

Tara Kaul  
Safiya Husain  
Tony Tyrell  
Marie Gaarder

# Synthesis of impact evaluations of the World Food Programme's nutrition interventions in humanitarian settings in the Sahel

March 2018

Working  
Paper 31

Humanitarian



International  
Initiative for  
Impact Evaluation

## About 3ie

The International Initiative for Impact Evaluation (3ie) is an international grant-making NGO promoting evidence-informed development policies and programmes. We are the global leader in funding, producing and synthesising high-quality evidence of what works, for whom, how, why and at what cost. We believe that using better and policy-relevant evidence helps to make development more effective and improve people's lives.

## 3ie working papers

These papers cover a range of content. They may focus on current issues, debates and enduring challenges facing development policymakers, programme managers, practitioners and the impact evaluation and systematic review communities. Policy-relevant papers in this series synthesise or draw on relevant findings from mixed-method impact evaluations, systematic reviews funded by 3ie and other rigorous evidence to offer new analyses, findings, insights and recommendations. Papers focusing on methods and technical guides draw on similar sources to help advance understanding, design and use of rigorous and appropriate evaluations and reviews. 3ie also uses this series to publish lessons learned from 3ie grant-making.

## About this working paper

This paper, *Synthesis of impact evaluations of the World Food Programme's nutrition interventions in humanitarian settings in the Sahel*, synthesises the main findings and lessons from impact evaluations in Chad, Mali, Niger and Sudan. The synthesis provides cross-cutting evidence to inform strategic decisions on future programming to address moderate and severe acute malnutrition as a tool for improving overall nutrition and food security outcomes.

The content of this paper is the sole responsibility of the authors and does not represent the opinions of 3ie, its donors or its board of commissioners. Any errors and omissions are also the sole responsibility of the authors. Please direct any comments or queries to the corresponding author, Tara Kaul, at [tkaul@3ieimpact.org](mailto:tkaul@3ieimpact.org).

World Food Programme (WFP) and UK aid through the Department for International Development (DFID) provided funding for this working paper. The views expressed in this paper are not necessarily those of WFP or DFID.

Suggested citation: Kaul, T, Husain, S, Tyrell, T and Gaarder, M, 2018. *Synthesis of impact evaluations of the World Food Programme's nutrition interventions in humanitarian settings in the Sahel*, 3ie Working Paper 31. New Delhi: International Initiative for Impact Evaluation (3ie).

3ie Working Paper Series executive editors: Beryl Leach and Emmanuel Jimenez

Production manager: Angel Kharya

Assistant production manager: Akarsh Gupta

Copy editor: Jaime L Jarvis

Proofreader: Sarah Chatwin

Cover design: John F McGill and Akarsh Gupta

Cover photo: Albert González Farran, UNAMID

# **Synthesis of impact evaluations of the World Food Programme's nutrition interventions in humanitarian settings in the Sahel**

Tara Kaul  
International Initiative for Impact Evaluation (3ie)

Safiya Husain  
3ie

Tony Tyrell  
Independent consultant

Marie Gaarder  
3ie

**3ie Working Paper 31**

**March 2018**



## **Acknowledgements**

We thank Soumya Dabriwal, 3ie consultant for excellent research assistance during the early stages of this paper and Kanika Jha, 3ie policy and evidence uptake officer for providing comments that greatly improved the final paper. We are also grateful to colleagues from the World Food Programme's country offices (Chad, Mali, Niger and Sudan), regional bureaus in Dakar and Cairo, the nutrition division, the asset creation and livelihoods division, and the Office of Evaluation for their feedback and suggestions. We also thank our colleagues from 3ie and DFID for their valuable inputs and feedback. This report was prepared under the supervision of Marie Gaarder, 3ie director of the Evaluation Office and global director for innovation and country engagement, and Emmanuel Jimenez, 3ie executive director.

## Summary

Acute malnutrition in the Sahel affects an estimated six million children under five years, of whom about 1.4 million require treatment for severe acute malnutrition. While there is considerable evidence of the effectiveness of interventions to treat moderate acute malnutrition under optimal conditions, there is insufficient and equivocal understanding of the relationship between malnutrition treatment and prevention work. In addition to examining the impacts of various components of World Food Programme (WFP) programming on core outcomes, the series of impact evaluations on moderate acute malnutrition programming synthesised in this report contribute evidence on the value of the interrelationship between programmes for preventing and programmes for treating moderate acute malnutrition in emergency and post-emergency contexts. The impact evaluations are part of the Humanitarian Assistance Thematic Window of the International Initiative for Impact Evaluation (3ie), which launched in 2014 with the overall objective of generating high-quality evidence for improving the quality of life of those in humanitarian crises.

This report is a synthesis of the main findings and lessons from four WFP-funded impact evaluations of nutrition and food security interventions in four countries of the Sahel region of Sub-Saharan Africa: Chad, Mali, Niger and Sudan. The evaluations examined aspects of WFP's programmes for food security and the treatment and prevention of moderate acute malnutrition and their impact on nutrition and food security outcomes, and identified lessons for improving programme effectiveness to achieve core WFP objectives in food security and nutrition. The synthesis provides cross-cutting evidence to inform strategic choices on future programming to address moderate and severe acute malnutrition as a tool for improving overall nutrition and food security outcomes. The impact evaluations consider the following main questions:

1. **Chad:** What is the impact of interventions for preventing moderate acute malnutrition on the incidence and prevalence of moderate acute malnutrition in children under two years with varying levels of access to moderate acute malnutrition treatment? (Saboya et al. forthcoming)
2. **Mali:** What are the impacts of conflict and food assistance on child malnutrition and other development outcomes? (Gelli et al. forthcoming)
3. **Niger:** What are the impacts on nutrition outcomes of various combinations of programme components in WFP's protracted relief and recovery operation? (Brück et al. forthcoming)
4. **Sudan:** What are the impacts of various interventions for treating and preventing moderate acute malnutrition on the incidence and prevalence of moderate and severe acute malnutrition in children under five years and pregnant and lactating women? (Guevarra et al. forthcoming)

The impact evaluations identify lessons relevant to WFP programmes and provide insights into how different components of WFP programming interact with one another. The evaluation results are situated, however, within the particular context of each study area. WFP implemented food security and nutrition-related protracted relief and recovery operations in the Sahel region because of high rates of poverty coupled with fast population growth, climate change, recurrent food security and nutrition crises, and violence due to armed conflicts.

The impact evaluations also contribute to the literature on what works to improve nutrition and food security outcomes in humanitarian contexts. Although acute malnutrition has been identified as a major driver of child mortality in the developing world, large evidence gaps remain (Black et al. 2008; Bhutta et al. 2008; Victora et al. 2008; Bryce et al. 2008; Morris et al. 2008). 3ie carried out an assessment of existing synthesis-type studies of the evidence base for humanitarian interventions (Appendix A) and identified significant knowledge and evidence gaps regarding the prevention and treatment of acute malnutrition.

The impact evaluations covered in this synthesis reported various effects, depending on the context and the combination of programmes implemented. The impact evaluation for Chad found that the prevention programme – blanket supplementary feeding – had a positive effect on the incidence of moderate acute malnutrition during the lean season, particularly for households supported by seasonal work. When looking at the interaction between the prevention programme (blanket supplementary feeding) and the treatment programme (targeted supplementary feeding), the prevention programme had a larger (positive) impact on moderate acute malnutrition incidence amongst households with poorer than average access to the treatment programme.

The evaluation for Sudan found a significant reduction in the prevalence of children at risk of malnutrition where food-based interventions for preventing moderate acute malnutrition were added to the treatment programme (targeted supplementary feeding). The Niger evaluation concluded that continued provision of food assistance for assets in combination with treatment and/or prevention programmes significantly reduced the incidence of moderate acute malnutrition, serving as a nutrition-sensitive form of assistance.

The impact evaluation in Mali found that access to general food distribution led to increases in households' non-food and food expenditures and in micronutrient availability. The evaluation examined the delivery of a package of multisector nutrition interventions and found that households living close to conflict and receiving at least two forms of assistance – particularly general food distribution and school feeding – showed statistically positive effects on nutrition outcomes, whereas the effects were not significant for households that received only one form of food assistance. Disaggregating by degree of exposure to conflict, the evaluation also uncovered that the effects on children's nutrition outcomes were concentrated mostly in areas that were not in the immediate vicinity of conflict and that this might, in part, be because these households had greater access to aid.

This synthesis report is based on a systematic analysis of the four impact evaluations and identifies several operational and policy-related lessons. Based on these lessons, the recommendations identified in the synthesis relate to improving operational efficiency and coverage, tailoring programme components according to context, increasing inter-agency cooperation and improving monitoring and cost data.

# Contents

<b>Acknowledgements</b> .....	<b>i</b>
<b>Summary</b> .....	<b>ii</b>
<b>List of figures and tables</b> .....	<b>v</b>
<b>Abbreviations and acronyms</b> .....	<b>vi</b>
<b>1. Introduction</b> .....	<b>1</b>
1.1 Background .....	1
1.2 Objectives and methodology of the synthesis .....	2
<b>2. Methodology and limitations</b> .....	<b>3</b>
2.1 Methodology and core evaluation questions .....	3
2.2 Limitations and implications for synthesis .....	5
<b>3. Findings and results</b> .....	<b>6</b>
3.1 Highlights.....	6
3.2 Targeting and uptake.....	7
3.3 Nutrition outcomes.....	8
3.4 Cost-effectiveness .....	10
3.5 Heterogeneous gender effects .....	10
<b>4. Broad lessons and recommendations</b> .....	<b>11</b>
4.1 Broad lessons.....	11
4.2 Recommendations.....	15
<b>Appendix A: Updated literature review</b> .....	<b>17</b>
<b>Appendix B: Types of data collected for the impact evaluations</b> .....	<b>25</b>
<b>Appendix C: Key lessons in evaluation implementation</b> .....	<b>26</b>
<b>References</b> .....	<b>28</b>

## List of tables

Table 1: Study designs, evaluation questions and main outcomes .....	5
Table 2: Major results.....	9
Table 3: Specific lessons regarding timing, sequencing and roll-out of programmes .....	12

## Appendix figure and tables

Figure A1: Studies on humanitarian assistance with nutrition-related outcomes.....	17
Table A1: Outcomes assessed in the studies included in the gap maps and scoping paper.....	178
Table C1: Examples of study and programme implementation challenges and solutions .....	27

## **Abbreviations and acronyms**

3ie	International Initiative for Impact Evaluation
BSF	Blanket supplementary feeding
FFA	Food assistance for assets
GAM	Global acute malnutrition
GFD	General food distribution
M&E	Monitoring and evaluation
MAM	Moderate acute malnutrition
PRRO	Protracted relief and recovery operation
SAM	Severe acute malnutrition
SBCC	Social and behaviour change communication
TFA	Targeted food assistance
TSF	Targeted supplementary feeding
WASH	Water, sanitation and hygiene
WFP	World Food Programme

# 1. Introduction

## 1.1 Background

Aligned with the World Food Programme (WFP) Strategic Plan 2017–2021, WFP’s nutrition policy for 2017–2021 articulates WFP’s expansive work to increase the availability of, access to, demand for and consumption of safe and nutritious diets. Building on lessons from the 2008 *Lancet* series on maternal and child undernutrition (Horton 2008), the 2010 framework for action of the inter-agency, inter-governmental Scaling Up Nutrition movement<sup>1</sup> and the Renewed Efforts Against Child Hunger and Undernutrition initiative,<sup>2</sup> the policy reiterates WFP’s commitment to including nutrition interventions in emergency responses and addressing moderate acute malnutrition (MAM) through prevention and treatment programmes. WFP’s approach includes food assistance for the treatment and prevention of MAM and selected complementary activities to address the causes of malnutrition. The approach builds on a base of evidence of the effectiveness of interventions, an understanding of the multicausal nature of malnutrition and a focus on the first 1,000 days following conception as critical for child survival and the attainment of an individual’s potential for physical and cognitive development, and hence health and income-earning in the future.

WFP implemented food security and nutrition-related protracted relief and recovery operations (PRROs) in the Sahel region because of high rates of poverty coupled with fast population growth, climate change, recurrent food and nutrition crises, and violence due to armed conflicts. The convergence of these factors affects an estimated 30 million people, almost 12 million of whom require emergency food assistance. In the Sahel, acute malnutrition affects an estimated six million children under five years, of whom about 1.4 million require treatment for severe acute malnutrition (SAM).<sup>3</sup> In certain zones of Chad and north east Nigeria, the prevalence of global acute malnutrition (GAM) is double the emergency threshold of the World Health Organization – 15 per cent. In the Sahel region, conflict has resulted in hundreds of thousands of families becoming dependent on aid. A report by the United Nations Office for the Coordination of Humanitarian Affairs notes that about 24 million people in the Sahel will need food assistance in 2017, requiring a response that will be one of the world’s largest humanitarian operations (UNOCHA 2016).

WFP has several ongoing, context-specific interventions aimed at preventing and addressing MAM and overall food insecurity in the Sahel region. Under the broad umbrella of humanitarian assistance, WFP implements food-based interventions. Blanket supplementary feeding (BSF) and targeted supplementary feeding (TSF) are intended to support the prevention and the treatment of MAM in food-insecure households through various forms of assistance tailored to the local context. Targeted food assistance (TFA), school feeding, food assistance for assets (FFA) and general food distribution (GFD) aim to contribute to improving nutrition outcomes.

---

<sup>1</sup> <http://scalingupnutrition.org/>

<sup>2</sup> <http://www.reachpartnership.org/>

<sup>3</sup> This burden value is only for acute malnutrition; the estimate would be much higher if chronic malnutrition were also considered. Furthermore, prevention efforts should support prevention of both types of malnutrition.

Chad is one of the poorest countries in the world, with 87 per cent of the population living in multidimensional poverty, and life expectancy as low as 51.2 years (WFP 2017a). The 2017 national nutrition survey revealed a GAM rate of 13.9 per cent (Ministry of Health 2017). In Sudan, undernutrition is not only a serious socio-economic and health problem, but also one of the least adequately addressed. According to UNICEF estimates in 2017, GAM rates of 15.7 per cent were found in the Jabel Marra area (UNICEF 2017a).

Niger ranks at the bottom of many development indices, including the Human Development Index and the United Nations Gender Inequality Index. Challenges facing the country include systemic institutional weakness, a range of internal and external security threats, relatively porous borders, episodes of involuntary migration and several recent food crises. The GAM rate in Niger is estimated at 15 per cent for children aged 6–59 months (WFP 2017b).

Mali is one of the most food-insecure countries in the world, ranking 179 of 188 in the 2015 Human Development Index. UNICEF's 2017 Standardized Monitoring and Assessment of Relief and Transitions survey reveals a GAM prevalence of 10.7 per cent (UNICEF 2017b). Mali has suffered a series of political, constitutional and military crises since January 2012; the situation was aggravated by the loss of government control in northern territories from April 2012 to January 2013, causing the displacement of more than 135,000 people (UNDP 2016).

The evaluations in Chad and Niger focused on the PRROs in the two countries, with each evaluation looking at different components, such as MAM treatment through TSF and the prevention of acute malnutrition through BSF, TFA and FFA. In Chad, participation in community awareness-raising sessions was encouraged and particularly aimed at pregnant women and mothers of young children. WFP activities in Niger peaked in the lean season, when children and households are the most vulnerable.

In Sudan, the evaluation focused on the community-based nutrition integrated programme, which is part of a PRRO and includes components for MAM treatment, malnutrition prevention, home-based food fortification, and social and behaviour change communication (SBCC). The Mali evaluation looked at various types of WFP food assistance activities in emergency operations and PRROs implemented over the five years following the 2012 conflict.

## **1.2 Objectives and methodology of the synthesis**

The synthesis has been prepared for the WFP Executive Board to serve accountability and learning purposes and to provide lessons that are useful to WFP country offices and the nutrition division, amongst others. An important objective of the synthesis is to examine the relationships amongst malnutrition treatment and prevention programmes and other nutrition and food security programmes in humanitarian contexts. Following current practice for synthesis reports, this document involves a systematic analysis of four impact evaluations in Chad, Mali, Niger and Sudan. The synthesis aims to identify cross-cutting themes, findings and lessons from the four evaluations and to provide useful insights into the effectiveness of programmes that aim to improve nutrition and food security outcomes for people in humanitarian assistance environments.

The report synthesises evaluation results and recommendations in the areas of programme targeting and implementation, evaluation design and implementation and potential explanatory factors influencing programme performance. To the extent possible, it includes comparisons of cost analyses amongst the programmes. While there is considerable evidence of the effectiveness of MAM treatment interventions under optimal conditions, there is insufficient and equivocal understanding of the relationship between malnutrition treatment and prevention work (WFP 2013–2015). In addition to examining the impacts of various aspects of WFP programming on core outcomes, this series of impact evaluations contributes to evidence on the value of the interrelationship between MAM prevention and treatment programmes in emergency and post-emergency contexts.

The report informs WFP, partner agencies, policymakers and other major stakeholders regarding the effectiveness of programmes and interventions in humanitarian and conflict settings. It is also relevant for donors supporting 3ie's Humanitarian Assistance Thematic Window, which supports impact evaluations of similar programmes in challenging humanitarian environments.

## **2. Methodology and limitations**

### **2.1 Methodology and core evaluation questions**

The impact evaluations synthesised in this report used various types of data and employed a range of methodologies, including quasi-experimental methods combined with qualitative methods. The evaluation questions aimed to assess the impact of different components of WFP programming on nutrition and food security outcomes. The questions were tailored to the programming context in each country and to the availability and quality of data. Table 1 presents a summary of the evaluation design, the main questions and the key outcomes for each of the four evaluations.

The impact evaluation in Sudan assessed the impact of different MAM treatment and prevention interventions on the incidence and prevalence of MAM and SAM in children under five years and pregnant and lactating women. The evaluation design used variation in the timing of introduction of MAM prevention components – such as food-based prevention or SBCC – and home fortification in various localities (clusters) where treatment activities were under way. The impacts were assessed by undertaking a cross-sectional comparison across clusters, as well as a comparison over time within the same cluster. Data were collected at two-month intervals over a period of eight months (May–December 2016), enabling an assessment of how the addition of varying combinations of malnutrition prevention programming, including to address micronutrient deficiency, interacted with MAM treatment. This is a good example of a methodology that can be employed for robust causal analysis when baseline data are not available and when withholding a programme from a group of potential beneficiaries is either undesirable or not feasible.

The impact evaluation in Chad asked a related but slightly different question: what is the impact of MAM prevention on the incidence and prevalence of MAM in children under two years with different levels of access to MAM treatment? Impact was assessed by comparing the outcomes for beneficiaries who received all the planned BSF distributions

in the prevention programme with the outcomes for a control group of people who were not covered by the programme. The evaluation then compared the difference in impact for both groups when their access to the treatment programme (using distance to the nearest health centre as a proxy) was good or poor.<sup>4</sup> Two waves of quantitative data were collected in June and November 2016. Regression and treatment effect models were used, along with propensity score matching to estimate the average effect on people who were targeted by the programme.

The impact evaluation in Niger focused on a broader set of questions, with the primary aim of understanding the impact of WFP's PRRO – a multifaceted group of nutrition interventions – on the prevalence of MAM. The interventions included TFA, BSF, TSF and activities designed to increase poor households' access to food and assets through land rehabilitation, water harvesting and local purchases, particularly through FFA. The evaluation used two waves of panel survey data and econometric techniques to estimate household-level impacts on children aged 6–59 months at the start of the evaluation: one wave in March 2014 to establish a baseline and one in September 2016 for the endline. The difference-in-differences analysis in the Niger evaluation makes use of secondary data collected work in the country.

The evaluation in Mali had a longer horizon for comparisons, with data collected in January 2012 and January 2017. The evaluation combined qualitative and quantitative methods, the latter including interviews with core stakeholders in the provision of humanitarian assistance, which informed the detailed survey design and descriptive data analysis. The study population was divided according to two criteria: the extent of humanitarian assistance received over the years since the conflict, and the extent to which the areas where populations lived were affected by conflict. The evaluation uses difference-in-differences combined with propensity score matching to assess the impact of various forms of food assistance – particularly GFD and school feeding – on food expenditures, food and nutrient consumption and the nutrition status of children at the household level.<sup>5</sup>

---

<sup>4</sup> Distance to the nearest health centre also indicates differences in access to infrastructure, urban amenities and other health services.

<sup>5</sup> Further details on data collection, timelines and types of data can be found in Appendix B.

**Table 1: Study designs, evaluation questions and main outcomes**

<b>Country</b>	<b>Primary evaluation question(s)</b>	<b>Methodology</b>	<b>Main outcomes</b>
<b>Chad</b>	What is the impact of interventions for preventing moderate acute malnutrition on the incidence and prevalence of moderate acute malnutrition in children under two years with varying levels of access to moderate acute malnutrition treatment?	<ul style="list-style-type: none"> <li>• Analysis of covariates and propensity score matching</li> <li>• Use of qualitative data to inform and interpret results</li> </ul>	Nutrition status of children under two years
<b>Mali</b>	What are the impacts of conflict and food assistance on child malnutrition and other development outcomes?	<ul style="list-style-type: none"> <li>• Use of qualitative and quantitative data to characterise exposure to conflict and humanitarian assistance</li> <li>• Natural experiment, difference-in-differences and propensity score matching</li> </ul>	Nutrition status of children under five years
<b>Niger</b>	What are the impacts on nutrition outcomes of various combinations of programme components in WFP's PPRO?	<ul style="list-style-type: none"> <li>• Difference-in-differences</li> <li>• Instrumental variables</li> <li>• Qualitative analysis</li> </ul>	Nutrition status of children under five years
<b>Sudan</b>	What are the impacts of various MAM treatment and prevention interventions on the incidence and prevalence of MAM and SAM in children under five and in pregnant and lactating women?	<ul style="list-style-type: none"> <li>• Stepped wedge cluster-controlled trial design</li> <li>• Qualitative analysis</li> </ul>	Nutrition status of children under five years and pregnant and lactating women

## 2.2 Limitations and implications for synthesis

All four evaluations were carried out in areas in need of urgent humanitarian assistance, particularly because of recurrent shocks and seasonal peaks in malnutrition. Despite this core similarity, however, various factors – such as the nature of the four studies, insecurity in many target areas, the interrelated engagement of different organisations, and country-specific factors – limit the overall comparability of results from the four evaluations.

In Chad, obtaining a large sample was a challenge because of difficult operational and cost factors involved. In Sudan, plans to follow an experimental approach for the evaluation had to be abandoned because WFP needed to start implementation in three specific locations, meaning that randomisation into clusters was not feasible. Similarly, given the high attrition in the Niger data, the original research questions could not be answered empirically, so the focus of the evaluation had to be modified. The main limitation for the evaluation in Mali was in assessing the accuracy of the triangulation of the data on conflict with the data on the delivery of timely and adequate food assistance to conflict-affected populations. Given the retrospective nature of the exercise conducted over a five-year period, the analysis has some limitations in terms of the accuracy of recall.

The country-specific challenges faced by the evaluations have implications for the validity of the synthesis. The evaluations used a wide array of data collection tools and followed timelines that varied from a few months to a few years, resulting in differential effects on the measurement of outcomes. Restrictions imposed by timelines were a continuous challenge throughout the four evaluations, suggesting that more foresight and planning before implementing the programmes could have eliminated some of the issues that arose. Although most of the evaluations had a broad focus, their primary outcome measures differed, limiting the ability for one-to-one comparisons of estimates.

Although these limitations necessitate some caution, the evaluation designs enable careful causal inferences to be drawn and provide a basis for policy recommendations and conclusions related to a variety of issues. The conduct of the evaluations, and observations made in that regard, also offer operational and policy lessons, which are elaborated in section 4.

### **3. Findings and results**

#### **3.1 Highlights**

The four evaluations in this synthesis examining impact on MAM incidence reported varying effects, depending on context and the combination of programmes implemented. The impact evaluation in Chad found that the BSF-based prevention programme had a positive effect on MAM incidence during the lean season. When looking at the interaction between the BSF and TSF programmes, BSF had a larger positive impact on MAM incidence amongst households with poorer access to the TSF-based treatment programme and households with seasonal livelihoods such as agriculture and livestock.

The evaluation in Sudan found that the addition of MAM prevention components to MAM treatment programmes had no effect on the incidence or prevalence of MAM or SAM. The evaluation found a significant reduction in the prevalence of children at risk of malnutrition where food-based MAM prevention was added to the TSF-based treatment programme.

The Niger evaluation concluded that continued provision of FFA in combination with MAM treatment and/or prevention programmes significantly reduced the incidence of MAM and served as a nutrition-sensitive form of assistance, but there was no evidence of positive impacts of the treatment and/or prevention programmes alone.

The impact evaluation in Mali found that households receiving at least two forms of assistance – particularly GFD and school feeding – registered statistically positive effects on nutrition outcomes, while the effects were not significant for households that received only one form of aid. Disaggregating by degree of exposure to conflict, the evaluation also revealed that the effects on nutrition outcomes for children were concentrated mostly in areas outside the immediate vicinity of a conflict, and that this could, in part, be because these households have less access to aid.

The following discussions present major evaluation results regarding targeting, uptake, nutrition outcomes and cost-effectiveness.

### **3.2 Targeting and uptake**

Typically, food-based nutrition programmes target food-insecure regions. In Sudan, the intervention first targeted specific localities, and interventions were implemented in a rolling manner in the selected localities. Two localities received the intervention from the outset, with others gradually following. In Chad, WFP used geographic targeting to select high-priority districts that were found to be structurally vulnerable according to a combination of food security indicators, nutrition indicators, aggravating factors, livelihood strategies, population movements and infrastructure. Geographic targeting was also prevalent in Niger, where selected villages were in food-insecure districts. Indicators for school completion, prevalence of nomadism, agricultural potential and convergence of partners' activities were also integrated into the geographic targeting process.

The evaluation in Mali looked at several interventions targeting various groups of beneficiaries. The BSF programme targeted children aged 6–59 months and pregnant and lactating women. The TSF programme focused on children aged 6–59 months with MAM and malnourished pregnant and lactating women. The school feeding programme targeted primary school children in areas with high food insecurity.

The evaluation in Sudan estimated that the TSF programme covered between 15 and 28 per cent of children in the study areas. The effectiveness of the case finding for the programme – that is, the identification of eligible participants – was between 9 and 12 per cent. Coverage of the MAM prevention activity was estimated at 10 per cent of children in the study areas. In Chad, coverage of the TSF programme was estimated at 13.1 per cent in the three Sahelian regions of Batha, Bahr el Gazal and Kanem, despite an increase in the number of health facilities able to provide MAM interventions; prevention coverage was not reported.

Regarding targeting success, descriptive statistics for the evaluation sample in Niger indicated that household size and education level of the household head were positively correlated with receipt of assistance. Overall, the evaluation found mixed evidence of the success of targeting of WFP programming in Niger. Children – or their households – receiving no FFA but receiving BSF, TSF or TFA may have had better nutrition indicators, *a priori*, than children in households that did not receive any form of assistance at the endline. This implies either that there were errors in the targeting strategy or that uptake of the assistance was lowest amongst the people who may have benefited most from it. This is in contrast to FFA programming, which appears to have been well targeted in Niger.

WFP activities in Mali, including school feeding, GFD, TSF and resilience-related programming, covered approximately 10 per cent of the population of Mopti in 2014 and 6 per cent in 2015. In the evaluation sample, 67% of households reported not receiving any food assistance, 23% reported receiving GFD, 14% reported having children who received school feeding, 2% reported having children or pregnant women receiving TSF and 2% reported participation in food for work programmes.<sup>6</sup>

Regarding access, all four evaluations highlighted the importance of geographic proximity to health centres or food distribution centres and a high level of awareness amongst potential beneficiaries and communities in helping to increase the uptake of the programme. The issue of geographic proximity is particularly complicated when dealing with migrating populations. Other barriers to good coverage include limited routine community-based screening, heavy workloads for staff from implementing agencies – WFP, government and other partner agencies, issues with maintaining case data and the need to improve the effectiveness of the case finding.

### **3.3 Nutrition outcomes**

The impact evaluation in Chad concluded that the BSF-based MAM prevention programme had a positive effect on MAM incidence in children aged 6–23 months during the lean season. The programme protected especially the upper range of this age group (18–23 months) and households supported by seasonal work. On the other hand, households that were closer to health centres and had easier access to TSF-based treatment programmes also had lower MAM incidence. When looking at the interaction between the two programmes, as expected the BSF programme had a larger (positive) impact on MAM incidence amongst households with poorer access to the TSF programme.

The evaluation in Sudan found no significant impact on the prevalence of MAM, SAM or GAM in children under five years or in pregnant and lactating women. In rounds two, three and four of data collection, however, a significant reduction of up to 12 per cent was seen in the prevalence of children at risk of malnutrition in areas where food-based MAM prevention was added to TSF, the treatment component.<sup>7</sup> The evaluation hypothesised that the lack of effect on prevalence could be the result of a number of factors, including a time lag in the reduction of the number of children at risk, SAM-discharged cases becoming MAM and the low coverage of the prevention programme. Although these factors were not analysed statistically, the findings highlight important areas for further research.

The evaluation in Niger found that certain modalities of WFP assistance significantly improved the MAM situation in the country. Specifically, children in households receiving FFA plus treatment and/or prevention assistance were 19 per cent more likely to recover from MAM at endline. The evaluation also found that children in households receiving a combination of assistance – treatment, prevention and FFA – were 15.5 per cent less likely

---

<sup>6</sup> The baseline information on food for work predates WFP's shift in focus towards FFA.

<sup>7</sup> WFP's field guide to Sudan's community-based nutrition integrated programme defines at-risk children as those aged 6–23 months with middle-upper-arm circumference of 125–135 millimetres.

to experience MAM than those in households that received only treatment and/or prevention assistance without FFA. The combination of nutrition-sensitive and nutrition-specific assistance provided by WFP turns out to have had the strongest positive impact on MAM amongst children in Niger.

The evaluation in Mali found that access to GFD led to an increase in households' non-food and food expenditures and micronutrient availability. When differences in the level of exposure to conflict are taken into account, improvements in child height and calorie consumption were found primarily in areas that were not in the immediate vicinity of conflict. Households receiving at least two forms of assistance – GFD and school feeding – showed statistically positive effects on calorie intake and micronutrient availability, while the effects were not significant in households that received only one form of assistance.

Disaggregating the Mali data by degree of exposure to conflict showed that the effects on the height of children under five years were concentrated mostly in areas outside the immediate vicinity of conflict. Households located in proximity to armed groups were found to have relatively higher increases in food expenditures and lower access to assistance. The drivers of higher food expenditure require further analysis and may not be related to higher food consumption in targeted households; for example, they may be driven by higher food prices close to conflict areas, or by leakage.

**Table 2: Major results**

<b>Chad</b>
<ul style="list-style-type: none"> <li>• There was a positive effect of the BSF-based prevention programme on MAM incidence in children aged 6–23 months during the lean season.</li> <li>• The prevention programme was more effective in reducing MAM incidence amongst beneficiaries with poorer access to the treatment programme (4 percentage points versus 7.4 percentage points).</li> <li>• Percentage of MAM cases at endline (14 per cent) was half of the baseline result (28 per cent). Change was seen for both sexes.</li> </ul>
<b>Mali</b>
<ul style="list-style-type: none"> <li>• Access to GFD was found to significantly increase calorie intake by 52% and zinc consumption by 64%; access to school feeding was found to increase vitamin A intake by 48%.</li> <li>• Analysis suggests that food assistance had protective effects on household total and food expenditures, on food consumption and on changes in height in children aged 2–5 years at baseline. Positive impacts were particularly pronounced in households receiving two forms of food assistance.</li> </ul>
<b>Niger</b>
<ul style="list-style-type: none"> <li>• Children benefiting from the provision of FFA along with treatment and/or prevention of MAM were 19 per cent more likely to recover from MAM at endline.</li> <li>• Agriculturally sensitive programming in Niger had a large positive impact on a child's probability of recovering from MAM.</li> </ul>
<b>Sudan</b>
<ul style="list-style-type: none"> <li>• No significant impact was observed on the prevalence of MAM, SAM or GAM in children under five years or pregnant and lactating women.</li> </ul>

- 
- Significant reductions of up to 12 per cent were seen in the prevalence of children at risk of malnutrition where food-based MAM prevention was added to the treatment programme.
  - No changes in feeding behaviours and practices were attributable to the behavioural SBCC intervention.
- 

### **3.4 Cost-effectiveness**

A cost-effectiveness analysis is an effective methodology for comparing the impacts and costs of different interventions aimed at achieving the same objective and for informing decisions regarding resource allocation (Gold et al. 1996). Three major constraints emerge when conducting a cost-effectiveness analysis: the availability and reliability of data for analysis; the lack of data on cost per activity; and the difficulty in apportioning costs when programmes comprise multiple interventions affecting multiple outcomes. Full cost-effectiveness analyses were not conducted in all the evaluations covered in this synthesis report, mainly because of difficulties in compiling disaggregated costing information.

In the Niger evaluation, cost-effectiveness was calculated based on the number of beneficiaries and the amount of food to be provided under each type of intervention. The emerging findings showed that interventions that combined BSF, TFA and FFA activities led to an improvement in nutrition indicators by 0.28 standard deviations per US\$100. The average cost of bringing a child with MAM to non-MAM status is thus estimated at US\$352.60 when MAM prevention and food assistance interventions are coupled.

In Chad, it was estimated that the cost of providing BSF to children aged 6–23 months during the lean season was US\$46.36 per child. Using the difference in MAM and/or SAM cases between children receiving BSF treatment and children in control groups, the estimated number of MAM and/or SAM cases avoided through BSF was calculated at 827, yielding an estimated global cost of US\$597 per MAM and/or SAM case avoided.

Although cost-effectiveness analysis focused on one core outcome – malnutrition – programmes also had impacts on other outcomes, such as the reduction of micronutrient deficiencies and their consequences and improved household resilience. The evaluations in Chad and Niger provided estimates of cost-effectiveness for the specific interventions under study, but these estimates cannot be directly compared; a more detailed analysis must be undertaken to derive broader, externally valid recommendations on cost.

### **3.5 Heterogeneous gender effects**

All four impact evaluations were designed to consider the heterogeneity of impacts for various vulnerable populations, including women. Of the total study sample of children in Chad, 48 per cent were girls, with a similar distribution in all age groups. The evaluation undertook a heterogeneity analysis and found no statistical evidence of differences in the effect of BSF on MAM incidence between boys and girls. Similarly, the evaluation in Sudan found no differences by sex in MAM admission trends or outcomes for children. Results for pregnant and lactating women mirrored those for children overall, with the evaluation finding no significant decrease in pregnant and lactating women with GAM but a significant decrease in the number of pregnant and lactating women at risk.

Because anthropometric data on women were not available and because of the overall small sample size, the Niger evaluation reported core outcomes only for children overall. The evaluation found that households that identified themselves as being headed by a woman exhibited significantly better nutrition status than those identifying themselves as being headed by a man.

Qualitative research undertaken in Mali highlighted the important consequences that the fleeing of government staff and subsequent closing of health centres had on basic health services for pregnant women, infants and young children. Interruptions in the few services available at the community level were likely to have directly affected the nutrition and health of these vulnerable age groups. Many pregnant women who were unable to flee found their antenatal care suspended, which exposed children to higher risks of infection and morbidity. Respondents facing this situation said that malnutrition in children and lactating women had increased considerably.

## 4. Broad lessons and recommendations

The four evaluations covered in this synthesis presented estimates of the causal impact on nutrition outcomes of a variety of nutrition-related interventions. Although the impact evaluations led to specific recommendations for a variety of stakeholders in each of the four countries, implementation of these recommendations led to some broad operational and policy-related lessons, outlined in the following subsection. Recommendations drawn from the broad lessons are presented in subsection 4.2, based on the sum of the analysis.

### 4.1 Broad lessons

The following are the primary lessons drawn from the synthesis exercise:<sup>8</sup>

- Lesson 1: Greater attention to the timing, sequencing and roll-out schedule of a package of interventions is likely to result in enhanced effectiveness.
- Lesson 2: Closer partnerships and coordination can support more effective, timely and efficient delivery.
- Lesson 3: Barriers to achieving better coverage and access include infrastructure deficits. Awareness of the availability of high-quality services is also important.
- Lesson 4: The quality, availability and lack of monitoring and evaluation (M&E) data are problematic.

These lessons are implied in the preceding sections of this report and elaborated in the following paragraphs.

**Lesson 1: Greater attention to the timing, sequencing and roll-out schedule of a package of interventions is likely to result in enhanced effectiveness.** This lesson arose from all four evaluations, albeit from different vantage points (Table 3).

---

<sup>8</sup> These lessons are evident from a close reading of the individual evaluations, although individual lessons are not necessarily explicitly supported by all four evaluations.

**Table 3: Specific lessons regarding timing, sequencing and roll-out of programmes**

<b>Country</b>	<b>Lesson</b>
<b>Chad</b>	<ul style="list-style-type: none"> <li>• TFA and BSF distributions should ideally start in April, before the lean season, to be most effective in preventing MAM, which tends to rise in July and August.</li> <li>• To be most effective, the BSF programme should cover the full 120 days of the lean season and be combined with other food assistance interventions at the household level to protect the rations of beneficiary children.</li> <li>• BSF distributions should be monthly to maximise the chances that beneficiary children are given part of the ration every day throughout the intervention period.</li> <li>• To improve access to TSF programmes, WFP should explore alternative approaches for increasing TSF programme coverage in a collaborative manner with agencies supporting other components of the management of acute malnutrition.<sup>9</sup></li> <li>• Sustainable reduction in the incidence of malnutrition requires the integration of short-term solutions for addressing acute malnutrition and longer-term, integrated prevention interventions in health; water, sanitation and hygiene (WASH); and food security.</li> </ul>
<b>Mali</b>	<ul style="list-style-type: none"> <li>• Bundling various other forms of food assistance with GFD may be an effective strategy for supporting vulnerable populations.</li> <li>• Providing two forms of food assistance – GFD and school feeding – may be more effective than providing one form of transfer alone.</li> </ul>
<b>Niger</b>	<ul style="list-style-type: none"> <li>• The availability of FFA should be extended significantly, given its strong and positive impact on MAM-related indicators; these positive effects can be further enhanced by the joint provision of FFA and prevention programming (specifically) and of prevention and treatment programmes (generally).</li> </ul>
<b>Sudan</b>	<ul style="list-style-type: none"> <li>• The significant reduction in the prevalence of children at risk of acute malnutrition indicates the potential role for MAM prevention in reducing malnutrition in settings where treatment programmes for acutely malnourished children are already available and performing well.</li> <li>• A sustained (year-round) package of treatment and prevention of MAM has the potential to bring about intended effects on MAM incidence and prevalence.</li> </ul>

In the Chad evaluation report, the emphasis is on sequencing and periodicity and following a combined approach. The integration envisaged includes connecting short-term solutions to longer-term provision of assistance, connecting locally produced products to community-based delivery or connecting programmes to one another more systematically, recognising the established cycles and patterns associated with food scarcity.

<sup>9</sup> For example, the evaluation team suggests that adequate design, testing, validation, promotion and utilisation of locally produced nutritional products could be an alternative for reducing the cost of the treatment (by reducing transport costs), and consequently, if combined with community-based delivery approaches, increase access to treatment.

The Niger report references positive impacts of certain combinations of assistance and synergies that result when multiple forms of assistance are provided together. It also notes that cost-effectiveness analysis shows that a combined approach – such as combining nutrition-specific prevention programming with nutrition-sensitive FFA – improved the nutrition status of children. The Niger report calls for more research on how particular combinations of assistance interact with the situation on the ground. In Mali and Sudan, the emphasis is on a more basic integration and sustained provision of, respectively, different types of food support, and treatment and prevention.

Taken together, the observations suggest that there is a need to focus on connecting, layering and sequencing support and programmes in order to make them more effective.

**Lesson 2: Closer partnerships and coordination can support more effective, timely and efficient delivery.** This lesson is related to lesson 1. The type of operational synergies envisaged in lesson 2 require more careful planning of stand-alone programmes and greater coordination of efforts amongst all stakeholders.

For example, the Chad report notes that early negotiations with relevant partners can improve coordination amongst major stakeholders (the report refers to coordination of timing, sequencing and connectedness of provision and coverage) and that improved coordination amongst agencies can facilitate alternative ways of managing MAM. Although this may appear self-evident, efforts to ensure adequate lead times, skills and resources for negotiation and partnering are not always adequate in terms of extent or depth. Experience suggests that what may appear to be a cost in the early stages can, if managed correctly and resourced adequately, become a useful investment later.

Examining the details of implementation, the Sudan report suggests that partners should be briefed on the importance of separating cost information from their various donors and throughout their programmes, and that M&E training and support should be provided for implementing partners, reinforcing the idea that early investment in partnerships can yield dividends later.

**Lesson 3: Barriers to achieving better coverage and access include infrastructure deficits.** This reflects the experience in Chad, for example, where physical distance from a health centre was found to determine the likelihood of a child having access to supported services. The experience in Sudan, however, suggests that even where health centre coverage was reasonably adequate, consistent links to communities – ideally mediated by community volunteers through local sensitisation activities and routine screening – would enhance programme effectiveness.

The Sudan report also highlights the criticality of ensuring that the right message is communicated to effect the desired behavioural change, including with regard to service utilisation. The report notes that SBCC messages were heard by no more than 12 per cent of the target audience, with radio and community mobilisers reported as the most common sources of information on community sensitisation activities amongst people who had heard the message. Only slightly more than 40 per cent of the people who heard about SBCC activities participated in them, and this figure declined to as low as 12 per cent in the later period of the programme. The report suggests that coverage of both treatment and prevention could be improved through enhanced community

sensitisation regarding the programme, greater community understanding of malnutrition and the programme's target groups, and increased participation in SBCC activities.

Other factors are also relevant. For example, reflecting lesson 1, the Niger report notes a lack of understanding of how combinations of assistance interacted with the situation on the ground. In Chad, delays in the targeting process and in the establishment of agreements between WFP and its partners – Oxfam and *Action contra la faim* – were amongst the factors that delayed implementation. The Sudan report notes that SBCC activities faced many delays and challenges to implementation, mostly associated with the workload for community volunteers, who were required to work with programme staff at the clinics to support routine distributions of food products rather than, for example, concentrating on maintaining and updating registers and records correctly. This led to programme staff and community volunteers being unable properly to track cases and identify beneficiaries who were not followed up or who eventually defaulted; this affected data quality, demonstrating the interrelatedness of the lessons outlined in this section.

**Lesson 4: The quality, availability and lack of M&E data are problematic.** This learning is reflected in all the evaluation reports. As noted in lesson 2, the Sudan report emphasises the need for M&E training and support for implementing partners to ensure the availability and integrity of data that facilitate accurate evaluation and research. Analysis of qualitative data generated during the evaluation in Sudan revealed issues with record-keeping and the maintenance of case registers in health centres, which could affect what is known about programme coverage.

In Niger, large initial investments in the collection of baseline data did not lead to optimal M&E because of the poor design of follow-up. The lack of availability of anthropometric data on women and the small overall sample size made it impossible to report sex-disaggregated outcomes in the Niger evaluation. The report calls for all M&E activity to be designed around the collection of panel data, with the specific aim of following up on all households included in the baseline data. Possibly of more general concern is the report's observation that, although rich data were generated at the field level for research purposes by various research teams, the data sets were not linked and the data were often presented in hard copy only, notwithstanding that the evaluation teams had suggested that they be digitised. It was often not possible to establish whether data pertaining to a given individual were included in all data sets. Data on specific individuals were therefore likely to be entered into multiple data sets, with no way of tracking or linking entries. This also means that even if individuals were subject to repeat questioning and surveys, the potential added value of generating data for use in studies of results over time may have been lost.

At a more basic level, the Sudan report suggests that to facilitate the analysis of cost-effectiveness, cost data should be collected from the beginning of a programme in a format that distinguishes both between individual programmes and between different programme components/activities; for example, start-up costs, personnel costs, operating costs and intervention components.

## 4.2 Recommendations

The recommendations are drawn from the analysis conducted for this synthesis and are closely aligned with the lessons described in the previous subsection. The recommendations cover policy, operational and technical aspects of the programmes and interventions that were evaluated in the four countries.

Subject to the status quo, the recommendations may require, for example, changes in policy or more robust application of existing policies or operational practices. Where appropriate, WFP policy and programme guidance should be changed or strengthened to reflect the recommendations, which address, amongst other things, strategic relationships with partners and stakeholders; programme planning and design and the tailoring of programme implementation based on consultations with beneficiaries; and the strategic management and use of data.

### **Recommendation 1: Improve overall efficiency and operational effectiveness**

To improve overall efficiency and operational effectiveness, WFP should invest in the strategic deepening of its relationships with partners and stakeholders, providing capacity strengthening where relevant. This recommendation pertains to matters such as coordination of efforts to ensure appropriate timing, sequencing, connectedness of provision and coverage,<sup>10</sup> cost management and collection of M&E data.

### **Recommendation 2: Improve the uptake and coverage of prevention and treatment programmes**

The planning and design processes for WFP interventions should pay greater attention to communication with target groups, the effectiveness of the case finding, and community sensitisation, all of which will help improve the quality of targeting, achieve efficiencies and contribute to enhanced effectiveness of MAM treatment and prevention programmes.

### **Recommendation 3: Programme components should be better tailored to the context**

MAM programme components should be better tailored to the context to facilitate the reduction of malnutrition in a sustainable manner:

- In any context, a variety of treatment and prevention activities may need to be integrated into longer-term, multisector solutions. For example, the studies in Mali and Niger both emphasise the synergies amongst various types of nutrition-sensitive and nutrition-specific programmes and the need to design assistance packages with a variety of complementary interventions.
- In conflict-affected situations, the critically important need to understand the political economy of food assistance is particularly important to the effectiveness of programme delivery. Enhanced understanding of the political economy can help when making critical trade-offs that involve, on the one hand, programme scale and cost-effectiveness, and on the other hand, the practicalities of operating in areas under the control of armed groups, including security, governance and transparency issues.

---

<sup>10</sup> For example, there is a need to improve timelines for seasonal food assistance through earlier mobilisation of resources to prevent delays in programme implementation.

- In conflict-affected situations, programme design and delivery can be enhanced to improve the scale-up of food-based assistance programmes. Increasing the coverage of nutrition-specific interventions, including the provision of specialised complementary foods, appears to be a critical gap.

The findings also suggest that, from a design perspective, the appropriate bundling of various forms of food assistance, with components tailored to context, could be an effective strategy for supporting vulnerable populations, as also suggested in WFP's current guidance on nutrition-sensitive programming. For example, in households receiving two forms of food assistance, the Mali evaluation found evidence of pronounced positive impacts on food consumption and on changes in height in children aged 2–5 years at baseline. The Niger evaluation recommended the extension of FFA programming, given its strong and positive impact on MAM-related indicators, which the evaluation report suggests can be further enhanced through the joint provision of FFA and prevention programming (specifically) and of prevention and treatment programmes (generally).

#### **Recommendation 4: Share data and standardise data collection tools and methods**

Given the common cross-agency commitment to achieving Sustainable Development Goal 2 to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture – particularly, in this instance, targets 2.1<sup>11</sup> and 2.2<sup>12</sup> – the agencies at the forefront of that effort, including WFP, need to make a greater effort to ensure that data are shared. These agencies should take into account the likely costs associated with data curation and hosting, and work to mainstream, to the greatest extent possible, compatibility in how they measure phenomena, including with regard to tools, methods, indicators and core demographic details. Consideration should be given to developing protocols for sharing data amongst agencies and studies with a view to maximising available data sets, minimising the duplication of effort in mutually exclusive studies of the same subjects and facilitating the efficient development of longitudinal data sets to support more in-depth analyses and assessments. This may require considerable effort in, for example, negotiating ethical concerns. The possibility of using a database mechanism to open up access to what are often stand-alone sets of data and to effectively present the data as a public good is worth pursuing, with the objective of enhancing overall humanitarian and development efforts in pursuit of Sustainable Development Goal 2.

#### **Recommendation 5: Improve monitoring and cost data**

Greater support and attention are needed to improve the collection and use of monitoring and cost data. This will help to improve programme implementation in real time and support assessment of the longer-term impacts and cost-effectiveness of various programme components. The impact evaluations found that to undertake a specific cost-effectiveness analysis, adequate resources need to be devoted to collecting and maintaining detailed cost data on the different components of the programme.

---

<sup>11</sup> By 2030 end hunger and ensure access by all people, in particular the poor and people in vulnerable situations including infants, to safe, nutritious and sufficient food all year round

<sup>12</sup> By 2030 end all forms of malnutrition, including achieving by 2025 the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women, and older persons

## Appendix A: Updated literature review

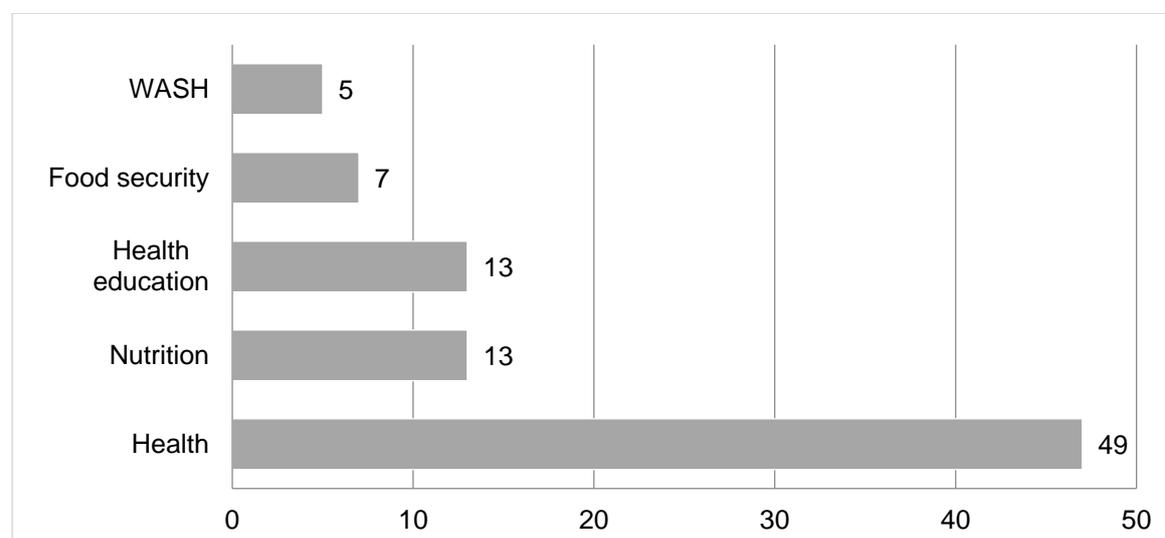
3ie published a [scoping study](#) in 2014 including an evidence review and gap map that highlighted the dearth of evidence in humanitarian studies (Clarke et al. 2014). A [gap map](#) published by Oxfam in 2015 delivered an index of existing systematic reviews and literature of humanitarian evidence syntheses from 2009 onwards (Bushby and Krystalli 2015). Similarly, IRC has published a [living gap map](#) that is periodically updated and provides quick and easy access to efforts in the humanitarian space (IRC n.d.). These two maps primarily focus on systematic reviews.

Figure A1 shows the dispersal of outcomes through aggregating studies from the two gap maps and scoping study. These studies include systematic reviews and impact evaluations that examine a range of interventions and include nutritional outcomes. Of the 65 studies identified, 7 are impact evaluations of nutrition interventions in humanitarian contexts. In terms of outcomes, most studies focus on overall health outcomes (49), one third include nutrition outcomes (13) and fewer focus on improving food security measures (7). In conflict-ridden areas, evaluations pertaining to nutrition and food security can be important catalysts for promoting the building of resilient livelihoods in challenging environments.

This synthesis exercise identifies significant knowledge and evidence gaps regarding the prevention and treatment of acute malnutrition, despite general agreement on the urgent need to manage MAM and SAM globally. The need to fill this gap is reinforced by the 2008 *Lancet* series on maternal and child nutrition, which identifies acute malnutrition as one of the key drivers of child mortality in the developing world (Black et al. 2008; Bhutta et al. 2008; Victora et al. 2008; Bryce et al. 2008; Morris et al. 2008).

When considering MAM specifically, there are a number of areas where evidence gaps remain, such as effectiveness of counselling, cost-effectiveness, determining product mixes, sharing of products, and SBCC components. Further, there are gaps around MAM management protocols and aggregation of MAM management data (Annan et al. 2014).

**Figure A1: Studies on humanitarian assistance with nutrition-related outcomes**



**Table A1: Outcomes assessed in the studies included in the gap maps and scoping paper**

<b>Authors</b>	<b>Study title</b>	<b>Health</b>	<b>Nutrition</b>	<b>Food security</b>	<b>Health education</b>	<b>WASH</b>
J Cilliers, O Dube, B Siddiqi	Can the wounds of war be healed? Experimental evidence on reconciliation in Sierra Leone	x				
M Humphreys, R Sanchez de la Sierra, P Van der Windt	Social and Economic Impacts of Tuungane: Final Report on the Effects of a Community Driven Reconstruction Program in Eastern Democratic Republic of Congo	x				
L Huybregts, F Hougbe, C Salpteur, R Brown, D Roberfroid, M Ait-Aissa, P Kolsteren	The Effect of Adding Ready-to-Use Supplementary Food to a General Food Distribution on Child Nutritional Status and Morbidity: A Cluster-Randomized Controlled Trial		x			
T Yasunari, M Nozawa, R Nishio, A Yamamoto, Y Takami	Development and evaluation of disaster preparedness educational programme for pregnant women				x	
M Kako, S Mitani, P Arbon	Literature Review of Disaster Health Research in Japan: Focusing on Disaster Nursing Education	x				
D Baker, L Baker, L Flagg	Preparing Families of Children with Special Health Care Needs for Disasters: An Education Intervention				x	
H Korteweg, I Van Bokhoven, CJ Yzermans, L Grievink	Rapid health and needs assessments after disasters: a systematic review	x				
L Uscher-Pines	Health effects of relocation following disaster: a systemic review of the literature	x				
PK Mittal, U Sreehari, RK Razdan, AP Dash	Evaluation of the impact of ZeroFly®, an insecticide incorporated plastic sheeting on malaria incidence in two temporary labour shelters in India	x				

Authors	Study title	Health	Nutrition	Food security	Health education	WASH
M Burns, M Rowland, RN Guessan, I Carneiro, A Beeche, S Ruiz, S Kamara, W Takken, P Carnevale, R Allan	Insecticide-Treated Plastic Sheeting for Emergency Malaria Prevention and Shelter among Displaced Populations: An Observational Cohort Study in a Refugee Setting in Sierra Leone	x				
A Bistaraki, K Waddington, P Galanis	The effectiveness of a disaster training programme for healthcare workers in Greece				x	
J Rucklidge, J Johnstone, R Harrison, A Boggis	Micronutrients reduce stress and anxiety in adults with Attention-Deficit/Hyperactivity Disorder following a 7.1 earthquake			x		
Y Matsuoka, D Nishi, N Nakaya, T Sone, K Hamazaki, T Hamazaki, Y Koido	Attenuating posttraumatic distress with omega-3 polyunsaturated fatty acids among disaster medical assistance team members after the Great East Japan Earthquake: the APOP randomized controlled trial	x				
D Nishi, Y Koido, N Nakaya, T Sone, H Noguchi, K Hamazaki, T Hamazaki, Y Matsuoka	Fish oil for attenuating posttraumatic stress symptoms among rescue workers after the great east Japan earthquake: A randomized controlled trial	x				
K Ruggiero, H Resnick, L Paul, K Gros, J McCauley, R Acierno, M Morgan, S Galea	Randomized controlled trial of an internet-based intervention using random-digit-dial recruitment: The Disaster Recovery Web project	x				
G Sachs, B Lafer, AL Stoll, M Banov, AB Thibault, M Tohen, JF Rosenbaum	A double-blind trial of bupropion versus desipramine for bipolar depression			x		
D Hensel-Dittmann, M Schauer, M Ruf, C Catani, M Odenwald, T Elbert, F Neuner	Treatment of traumatized victims of war and torture: A randomized controlled comparison of narrative exposure therapy and stress inoculation training	x				

Authors	Study title	Health	Nutrition	Food security	Health education	WASH
Y Zang, T Cox, N Hunt	A randomised controlled pilot study – the effectiveness of narrative exposure therapy with adult survivors of the Sichuan earthquake	x				
TM Kilner, SJ Brace, MW Cooke, N Stallard, A Bleetman, GD Perkins	In 'big bang' major incidents do triage tools accurately predict clinical priority?: A systematic review of the literature	x				
N Steen	Synthesis of Mixed Method Impact Evaluations of the Contribution of Food Assistance to Durable Solutions in Protracted Refugee Situations Commissioned Jointly by UNHCR & WFP		x	x		
R Glennerster, E Miguel, K Casey	Assessing the impacts of community-driven development in Sierra Leone	x				
WFP	The Contribution of Food Assistance to Durable Solutions in Protracted Refugee Situations; its impact and role in Bangladesh: A Mixed Method Impact Evaluation	x	x	x		
P Sutter, J Downen, T Walters, B Izabiriza, RS Kagendo, M Langworthy, B Sagara, M Mueller	The Contribution of Food Assistance to Durable Solutions in Protracted Refugee Situations: its impact and role in Rwanda (2007–2011)		x			
UNHCR, WFP	Evaluation Brief – Food Assistance in Protracted Refugee Situations in Chad (2003–2011): a Joint Mixed Method Impact Evaluation		x			
P Sutter, T Frankenberger, S Sutter, A Aberra, B Sagara, L Starr	Food Assistance in Protracted Refugee Situations in Ethiopia (2003–2010): a Joint Mixed Method Impact Evaluation		x			
S Doocy, H Tappis	The Effectiveness and Efficiency of Cash-based Approaches in Emergencies: A Systematic Review	x	x	x		
A Farrar	Interventions with children engaged in armed conflict	x				

Authors	Study title	Health	Nutrition	Food security	Health education	WASH
J Spangaro, A Zwi, C Adogu, G Ranmuthugala, GP Davies, L Steinacker	What is the evidence of the impact of initiatives to reduce risk and incidence of sexual violence in conflict and post-conflict zones and other humanitarian crises in lower and middle-income countries?				x	
E Lloyd, H Penn, S Barreau, V Burton, R Davis, S Potter, R Sayeed	How Effective Are Measures Taken to Mitigate the Impact of Direct Experience of Armed Conflict on the Psychosocial and Cognitive Development of Children Aged 0–8?	x				x
N Inès Dossa, M Hatem	Cognitive-Behavioral Therapy versus Other PTSD Psychotherapies as Treatment for Women Victims of War-Related Violence	x				
EA Obuku	Working with non-state providers in post-conflict and fragile states in primary healthcare service delivery	x			x	
N Patel, B Kellezi, A Williams	Psychological, social and welfare interventions for psychological health and well-being of torture survivors	x				
ME Williams, SC Thompson	The Use of Community-Based Interventions in Reducing Morbidity from the Psychological Impact of Conflict-Related Trauma Among Refugee Populations: A Systematic Review of the Literature	x				
WA Tol, S Song, MJ Jordans	Resilience and mental health in children and adolescents living in areas of armed conflict	x			x	
JW Timbie, JS Ringel, DS Fox, DA Waxman, F Pillemer, C Carey, M Moore, V Karir, TJ Johnson, N Iyer, J Hu, R Shanman, JW Larkin, M Timmer, A Motala, TR Perry, S Newberry, AL Kellermann	Allocation of Scarce Resources During Mass Casualty Events				x	

Authors	Study title	Health	Nutrition	Food security	Health education	WASH
K Blanchet, V Sistenich, A Ramesh, S Frison, E Warren, J Smith, M Hossain, A Knight, C Lewis, N Post, A Woodward, A Ruby, M Dahab, S Pantuliano, B Roberts	An evidence review of research on health interventions in humanitarian crises	x			x	x
K Jong, JW Knipscheer, N Ford, RJ Kleber	The Efficacy of Psychosocial Interventions for Adults in Contexts of Ongoing Man-Made Violence—A Systematic Review	x				
J Bisson	Systematic Review of Psychological First Aid	x				
V Stavrou	Sexual Violence and Armed Conflict: A Systematic Review of Psychosocial Support Interventions	x				
CP Che, H Urdal, O Umeora, J Sundby	Interventions to improve maternal, newborn and reproductive health in crisis settings	x				
DT Bradley, M McFarl, M Clarke	The Effectiveness of Disaster Risk Communication: A Systematic Review of Intervention Studies				x	
JH Fox, FM Burkle, J Bass, F Pia, J Epstein, D Markenson	The effectiveness of psychological first aid as a disaster intervention tool: research analysis of peer-reviewed literature from 1990–2010	x				
J Manley	How effective are cash transfer programmes at improving nutritional status? A rapid evidence assessment of programmes' effects on anthropometric outcomes					
K Blanchet, B Roberts	Humanitarian Health Evidence Review	x				x
N Lord	Integrating Research on Health & Development: Evidence Building and Researcher Engagement	x			x	

<b>Authors</b>	<b>Study title</b>	<b>Health</b>	<b>Nutrition</b>	<b>Food security</b>	<b>Health education</b>	<b>WASH</b>
A Bellos, K Mulholland, KL O'Brien, SA Qazi, M Gayer, F Checchi	The burden of acute respiratory infections in crisis-affected populations: a systematic review	x				
W Kimbrough, V Saliba, M Dahab, C Haskew, F Checchi	The burden of tuberculosis in crisis-affected populations: a systematic review	x				
R Akparibo, ACK Lee, A Booth	Recovery, relapse and episodes of default in the management of acute malnutrition in children in humanitarian emergencies: A systematic review	x	x		x	
ZA Bhutta, ZS Lassi, N Mansoor	Systematic review on human resources for health interventions to improve maternal health outcomes: Evidence from developing countries	x				
J Hussein	What kinds of policy and programme interventions contribute to reductions in maternal mortality? The effectiveness of primary level referral systems for emergency maternity care in developing countries	x				
B Roberts, J Browne	A systematic review of factors influencing the psychological health of conflict-affected populations in low- and middle-income countries	x				
C Quosh, L Eloul, R Ajlani	Mental health of refugees and displaced persons in Syria and surrounding countries: a systematic review	x				
RA Tyrer, M Fazel	School and Community-Based Interventions for Refugee and Asylum Seeking Children: A Systematic Review	x				
M Målqvist, B Yuan, N Trygg, K Selling, S Thomsen	Targeted Interventions for Improved Equity in Maternal and Child Health in Low- and Middle-Income Settings: A Systematic Review and Meta-Analysis	x				
N Crumlish	A Systematic Review of Treatments for Post-Traumatic Stress Disorder Among Refugees and Asylum-Seekers	x				

Authors	Study title	Health	Nutrition	Food security	Health education	WASH
C Meyer, N Bellows, M Campbell, M Potts	The Impact of Vouchers on the Use and Quality of Health Goods and Services in Developing Countries: A Systematic Review	x			x	
TP Koehlmoos	Working with non-state providers in post-conflict and fragile states in primary healthcare service delivery: a systematic review	x				
M Chaffee	Willingness of health care personnel to work in a disaster: an integrative review of the literature	x				
J Parkinson	A Review of the Evidence Base for WASH interventions in Emergency Responses: Discussion document					x
SE Casey	Evaluations of reproductive health programs in humanitarian settings: a systematic review	x			x	x
C Navarro-Colorado	A Retrospective Study of Emergency Supplementary Feeding Programmes		x		x	
S O'Reilly, V Shrestha, M Flint	Evaluation of the Impact of Food for Assets on Livelihood Resilience in Nepal	x		x		
A Fouillard, C Lewis, M Daku, K Mgaye	Food for Assets on Livelihood Resilience in Senegal: An Impact Evaluation	x		x		
J Gayfer, J Bames, A Kayondo, V Nkwanzu	Evaluation of the Impact of Food for Assets on Livelihood Resilience in Uganda (2005–2010)	x		x		
RC Beaulieu, A Fouillard, H Gough, A Daoust, O Marina Pinto	Food for Assets on Livelihood Resilience in Guatemala: An Impact Evaluation	x		x		

## Appendix B: Types of data collected for the impact evaluations

Country	Frequency	Timeline	Unit	Type of data	Sample size
<b>Chad</b>	Two waves of baseline and endline data	June and November 2016	Household and child and sibling data	Primary data triangulated with information obtained through secondary sources and supported by a consultative approach	Baseline: 1,757 children Endline: 1,270 children
<b>Mali</b>	Two waves of baseline and endline data	January 2012 and January 2017	Village- and household-level data	Primary quantitative data and extensive qualitative data from multiple sources	1,583 households
<b>Niger</b>	Two waves of baseline and endline data	March 2014 and September 2016	Household- and child-level data	Panel survey data commissioned by WFP Niger and collected by the National Statistics Institute of Niger	1,619 children 4,310 households
<b>Sudan</b>	Four waves of data collection	May–December 2016	Child- and mother-level data	Primary quantitative and qualitative data	Round 1: 610 children Round 2: 848 children Round 3: 909 children Round 4: 867 children

## **Appendix C: Key lessons in evaluation implementation**

Implementing successful impact evaluations in humanitarian settings poses several challenges. There is a high level of uncertainty with respect to the exact intervention in humanitarian settings, the areas of programme implementation, who will be actual beneficiaries and whether there will be funding for the interventions. This implies sudden changes to the planned study design, and sufficient importance should be given to the design of the sampling frame, ensuring that the studies are adequately powered in the statistical analyses and safeguarded against bias due to sudden changes on the ground. The team in Sudan had to modify their study design from a four-step roll-out to a three-step roll-out with an increase in the sample size, due to an unexpected emergency situation in the field.

Given the contexts and the sensitivity of these programmes, evaluations need to be conducted on tight timelines in order to provide useful and timely inputs for activities and decisions. This requires quick reactions and expertise in understanding and identifying bias, spill-overs and overall rigour in evaluations. Due to a security situation in Bamako, the team in Mali quickly rearranged the order of data collection activities and came up with an alternative plan that allowed them to complete the study within their timeframe.

Real-world impact evaluations require trade-offs between types of available data. This is particularly important because the choice of data has implications for budgets. In Niger, the team used secondary data for quantitative analysis, complemented with qualitative research. Although dependency on secondary data can have quality implications, efforts should be made to pool all available sources of administrative and primary data.

Table C1 provides some examples to illustrate the challenges the research teams faced in the field and their subsequent solutions.

**Table C1: Examples of study and programme implementation challenges and solutions**

<b>Country</b>	<b>Challenge</b>	<b>Solution</b>
<b>Chad</b>	A measles vaccination campaign was happening while the impact evaluation survey teams were on the field.	The survey team coordinated with health centres to avoid displacing families to the immunisation sites while they were collecting data. The research team conducted an awareness session with all the health centres to agree on the need for better coordination.
<b>Mali</b>	The security situation in the Mopti region, where the qualitative research was under way, was challenging and caused a few delays.	The research team and in-country research partners carefully monitored the security situation, aiming to minimise risk to the survey team on the ground.
<b>Niger</b>	The team encountered issues with previously collected data, such as a lack of unique cross-wave identifiers for households and children and the large extent of sample attrition.	Meetings with local research partners revealed that geography and security were the key determinants of sample attrition at the village level. The team adopted Heckman-style selection correction models in the analysis to overcome this source of bias.
<b>Sudan</b>	Costs of running the study and sample size were affected by the increases in number of clusters and in the length of time for data collection.	The additional cost was minimised through strategic positioning of the enumerators in assigned clusters and better data collection mechanics to optimise the time available for data collection.

## References

Annan, RA, Webb, P and Brown, R, 2014. *Management of Moderate Acute Malnutrition (MAM): current knowledge and practice*. CMAM Forum.

Bhutta, ZA, Ahmed, T, Black, RE, Cousens, S, Dewey, K, Giugliani, E, Haider, BA, Kirkwood, B, Morris, SS, Sachdev, HPS and Shekar, M, 2008. What works? Interventions for maternal and child undernutrition and survival. *The Lancet*, 371(9610), pp.417–440.

Black, RE, Allen, LH, Bhutta, ZA, Caulfield, LE, de Onis, M, Ezzati, M, Mathers, C and Rivera, J, 2008. Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet*, 371(9608), pp.243–260.

Brück, TN, Ferguson, TN, Ouédraogo, J and Ziegelhöfer, Z, Forthcoming in the 3ie impact evaluation reports series. *Impact evaluation of WFP malnutrition interventions in Niger*. International Initiative for Impact Evaluation (3ie).

Bryce, J, Coitinho, D, Darnton-Hill, I, Pelletier, D and Pinstrip-Andersen, P, 2008. Maternal and child undernutrition: effective action at national level. *The Lancet*, 371(9611), pp.510–526.

Bushby, K and Krystalli, R, 2015. *Mapping Evidence Syntheses in the Humanitarian Sector: Insights and Challenges*. Humanitarian Evidence Program. Oxfam, UK aid and Feinstein International Center. Available at: <[http://www.evidenceaid.org/wp-content/uploads/2013/02/61076-Mapping-Humanitarian-Evidence\\_Insights-and-Challenges.pdf](http://www.evidenceaid.org/wp-content/uploads/2013/02/61076-Mapping-Humanitarian-Evidence_Insights-and-Challenges.pdf)> [Accessed 21 February 2018].

Clarke, M, Allen, C, Archer, F, Wong, D, Eriksson, A and Puri, J, 2014. *What evidence is available and what is required, in humanitarian assistance?* 3ie Scoping Paper 1. New Delhi: International Initiative for Impact Evaluation (3ie). Available at: <[http://www.3ieimpact.org/media/filer\\_public/2014/12/17/3ie\\_scoping\\_paper\\_1-humanitarian-top.pdf](http://www.3ieimpact.org/media/filer_public/2014/12/17/3ie_scoping_paper_1-humanitarian-top.pdf)> [Accessed 21 February 2018].

Gelli, A, Tranchant, JP, Aurino, E, Bliznashka, L, Diallo, AS, Sacko, M, Siegel, E and Masset, E, (in press). *The impact on humanitarian aid on food insecure populations during conflict in Mali*. Forthcoming in the 3ie Impact Evaluation Reports series. New Delhi: International Initiative for Impact Evaluation (3ie).

Gold, MR, Siegel, JE, Russel, LB and Weinstein, MC eds., 1996. *Cost-Effectiveness in Health and Medicine*. Oxford University Press.

Guevarra, E, Mandalazi, E, Belagamire, S, Albrekstan, K, Sadler, K, Abdelsalam, K, Urrea, G and Alawad, S, (in press). *Impact evaluation of the World Food Programme's moderate acute malnutrition treatment and prevention programmes in Kassala Sudan*. Forthcoming in the 3ie Impact Evaluation Reports series. New Delhi: International Initiative for Impact Evaluation (3ie).

Horton, R, 2008. Maternal and child undernutrition: an urgent opportunity. *The Lancet*, 371(9608), p.179. Available at: <<https://www.ncbi.nlm.nih.gov/pubmed/18207569>> [Accessed 21 February 2018].

IRC, n.d. Humanitarian Emergencies Map. International Rescue Committee (IRC). Available at: <<https://rescue.app.box.com/s/ehvur8tn6scnufyptxf563sqkryxzjdi>> [Accessed 21 February 2018].

Ministry of Health, 2017. *Direction de la Nutrition et de la Technologie Alimentaire*. Chad: National Nutrition and Food Directorate.

Morris, SS, Cogill, B and Uauy, R, 2008. Effective international action against undernutrition: why has it proven so difficult and what can be done to accelerate progress? *The Lancet*, 371(9612), pp.608–621.

Saboya, M, Rudiger, J and Frize, J, (in press). *Impact evaluation of WFP programmes targeting moderate acute malnutrition in humanitarian assistance situations in Chad*. Forthcoming in the 3ie Impact Evaluation Reports series. New Delhi: International Initiative for Impact Evaluation (3ie).

UNDP, 2016. *Human Development Report 2016: Human Development for Everyone*. New York: United Nations Development Programme (UNDP). Available at: <[http://hdr.undp.org/sites/default/files/2016\\_human\\_development\\_report.pdf](http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf)> [Accessed 21 February 2018].

UNICEF, 2017a. *Sudan Humanitarian Situation Report (May)*. United Nations Children's Fund (UNICEF).

UNICEF, 2017b. *Mali Humanitarian Situation Report (September)*. United Nations Children's Fund (UNICEF).

UNOCHA, 2016. *2017 Sahel – Overview of humanitarian needs and requirements*. Office for the Coordination of Humanitarian Affairs (UNOCHA). Available at: <[https://www.humanitarianresponse.info/system/files/documents/files/hnro\\_sahel-2017-en\\_2.pdf](https://www.humanitarianresponse.info/system/files/documents/files/hnro_sahel-2017-en_2.pdf)> [Accessed 21 February 2018].

Victora, CG, Adair, L, Fall, C, Hallal, PC, Martorell, R, Richter, L and Sachdev, HS, 2008. Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet*, 371(9609), pp.340–357.

WFP, 2013–2015. OEV Impact Evaluation Series on MAM programming. World Food Programme (WFP).

WFP, 2017a. *Chad*. World Food Programme (WFP). Available at: <<http://www1.wfp.org/countries/chad>> [Accessed 21 February 2018].

WFP, 2017b. *Niger*. World Food Programme (WFP). Available at: <<http://www1.wfp.org/countries/niger>> [Accessed 21 February 2018].

## Other publications in the 3ie working paper series

The following papers are available from

<http://www.3ieimpact.org/en/publications/workingpapers/>

*Community-driven development: does it build social cohesion or infrastructure? A mixed-method evidence synthesis*, 3ie Working Paper 30 White, H, Menon, R and Waddington, H, 2018.

*Evaluating advocacy: an exploration of evidence and tools to understand what works and why*. 3ie Working Paper 29. Naeve, K, Fischer-Mackey, J, Puri, J, Bhatia, R and Yegbemey, R, 2017.

*3ie evidence gap maps: a starting point for strategic evidence production and use*, 3ie Working Paper 28. Snilstveit, B, Bhatia, R, Rankin, K and Leach, B (2017)

*Examining the evidence on the effectiveness of India's rural employment guarantee act*, 3ie Working Paper 27. Bhatia, R, Chinoy, SL, Kaushish, B, Puri, J, Chahar, VS and Waddington, H (2016)

*Power calculation for causal inference in social science: sample size and minimum detectable effect determination*, 3ie Working Paper 26. Djimeu, EW and Houndolo, DG (2016)

*Evaluations with impact: decision-focused impact evaluation as a practical policymaking tool*, 3ie Working Paper 25. Shah, NB, Wang, P, Fraker, A and Gastfriend, D (2015)

*Impact evaluation and policy decisions: where are we? A Latin American think-tank perspective*, 3ie Working Paper 24. Baanante, MJ and Valdivia, LA (2015)

*What methods may be used in impact evaluations of humanitarian assistance?* 3ie Working Paper 22. Puri, J, Aladysheva, A, Iversen, V, Ghorpade, Y and Brück, T (2014)

*Impact evaluation of development programmes: experiences from Viet Nam*, 3ie Working Paper 21. Nguyen Viet Cuong (2014)

*Quality education for all children? What works in education in developing countries*, 3ie Working Paper 20. Krishnaratne, S, White, H and Carpenter, E (2013)

*Promoting commitment to evaluate*, 3ie Working Paper 19. Székely, M (2013)

*Building on what works: commitment to evaluation (c2e) indicator*, 3ie Working Paper 18. Levine, CJ and Chapoy, C (2013)

*From impact evaluations to paradigm shift: A case study of the Buenos Aires Ciudadanía Porteña conditional cash transfer programme*, 3ie Working Paper 17. Agosto, G, Nuñez, E, Citarroni, H, Briasco, I and Garcette, N (2013)

*Validating one of the world's largest conditional cash transfer programmes: A case study on how an impact evaluation of Brazil's Bolsa Família Programme helped silence its critics and improve policy*, 3ie Working Paper 16. Langou, GD and Forteza, P (2012)

*Addressing attribution of cause and effect in small n impact evaluations: towards an integrated framework*, 3ie Working Paper 15. White, H and Phillips, D (2012)

- Behind the scenes: managing and conducting large scale impact evaluations in Colombia, 3ie Working Paper 14.* Briceño, B, Cuesta, L and Attanasio, O (2011)
- Can we obtain the required rigour without randomisation? 3ie Working Paper 13.* Hughes, K and Hutchings, C (2011)
- Sound expectations: from impact evaluations to policy change, 3ie Working Paper 12.* Weyrauch, V and Langou, GD (2011)
- A can of worms? Implications of rigorous impact evaluations for development agencies, 3ie Working Paper 11.* Roetman, E (2011)
- Conducting influential impact evaluations in China: the experience of the Rural Education Action Project, 3ie Working Paper 10.* Boswell, M, Rozelle, S, Zhang, L, Liu, C, Luo, R and Shi, Y (2011)
- An introduction to the use of randomised control trials to evaluate development interventions, 3ie Working Paper 9.* White, H (2011)
- Institutionalisation of government evaluation: balancing trade-offs, 3ie Working Paper 8.* Gaarder, M and Briceño, B (2010)
- Impact evaluation and interventions to address climate change: a scoping study, 3ie Working Paper 7.* Snilstveit, B and Prowse, M (2010)
- A checklist for the reporting of randomised control trials of social and economic policy interventions in developing countries, 3ie Working Paper 6.* Bose, R (2010)
- Impact evaluation in the post-disaster setting, 3ie Working Paper 5.* Buttenheim, A (2009)
- Designing impact evaluations: different perspectives, contributions, 3ie Working Paper 4.* Chambers, R, Karlan, D, Ravallion, M and Rogers, P (2009) [Also available in Spanish, French and Chinese]
- Theory-based impact evaluation, 3ie Working Paper 3.* White, H (2009) [Also available in French and Chinese]
- Better evidence for a better world, 3ie Working Paper 2.* Lipsey, MW (ed.) and Noonan, E (2009)
- Some reflections on current debates in impact evaluation, 3ie Working Paper 1.* White, H (2009)

Acute malnutrition in the Sahel region affects an estimated 6 million children under the age of 5, of whom approximately 1.4 million require treatment for severe acute malnutrition. There is insufficient and equivocal understanding of the relationship between prevention and treatment of malnutrition. This paper synthesises findings and lessons from four 3ie-supported impact evaluations of World Food Programme's interventions to improve nutrition and food security outcomes in Chad, Mali, Niger and Sudan. They provide evidence on the interrelationship between programmes for preventing and treating moderate acute malnutrition in emergency and post-emergency contexts. The authors offer recommendations for improving operational efficiency and coverage, designing programme components, along with calling for increased interagency cooperation and improved monitoring processes and cost data.

### Working Paper Series

International Initiative for Impact Evaluation  
202-203, Rectangle One  
D-4, Saket District Centre  
New Delhi – 110017  
India

3ie@3ieimpact.org  
Tel: +91 11 4989 4444



[www.3ieimpact.org](http://www.3ieimpact.org)



**World Food Programme**