
- Most studies considered agricultural outcomes (n=32). Economic (n=18) and diet quality and adequacy outcomes (n=19) were also common.
- Six studies address previously identified gaps such as women's empowerment (n=3), environmental impacts of food systems (n=1), and measures of diet insufficiency (n=1).
- There was a reduction in the reliance on experimental designs from 80 per cent to 59 per cent.
- The country focus has shifted slightly. The most commonly considered country is Kenya (n=7), followed by Ghana (n=6), and Vietnam (n=6;).
- The map will be updated again in March 2022. It can be accessed here. The original EGM report is available here.

Table 1: Studies added to the EGM

Interventions	Studies and protocols added (studies in original)
Total studies	74 (1838)
Food supply	52 (800)
Food environment	8 (640)
Consumer behaviour	18 (522)
Common multi-component	6 (81)
Previously identified gaps	
Illustrative list of interventions to priorities for evaluation	
Government manipulations of price	1 (22)
Advertising and labelling regulations	0 (3)
On-farm, post-harvest processing	0 (4)
Interventions to support food packaging	0 (0)
Efforts to support women's empowerment within the food system	2 (10)
Innovative store design	0 (5)

Interventions	Studies and protocols added (studies in original)
Illustrative list of outcomes to priorities for evaluation	
Women's empowerment	3 (43)
Economic, social, and political stability	0 (3)
Food loss	0 (3)
Environmental impacts of the food system	1 (2)
Measures of diet insufficiency	1 (25)
Illustrative list of evidence synthesis priorities	
Provision of free or reduced-cost farm inputs to crop production	0 (9)
Educational approaches within the food value chain	0 (8)
Agricultural insurance products	0 (1)
Outcome related to other diet quality and adequacy measures	0 (24)

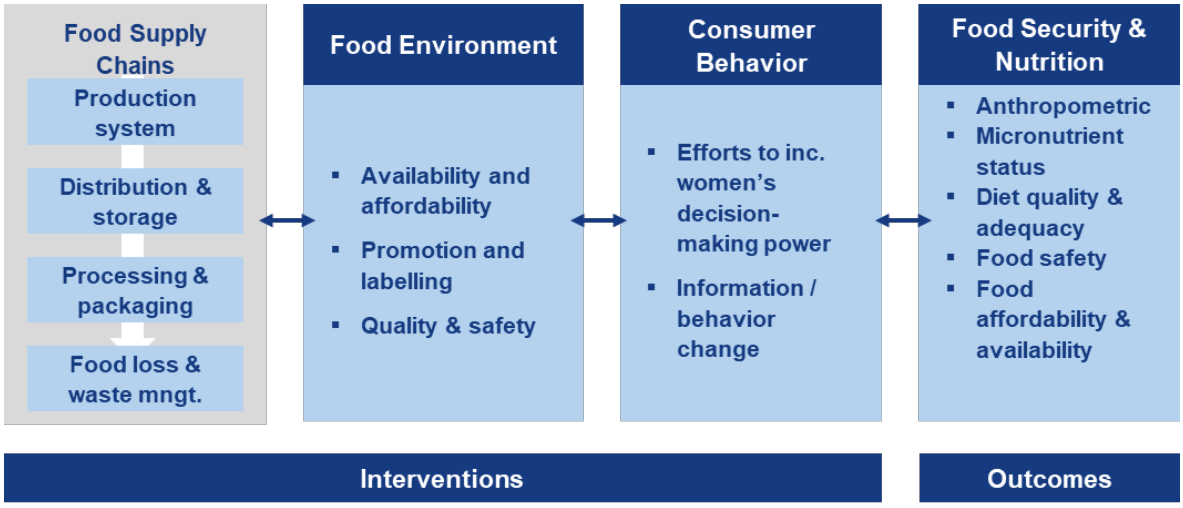
Background

The global community is currently grappling with the issue of how to transform food systems so that they achieve healthy diets for a growing global population without causing long-term environmental harm to the planet (1, 2). To ensure that limited resources are used as effectively as possible, new strategies and programmes need to be informed by high quality evidence.

To respond to this need, with support from the GIZ Knowledge for Nutrition programme, 3ie completed an Evidence Gap Map (EGM) on food systems and nutrition in early 2021. The EGM compiles all impact evaluations and systematic reviews of interventions in low- and middle-income countries (LMIC) that function within food systems and measure outcomes related to food security and nutrition. The EGM has the dual purpose of serving as a collection of the available evidence and a representation of the research topics where additional work is needed. In both functions, the EGM acts as a global public good to inform the efficient allocation of resources. It makes existing evidence more easily available to decision-makers, funders, and researchers.

The EGM uses an adapted version of the framework from the High-Level Panel of Experts on Food Security and Nutrition (HLPE) from 2017 to conceptualise the food system, separating it into the three dimensions (i) food supply chain, (ii) food environment, and (iii) consumer behaviour (Figure 1) (3). With over 1,800 impact evaluations and 170 systematic reviews included, the original EGM was 3ie's largest to date. However, the evidence base is rapidly expanding. To ensure that the EGM remains a useful and current tool, we have developed it into a living EGM. What this means in practice is that we continuously monitor newly published studies, adding them to the EGM as they are identified. In doing so it ensures that the most recent research remains available to stakeholders and keeps them up to date on latest evidence. This report presents our analysis of the studies published from May 2020 to July 2021 and discusses changes in the evidence base over this period.

Figure 1: Conceptual framework and theory of change for the Food Systems and Nutrition Evidence Gap Map



Source: 3ie (2020). Adapted from HLPE (2017).

Methods

Search strategy

To populate this EGM, we drew from two sets of searches. First, we re-ran the searches in the original EGM. The search strings used and the databases searched were identical to those in the original EGM, with the exception of correcting a syntax error in the strings for one database (Scopus). Second, we screened items retrieved in the searches for 3ie's Development Evidence Portal—a database of impact evaluations and systematic reviews across sectors in international development—for relevance to this EGM. Monthly "evidence surveillance" searches are used to populate the Development Evidence Portal. As there is considerable overlap in the inclusion criteria for the Portal and this EGM, the marginal cost of screening DEP search results for relevance to this EGM is small, allowing us to cover additional literature and include relevant studies that do not use the specific search terms for this EGM. To date, we have not re-searched non-database sources (i.e., websites and backward citation tracking), included in the original EGM; however, these sources will be searched in the coming months.

The EGM-specific searches were run in July 2021, covering the period since the previous searches in May 2020. Relevant studies from this search are included in the present update. For the next update, we will present studies added to academic bibliographic databases starting from July 2021. Further updates will be published on a quarterly basis throughout 2022.

Screening

The same process for screening was employed in this update as in the original EGM. Records retrieved through the searches were uploaded into the EPPI-Reviewer 4 software. An automated process within the software was applied to remove duplicates. We applied a machine learning classifier, developed during the original EGM, to these search results, and screened those abstracts with a priority score of 30% or above. We also applied a classifier developed with Development Evidence Portal screening data to the EGM search results and screened those scoring 30% or above.

Title and abstracts of all imported, deduplicated, and adequality prioritized studies were screened by a single consultant against inclusion/exclusion criteria. If screeners were uncertain about inclusion, the study was screened by a senior reviewer.

The full texts of studies that met title and abstract criteria were screened by a single consultant using the same approach of providing an “unsure” option for screeners to flag papers for screening by a senior reviewer. All consultants conducting full text screening had conducted screening for the original EGM.

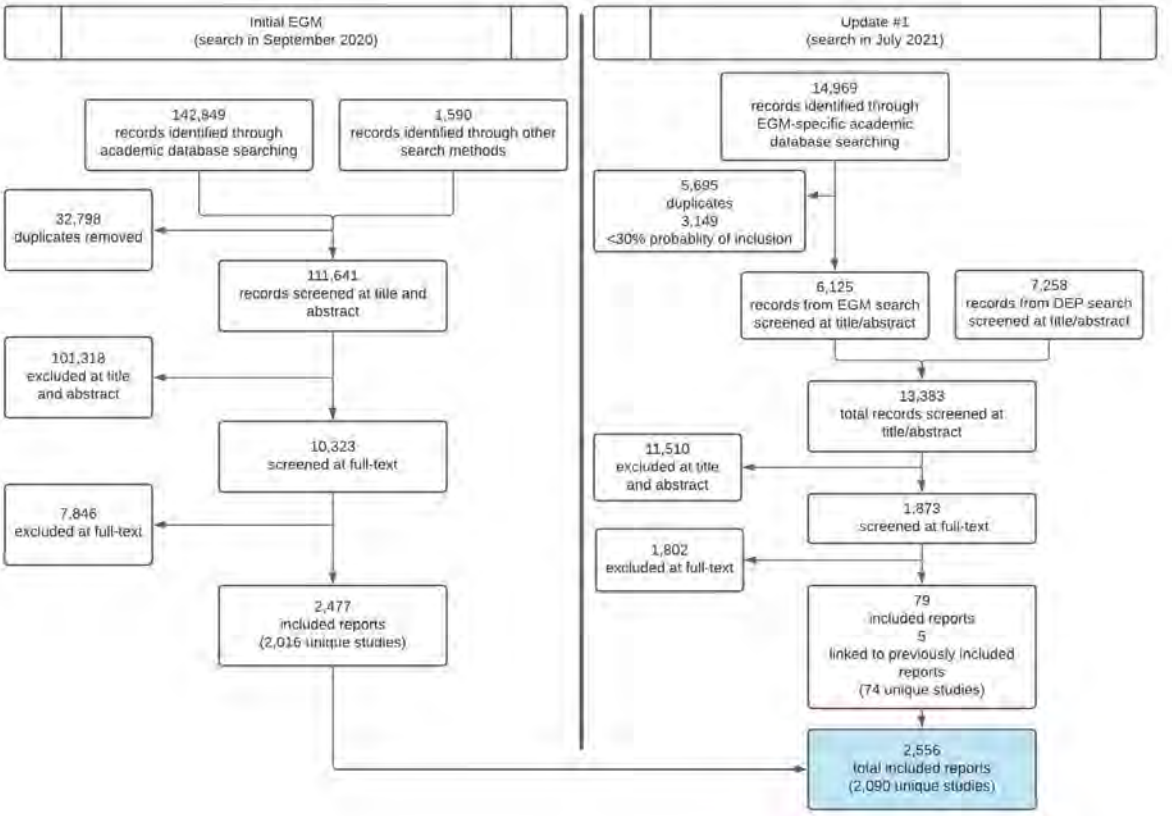
Data extraction, analysis, and presentation of results

Data extraction and analysis procedures were identical to those of the original EGM. Results are presented graphically on the 3ie interactive online platform. This report presents updated figures, illustrating the evolution of the evidence base throughout the last year.

Results

Our search retrieved 14,969 records (Figure 2). We removed 5,695 duplicates. We also removed 3,149 which were identified as having low probability based on the classifier in EPPI-Reviewer 4. Therefore, 6,125 abstracts were screened through our Food Systems and Nutrition search. An additional 7,258 abstracts identified through regular surveillance for the Development Evidence Portal were also screened for inclusion in the Food Systems and Nutrition Evidence Gap Map. During title and abstract screening, 11,510 articles were excluded, leaving 1,873 to be screened at full text. Finally, 79 relevant articles were eligible for inclusion, five of which were linked to other articles and did not represent unique studies. Therefore, we added 74 unique studies: 73 impact evaluations and one systematic review. No articles that were identified through the routine surveillance of the Development Evidence Portal and not the Food Systems and Nutrition search were ultimately included, indicating that our search is well targeted. Seven of the included reports were published before 2020 but added to the databases searched in a delayed manner. The remainder of the newly included studies were published in 2020 and 2021.

Figure 2: PRISMA



Most of the new studies focused on the food supply chain (Figure 3, n=52), specifically the production system (n=42). There was no obvious clustering of intervention types within the production system. Nine new studies on peer support and counselling were added to the 130 already in the EGM. We also added six new studies on classes regarding consumer behaviour (245 in the original EGM) and five new studies on fortification (285 in the original EGM). There were 18 new studies related to consumer behaviour, and two of these (a completed study and a protocol) focused on increasing women's decision-making power. Seven studies considered national policies. One new study considered the use of subsidies (governmental manipulations of price).

Most studies considered agricultural outcomes (Figure 4, n=32), such as plant or crop production (n=19) and the quality of agricultural inputs (n=18). Economic (n=18) and diet quality and adequacy outcomes (n=19) were also commonly considered.

Figure 3: Distribution of included studies by intervention domain and subdomain

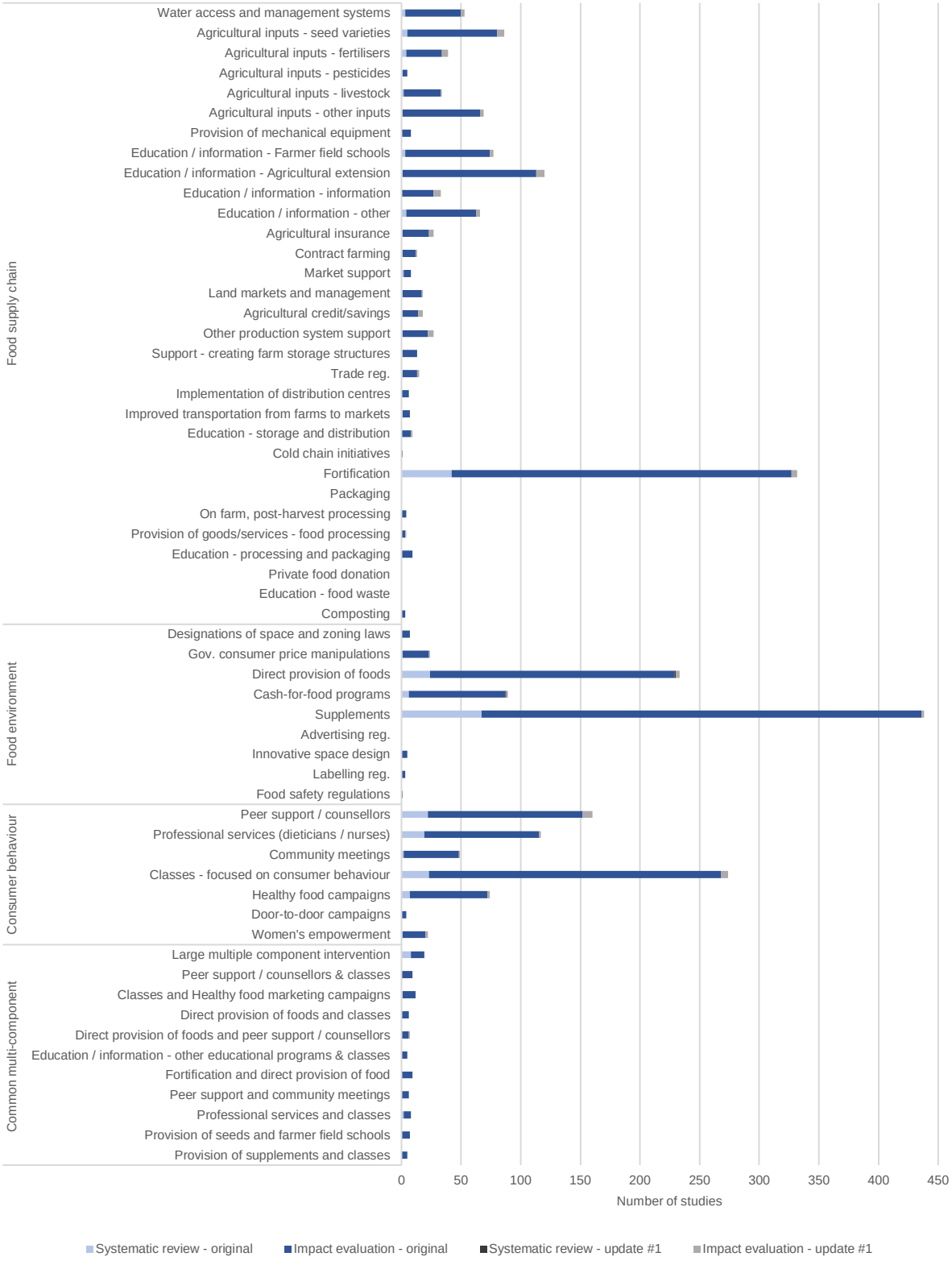
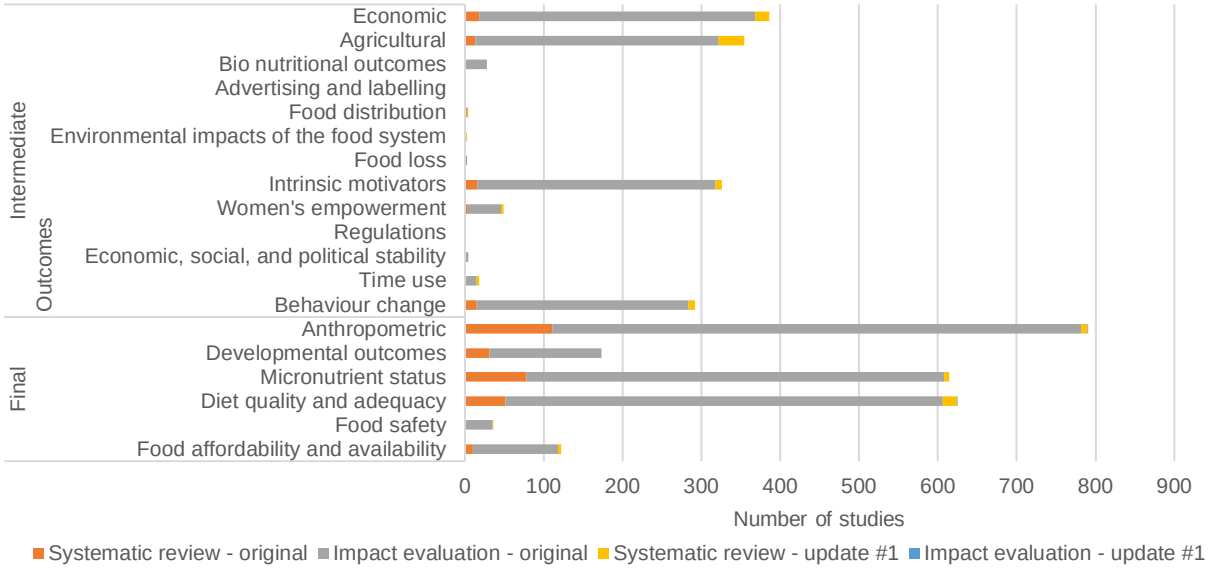
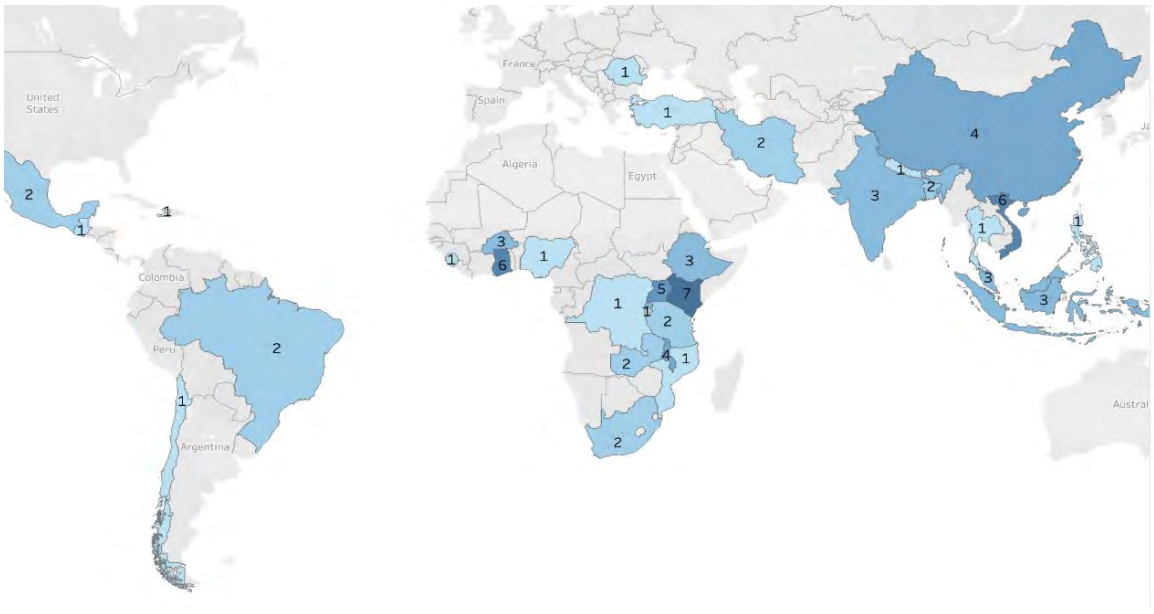


Figure 4: Distribution of included studies by outcome domain



There was a reduction in the share of studies adopting an experimental design, from 80 per cent reliance on experimental designs in the original EGM to a 59 per cent among the studies published between May 2020-July 2021. Although there continues to be a focus on randomized trials (n=43), other approaches, such as statistical matching (n=11) and difference-in-difference (n=9) are becoming more common. The most commonly considered country is Kenya (n=7), followed by Ghana (n=6), and Vietnam (n=6; Figure 5). In the original EGM, India, Bangladesh, and China were the most common countries. The single systematic review considered cash transfers and the direct provision of food. It was rated as low confidence.

Figure 5: Distribution of included impact evaluations by country



Discussion

This is our first living EGM, which will continue to provide researchers and decision-makers with the most up to date evidence on food systems and nutrition. We monitor if gaps in the evidence base have been filled or the research focus is changing and make new studies available through the interactive version of the EGM.

The most striking change that we identified was a meaningful shift towards more **quasi-experimental designs**. This was not, however, accompanied by a major change in the types of interventions that were evaluated. We also saw a different the geographic focus, which likely reflects changes in the funding landscape. Previous research focused on countries with high populations, India and China, but in this update Kenya, Ghana, and Vietnam were the most studied countries. Seven studies **evaluated national-level policies.**

Some new studies have focused on the areas previously identified as priorities in the original map (Table 1). One study on **governmental price manipulation** found that a rice price subsidy in South India positively affected food consumption, nutrient intake and purchasing power (4). Another new study investigated the impact of an agricultural capacity building intervention and an education and behavior change nutrition intervention. The nutrition intervention included **efforts to improve women's empowerment** through gender sensitization training. This study found that the nutrition intervention improved **women's empowerment outcomes** - women were more likely to express their opinion to their spouses and in meetings. It also improved women's control over income from food crop farming and livestock rearing (5). Effects on **diet insufficiency** were evaluated by a study of an exclusive breastfeeding promotion intervention in Burkina Faso, Uganda, and South Africa. It found a decrease in pre-lacteal feeding in Burkina Faso and Uganda, but no changes in South Africa (6).

Some recently published protocols indicate that gaps may close in the coming years. A study on egg consumption promotion will evaluate **efforts to improve women's empowerment** (gender-sensitive behavior change communication and training) and measure a **women's empowerment outcome** (decision-making) (7). An evaluation of a combined nutrition counselling and cash transfer intervention in Bangladesh will measure **women's empowerment**, agency, and inclusion (8). Another study will evaluate the effects of using a high- or low-tech biomass cook stove on **environmental outcomes** (local to regional air quality) (9). We look forward to adding these studies to the EGM as results are published.

We added many studies to the well-established clusters of evidence on peer support and counselling, classes on consumer behaviour, and fortification. It is not clear that these studies break ground and add significantly to our understanding of the likely impacts of these interventions.

The map will be updated again in March 2022. It can be accessed here. The original EGM report is available here.

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Appendix 1: Studies added to EGM May 2020 – July 2021

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About this note

This note presents information and results from the first update to the Food Systems and Nutrition Evidence Gap Map. We discuss the distribution of the evidence base and the current state of the evidence. A new note will be provided in March 2022 with an additional update.

This brief was authored by Charlotte Lane, Veronika Tree, Ingunn Storhaug, and Mark Engelbert. They are solely responsible for all content, errors, and omissions. It was designed and produced by Akarsh Gupta and Tanvi Lal.

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