Technical assistance to understand the evidence and research priorities for prevention of acute malnutrition

MQSUN+ retrospective case study (June 2019)

This retrospective case study is part of a brief series on Assumption maps to assess signs of impact of short-term technical assistance.

With approximately 49 million children (7.3 percent) under five years of age affected by acute malnutrition (UNICEF/WHO/World Bank Group, 2019), there is an urgent need for concerted prevention efforts. The last decade has seen significant investments to develop evidence-based prevention strategies, though a recent analysis of World Health Assembly targets highlights a lack of robust studies on effective interventions (Shekar et al., 2017).

Technical assistance implementation

Maximising the Quality of Scaling Up Nutrition Plus (MQSUN+), through its Technical Assistance for Nutrition (TAN) partner, the Emergency Nutrition Network, has been tasked to support the UK’s Foreign, Commonwealth and Development Office (FCDO) and the wider nutrition community to accelerate coordinated action to develop evidence of what works to reduce the incidence and recurrence of wasting.

Phase I comprises a review of the available evidence to understand how and why wasting evolves from conception onwards and how it differs from other forms of malnutrition. This was supplemented with stakeholder consultations and an assessment of interventions to reduce wasting prevalence. These are summarized in the Aetiology of Wasting and The Current State of Evidence and Thinking on Wasting Prevention. Phase II is an exercise to prioritize what gaps ought to be researched. Finally, Phase III
seeks to review how actors can strengthen the humanitarian and development nexus to increase impact on the reduction of wasting and other major forms of child malnutrition.

Assumption pathway to impact

The aim of this case study is to showcase what has enabled this TA’s impact, as well as the signs of impact along the pathway for scaled-up nutrition action and reduced malnutrition. It singles out one row of the assumption map to highlight how TA carrying out research and review of the evidence (one of the categories of support to FCDO) can lead to improved or scaled-up nutrition programs and impact malnutrition (Figure 1). This is part of a larger picture, the full assumption map, of how different types of TA (corresponding to each row of the map), such as TA to build capacity in nutrition, contribute to and capture the contributions to the nutrition theory of change (TOC) and the global nutrition agenda.

Phase I: Development of the etiology of wasting

The comprehensive review of peer-reviewed journal articles and key pieces of grey literature, led by a team of experts, resulted in a clearer understanding of the pathways through which children become wasted. It highlighted a growing evidence base on the association between wasting and stunting, the overlap of risk factors, and the multiplicative effect of dual deficits on child mortality. This led to the idea that prevention strategies may need to include a joint approach to capture, understand, and address this vulnerability. The evidence review, which resulted in a depiction of the cycle of wasting, collaboratively prepared with the FCDO advisor who requested the assignment (Figure 2 and Table 1), highlights the need to act on early determinants to support optimal fetal development and infant feeding. This has consequences not only for the type of literature search on interventions but also on the type of research questions that arise, such as how and to what extent does in utero experience amplify...
Figure 2. Wasting throughout the life cycle diagram.

Abbreviation: WASH, water, sanitation, and hygiene.

Table 1. Data sources for child wasting factors and examples.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Association with child wasting outcomes</td>
<td></td>
</tr>
<tr>
<td>Maternal status (short) and body mass index (BMI) (thin)</td>
<td>(Ali et al., 2017; Ozaltin et al., 2010; Subramanian et al., 2009; Tigga &amp; Sen, 2016)</td>
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<tr>
<td>Maternal age (young)</td>
<td>(Fall et al., 2015; Pravana et al., 2017)</td>
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<tr>
<td>Family planning</td>
<td>(Aheto et al., 2015; Asfaw et al., 2015; Betbebo et al., 2017; Fink et al., 2014; Tette et al., 2015)</td>
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<tr>
<td>Intra-uterine growth restriction, preterm and/or low birth weight</td>
<td>(Christian et al., 2013; Rahman et al., 2016; Sania et al., 2015)</td>
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<tr>
<td>Child stunting</td>
<td>(McDonald et al., 2013; Victora, 1992)</td>
</tr>
<tr>
<td>Inflammation and enteric enteropathy</td>
<td>(Genton et al., 2015; Harper et al., 2018; Patwari, 1999; Relman, 2013)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>(Ahmed et al., 1993; Patwari, 1999; Relman, 2013)</td>
</tr>
<tr>
<td>Dietary diversity</td>
<td>(Arimond &amp; Ruel, 2018; Frempong &amp; Annim, 2017)</td>
</tr>
<tr>
<td>Food insecurity</td>
<td>(Abdurahman et al., 2016; Betbebo et al., 2017)</td>
</tr>
<tr>
<td>Water, sanitation, and hygiene (WASH)</td>
<td>(Humphrey, 2009; Raihan et al., 2017)</td>
</tr>
<tr>
<td>Household wealth (low)</td>
<td>(Bhutta et al., 2013; Frongillo et al., 1997; Martorell &amp; Young, 2012)</td>
</tr>
<tr>
<td>Mother’s education/literacy</td>
<td>(Aheto et al., 2015; Frozanfar et al., 2016; Ickes et al., 2015; Mishra et al., 2014)</td>
</tr>
<tr>
<td>Women’s empowerment</td>
<td>(Alaqfè et al., 2017; Shroff et al., 2011)</td>
</tr>
<tr>
<td>Male involvement</td>
<td>(Kansiime et al., 2017)</td>
</tr>
<tr>
<td>Factor</td>
<td>Example</td>
</tr>
<tr>
<td>--------------------------------</td>
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<tr>
<td>Multiple risk factors in the life cycle</td>
<td>(Akombi et al., 2017)</td>
</tr>
<tr>
<td>Emergency contexts</td>
<td>(Altare et al., 2016)</td>
</tr>
<tr>
<td>Impact of child wasting</td>
<td></td>
</tr>
<tr>
<td>Multiple impacts</td>
<td>(Black et al., 2008, 2013)</td>
</tr>
<tr>
<td>Cognitive development</td>
<td>(Kar et al., 2008)</td>
</tr>
<tr>
<td>Morbidity</td>
<td>(Black et al., 2013)</td>
</tr>
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</table>

Phase I: Summarizing the state of evidence on wasting prevention

The team used the findings of the evidence summary to frame the literature search on nutrition-related interventions and develop a semi-structured questionnaire for expert stakeholders to share their opinion on what approaches work, the challenges, and the knowledge gaps. The systematic summary of the state of evidence by intervention area, quality of available studies, potential effect on wasting prevention, and the expert opinion on its significance helped depict where the evidence is mixed or inconclusive. This in itself has the potential to demonstrate impact, if the nutrition community uses the gaps identified to bolster action and research in the coming months or years. In terms of this piece of TA contracted by FCDO, the findings were used in Phase II.

Phase II: Establishing research questions relevant to the prevention of wasting

Drawing from the review of the literature on the etiology of and the findings of the state of the evidence on what works to prevent wasting, the team was able to meet a sign of impact: using the findings to develop tangible research questions for an expert group to review. The investment in this exercise is itself a testament to the uptake and progression towards the global nutrition agenda.

Phase II: Prioritizing research questions

Useful research questions must meet some key assumptions. That is, they must be answerable (feasible given context and time?), efficient (likely to produce the outcome hypothesized?), deliverable (cost-effective?), and gap-filling (pertinent to the knowledge gaps?). Whether these assumptions will be met for the top-ranked/prioritized questions is yet to be seen (i.e., whether there will be sufficient buy-in from the global nutrition-related communities). The questions would serve as a preliminary point to conduct supplementary research to strengthen the evidence base and/or test new or scale up existing interventions for impact. It provides an opportunity for scaling up action beyond wasting prevention, such as strengthening health systems to achieve the World Health Assembly targets and deliver on the Sustainable Development Goal to end malnutrition in all forms by 2030.

Discussion on signs of impact

The findings of this TA should facilitate uptake related to wasting prevention, though incorporation of the relevant findings into FCDO investment decision-making is yet to be seen. It also has the potential to inform FCDO of key networks, groups, and initiatives involved in this research area (Phase III). Having prioritized study questions as a result of technical consensus has the potential to support decision-making on funding and harmonization of efforts to avoid duplication. In addition, it is essential to consider where existing data can be used and where evidence can be improved to identify opportunities to prevent wasting and other forms of child malnutrition. The dissemination of the results and uptake of the information by appropriate stakeholders can strengthen global-, regional-, and country-level understanding of nutrition status and help in making targeted and informed decisions, which in turn will help prevent death in children due to wasting.
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malnutrition in children under five years in Bangladesh: Do mother’s education, socio-economic status, and


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