



Evaluation of Community Management of Acute Malnutrition (CMAM) in Sudan, 2015 - 2019

Final Report

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LIST OF ACRONYMS

AM	Acute Malnutrition
BBQ	Barriers, Boosters and Questions
CHW	Community Health Worker
CMAM	Community-based Management of Acute Malnutrition
CO	Country Office
DAC	Development Assistance Committee
DHS	Demographic and Health Surveys
ECHO	European Civil Protection and Humanitarian Aid Operations
EM	Evaluation Matrix
EPI	Expanded Programme on Immunization
ERG	Evaluation Reference Group
FAO	Food and Agriculture Organization
FFP	Food for Peace
FGD	Focus Group Discussion
FMoH	Sudan Federal Ministry of Health
GAM	Global Acute Malnutrition
GoS	Government of Sudan
ICCM	Integrated Community Case Management
IDP	Internally Displaced Population
IMCI	Integrated Management of Childhood Illnesses
INGO	International Non-Governmental Organisation
IR	Inception Report
IYCF	Infant and Young Child Feeding
KI	Key Informant
KII	Key Informants Interview
MAM	Moderate Acute Malnutrition
NIPP	Nutrition Impact for Positive Practice
MoH	Ministry of Health
MoUs	Memorandum of Understandings
MUAC	Mid-Upper Arm Circumference
NACS	Nutrition Assessment, Counselling and Support
NGO	Non-Governmental Organisation
OECD	The Organisation for Economic Co-operation and Development
OFDA	Office of Foreign Disaster Assistance
OTP	Outpatient Therapeutic Care
PHC	Primary Health Care
PHF	Patients Helping Fund (national NGO)
PII	Personal Identification Information
PLW	Pregnant and Lactating Women
RUF	Ready to Use Foods
RUSF	Ready to Use Supplementary Food
RUTF	Ready-to-Use Therapeutic Food
S3M	Simple Spatial Surveying Method
SAM	Severe Acute Malnutrition
SC	Stabilisation Centre
SFP	Supplementary Feeding Programme

SQUEAC	Semi-Quantitative Evaluation of Access and Coverage
SUN	Scaling Up Nutrition
TBA	Traditional Birth Attendant
TFC	Therapeutic Feeding Centre
ToC	Theory of Change
ToR	Terms of Reference
TSFP	Targeted Supplementary Feeding Programmes
UNEG	UN Evaluation Group
UNICEF	The United Nations Children's Fund
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
Valid	Valid International
W/H	Weight/Height
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WHO	World Health Organization

EXECUTIVE SUMMARY

1. Background

Since 2009, the Government of Sudan (GoS), UN Agencies and Implementing partners (IP) have focused on scaling up Community Management of Acute Malnutrition (CMAM) as one of the approaches to reduce child mortality and contribute to decreasing the prevalence and incidence of acute malnutrition. Despite important achievement, only about 25 per cent of severe acute malnourished (SAM) children have access to treatment services. The GoS is moving in many strategic directions such as expanding the primary health care programme and strengthening health systems at locality level to achieve universal health coverage. The findings and recommendations of this evaluation will be instrumental in designing the next CMAM scale-up plan to effectively contribute to achieving government's strategic vision for children.

2. Evaluation purpose

The evaluation aims to serve two purposes:

- *Learning* from experience; identifying strengths/good practices and factors where results fall short of expectations; to facilitate adjustment and doing business differently; and,
- *Accountability* to affected populations, communities, and donors about the return on investments made in response to the huge humanitarian needs of displaced populations and host communities, refugees, and returnees.

3. Evaluation objectives

- To assess CMAM-related interventions' relevance and appropriateness, efficiency and quality of services and explain how programme effectiveness could be improved.
- To assess the impact of the current CMAM programme in terms of reduction of acute malnutrition prevalence and determine how the programme can be sustainable and ensure nationwide coverage.
- To measure the current level of integration between CMAM components, and between the CMAM programme and other programmes and to advise on how this integration could be fostered in a way that contributes to health system strengthening rather than overburdening it.
- To assess to what extent the implementation of CMAM has contributed to system strengthening, i.e. coordination, governance and management, capacity development, advocacy and policy development.
- To assess the adequacy of the monitoring and information management systems for the CMAM programme and provide recommendations on how this could be extended to lowest level possible, taking into consideration the different contexts in Sudan.
- To document good practices and evidence-based lessons in supporting the recommendations of the evaluation in order to strengthen ongoing efforts towards expansion and quality improvement of CMAM coverage in Sudan.

4. Evaluation scope, criteria, and methodology

The evaluation focused on the implementation of the four components of CMAM in the 18 states of Sudan during the period 2015-2019. Field visits for primary data collection took place in the three states of Kassala, North Darfur and Gezira. The Organisation for Economic Co-operation and Development - Development Assistance Committee (OECD DAC) criteria of relevance, effectiveness, efficiency, impact, and sustainability were used to conduct the evaluation.

This was a process, output and outcome evaluation, using a combination of qualitative and quantitative data methods to triangulate the information obtained from (A) desk review and (B) primary data collection. The primary data collection used four methods: 1) Semi-Quantitative Evaluation of Access and Coverage (SQUEAC); 2) semi-structured individual interviews with key informants; 3) Focus group discussion (FGD); and 4) direct observation

of CMAM operations. Several tools, developed in line with the procedure of UNICEF's ethical standards in research, evaluation, data collection and analysis, were used for data collection at federal, state, locality, and community levels. The evaluation experienced many challenges, including the availability of limited programme and financial data, as well as sub-optimal quality of data. Important part of data available were not disaggregated according to location, age or gender. To mitigate this issue, the evaluation team used triangulation during data collection and analysis, and the preliminary findings and draft report were presented to the Evaluation Reference Group (ERG) for comments and validation.

5. Main findings and preliminary conclusions

Relevance

- CMAM is well integrated in the government's different health and nutrition policies, strategies, and plans. This creates an enabling environment for the implementation of the programme in the different states of the country.
- CMAM is perceived as an effective programme for addressing acute malnutrition and contributing to system strengthening; however, linkages with nutrition sensitive interventions still need improvements.
- Although coordination at federal level has improved overtime, there are still gaps in roles and responsibilities regarding various aspects such as community engagement or the transport of Ready-to-used Therapeutic Foods (RUTF) at decentralised levels.

Effectiveness

- Screening targets have not been reached. Mass screening and screening at the household level to identify SAM children using incentivised volunteers are the approaches mostly commonly used. These are combined with routine screening performed by health workers and CMAM staff at health facilities. Household follow-up and sensitisation are irregular or non-existent, and their effectiveness could not be assessed due to the absence of monitoring data. The community component of CMAM is weak in terms of planning, implementation, monitoring and reporting. Systematic application of the steps for community engagement proposed in the CMAM Manual are likely to produce important improvements.
- Despite good awareness of the programme leading to significant numbers of self-referrals, admission targets were not reached. The low coverage of health facilities means that it is difficult for isolated populations to access the services.
- The CMAM data bases at federal level indicated that the programme performed well in terms of cure rate and death rate, despite the apparent late admissions and high default rates in some states. However, underreporting and delay in submission of monthly reports jeopardise the accuracy and correctness of data transferred to federal level. The CMAM data base or indicators have not yet been included in the national District Health Information System (DHIS) for consistency and better planning and implementation.
- Interesting measures such as setting up satellite services or mobile clinics have been taken to minimise the equity gaps. However, adequate access to isolated and mobile populations, and those living in conflict areas remains an important issue.

Efficiency

- Overall, the capacity of health staff and volunteers is good. However, appropriate counselling of patients, the quality of records, anticipating stock shortages and supervision are not adequate. Health staff also often lack skills in community engagement.
- Insufficient follow-up and supervision of cases undergoing treatment, relatively late admissions and regular stock-outs of Ready-to-use Foods (RUFs) have affected the programme quality, leading to many defaults from attendance of the programme.

- The linkages of SAM treatment with other programmes delivered within the health facilities such as Expanded Programme of Immunisation (EPI) or Infant and Young Child Feeding (IYCF), or delivered in the community (such as integrated community case management - ICCM) are not consistent. There is room for improvement through a better understanding of the roles between SAM and these programmes, developing better case finding and referral strategies, particularly for isolated or difficult to reach populations.
- Low engagement of the community has resulted in sub-optimal early case identification and treatment, misuse of RUFs (leakage from the supply chain) leading to frequent stock out and fragile health and community systems.
- CMAM funding has increased over the years, supplies and commodities absorbing most of expenditures. Most funds are from humanitarian sources. The cost-effectiveness of the SAM treatment is good in the context of Sudan.

Impact

- The implementation of OTP services contributed to nearly 200,000 lives saved among under-five children. Nevertheless, CMAM has a primary curative focus and requires a strong linkage with preventive interventions to impact on the nutritional status of children and the prevalence of acute malnutrition.
- The availability of RUTF in OTP sites stimulated attendance to other child health services. However, it is also misused and/or wasted by the community and service providers, particularly with sharing among siblings and selling in local markets.

Sustainability

- Capacities have been built and systems developed. But these gains are still fragile. There is still an important need to ensure that government resources are sufficiently funded, staff are trained, and that they actively supervise the various aspects of the programme.
- The government's indirect participation through staff, infrastructure, equipment and services that are free of charge for children is a good practice that should be promoted to enhance more ownership.
- The increasing importance of the local production of RUTF that now supplies most of the RUTF used by the programme is an important achievement that increases sustainability and better links the CMAM programme with local agricultural markets.
- Delivery of CMAM services within government health facilities, the local production of RUTF, the use of different « community-based case finding methods » such as mothers' Mid-Upper Arm Circumference (MUAC), mothers' groups, ICCM are opportunities for sustaining CMAM, along with its implementation within a multisectoral approach for addressing malnutrition.

6. Lessons learned

- **Underemphasising the importance of community engagement** by managers and OTP workers at different levels is a critical issue undermining the effectiveness of CMAM in Sudan. Community engagement is essential if the programme is ever to evolve into a sustainable intervention through altering community health-seeking behaviour and their understanding of the cause and how to prevent acute malnutrition. Given the size and complexity of Sudan, creating sufficient understanding amongst the community so that they identify acute malnutrition and seek treatment early would be the best way to improve coverage in large catchment areas or densely populated areas.
- The objective of **lowering the prevalence of acute malnutrition** cannot be achieved by the CMAM programme alone. The programme has not yet established sufficient linkages with a wide range of nutrition specific and sensitive interventions (social protection, food security, livelihood, etc.) that can benefit the children and concomitantly strengthen the resilience of their households. Impacting on prevalence of acute malnutrition requires strong integration with other programmes.

- Without a **consistent data base**, it is difficult to determine whether programme outputs and outcomes reflect the reality. For example, evidence showed that defaulters are under-reported, and given that the majority of cases default early, this most likely represents a considerable under-reporting of mortality as well. Late admissions and slow recovery are not captured, making it difficult to initiate appropriate action. Strengthening the accuracy and reliability of data is important for good management of the programme.
- **Achieving high quality standards** within a health system experiencing multiple challenges is difficult. A more decentralised SAM outpatient service delivered within the community through appropriate linkages with preventive interventions is an alternative that should be explored in the context of Sudan. Optimal community engagement is requisite for implementing such initiative.

7. Final Conclusions

Relevance. CMAM is aligned to national health policies and strategies in Sudan and meets the expectations of beneficiaries in terms of targeting the most vulnerable and addressing acute malnutrition among children under-five at decentralised levels. It is well accepted by beneficiaries and is adequate for strengthening the capacity of government staff despite challenges experienced.

Effectiveness. Although the CMAM programme's performance has improved over time, access to services remains below expectations, and the programme experiences late admissions and high defaults. Community engagement, which is the cornerstone of the programme for optimal access and impact, is not adequately implemented. For better planning and implementation, the monitoring and reporting system should be consistent and strengthened.

Efficiency. Significant progress has been achieved in deploying SAM treatment activities within the health centres and through mobile teams. Stock-outs of RUTFs have reduced over time. However, quality standards are not reached because of weak linkages between SAM treatment and other curative and preventive programmes, irregular supportive supervision and low community engagement.

Impact. The implementation of OTP services strongly contributed to child survival and stimulated attendance to other child health services. Addressing the problem of miss use of RUTF can contribute to better achievement, especially given that RUTF absorbs most of the programme expenditures. The programme is very cost-effective in life-saving of children suffering from severe acute malnutrition.

Sustainability. Delivery of SAM treatment services within government health facilities, the local production of RUTF, relative high awareness of the programme among the population are important characteristics that spur adherence to the programme. Technical sustainability is feasible, but reliance on emergency funding limits the programme's sustainability prospects. The programme would benefit from being implemented within a multisectoral approach for addressing malnutrition in the country.

8. Recommendations

Based on the findings and conclusions of the evaluation, strategic and operational recommendations were developed, discussed, and reformulated during a workshop on preliminary findings held with the Evaluation Reference Group (ERG).

Strategic Recommendations

1. Re-organise, revamp, and increase the emphasis of community engagement and mobilization
2. Strengthen the national health information system for real time monitoring and timely reporting
3. Continue the partnership between Government, donors, and development partners to ensure long term and flexible funding for CMAM, and addressing underlying causes of malnutrition
4. Improve coordination mechanisms at different levels to ensure more commitments

5. Reinforce the programme supply chain management to reduce frequency of pipeline breaks and supply stock-outs

Operational Recommendations

6. Strengthen the capacity of health personnel (Capacity Building)
7. Ensure regular supportive supervision

1. BACKGROUND

Sudan is the third-largest country in Africa, having a total estimated 41 million inhabitants in 2019. The majority of the population is young, composed of people below the age of 18 (about 20 million), and children under five years of age represent about 16 percent (about 6.5 million)¹. The under-five mortality rate in the country was estimated at 63.5 per 1,000 live births in 2018².

The problem of undernutrition in Sudan is known to be a manifestation of multiple factors related to low health status and health services coverage, water availability, food insecurity, periodic humanitarian crises, limited safety nets, and poor economic and education status at all levels³. The most affected population are children under five and pregnant and lactating women (PLW) as their nutritional needs are relatively high.

The rate of malnutrition in the country has changed little in the last three decades. With a 13.6 percent global acute malnutrition (GAM) amongst children under five⁴, the country has the third highest prevalence of acute malnutrition in the Middle East and North Africa (MENA) region after Yemen and Djibouti⁵. About 2.7 million children suffer from wasting annually, with approximately 522,000 currently suffering from SAM⁶. In addition, approximately 883,000 pregnant and lactating women (PLW) suffer from acute malnutrition annually in the country. In 2020, 15 out of the 18 states had high GAM rates, and around 95 localities reported extremely high levels of malnutrition⁷.

Annually, approximately 40,000 child deaths under five children are associated with under nutrition in the country, only about 25 per cent of SAM children are accessing treatment services because of insufficient resources and capacity among government and humanitarian actors. Scaling up maternal nutrition services also remains a concern with approximately 647,623 PLW in need of moderate acute malnutrition (MAM) management services. One million mothers need appropriate infant and young child nutrition (IYCN) counselling services, as 61.2% of children are exclusively breastfed and age-appropriate dietary diversity is applied to 23.8% of children⁸. Insufficient investment in nutrition over the past 30 years has been identified as a missed opportunity for development and economic progress in the country, where most of the donor funding for nutrition is for short-term support of humanitarian action with limited longer-term outcomes⁹.

CMAM has four components: a) community outreach/mobilisation; b) outpatient therapeutic programme (OTP) for children with severe acute malnutrition (SAM) without medical complications at decentralised health facilities; c) inpatient therapeutic feeding centre (TFC) care for children with SAM with medical complications or no appetite; and d) supplementary feeding programme (SFP) for children with moderate acute malnutrition (MAM)¹⁰. Since 2009, UNICEF Sudan has focused on scaling up CMAM as one of the approaches to reduce child mortality and contribute to decreasing the prevalence and incidence of acute malnutrition. To achieve this, the Sudan Federal Ministry of Health (FMoH) adopted, endorsed, and implemented a CMAM scale-up plan for the years 2015-2018¹¹. CMAM is currently implemented in the 18 states of the country, through government health system, with the technical and financial support of the GoS, UNICEF, WFP, WHO, National and international Non-Governmental Organisations (NGOs), as well as bilateral and multilateral donors.

Main beneficiaries of CMAM programme are children under-five years of age. Indirect beneficiaries also include parents, health and nutrition staff delivering the services, as well as community health workers (CHW) and volunteers. From 2015 to 2019, a total of 1,221,531 SAM children were admitted to the programme, and 769,232 MAM children were admitted for the years 2017 to 2019 (data on MAM admissions for 2015 and 2016 were not available). From 2015 to 2019, a total of 86 million US\$ were invested in SAM treatment, with an average yearly investment of more than 17.5 million US\$.

The Government of Sudan is moving in many strategic directions such as expanding the primary health care programme and strengthening health systems at locality level to achieve universal health coverage. The UNICEF country programme for 2018-2021 also focuses on moving from solely humanitarian based interventions towards a more developmental focus, while continuing to address humanitarian needs¹². These changes are expected to influence the development of the upcoming CMAM scale-up plan.

Therefore, the findings and recommendations of Sudan's CMAM evaluation for the period 2015-2019 will be instrumental in designing the next CMAM scale-up plan to effectively contribute to achieving both the FMOH and UNICEF's strategic visions for children.

2. EVALUATION PURPOSE, OBJECTIVES AND SCOPE

As per the terms of reference (ToR), the evaluation aims to serve two purposes:

- A. **Learning** from experience; identifying strengths/good practices and factors where results fall short of expectations; to facilitate adjustment and doing business differently; and,
- B. **Accountability** to affected populations, communities, and donors about the return on investments made in response to the huge humanitarian needs of displaced populations and host communities, refugees, and returnees.

The objectives of the evaluation are the following:

- To assess CMAM-related interventions' relevance and appropriateness, efficiency, and quality of services (2015-2019) and explain how programme effectiveness could be improved.
- To assess the impact of the current CMAM programme in terms of reduction of acute malnutrition prevalence and determine how the programme can be sustainable and ensure nationwide coverage.
- To measure the current level of integration between CMAM components, and between the CMAM programme and other programmes such as water, sanitation and hygiene (WASH), integrated management of childhood illnesses/integrated community case management (IMCI/ICCM), expanded programme on immunization (EPI), micronutrient programme, infant and young child feeding (IYCF) and reproductive health programme and to advise on how this integration could be fostered in a way that contributes to health system strengthening rather than overburdening it.
- To assess to what extent the implementation of CMAM has contributed to system strengthening, i.e., coordination, governance and management, capacity development, advocacy, and policy development.
- To assess the adequacy of the monitoring and information management systems for the CMAM programme and provide recommendations on how this could be extended to lowest level possible (locality and community levels) taking into consideration the different contexts in Sudan (accessible and hard-to-reach areas).
- To document good practices and evidence-based lessons in supporting the recommendations of the evaluation in order to strengthen ongoing efforts towards expansion and quality improvement of CMAM coverage in Sudan.

The focus of the evaluation was the four CMAM components of CMAM, which were assessed to capture the coherence and continuum of care within the programme implemented during the period 2015 to 2019. The evaluation covered all the 18 states of the country for document review and secondary data analysis. Field visits for data collection took place in the three states of Kassala, North Darfur, and Gezira. Additional primary data collection (interviews) also took place at Federal level (Khartoum). The selection of the three states addressed a scope that ranges from stable developmental settings (Gezira and Kassala) to a more humanitarian setting (North Darfur), as well as the diet diversity and availability in Sudan, ensuring a comprehensive understanding of programme implementation modalities and contexts across the country.

3. EVALUATION DESIGN AND METHODOLOGY

3.1. Approach, criteria, and questions

The evaluation team used a **participatory approach**, which helped ensure that existing stakeholder knowledge is shared, and conclusions are verified. Those who have the most to benefit from this evaluation, i.e., the Government of Sudan (GoS), UNICEF and other UN Agencies, donors, private companies, implementing partners and beneficiaries, played an important role in shaping the strong learning focus of this evaluation.

The evaluation team also used a theory-driven approach¹³ to unveil the results and outcomes of CMAM in light of the assumptions that support the programme's theory of action and the dynamics of the socio-political, cultural, economic and health system context in which programme activities are implemented. No Theory of Change (ToC) specific to the CMAM programme was developed either during the design of the 2014 scaling up plan, or in national nutrition policy/strategy documents. The interim manual and operational guidelines for SAM and MAM were mainly activity-based. The evaluation conducted in 2013 did not develop a ToC that could guide the current evaluation¹⁴. Therefore, the evaluation team drafted an overview of expected programme results at different levels based on the review of the national CMAM protocol and operational guidelines^{15,16}, the log frame developed for CMAM scale-up in the country, and the model developed for the CMAM global evaluation conducted by UNICEF Head Quarter in 2013 in five countries¹⁷, adapted to the context of Sudan (see annex 1).

The ToR highlighted the OECD DAC criteria of relevance, effectiveness, coverage, efficiency, impact, and sustainability for evaluating CMAM in Sudan, with specific questions designed under each criterion. The evaluation team reviewed these criteria and questions and developed an Evaluation Matrix that supplemented these main questions with sub-questions, indicators, data sources, and data collection techniques (see annex 5).

3.2. Evaluation Methodology

This was a process, output and outcome evaluation using a combination of qualitative and quantitative data methods to triangulate the information obtained from (A) desk review and (B) primary data collection using the following four methods: 1) Semi-Quantitative Evaluation of Access and Coverage (SQUEAC); 2) semi-structured individual interviews with key informants; 3) Focus group discussion (FGD); and 4) direct observation of CMAM operations. These different techniques are complementary in the sense that document review facilitated the understanding of the programme context and identification of indicators useful for assessing programme achievements, while individual interviews captured participants' experiences and perspectives about the implementation of the programme from Federal to locality levels. FGDs were appropriate for getting the perception of leaders, volunteers, and programme beneficiaries at community level. Direct observations were useful for understanding the process of CMAM activities delivered within the health facilities and community. The SQUEAC exercise elicited boosters and barriers affecting programme coverage and access¹⁸.

3.2.1. Selection of states, localities and CMAM sites

Data collection took place at federal, state, locality, and community levels. Given that the CMAM programme is implemented nationwide, document and secondary quantitative data reviews covered all the 18 states, while field visits for primary data collection (SQUEAC and qualitative assessment) took place in three states (Kassala, North Darfur and Gezira), selected by the evaluation team, in agreement with the FMoH and UNICEF Sudan. The main characteristics of the three states are summarised in the table below:

	Kassala	North Darfur	Gezira
Characteristics	More stable and development oriented. Climate: ranges from water abundance to water shortages, from rain-fed seasonal farming to irrigation schemes, and from urban settlements to nomadic communities that include a variety of gender specific traditions perceived to affect the nutritional status in the community.	Population ranges between post-conflict and current IDPs, refugees and returnees. Climate: ranges from desert (uninhabited) in the north to semi-arid land (often very marginal) and covers the agro-pastoral communities from a different gender perspective. Some of the wadis have heavier soils and retain some water (so that fruit trees grow or the growing of vegetables, legumes and tobacco is possible).	More stable and development oriented. Lies between the Blue Nile and the White Nile Is the site of one of the largest irrigation projects in the world, making it the most productive agricultural area of Sudan, with more than 10,000 square kilometres under cultivation. Most of the population engages in agriculture, and crops include cotton, cereals, oilseeds, peanuts (groundnuts), wheat, sesame, durra (sorghum), dukhn (millet), and vegetables. Industries also produce ginned cotton, sesame and peanut oils, cigarettes, leather goods, soap, and processed foods.
CMAM implementation modality	CMAM is implemented as part of resilience programming by MoH and the locality staff, as well as national and international NGOs. There is certain scope of emergency in addition to resilience.	CMAM is implemented as part of emergency response programming by MoH and the locality staff. There is strong INGO programming in the state.	CMAM was established and is managed exclusively by the MoH.

3.2.1.1. Selection of localities and sites for SQUEAC Assessment

A two-stage sampling method was applied in selecting the localities and OTP sites to collect the additional CMAM secondary data. The first stage involved selecting the localities and OTP sites using a purposive systematic random sampling framework. In Kassala state, a spatial systematic random sampling method was used to select the OTP sites to visit in the four localities. This sampling method was used to have a sample that is well spread across the four localities. Due to time limitations and the amount of time involved to travel across the programme areas, this method was only used in Kassala state. For North Darfur and Gezira states a purposive random sample was used. This involved restricting assessment to four localities only, selected based on the performance observed during the initial analysis of the CMAM database. Two of the four selected localities were believed to be well performing and two poorly performing. Then, within each locality, four OTP sites were purposively selected, with two sites being close to the locality headquarters and the other two far away from it. This selection method was based on the assumption that, usually, sites closer to the centre are expected to be well performing because they have easy access to programme information and supplies, as well as regular supervision and support visits. The opposite was assumed to be true for the other two remote sites¹⁹.

Several other factors were considered during the sampling process of the sites to collect additional data. These factors included implementing agency (in Kassala and North Darfur), migrating groups, water access and

availability, host communities vs. IDP camps (especially in North Darfur). Annex 2 shows a summary of the sample in all the three states that were visited.

The second stage of sampling was carried out within each OTP site. It was designed to collect data to inform an analysis aimed at identifying factors that potentially enable or block programme coverage. This stage had two distinct parts. The first part of the sample was drawn from all OTP patients admitted into the programme in the previous 6 months prior to the SQUEAC assessment for MUAC on admission, time to default, time to travel to site versus number of admissions, defaulters and volunteers between May and October 2020¹. The second part of the sample comprised 10 OTP cards randomly selected from all the admissions between May and October 2020 in each OTP site visited to collect information on: referral source, length of stay and minimum weight gain. In addition, the team reviewed OTP records including OTP registers, patient monitoring cards and monthly reports to again analyse factors that are related to programme coverage.

3.2.1.2. Selection of localities and sites for Qualitative Assessment

A number of criteria were used to select the sites for this assessment, including implementing agencies (MoH versus NGO), site locations (close versus far from a large town or city), livelihood systems (nomadic and farmer/productive versus less productive), delivery of SAM and MAM services versus SAM without MAM services (continuum of care), performance of the centre against national standards. In Kassala state, 10 sites were visited in 6 localities. In North Darfur, 15 sites were visited in 8 localities. In Gezira, 11 sites were visited in 8 localities. Annex 2 presents the localities and sites visited for qualitative assessment. Overall, the team visited 25 localities and 81 sites across the three states for SQUEAC and qualitative assessments.

3.2.2. Data collection methods and tools

Review of Documents and secondary data. The evaluation team conducted a review of relevant documents and CMAM quantitative data for the period 2015 to 2019, obtained from the FMoH, UNICEF, WFP, and WHO.

Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) mainly assessed coverage-related factors that may have hindered (“barriers”) or facilitated (“boosters”) access to CMAM programme across all 18 states of Sudan. A desk review of existing programme databases, documents and reports, and results from previous coverage studies/assessments were the initial step of the bespoke SQUEAC assessment. Detailed steps used to conduct the assessment are presented in annex 3. The findings and observations from the SQUEAC analysis contributed to lines of enquiry in the subsequent qualitative assessment.

Semi-Structured Key Informant Interviews (KII) were conducted at federal, state, and locality levels. Key informants were purposively selected at these different levels based on a stakeholder analysis performed by the evaluation team prior to data collection^{20,21}, and through snowball sampling² during data collection in the field. At federal level, they included officials from GoS, UN Agencies, donors and NGOs involved in the design and implementation of CMAM, as well as private sector such as the local producer of RUTF (SAMIL). At state, locality, and health facility levels, they included nutritionists, UN and NGO staff, health facility staff, mothers, and community leaders. Interviews were conducted in English or Arabic when necessary.

Focus Group Discussions were conducted at state, locality, and village levels with groups of the same sex and same role in the programme, including state MoH staff and others involved in health delivery, health centre staff,

¹ All SQUEAC analyses use recent data (between 3-6 months prior to the SQUEAC assessment) to have a clear picture of coverage issues affecting the programme. Retrospective data would not give actual coverage issues and identify remedial actions to improve the programme.

² Snowball sampling is a non-probability technique in which identified key informants recruit future subjects from among their acquaintances.

mothers who have had a child admitted to the CMAM programme, volunteers, women's groups, and men's groups. The facilitator and note-takers worked to create a trust-inspiring and culturally sensitive environment for all participants during discussions about their personal experiences. FGD sessions were held mostly in Arabic.

Direct Observations. Sampled hospitals, OTP and SFP sites visited were observed with a focus on infrastructure, available human resources, equipment, and supplies, as well as health facility and community services delivered. A total of 15 CMAM sites were observed in each state, for a total of 45 sites observed in the three states.

Data Collection Tools. Several tools were developed by the evaluation team to collect the data. SQUEAC assessment tools, interview and FGD guides, as well as observation grid can be found in annex 3 and 4.

3.2.3. Data Analysis

The evaluation team used quantitative and qualitative data analysis techniques. The analysis was disaggregated according to state, age, and sex. For **quantitative analyses**, descriptive statistics such as measures of caseloads, seasonal variations, trends over time, performance indicators (such as cure rate, death rate, default rate, non-response rate, length of stay) were performed and assessed against Sphere Standards for CMAM implementation. Descriptive financial analysis of programme expenditures was also performed, as well as cost per admitted and per cured child. Descriptive frequencies of data obtained from observation grids were assessed against quality standards defined in the national CMAM guidelines. For **qualitative analyses**, a thematic content analysis of synthetic notes obtained from KII and FGD was performed, using deductive and inductive approaches to interpret the findings^{22,23,24}. **Triangulation** was also used, wherein findings obtained from different sources were compared to ensure coherence and reliability.

Preliminary findings and recommendations were presented to the Evaluation Reference Group (ERG). The draft report was also commented upon by the ERG and revised by the evaluation team accordingly. This iterative process helped to validate the evaluation findings.

3.3. Ethical Considerations

The UN Evaluation Group (UNEG) ^{Error! Bookmark not defined.,25} Code of Conduct, Ethics Guide, Guidelines, and Standards were applied throughout the process, in particular with regard to independence, impartiality, transparency, utility and conflict of interest²⁵.

- **Independence:** The judgment, conclusions and recommendations made in this evaluation were based on evidence obtained from data analysis and triangulation. The Evaluation Team independently established the findings, without being influenced by any party (UNICEF, WHO, WFP, etc.)
- **Impartiality:** The Evaluation Team assessed the strengths and weaknesses of CMAM programme impartially. No programme component or stakeholder was favoured at the expense of others.
- **Transparency:** The Evaluation Team clearly communicated to stakeholders the purpose of the evaluation, the criteria applied and the intended use of the findings. Participation in the process was based on informed consent, and the team considered the views of all stakeholders throughout the evaluation process.
- **Utility:** The findings, conclusions and recommendations were formulated in such a way as that would guide the decisions and actions to be taken by the GoS, donors, UNICEF and other UN agencies, NGOs, and CMAM beneficiaries to ensure the usefulness of the evaluation.
- **Conflicts of interest:** Valid International and its team of evaluators had no conflicts of interest with the stakeholders involved in this evaluation.

The evaluation methodology and tools were also developed in line with the procedure of UNICEF's ethical standards in research, evaluation, data collection and analysis. Within this procedure, the principles and requirements for evidence generation are applied to four core ethical components. Namely: harms and benefits,

informed consent, privacy and confidentiality, and compensation and payment²⁶. In terms of *harms and benefits*, the data collection methods (interviews, FGDs, observation) and the tools were developed and administered without any negative repercussion on the health and well-being of participants. Children were not consulted and where mothers were below the age of 18 (15% of the mothers interviewed) the team ensured the presence of a guardian. *Informed verbal consent* was obtained from all participants prior to conducting interviews and FGDs. They were aware of the voluntary nature of their participation, and their decision on whether to participate or not was respected. The evaluation team also pledged *confidentiality* to interviewees and FGD participants. Direct identifiers (e.g., personal information such as names and addresses) were not inserted in the report as the analysis was anonymised. No *payment or compensation* was provided to participants. *Ethical approval* was obtained from the HML Ethics Review Board of UNICEF prior to data collection, and the data collection teams were briefed on cultural and ethical issues to be considered adequately while interviewing women and men in the localities and villages.

3.4. Limitations and Mitigation Factors

The following were noted as challenges to data collection, analysis, and reporting.

Limitations / challenges	Means of mitigation
Representativeness of the findings and comparing programmes set in different states and localities, with various levels of development, resources, and capacity.	The desk review (documents and secondary quantitative data) covered the 18 states to get an overall picture of CMAM implementation in the country. The team considered contextual factors while comparing findings among different states. Three very different states were selected so that their characteristics reflected the characteristics of the range of conditions seen in other states of Sudan as far as is possible with a sample of only three states out of the 18. Although there is no guarantee that the findings from the three states visited do apply to other states, the selection of three very different states was design to help ensure that lessons learned from the three states and recommendations of the evaluation to be transferable to other states.
The security situation in North Darfur. The team was advised not to travel to localities to the west of the state because of security concerns	Alternative localities and sites were selected and visited.
Missing data The year 2017 was missing in the OTP data base obtained from FMOH, and the year 2015 was missing in the OTP data base obtained from UNICEF.	The team used the FMOH 2015 data and the UNICEF 2017 data to complement each other for the missing data in order to obtain a full data set for the period 2015 to 2019.
Paucity of surveys and data for assessing programme effects or potential impact Very few numbers of coverage and nutrition surveys were conducted during the target period of the evaluation Absence of mortality data at national and state level for the period under evaluation	The team used survey reports that were available to estimate the effects and potential impact of CMAM programme, even though these surveys did not perfectly fit with the implementation period. Coverage surveys conducted in 2015 and 2017 in localities of some states, not representative of the country - S3M survey conducted in 2013²⁷ and 2018-2019 The team used the outcome indicators of cure, death, default, non-response rates and coverage as proxies of impact.

Limited data available to assess MAM or SFP component targeting under five children Data obtained from the FMOH and WFP for assessing the SFP targeting under five years of age were available only for 2017, 2018 and 2019. These data were not disaggregated according to states.	The team performed the analysis on the aggregated data only and collected primary data through interviews and FGDs to appraise the continuum of care between SAM and MAM.
Inconsistency between quantitative data collected at the health centres (from the beneficiary registers and cards) and the aggregation chain in the MoH (Locality – State – Federal data bases). The health centre data often did not appear to match with the data that was being sent or reported to the State and Federal levels. This finding of inconsistency in the data at different levels in the system was supported by other observation that the team made during the field work. This is an important finding and led us to assert that the State and national level aggregated data was likely to be being unreliable.	During the evaluation we compared data collected from different quantitative and qualitative methods to allow us to clarify the evidence we were collecting through triangulation in order to help ensure that the evaluation findings reflected reality. In the various report and feedback sessions that comprised this evaluation, the evaluation team frequently signalled doubts over the quality of the aggregated data in the data base to alert stakeholders to this important finding.
Limited financial data and analysis Financial data were obtained from UNICEF and the FMOH only. The team has followed up on multiple occasions to obtain complementary data from other partners but did not receive any. Financial data obtained from UNICEF and the FMOH were not disaggregated according to states or localities. Therefore, it was not possible to compare cost-efficiency or cost-effectiveness between the states. In terms of scope, the analysis targets the investments done for treatment of SAM. It does not consider investment done for the management of MAM or community outreach. Data provided by UNICEF were for funds coming from different donors, administered through UNICEF for planning and implementation of management of SAM in Sudan during the period 2015-2019. Data provided by the FMOH were for government investment in SAM as well as the African Development Bank contribution that was invested through the FMOH. The Government of Sudan provides direct and indirect support to CMAM. Direct support (funding participation for RUFs procurement) was captured in the analysis; but the important indirect support provided through infrastructure, staff, equipment, medicines, or laboratory testing was not financially estimated because it was not within the scope of the evaluation. Additional indirect costs such as societal opportunity cost of mothers attending CMAM sessions, involvement of non-incentivised volunteers and community leaders were not financially assessed.	The evaluation team followed-up on multiple occasions in person, by phone and in writing to try to obtain as much data as possible from the different stakeholders. The team performed the analysis on the aggregated quantitative data received from UNICEF and the FMOH. For indirect costs, the team used qualitative evidence through interviews and observations to report on government and community participation in CMAM.

4. EVALUATION FINDINGS (BY CRITERION)

4.1. RELEVANCE AND APPROPRIATENESS

4.1.1. Alignment to the national priorities and strategies

Addressing malnutrition is an important priority for the government of Sudan. This is reflected in the policies, strategies, plans, and protocols developed over the years that have created an enabling environment for the implementation on different health and nutrition interventions targeting children under five years of age in the country. For example, the management of acute malnutrition was reflected in the **National Nutrition Policy (2008-2012)** wherein the main objective was to ensure the prevention and treatment of nutrition related disorders in emergency and non-emergency situations. CMAM was also in line with the **National Nutrition Strategic Plan (2014-2018)**, where the second objective was to promote management of severe and moderate acute malnutrition, and the **Case for Investment in Nutrition in Sudan (2016)** which explains how to scale up a high impact, cost-effective integrated multisectoral package of interventions within the National Nutrition Strategic Plan 2014–2018. One of the purposes of the **National Health Strategic Plan (2017-2020)** was to reduce rural and urban malnutrition, and the **National Plan for Scaling-up CMAM (2015-2018)** that came as a recommendation of CMAM evaluation conducted in 2013, aimed to apply these policies and strategies, along with the **national CMAM Manual** and the corresponding **SAM and MAM operational guidelines**, all developed in 2015 and updated in 2019.

Table below presents how acute malnutrition is considered in the different policies and plans developed over time in Sudan.

Table 1: Mapping of health and nutrition policies/plans in Sudan and their linkages with acute malnutrition

Policy/strategy	Year	Objective/strategy
National Nutrition Policy & Key Strategies (2008 - 2012)	2008	Ensure adequate services are established to prevent and treat moderate and severe acute malnutrition where needed, within the public health system, based on evidence and prevalence of malnutrition in the catchment area and using an integrated approach.
National Nutrition Strategic Plan (2014-2018)	2014	Create a supportive environment including political commitment, multi-sectoral coordination, and enhance nutrition assessment, monitoring and evaluation .
The Case for Investment in Nutrition in Sudan (2016)	2016	Explains how to scale up a high impact, cost-effective integrated multisectoral package of interventions within the National Nutrition Strategic Plan 2014–2018 to reduce the very high undernutrition burden of Sudanese children and women.
National Health Strategic Plan (2017-2020)	2017	Reduce child and maternal mortality rates, building a decentralized health system and strengthening the capacities of states and localities. Promote maternal and child health , ensuring a comprehensive health coverage so that services are available to the needy without barriers of distance, cost and expansion in family medicine and consider it as an entrance to the health system.

National Plan for Scaling-up CMAM in Sudan (2015 – 2018)	2015	Improve quality and coverage of existing CMAM sites. Decentralise to enable early presentation and increase the effective coverage of treatment for malnutrition.
SAM and MAM operational guidelines.	2015, 2019	Treatment of MAM and SAM protocols and procedures.

Although CMAM is embedded in the different health and nutrition policies and plans developed over the years in the country, its implementation has experienced many challenges that hampered the achievement of different objectives (more details are provided in the effectiveness and efficiency chapters).

4.1.2. Appropriateness to the overall problem context, needs and priorities

Acute malnutrition is an important public health problem in Sudan, affecting the most vulnerable population, particularly children under five years of age. CMAM is appropriate for the context as the programme is designed to address acute malnutrition and has been successful in doing so. The prevalence and burden of acute malnutrition have been used to prioritise the localities for the scaling up of CMAM, in addition to the Humanitarian Need Overview (HNO) used to ensure that those needing emergency response were given due consideration. Within these localities, deprived populations were targeted. Thus, the programme addresses the needs of children and their caretakers, and thereby, contribute to achieving government's priorities in terms of reduction of child malnutrition and mortality.

One of the priorities of the National Health Strategic Plan is building a decentralized health system and strengthening the capacities of states and localities. During field visits, the evaluation team noticed that the implementation of CMAM contributed to some extent to capacity building in most of the health facilities (more details provided in the efficiency and sustainability chapters). CMAM activities are delivered within the government health facilities and the communities across the 18 states of Sudan. It is perceived by health workers, community nutrition volunteers, mother support groups, health workers and caretakers as appropriate for addressing acute malnutrition within their villages. According to those interviewed at different levels, most malnourished children admitted to the programme recover within few weeks of treatment using RUFs (more details provided in the effectiveness chapter), and the sensitisation messages delivered by health workers and volunteers help the care takers to better feed and take care of their children.

CMAM is generally considered a suitable intervention for scaling up access to treatment of malnutrition during humanitarian emergencies – building surge capacity among the staff and pre-positioning of nutrition products. It is not designed to reduce the prevalence of Acute Malnutrition, the prevention of which requiring a far broader range of humanitarian and development interventions that complement CMAM through targeting different forms of malnutrition.

4.1.3. Coordination with relevant partners and sectors

4.1.3.1. Coordination within CMAM components

CMAM has four components. In Sudan, the inpatient management of SAM is mainly supported by the WHO and UNICEF, while UNICEF and WFP support the outpatient management of SAM and MAM, respectively. UNICEF supports community outreach activities, including MUAC screening campaigns and awareness raising. UNICEF support also includes training of community nutrition volunteers (but do not provide incentives), mother support groups (MSGs) and mothers of SAM children, provision of therapeutic milks, Resomal and anthropometric equipment for Stabilisation Centres. The FMoH provides strategic guidance and capacity building, while the SMoH

and NGOs supervise the implementation of CMAM activities in the in the states and localities. WFP also supports community outreach activities, but provide incentives to volunteers. Participants interviewed at national level reported that the coordination between the FMoH, UN Agencies (WHO, UNICEF and WFP), NGOs and the private sector (local producer of RUFs) improved over time. A map of sites delivering SCAM services in different localities of the country has been developed to better plan and ensure the continuum of care between SAM and MAM in the health facilities, and to set up mobile teams where needed. Volunteers supported by UNICEF/SMoH, WFP, as well as NGOs partners also refer children identified with SAM to OTPs. The amount of RUF needed for each year is estimated based on available budget and is requested to the local RUF producer.

In the states, North Darfur and Kassala have an active sub-sector coordination mechanism that holds monthly coordination meetings with partners to update on what is going on in the different localities and how service could be improved. The Evaluation Team noticed in these states that the nutrition department is relatively well resourced and many of the locality nutritionists visit sites and provide guidance, including in collaboration with (local) NGOs. However, the state and locality nutritionists in Gezira appear unclear about their mandate and responsibilities for CMAM programme. Other reasons mentioned during the interviews were the limited material and financial resources to organise and facilitate coordination meetings, as well as the « political » difficulty of supervising INGOs and UN partners effectively.

4.1.3.2. Coordination with other programmes

According to participants interviewed at all levels, there is linkage between CMAM and other MCH programmes, or other nutrition specific interventions implemented in the localities. Clinicians, nurses, and community volunteers are trained on each of these interventions. This comprehensive approach is mainly derived from the fact that all implementers follow the national guidelines in close coordination with MOH at state and locality level to ensure the target population receives sufficient health and nutrition services.

In most of the sites visited in Kassala and North Darfur the CMAM programme was linked with other health activities. This benefitted the CMAM programme by providing a source of referrals and services for children who were not thriving in the OTP (for example, because of sickness). The health system has also benefitted from CMAM's attraction of children to health centres where other services could be accessed. In Gezira, the situation was different. Few OTPs had won the respect of other health workers and referrals from other health services to CMAM services were not common. In addition, many health workers in Gezira had little understanding of acute malnutrition and what can be done about it. The collaboration between the CMAM and EPI programmes in the state often appeared to be damaging the CMAM programme while providing some additional resources to the EPI programme.

Although Sudan joined the SUN, the country has not yet developed a nutrition multisectoral strategy imbedding nutrition specific and nutrition sensitive interventions in a comprehensive package. The overall perception of participants interviewed at national level is that most programmes are planned and implemented vertically, without a strong collaboration between donors, or between donors and implementing partners for strategic planning. Thus, the mutualisation of resources is weak or inexistant.

Conclusions on Relevance

RELEVANCE 1: CMAM is nutrition specific intervention strongly considered in different health and nutrition policies, strategies, and plans, creating an enabling environment for the implementation of the programme in the different states of the country.

RELEVANCE 2: CMAM is perceived as an effective programme for addressing acute malnutrition and contributing to system strengthening; however, linkages with nutrition sensitive interventions still need improvements.

RELEVANCE 3: Although coordination at federal level has improved overtime, there is still gap in roles and responsibilities regarding aspects such as community engagement or transport of RUFs at decentralised level. Coordination mechanism in the states also need improvements.

4.2. EFFECTIVENESS

This section presents data from the federal level CMAM data bases.

4.2.1. Achievement of the expected results

4.2.1.1. Community Participation and Outreach

Community participation and outreach is a critical component for successful CMAM implementation and coverage. The national CMAM manual proposes the implementation of community outreach through five main steps: (1) conducting a Community Assessment; (2) formulating a Community Participation and Outreach Strategy; (3) conducting Training on Community Participation and Outreach for CMAM; 4) implementing Community Outreach Activity; and (5) conducting Supervision, Monitoring, and reporting (CMAM Manual, p12). These activities should be implemented in localities hosting health centres delivering outpatient and/or inpatient services for treatment of acute malnutrition. However, interviews with health and OTP workers, state and locality nutritionists revealed that these steps were rarely applied. There was insufficient initiative to determine where community engagement might help with problems and weaknesses.

Community participation

According to the national CMAM Manual, community activities should be planned, monitored, and managed in consultation with and through locality and sub-locality committees if they exist, to enhance sustainability and ownership of services. Interviews and FGD at federal level and during field visits did not identify activities engaging the community into CMAM formally. In Kassala and North Darfur, the support of local leaders (sheikhs, village committees, women's groups etc) was solicited while the programme was being established for stimulating community adhesion to the programme. However, there had been little attempt to maintain or build on these relationships to further strengthen the programme once it was running. Except in some sites supported by NGO partners in North Darfur, there was no formal engagement of the community structures in supporting activities such as facilitating the organisation of case-finding, controlling sharing (or selling) of RUTF, ensuring transport of children referred to SC or OTP or ensuring better follow-up of potentially defaulting cases.

Community outreach

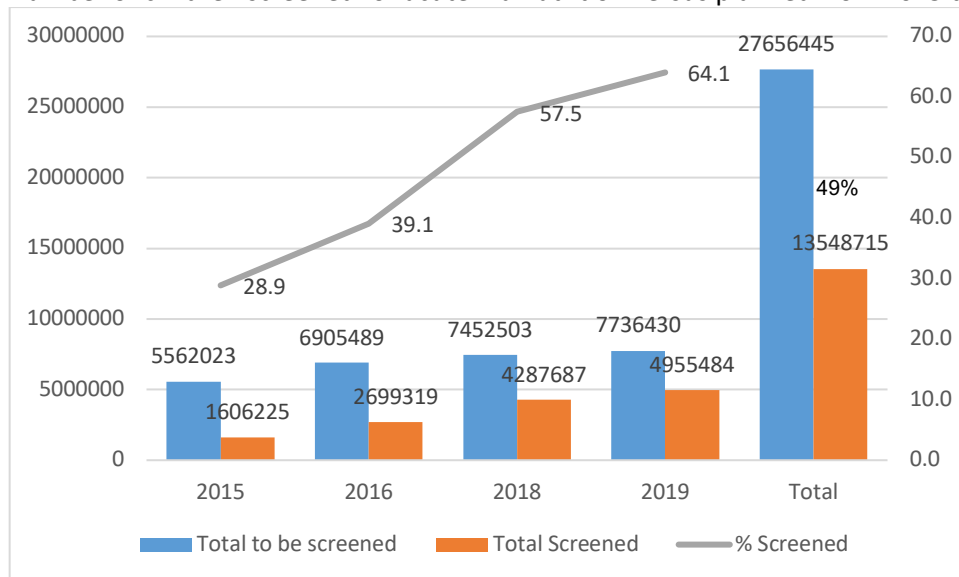
Community outreach for CMAM include screening for early case-finding and referral of children with SAM and MAM, home visits to follow non-responder and defaulter cases, as well as health and nutrition education and behaviour change communication (BCC). Early case-finding and referral of children with SAM is essential to initiate treatment before the onset of medical complications or increased risk of death. It is recommended in the CMAM Manual that all children under 5 be periodically screened for SAM and MAM, ideally quarterly (CMAM Manual Page 19).

Active case finding and referral

The analysis of the database obtained from the FMOH showed that overall, 13,548,715 (49%) children planned for screening using MUAC in the 18 states for the period 2015-2019 were screened, based on the number of under five children to be screened using MUAC (mass screening, household screening, routine screening in health facility, etc.) planned in the national plan for scaling up CMAM 2015 – 2017 and the Nutrition annual plan (Figure 1). This number increased from 1,606,225 (28.9%) in 2015 to 4,955,484 (64%) in 2019, which is an important achievement even if the screening targets were not reached for the five years. These observations are confirmed by the S3M-II survey, which found that on average, only 6% of children were screened using MUAC in the month prior to the

survey and about 12% in the three months prior to the survey. In the S3M-II survey, this is the proportion of screened using MUAC in the month prior to the survey, thus a kind of ‘point coverage’ of the screening. Although not an annual target, it gives an idea on the achievement of the screening activity. The FMOH approach for MUAC screening campaigns was modified in 2017 from mass screening to targeted screening campaigns covering hot spot areas and localities of poor performance and low coverage. This can explain why the number of children screened highly increased in 2018 and 2019.

Figure 1: Number of children screened for acute malnutrition versus planned from 2015 to 2019, Sudan



Source: the Evaluation Team, using the FMOH data base 2015-2029. Data for 2017 was missing in the FMOH data base

In the states, the analysis showed that screening activity was weak in Sinnar (0,6%), River Nile (2%), Khartoum (2,8%), Gezira (3,2%), Northern (7,9%), North Kordofan (10,2%) and Gedaref (10,5%). The S3M-II survey findings also confirmed the weak screening activity in these states. Despite the overall weak figures, some states performed better than expected. These included Central Darfur (276%), North Darfur (199%), West Darfur (130%) and South Kordofan (107%), also confirmed by slightly higher proportion of screening in the S3M-II survey findings (Table 2). In these states, the high proportion of screening can be explained by regular mass screening and household visits done by community nutrition volunteers supported by different organisations (WFP, UNICEF and SMOH, or NGOs), as well as mother support groups initiated for IYCF activities in different localities with the support of UNICEF, and under the supervision of the MoH. As reported by interviewees, in some sites the incentivised volunteers were also engaged in following-up on children who had missed an OTP session or were responding slowly to their treatment.

Table 2: Total children screened versus planned in each state for the period 2015-2019

	Total planned to be screened	Total Screened	% screened	% screened according to the S3M-II survey
Gezira	3,473,982	112,559	3.2	1.6
Blue Nile	1,010,634	974,563	96.4	22.3
Central Darfur	9,742,57	2,696,637	276.8	9.1

East Darfur	1,026,454	535,671	52.2	3.9
Gedaref	2,285,972	240,632	10.5	3.8
Kassala	2,009,329	1,478,753	73.6	19.1
Khartoum	6,666,138	185,692	2.8	1.7
North Darfur	2,463,608	4,920,446	199.7	12.9
North Kordofan	1,941,835	198,760	10.2	5.0
Northern	472,466	37,222	7.9	1.8
Red Sea	873,458	511,465	58.6	32.0
River Nile	990,060	20,222	2	1.9
Sinnar	1,762,762	10,009	0.6	2.4
South Darfur	3,503,248	1,288,775	36.8	5.7
South Kordofan	1,509,873	1,627,340	107.8	10.9
West Darfur	1,288,880	1,680,678	130.4	8.2
West Kordofan	1,441,028	244,749	17	4.5
White Nile	1,993,638	386,100	19.4	3.4

Source: the Evaluation Team, using the FMOH data base 2015-2019 and the S3M-II survey report (proportion of screened using MUAC in the month prior to the survey). Data for 2017 was missing in the FMOH data base

Non-achievement of screening targets can be explained by the fact that the programme mainly relied on mass screening to identify malnourished children. Ideally, next to mass screening, any opportunity facilitating access to children should be used to screen acute malnutrition, such as (but not limited to) household monthly visits by volunteers, pre-schools, or using mother's support groups (MSG). The team found few functioning MSGs but, when present, they were active in screening their members' children. However, household screening was rarely

performed in states and localities without volunteers' incentive support. For example, in Gezira, most of the health workers in the CMAM sites visited reported that the last time mass screening was conducted in their catchment area was in 2017. Nearly all OTPs lacked a strategy for reaching out extensively within their target communities. Based on exchanges with participants in the field, especially in Kassala state, the evaluation team identified many other limitations of relying mostly on mass screening for the identification of malnourished children. They are summarised in the adjacent box.

Passive case finding, self-referral and health seeking behaviour

The analysis showed that every year, the proportion of children admitted in the OTP was higher compared to the referred. It was 173% in 2015, 164% in 2016, 185% in 2018, and 174% in 2019, for an overall proportion of 174% (Figure 3). Table 3 also shows extremely high admissions compared to the referred in states such as Northern, West Kordofan, Sinnar, North Kordofan, Khartoum and Gedaref (more details on admissions are provided in the section 4.2.1.2 below).

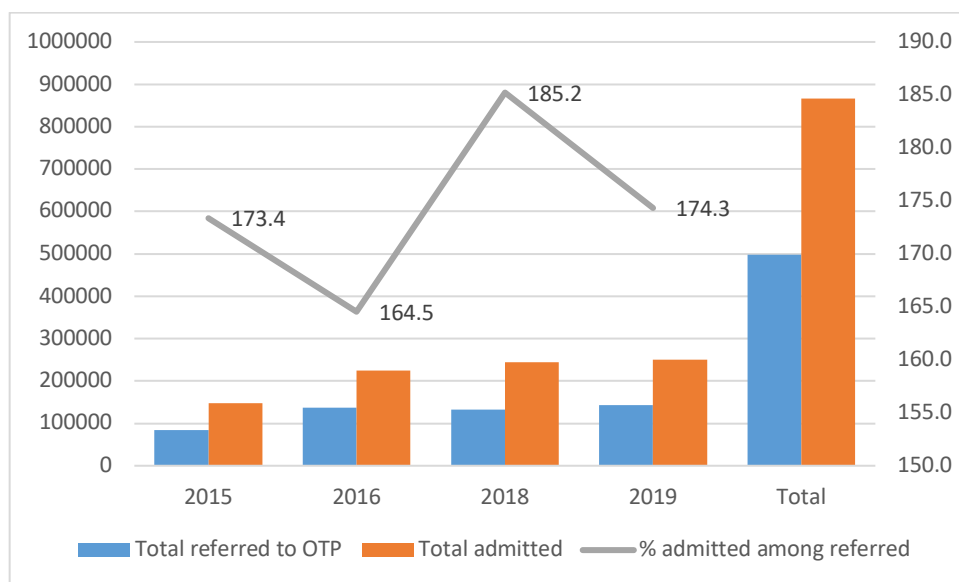
Higher admissions compared to the referred can be explained by a strong awareness of the programme by the population, as reported by S3M-II (2018) survey findings, which showed that 53,7% of the target population was aware of the CMAM programme in Sudan. High variability was noted among states, with higher awareness recorded in Blue Nile (85,8%), West Darfur (82,7%), Kassala (77,2%), East Darfur (70,5%) and central Darfur (65,8%). Many mothers in the wider communities were familiar with the CMAM programme and its MUAC band. This is a positive finding and might mean that a mother, worried about her child's thinness, would visit the OTP to have the child checked and even that neighbours might pass on advice to do so.

This strong awareness might have led to high number of self-referrals, assumption confirmed by the SQUEAC assessment, which showed that most of SAM children admitted in the states of Kassala, North Darfur and Gezira were self-referred (Figure 4). However, the evaluation team found that many OTP workers were aware of the detail of the referral but had not recorded this, opting instead for a generic answer of self-referral. For example, referrals can come from other health programmes (a visit to the medical assistant, the EPI or growth monitoring programme etc.), but are reported as self-referrals. Some programmes also established and trained MSGs in screening acute malnutrition through MUAC and referring, but usually got reported as self-referral in the health centre.

There are several weaknesses with relying on mass screening for case finding, especially when it is only conducted on a three-monthly cycle:

- Three months is quite a long time between screenings – a lot can happen to a child in three months. Moreover, three months is sometimes more of an aspirational figure or target than a fact, and the gap between screenings is often a longer.
- A mass screening of an entire small town or large village is hard work for a small group of volunteers, and it is doubtful that all children do actually get screened during a mass screening – for example, the mother can be out of town, the day is ending and the target number has not been reached, the child does not cooperate at the end of a hard day, etc. - Where it fails a child on one cycle this can lead to a gap of more than six months between a child becoming acutely malnourished and the detection of the case. Given that the duration of a case of SAM is often less than 6 months, this can lead to a substantial number of cases being missed completely with resulting undetected mortality.
- Few OTPs tried to follow-up referred cases from mass screenings when they did not attend the next OTP. When this was done, it resulted in better case finding results from screenings.

Figure 3: Relationship between referred children to the total admitted to OTP including self-referrals



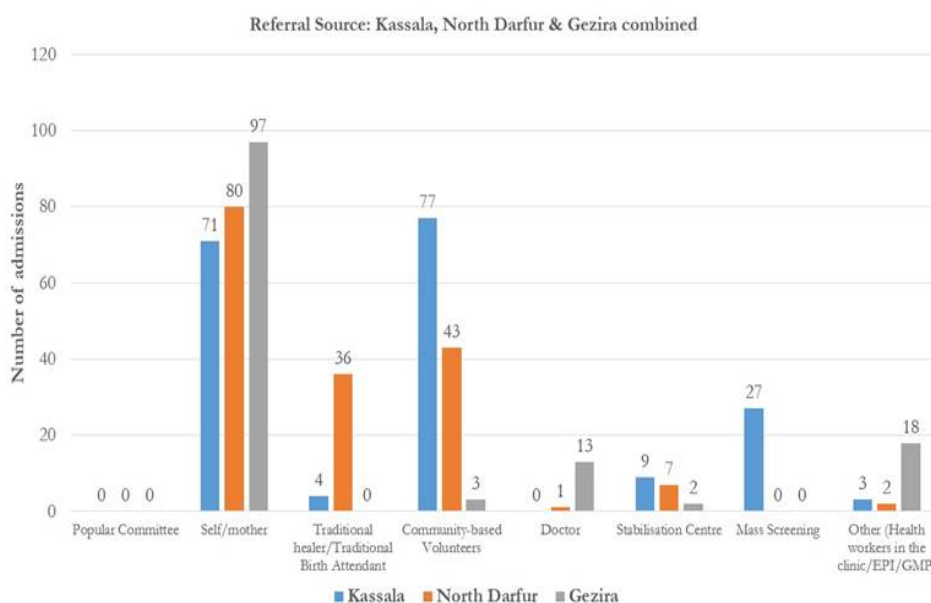
Source: the Evaluation Team, using the FMOH data base 2015-2019. Data for 2017 was missing

Table 3: Proportion of children admitted compared to those referred to OTP in the states from 2015 to 2019

	Total referred to OTP	Total admitted	% carer aware of CMAM (S3M-II, 2018)
Gezira	5,902	19,951	52.9
Blue Nile	22,910	53,195	85.8
Central Darfur	74,173	74,805	65.8
East Darfur	44,859	55,170	70.5
Gedaref	16,190	68,257	43.3
Kassala	45,965	83,261	77.2
Khartoum	9,661	86,496	48.4
North Darfur	190,682	182,904	48.6
North Kordofan	7,989	26,717	75.6
Northern	246	16,348	43.7
Red Sea	64,745	59,756	57.4
River Nile	2,025	5,860	34.6
Sinnar	1,463	49,839	63.1
South Darfur	97,776	124,744	44.6
South Kordofan	14,631	42,839	67.6
West Darfur	31,746	48,276	82.7
West Kordofan	2,088	45,615	53.7
White Nile	6,722	50,483	49.7
Sudan (average)	639,773	1,094,516	53.7

Source: the Evaluation Team, using the FMOH data base 2015-2019, and S3M-II survey report, 2018

Figure 4: Referral sources identified in the states of Kassala, North Darfur and Gezira by SQUEAC assessment



Source: the Evaluation Team, using the SQUEAC assessment data collected from the patients' OTP cards and registers during field visits

Home visit and follow-up for non-responder and defaulter cases

According to the national CMAM manual, children admitted to outpatient care are monitored to ensure sustained improvement in their condition, and where appropriate the health care provider will request that follow-up home visits be conducted. Home visits for children with SAM are essential when the child is absent from treatment (missed one or two visits) or has defaulted (missed three consecutive visits), the child has static weight, is losing weight, is not losing oedema or has a deteriorating medical condition (CMAM Manual, P20). No data was available to assess the effectiveness of home visits because the activities are not formally reported. However, interviews with health workers and FGD with volunteers and parents of children in most CMAM sites revealed that this activity was rarely performed. It depended on the diligence of the OTP worker to initiate it using a phone to enquire about the child's situation, and to the motivation of the volunteer to visit the household. Except in some NGO supported sites, household follow-up activities were inexistant in areas without incentive support for volunteers.

Health and nutrition education and BCC

According to the national CMAM manual, awareness-raising is an ongoing process that should contribute to strengthening the skills of families and communities for the detection and prevention of acute malnutrition. Materials and visual aids developed by the National Nutrition Programme (NNP) should be made available for use in community outreach activities both for health and nutrition promotion, and specifically in relation to understanding causes of malnutrition, CMAM services, as well as for key messages in relation to prevention and treatment of malnutrition and optimal feeding practices for malnourished children. No data were available on education sessions conducted by health workers or volunteers, or on the number of caregivers attending the sessions, to assess the effectiveness of this activity.

During field visits, the observations of activities in the CMAM sites showed the presence of counselling materials. However, except in North Darfur and some localities in Kassala, there was generally poor communication and guidance on admission and during treatment, personal communication and information sharing was not well recognised. The health workers did not record on CMAM treatment cards all counselling activity performed for

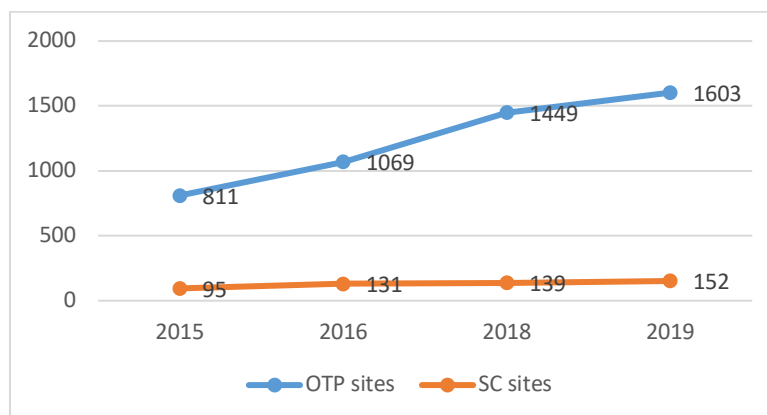
each client consulted (more details provided in the efficiency chapter). Some sites have started to establish an IYCF programme, whereby a group of 10 mothers are formed and trained, and then they each form their own groups.

4.2.1.2. OTP, SC and SFP

Geographic coverage

CMAM is implemented in the 18 states of Sudan, and in each state the programme has been well decentralized to village level. SAM treatment is part of the health service package delivered in the health facilities. This is an important achievement considering the size and complexities in the country. In 2014, the National Nutrition Strategic Plan targeted 50% of health facilities/centres for delivering OTP services, the baseline being 27%³. The analysis of secondary data showed that the number of health facilities delivering OTP and SC services for SAM children increased gradually over the years. From 811 OTP sites in 2015, it reached 1603 in 2019. For stabilisation centres (SC), the number also increased gradually from 95 site in 2015 to 152 in 2019 (Figure 5). Data on the trends of SFP sites over time were not available.

Figure 5: Progress in OTP and SC services over the years 2015 to 2019 in Sudan



Source: the Evaluation Team, using the FMOH data base 2015-2020. Data for 2017 was missing in the FMOH data base

Northern, East Darfur, South Darfur, West Darfur, and South Kordofan achieved the highest number of fixed OTP sites, with respectively 100%, 84%, 70.9%, 80% and 70.9% health facility coverage in 2019-2020 (Table 4). The 1565 fixed OTP sites represent a coverage of 26.9%. There are an additional 80 mobile OTPs mainly operating in West Darfur, Central Darfur, Kassala, South Darfur, East Darfur, North Darfur, and Red Sea. The national coverage of OTPs (fixed & mobile) is 31.1%. Thus, despite the overall remarkable increase in the number of OTPs across the country, the 50% health facility coverage target is yet to be achieved.

³ National Nutrition Strategic Plan 2014-2018, August 2014. Chapter4: strategic objectives log frame, page 25.

Table 4: Health facility coverage for OTP services in Sudan

	Total Health facilities	Fixed OTPs	% fixed OTPs	Mobile OTPs	Total OTPs (fixed & mobile)	% OTPs (fixed and mobile)
Northern	12	12	100.0%	0	12	100.0%
River Nile	53	28	52.8%	0	28	52.8%
Gezira	848	81	9.6%	0	81	9.6%
Khartoum	505	33	6.5%	0	33	6.5%
Sinnar	403	36	8.9%	0	36	8.9%
White Nile	393	64	16.3%	0	64	16.3%
Kassala	332	169	50.9%	10	179	53.9%
Gedaref	343	91	26.5%	0	91	26.5%
South Kordofan	189	134	70.9%	0	134	70.9%
West Kordofan	218	101	46.3%	0	101	46.3%
North Kordofan	675	75	11.1%	0	75	11.1%
Blue Nile	172	94	54.7%	0	94	54.7%
Central Darfur	173	89	51.4%	24	113	65.3%
North Darfur	481	227	47.2%	1	228	47.4%
West Darfur	95	76	80.0%	28	104	109.5%
Red Sea	199	113	56.8%	1	114	57.3%
East Darfur	50	42	84.0%	7	49	98.0%
South Darfur	141	100	70.9%	9	109	77.3%
Total	5282	1565	29.6%	80	1645	31.1%

Source: the Evaluation Team, using the data base shared by UNICEF

Children admitted for SAM and MAM in OTP, SC and SFP in the country

The FMOH data bases 2015-2019 indicates that a total of 1,214,834 children were admitted to OTP and SC, for an average of 242,966 admissions every year. Among these SAM children, 1,094,516 were admitted to OTP services, equivalent to an average of 218,903 admissions annually. The admissions to OTP increased from 147,101 in 2015 to 250,568 in 2019 (Table 5). For the same period, 120,318 children were admitted in SC, equivalent to an average of 24,063 admissions every year. Children admitted to SC represented 10% of total SAM admissions, which is lower than the 20% expected in the CMAM scaling up plan 2015-2017. The admissions of children to SFP also increased from 203,479 in 2017 to 341,016 in 2019. Data on SFP admissions for 2015 and 2016 were not available. Lower admissions to SCs might be explained by the difficulties in accessing the services, the capacity and functionality of SCs, but could also suggest that the treatment of children at the OTPs and SFPs work relatively well.

Table 5: Trends in SAM admissions in OTP and SC during the period 2015-2019 in Sudan

	Admissions to OTP	Admissions to SC	Total SAM admissions	% of SAM admissions to SC	Admissions to SFP
2015	147,101	18,670	165,771	11.3%	-
2016	224,632	27,773	252,405	11.0%	-
2017	227,419	24,127	251,546	9.6%	203,479
2018	244,796	25,233	270,029	9.3%	224,737
2019	250,568	24,515	275,083	8.9%	341,016
Total	1,094,516	120,318	1,214,834		
Average	218,903	24,063	242,966	10.0%	256,410

Source: the Evaluation Team, using the FMOH data base 2015-2019

The analysis of the data bases showed that North Darfur, South Darfur, Khartoum and Kassala recorded the higher number of OTP admissions for the period 2015-2019. Five states admitted more than 70 thousand cases of SAM in the OTPs over the five years. They included North Darfur (182,904), South Darfur (124,744), Khartoum (86,496), Kassala (83,261) and Central Darfur (74,805). The lower admissions were recorded in the states of River Nile (5,860), Northern (16,348) and Gezira (19,951). For admissions in SC, three states admitted 15% or more of cases with complications among the total number of SAM. They included North Kordofan (19.9%), Gezira (18.6%), and River Nile (16.6%) (Table 6).

Table 6: OTP and SC admissions in the in the 18 States of Sudan for the period 2015-2019

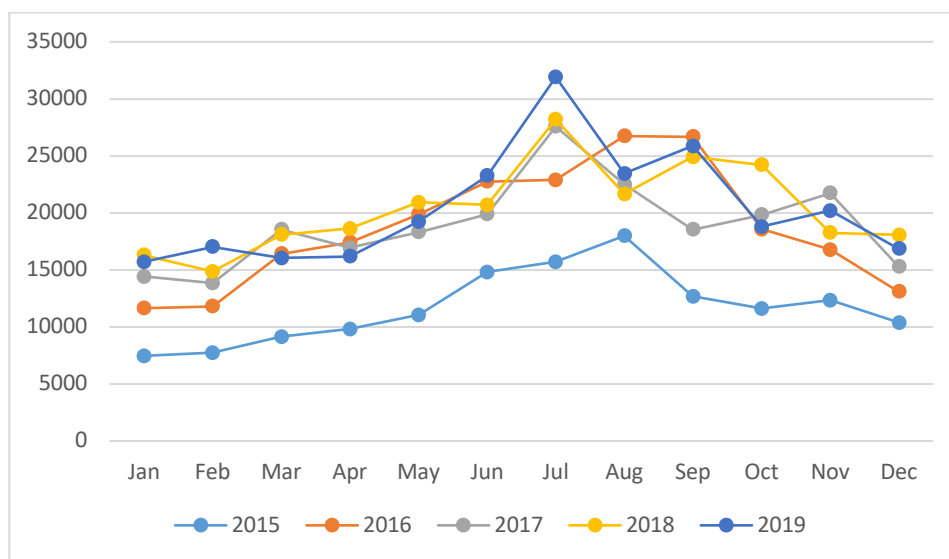
	Admissions to OTP	Admissions to SC	Total SAM admissions	% admissions to SC
Gezira	19,951	4,561	24,512	18.6%
Blue Nile	53,195	7,491	60,686	12.3%
Central Darfur	74,805	5,088	79,893	6.4%
East Darfur	55,170	3,481	58,651	5.9%
Gedaref	68,257	7,492	75,749	9.9%
Kassala	83,261	9,770	93,031	10.5%
Khartoum	86,496	13,672	100,168	13.6%
North Darfur	182,904	14,913	197,817	7.5%
North Kordofan	26,717	6,652	33,369	19.9%
Northern	16,348	610	16,958	3.6%
Red Sea	59,756	9,497	69,253	13.7%
River Nile	5,860	1,169	7,029	16.6%
Sinnar	49,839	4,713	54,552	8.6%
South Darfur	124,744	11,501	136,245	8.4%
South Kordofan	42,839	2,642	45,481	5.8%
West Darfur	48,276	4,054	52,330	7.7%
West Kordofan	45,615	4,005	49,620	8.1%
White Nile	50,483	8,703	59,186	14.7%
Total	1,094,516	120,318	1,214,834	10.0%

Source: the Evaluation Team, using the FMOH data base 2015-2019

Seasonality of admissions

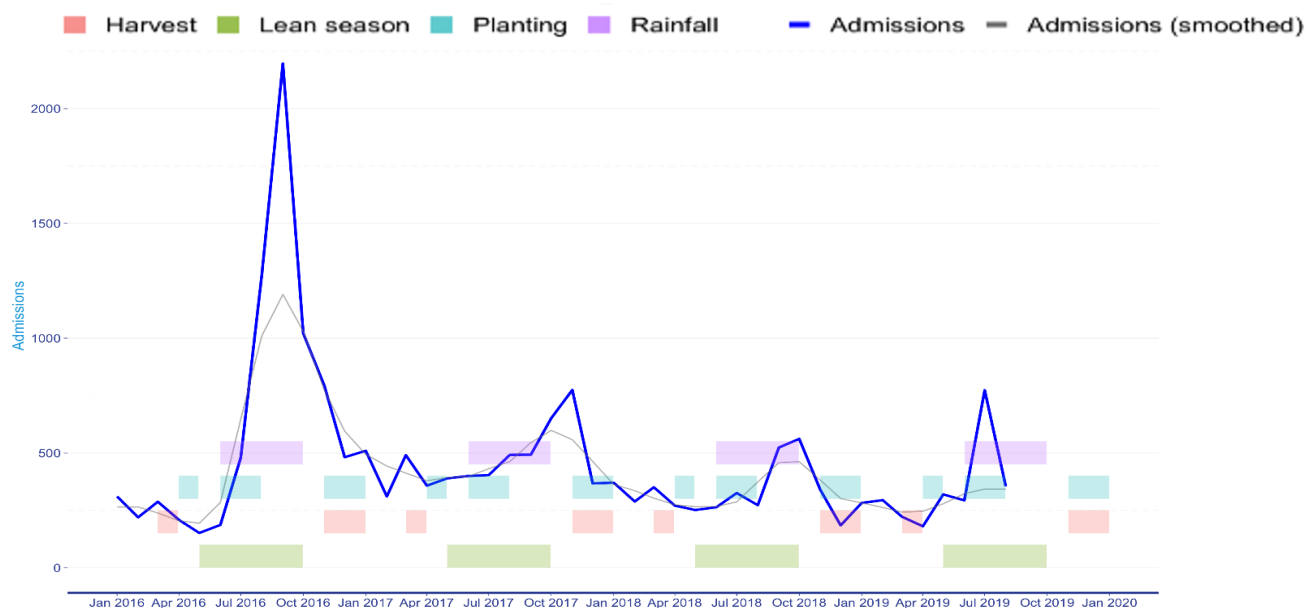
Monthly trends in the database data showed that the admissions generally peaked from June-July to October every year in the country (Figure 6). Figures 7a, 7b, 7c plot the number of admissions with seasonal calendars indicating the timing of rains, harvest, planting, and the lean season in the three states visited. The periods plotted in the figures correspond to peaks in the incidence of the most important diseases affecting young children, particularly diarrhoea and malaria in the rainy season; periods of intensive labour demand in the planting and harvest seasons; periods of food insecurity in the lean season that increases over time up until the harvest and migration periods usually triggered by the rainfall when pastoralists move to take advantage of new pasture as a result of the rain that may delay or prevent children presenting to the CMAM programme.

Figure 6: Trends in monthly admissions to OTP from 2015 to 2019 in Sudan



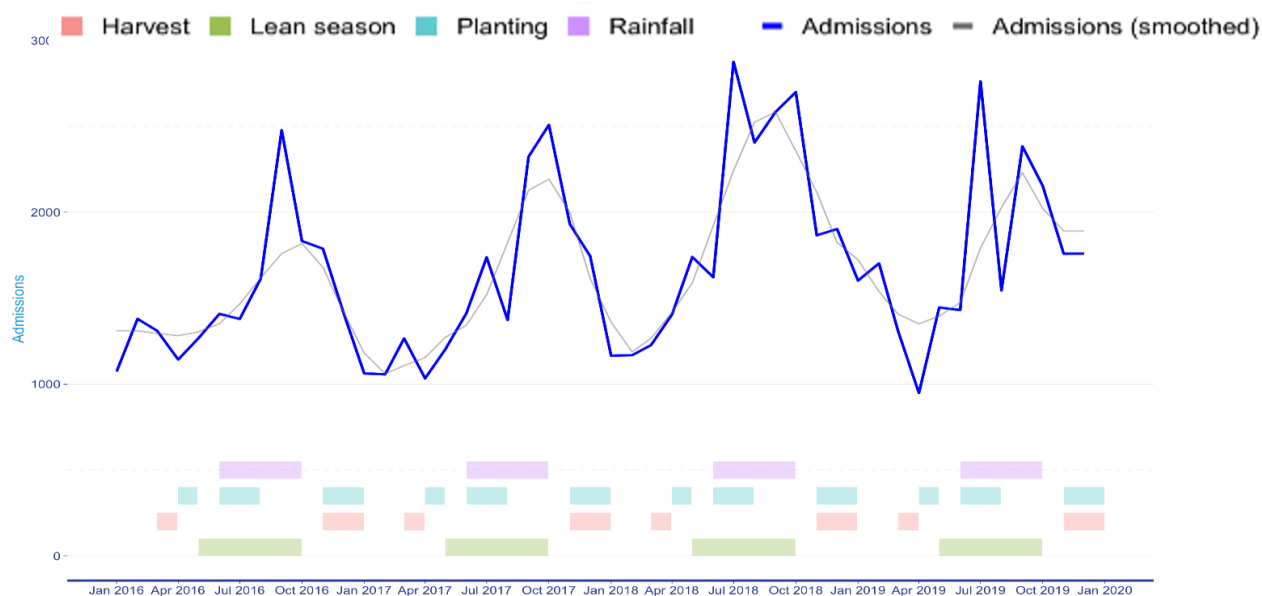
Source: the Evaluation Team, using the FMOH data base 2015-2019

Figure 7a: Admissions vs. seasonal calendar over time (unsmoothed and smoothed) for Gezira state, taken from the National CMAM data base (2016-2019)



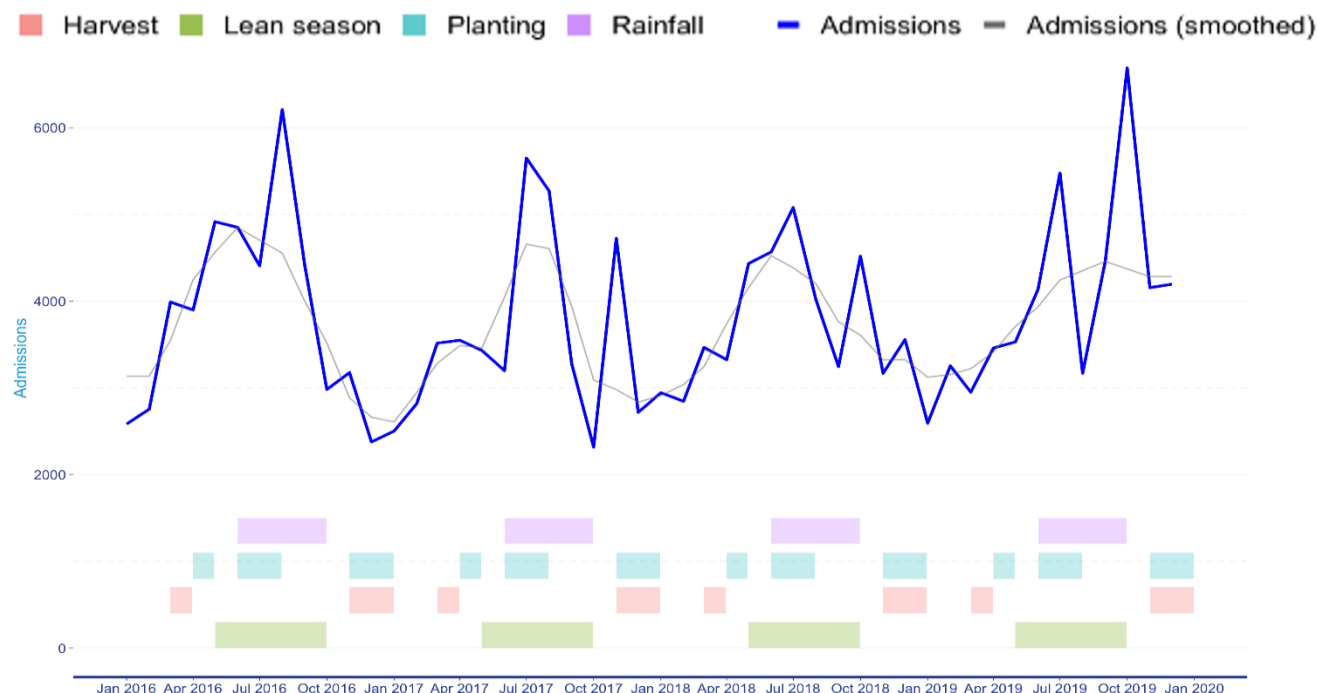
Source: the Evaluation Team, using the FMOH database

Figure 7b: Admissions vs. seasonal calendar over time (unsmoothed and smoothed) for Kassala state, taken from the National CMAM data base (2016-2019)



Source: the Evaluation Team, using the FMOH database

Figure 7c: Admissions vs. seasonal calendar over time (unsmoothed and smoothed) for North Darfur state, taken from the National CMAM data base (2016-2019)



Source: the Evaluation Team, using the FMOH database

As would be expected, the figures show that the admissions tend to peak during the middle and end of lean season between July and October each year. This period is towards the height of the “hunger gap” when food insecurity is at its highest and at a time when the rains have led to increased incidences of malaria and diarrhoeal diseases. The high levels of admissions recorded in the CMAM programme during this period is a positive sign in terms of the responsiveness of the CMAM programme. It indicates that the programme is responding to need by being able to ramp up treatment activities in response to increases in the incidence of SAM. Although the three states share similar climatic conditions, yet, they differ on several fronts. North Darfur and Kassala seem to have a similar hunger season (May to October) which coincides with the rainy season and continues until harvesting season. Gezira, on the other hand, has approximately three harvests per year; one rain fed and two with irrigation. Hence, food availability is less of a problem in Gezira. Also, the poorer (*cambo*) communities generally rely on wage labour (or share cropping) rather than food availability. This probably explains the decreased seasonal variations in admissions in Gezira.

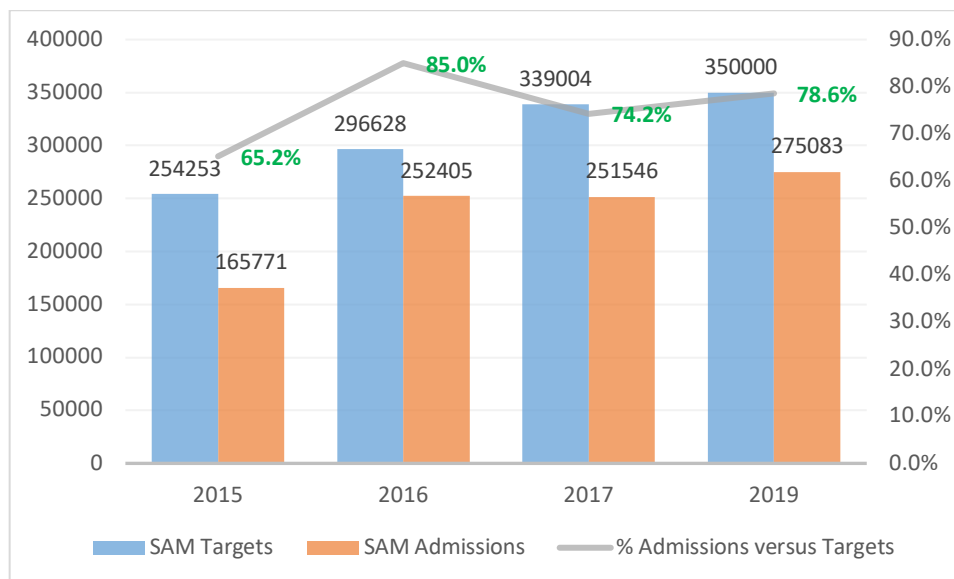
4.2.1.3. Treatment coverage: Admissions versus Targets

The Team used the targets set up in the CMAM scaling up plan for 2015, 2016 and 2017, and the one set up in the Humanitarian Needs Overview (HNO) for 2019 to assess the achievements of SAM admissions as reported in the databases. Both targets were used because they did not show important differences. For example, in 2015, the scaling up plan target was 254,253 SAM admissions versus 250,000 for HNO, while in 2016 these targets were 296,268 and 275,000 respectively for the scaling-up plan and the HNO.

The analysis showed that for the four years (2015, 2016, 2017, 2019), the proportion of SAM children admitted to OTP and SC was 65.2%, 85%, 74.2% and 78.6%, respectively (Figure 8). This was below the targets set up in the

CMAM scaling up plan and the HNO. The HNO target for 2018 was not used in the figure because it was not disaggregated according to type of malnutrition (outpatient SAM and inpatient SAM versus MAM). According to health managers, health workers, and community members interviewed, reasons explaining the admission gaps include, among others, the long distance from home to the health centres (less likelihood that they will be covered by mass screening and many referred children not getting to the health centre for admission), and the low coverage of health facilities in the intervention catchment area (thus low number of OTPs), as the admissions take place in the health centres.

Figure 8: Proportion of SAM admissions to OTP and SC, compared to the planned for 2015, 2016, 2017 and 2019.



Source: the Evaluation Team, using the FMOH data base 2015-2019, the targets defined in the CMAM scaling up plan 2015, 2016, 2017 and the HNO target for the year 2019

4.2.2. Achievement of the expected standard quality of care of children admitted to OTP, SC and SFP

4.2.2.1. OTP, SC and SFP performance

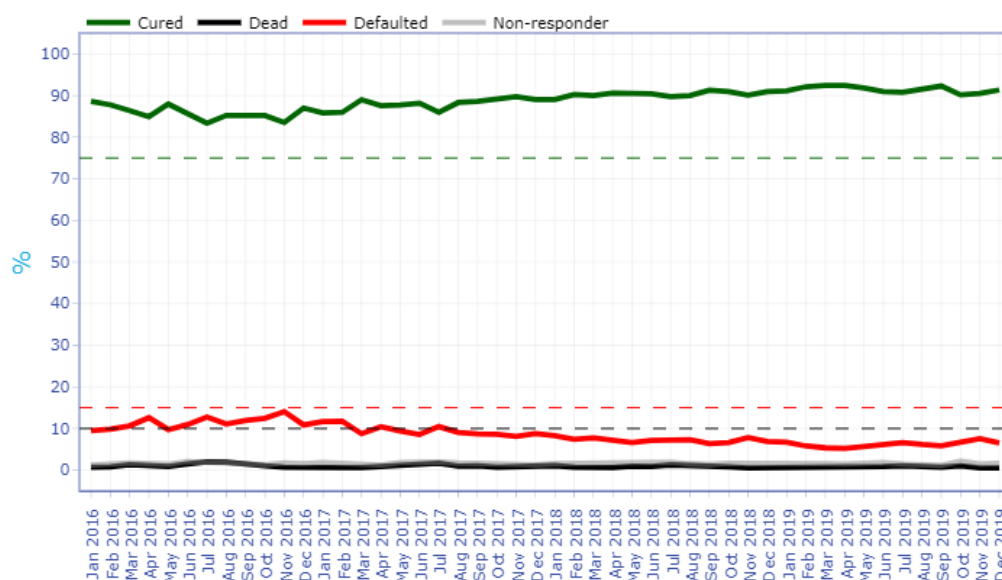
Data from the FMOH data bases 2015-2019 suggest that performance indicators in the OTP, SC and SFP met the recommended Sphere Standards for programme effectiveness. Overall, the cure rate was 89% for OTP, 86,7% for SC and 90,9% for SFP; the death rate was 0,9%, 5,9% and 0% respectively; the default rate was 8,5%, 7,9% and 5,1%, and the non-response rate was 1,6%, 0,2% and 2,9% respectively. The indicators gradually improved from 2015 to 2019, translating an improvement of service quality over time (Table 7), except for death rates in the SC, which remained stable. The monthly performance in OTPs also remained within the Sphere Standards from 2016 to 2019 (Figure 9). Participants interviewed from national to locality and health facility levels reported that main reasons for high death rates in SCs were late admissions in the hospitals and insufficient staff available to manage complications during night-time (as most deaths occur in the night).

Table 7: Performance indicators of OTP, SC and SFP in Sudan from 2015 to 2019

	Cure rate			Death rate			Default rate			Non-response rate		
	OTP	SC	SFP	OTP	SC	SFP	OTP	SC	SFP	OTP	SC	SFP
2015	86.6%	85.8%	-	1.0%	4.9%	-	10.4%	9.1%	-	2.0%	0.3%	-
2016	86.0%	84.1%	-	1.2%	6.1%	-	11.6%	9.7%	-	1.6%	0.1%	-
2017	88.0%	-	91.3%	0.9%	-	0.1%	9.5%	-	5.7%	1.6%	-	2.9%
2018	90.0%	86.0%	90.7%	0.9%	6.3%	0.1%	7.2%	7.5%	6.2%	1.6%	0.2%	3.1%
2019	91.0%	87.7%	93.7%	0.8%	6.0%	0.0%	6.0%	6.2%	3.5%	1.6%	0.1%	2.8%
Average	89.1%	86.7%	91.9%	0.9%	5.9%	0.0%	8.5%	7.9%	5.1%	1.6%	0.2%	2.9%
SPHERE Standards	> 75%			< 10%			< 15%			-		

Source: the Evaluation Team, using the FMOH data base 2015-2019

Figure 9: National level monthly performance for OTP (2016 to 2019)

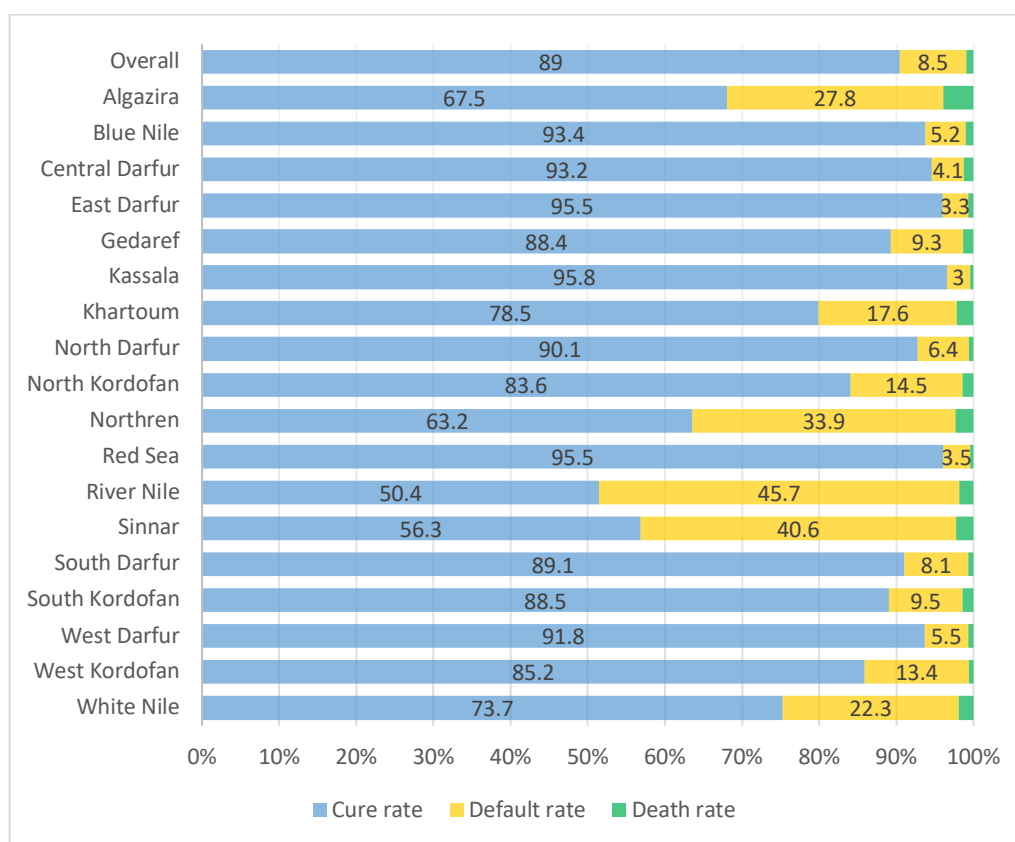


Source: the Evaluation Team, using the FMOH database

Note: dashed lines represent the SPHERE standards

In the states, the OTP in White Nile (73,7%), Gezira (67,5%), Northern (63,2%), Sinnar (56,3%) and River Nile (50,4%) performed lower than the recommended standards for cure rates. Higher default rates were also observed in these states, in addition to Khartoum (Figure 10). The observations made in the states were also confirmed by the SQUEAC study, which showed that of the three states visited in the field, Kassala and North Darfur appeared to perform well overall, whilst Gezira was found to be below the acceptable SPHERE standards, especially in terms of low recovery rates and high default rates (Figures A1, A2, A3, A4 in complementary findings).

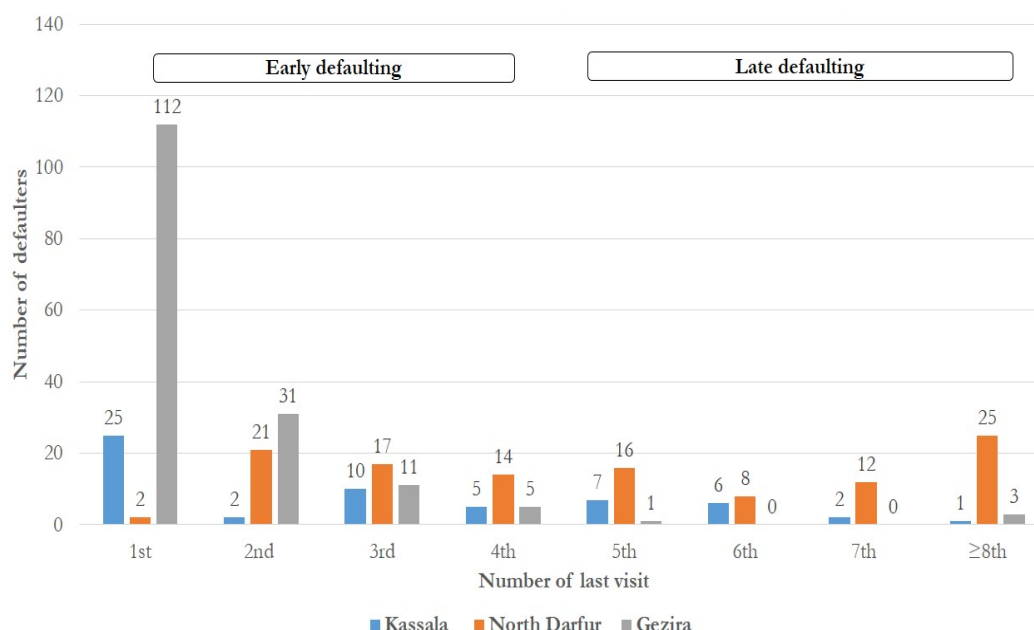
Figure 10: OTP performance by state during the period 2015-2019



Source: the Evaluation Team, using the FMOH data base 2015-2019

Most children (75%) defaulted early in all the three states. In Gezira, 97% of defaulters defaulted early. In Kassala, although the pattern of defaulting was different, 72% of defaulters did so early. By contrast, in North Darfur, only 36% of defaulters occurred early (Figure 11). Early defaulting is defined as between the 1st and 4th visits, while late defaulting is from the 5th visit onwards. Patients that default early in the treatment episode are likely to be current cases who have not yet been cured, whereas those who default later in the treatment episode are likely to be recovering or recovered cases. This difference is important as children that default early before they have been adequately treated are at a much higher risk of mortality and morbidity than those who default later and therefore could represent 'hidden deaths' i.e., children dying at home but nobody informing the programme of this. The possibility of hidden deaths is a particular concern in programmes where there are low levels of community outreach / community workers to follow-up cases at home. Discussions with stakeholders and observations indicated that the main reasons for defaulting included stock-outs of RUTF, a lack of clear understanding of the programme and its protocols by both the OTP staff and caregivers, irregular supervision, and support, which could have identified issues and helped address them.

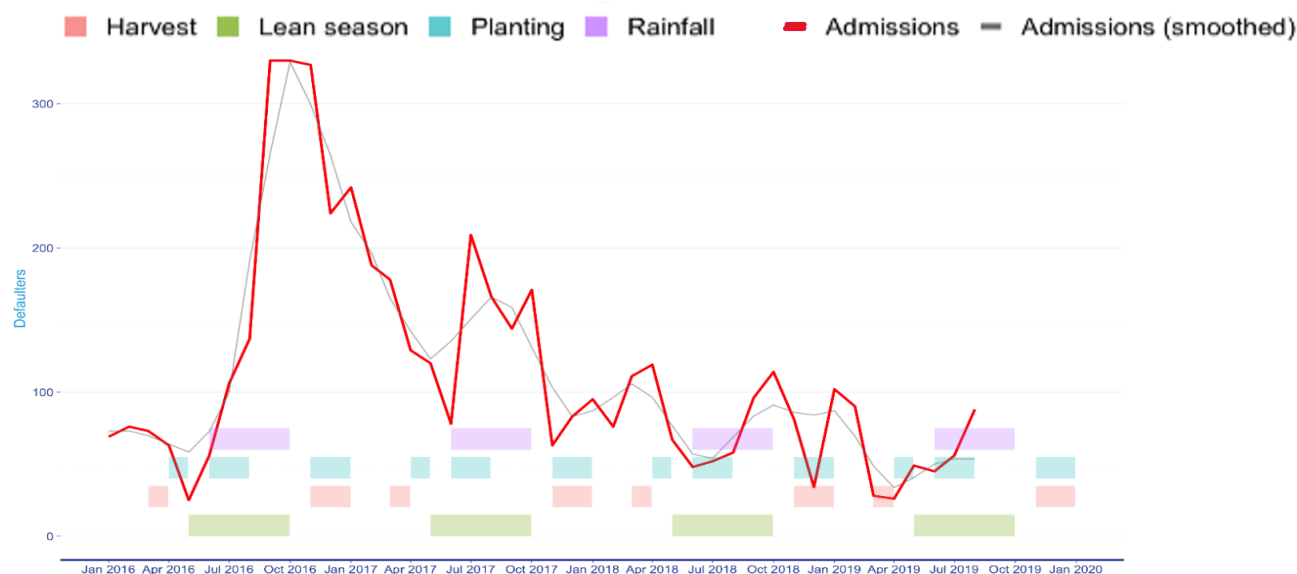
Figure 11: Time to default in OTP in the states of Kassala, North Darfur and Gezira from 2016 to 2019



Source: the Evaluation Team, using health facility monitoring data collected during SQUEAC assessment

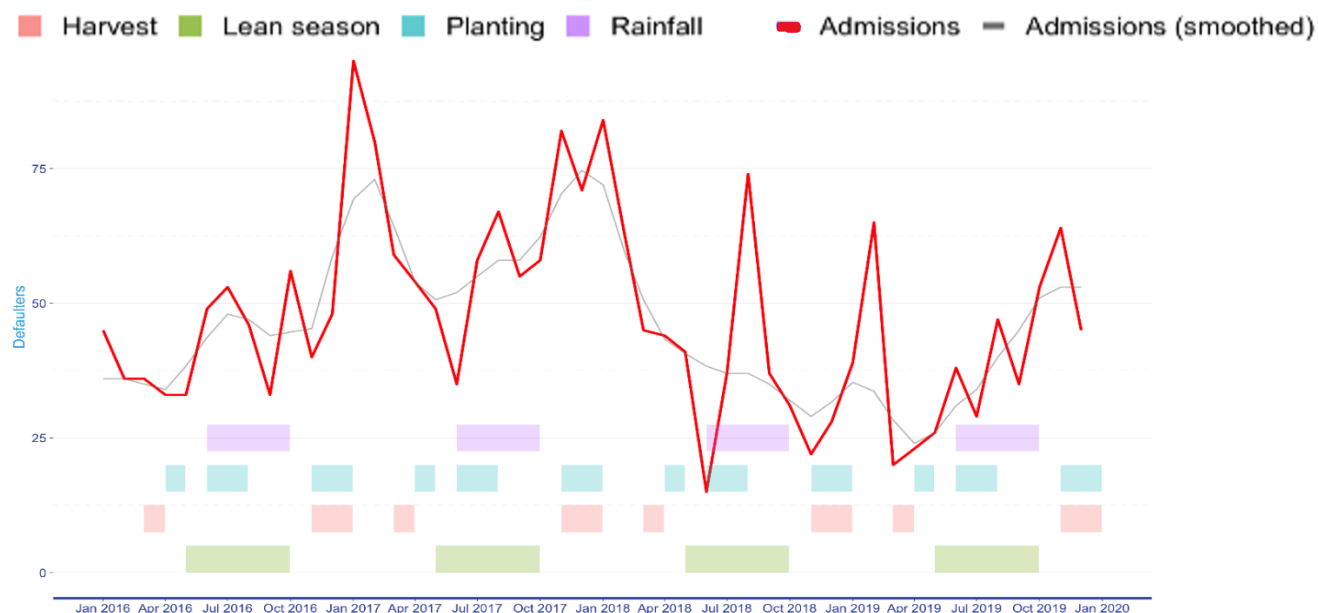
The evaluation team also analysed the seasonal variations in defaulting rates over time in the three states. Figures 12a, 12b and 12c present them. They show that in Gezira and North Darfur the rate of defaulting increases in the rainy season. This is at a time when labour demands for agricultural activities such as planting and weeding are highest and when the movement of people may be restricted due to seasonal rivers that form and may prevent patients accessing CMAM services. Given the size of the country and the distances between villages, in a CMAM programme where patients access services through OTP sites, this pattern would be expected as it is not possible to implement a CMAM site in every village. Nevertheless, it does indicate that there are significant opportunity costs to accessing CMAM services with people weighing up the cost benefit of skipping their day-to-day activities in order to take their children to receive treatment in the programme. The lower the opportunity cost in terms of distance to the OTPs and time taken waiting for treatment, the more this balance is tilted in favour of accessing the programme, especially given most of the responsibilities for the domestic work falls on women for whom the time consideration is a major factor in decision making. This finding reinforces the gender stereotypes as the household responsibilities remain mainly on mother and not the family.

Figure 12a: Defaulters vs. seasonal calendar over time (unsmoothed and smoothed) for Gezira state, taken from the National CMAM data base (2016-2019)



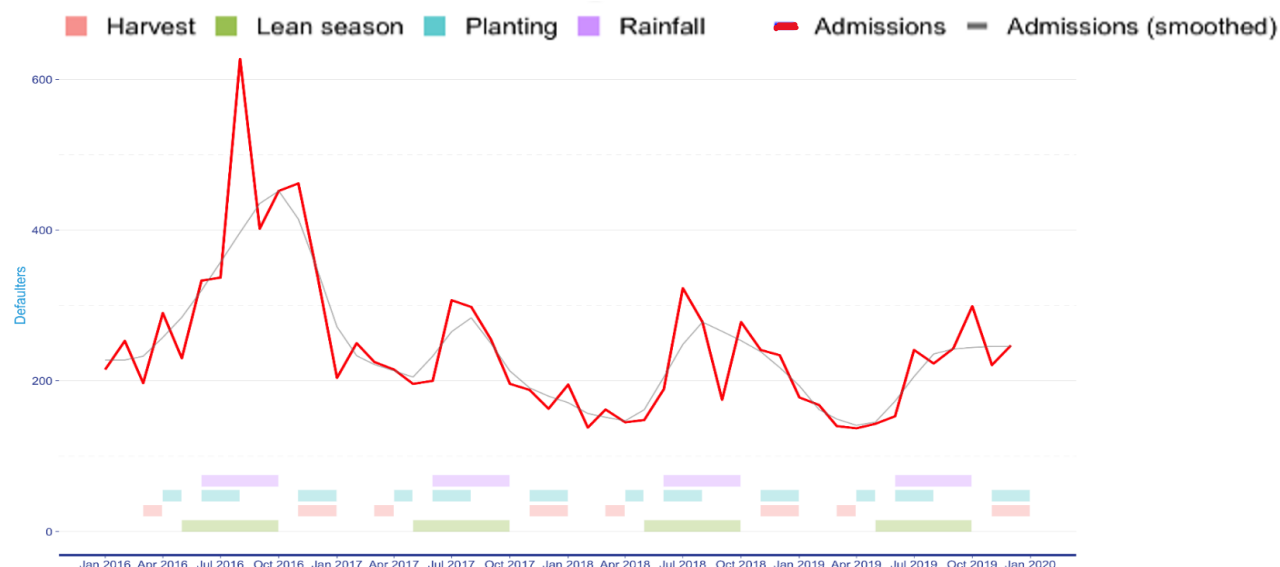
Source: the Evaluation Team, SQUEAC assessment data collected from health facilities

Figure 12b: Defaulters vs. seasonal calendar over time (unsmoothed and smoothed) for Kassala state, taken from the National CMAM data base (2016-2019)



Source: the Evaluation Team, SQUEAC assessment data collected from health facilities

Figure 12c: Defaulters vs. seasonal calendar over time (unsmoothed and smoothed) for North Darfur state, taken from the National CMAM data base (2016-2019)

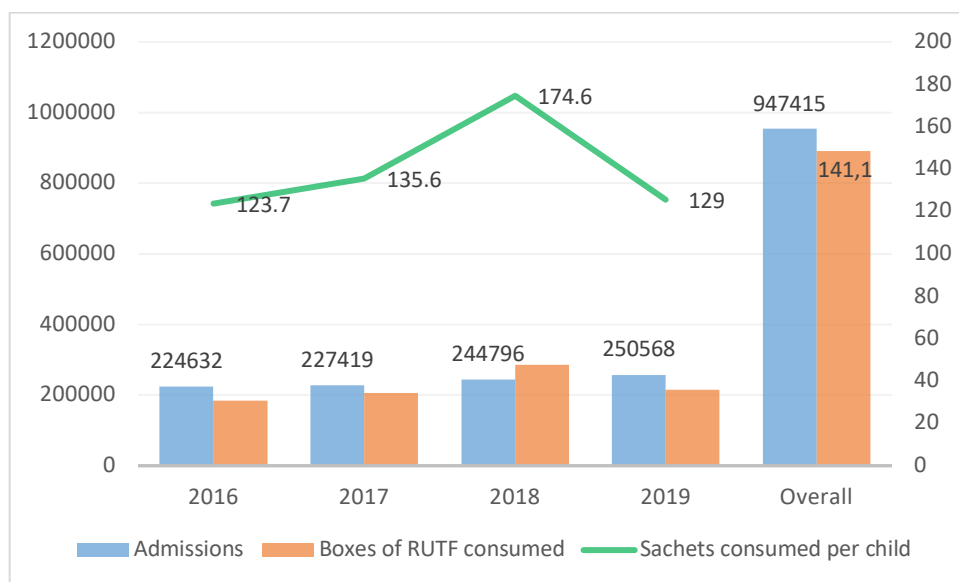


Source: the Evaluation Team, SQUEAC assessment data collected from health facilities

4.2.2.2. Quantity of RUTF consumed versus number of children admitted

Globally the expected average number of RUTF sachets consumed per OTP admission is 150 (13.8 kg), or at least 80% of the carton in the context of Sudan, corresponding to 120 sachets. The analysis showed that the average number of sachets of RUTF consumed by each SAM child admitted to OTP was 141, which represents 93% of a carton of 150 sachets. The trends showed that it increased from 123 sachets (82%) in 2016 to 174 (116%) in 2018, then decreased to 129 sachets (83%) in 2019 (Figure 13). Thus, the consumption of RUTF was within the national standards during the period of implementation. In 2018, more sachets of RUTF were consumed by children admitted to OTP than the other years. This higher consumption can be explained by stock-outs of RUSF supplies observed in 2017 and 2018, as many MAM children were getting RUTF. Over consumption can also occur when the child is admitted late (needs more RUTF to catch up) or responds slowly to the treatment. A low number of sachets consumed compared to the number of admissions can illustrate some difficulties from supply side as a result of underestimating RUTF need, or children might be treated faster than average.

Figure 13: RUTF consumed by children admitted to OTP during the period 2016 to 2019



Source: the Evaluation Team, using the FMOH data base 2016-2019

4.2.2.3. Length of Stay and Minimum Weight Gain

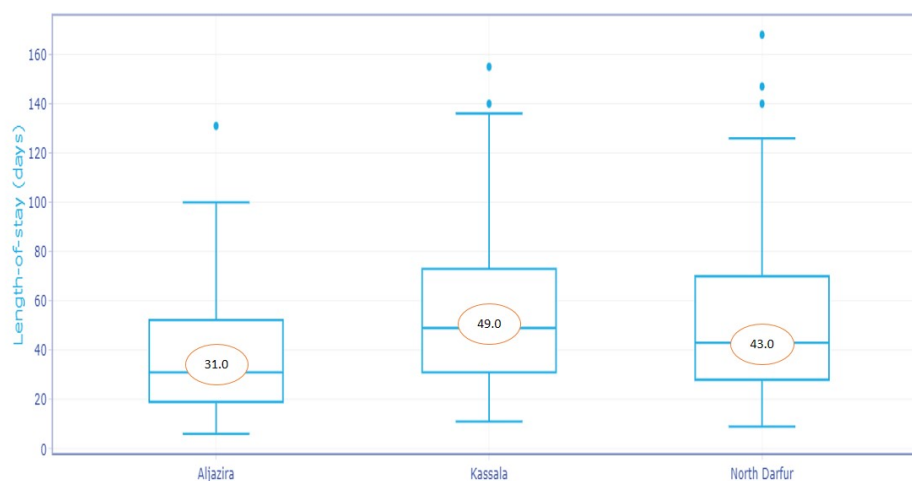
The LoS is the time it takes to successfully cure malnourished children admitted into the CMAM programme⁴. Timeliness of presentation and adherence to treatment protocols impact on the rate of weight gain and length of stay (LoS) of patient in the programme. These indicators are also affected by supply side issues such as the implementation of protocols by OTP staff or the consistency of the supply line of RUTF and essential medicines and by demand side issues such as adherence to OTP protocols, regular OTP attendance and the sharing or selling of RUTF⁵.

The median LoS and rate of weight gain were calculated from a group of 10 OTP cards in each OTP site visited. Figure 14 shows that **the median LoS** were 31 day in Gezira, 49 days in Kassala and 43 days in North Darfur. These are within the acceptable value of equal to or less than 8 weeks (56 days) (SQUEAC and SLEAC reference manual pp. 23-24) and less than 60 days (CTC Field Manual p.152). However, results for Gezira need to be interpreted with caution as there were very few cured cases and the quality of data is questionable.

⁴ This reflects several factors: the timeliness of admission (associated with low admission MUAC), poor implementation of CMAM treatment protocol, discontinuity of supplies such as RUTF, poor adherence to protocols by patients as a result of selling and/or sharing RUTF, inconsistent visits to the OTPs.

⁵ In contrast to the LoS, the rate of weight gain tends to be higher in late admissions as those with the lowest body weight at admission tend to have higher rates of weight gain than those admitted with less severe emaciation. The rate of weight gain is confounded by the presence of oedema as oedematous children initially should loose fluid during treatment and this depresses the rate of weight gain in the early stages often even causing decrease in weight during the first few days of treatment. Unfortunately, the sample for oedematous children who had been discharged as cured was too small to draw any conclusion, with 119 out of 4208 cases that had been admitted into the programme by oedema in the previous six months.

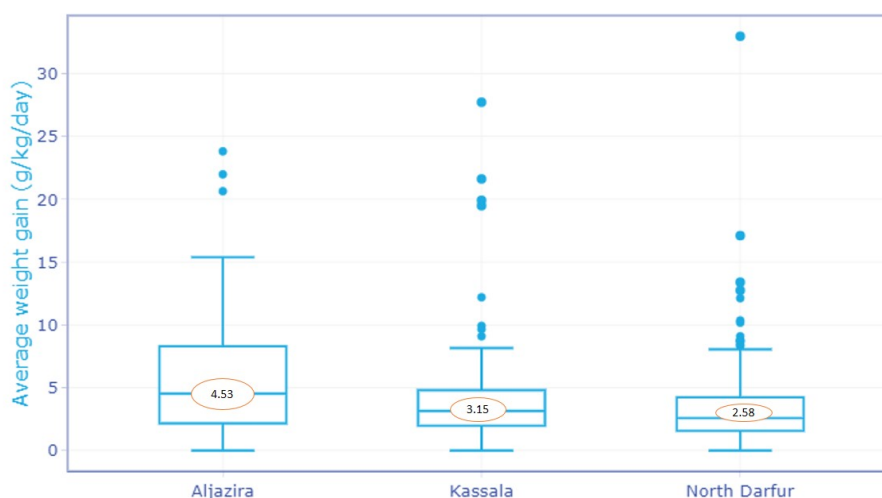
Figure 14: Median length of stay in the three states of Gezira, Kassala and North Darfur



Source: the Evaluation Team, SQUEAC assessment data collected from health facilities

Figure 15 shows that **the rates of weight gain** in the sites surveyed were 4,53g/kg/day, 3,15g/kg/day and 2,58g/kg/day for Gezira, Kassala and North Darfur, respectively. With a median weight gain of 4,53g/kg/day, the Gezira CMAM programme appears to be meeting the acceptable minimum standard of ≥ 4 g/kg/day (CTC Field Manual p.152) unlike Kassala and North Darfur. In Gezira however, the evaluation team found several issues with the data. More specifically, there were large inconsistencies within the data sampled, between the data recorded in registers and patients' cards and that reported in the OTP's monthly report, and the team observed the absence of registration books and OTP cards in some sites. It is impossible to know for sure, but our findings strongly suggest that this data is not representative of the situation on the ground in that state. The lower rates of weight gain in North Darfur are more consistent with the observation the evaluation team made in the field. Important factors that were reported to have likely influenced the weight gain were RUTF stock-outs at the OTPs, as well as the frequent sharing of RUTF.

Figure 15: Median weight gain for Gezira, Kassala, North Darfur



Source: the Evaluation Team, SQUEAC assessment data collected from health facilities

4.2.3. Contribution in reducing the bottlenecks and barriers that determine equity gaps

The respect for human rights in health implies that health services are available, accessible, affordable, and of quality for everyone, especially the most vulnerable⁶. In Sudan, the right to health is a government priority that is considered in various health policies, including availability, as well as geographical and financial accessibility to the most vulnerable such as malnourished children, their families, and communities. The barriers that determine equity gaps were analysed in terms of programme coverage and access to services to the most vulnerable.

Geographical access to health facilities delivering the services, varies from state to state, and between localities within the states. Although attempts have been made to bring the services closer to the large population, some villages still must travel long distances to access the health centres, and there is difficulty in mobilising effective case finding, follow-up and BCC in communities that are distant from their OTP. There are also issues accessing nomadic (pastoralists) populations that are constantly on the move (more details are provided in the section 3.2.5). To overcome these challenges, satellite services were set up to serve dispersed populations (small villages) and mobile OTPs had been set up to serve both the dispersed and the nomadic populations in some cases. For example, in Kassala SMOH operates clusters of “satellite OTPs” in some areas – using the same staff as a more central OTP but in different places on different days – to ensure that OTP services are accessible in more dispersed communities. For some of the communities that are even more dispersed – as is common among pastoralists – Kassala has set up Mobile OTPs that visit multiple sites on a monthly rotation. This involves a vehicle, a driver, OTP staff and the necessary equipment and supply for providing monthly OTP service⁷. In North Darfur and Gezira, although getting and investing many resources (especially for North Darfur), MoH reported these resources were not enough (especially the vehicles) to initiate mobile OTPs that would cover all the localities in need.

As part of the SQUEAC, the evaluation team conducted a spatial assessment to know where admissions and defaulters are coming from in relation to the programme sites, and where community/outreach workers or volunteers are located. This was done by compiling a list of all the villages that fell under the OTP catchment area and combining that with the home locations for admissions, defaulters, and volunteers to determine the geographical spread of the catchment area and volunteer network for each OTP site visited. In addition to these data, the time to travel and distance to the distribution sites was recorded on the OTP cards for all patients and in the OTP registers and gives an insight into to how much time patients spend to get to the clinic and the related cost for travel. The frequency that each 30-minute time category occurred was then calculated for all the sites over the previous six months period and plotted on a bar graph with the time categories on the x-axis and the corresponding frequencies on the y-axis.

Findings showed that in the three states visited, most admissions were from villages within 30 minutes from the OTP sites: 67% in North Darfur, 62% in Kassala and 74% in Gezira (Figure A5, A6 and A7 in complementary findings). The same was true for volunteers where in North Darfur 75% were in locations within 30 minutes and 85% in Kassala. There were only 2 volunteers reported in Gezira, so no analysis was possible. The pattern of defaulters in North Darfur is different and only 39% of defaulters were from villages within 30 minutes walking distance, whereas 61% of defaulters were from villages of more than 60 minutes away from the OTP sites. This pattern appears to indicate that distance and physical barriers to accessing OTP sites and reduced levels of community engagement are important issues in North Darfur. One difficulty in Darfur concerns the dispersed population and many communities are several hours’ walk from their OTP. This makes it difficult to mobilise and supervise paid volunteers for case finding or community orientation and difficult for mothers to attend regular OTP sessions. According to interviewees, this leads to often late admissions (with the likelihood that many children with SAM never get admitted at all) as well as slow response and/or defaulting. Many OTPs try to solve some of these

⁶ WHO, Health and human rights. December 2017. <https://www.who.int/fr/news-room/fact-sheets/detail/human-rights-and-health>

⁷ A factor that probably increases the likelihood of misuse of important quantity of RUTF given to beneficiaries.

problems by requiring only fortnightly attendance from distant communities and/or holding OTP sessions (and/or orientation sessions) on market days. From an economic viewpoint, treatment for dispersed populations can seem to cost much more per head than treatment for those who live near an OTP. There is no cost to programmes in requiring mothers to regularly travel considerable distance for treatment, but this does involve a cost to mothers, and many may not be able to afford this, resulting in many children not having access to OTPs and SFPs, or defaulting quite often. More awareness fathers on these issues may improve household roles sharing, thereby minimising the high responsibilities devoted to mothers.

By contrast, in Kassala and Gezira, the pattern of defaulting was not related to distance and the spatial distribution of defaulters was similar to the spatial distribution of admissions (62% in Kassala and 74% in Gezira within 30 minutes walking distance of the OTP). The spatial distribution of defaulting was also similar to the distribution of community volunteers (where they existed) and in Kassala the majority of volunteers are also clustered close to the OTP sites. In Gezira, volunteers were almost non-existent. This pattern of defaulters is not what would normally be expected, as in the nearer locations the physical barriers to accessing OTPs would usually be less and the awareness of the programme higher, especially given the presence of higher number of volunteers in these locations in Kassala. The fact that this pattern exists therefore indicates that in Kassala and Gezira physical barriers are not the main drivers of default. Default is instead more related to issues around engagement and communication with the community (very widespread ignorance concerning AM and OTPs) and the quality of client experience at the OTPs.

In relation to **affordability**, CMAM services are free of charge for children under five years of age in the country. According to most interviewed participants, free health care for a larger number of children has eased accessibility to the treatment of SAM in health centres delivering these services. Very few of them (specifically in Gezira) mentioned the opportunity cost of reaching the OTP as a difficulty for service access. Overall, the evaluation team did not find direct evidence of discrimination against specific groups influencing case finding or admission to services in the health facilities. People had equal access to the various channels of community communication used for sensitisation.

One important issue of service access raised by participants during interviews is the prevailing insecurity in some localities, particularly in North Darfur, which is limiting availability and access to AM treatment. To overcome this constraint, a measure such as the mother MUAC has been initiated, currently at a small scale by some organizations. Mothers are trained and provided with MUAC tapes for screening their children at home and do so wherever they happen to be (including when travelling to visit relatives) and taking them to the accessible functioning health facility for admission if she notices her child is suffering from acute malnutrition. It runs alongside mass screening and is finding some cases that screening had missed.

4.2.4. Effectiveness of CMAM programme monitoring mechanism

The national CMAM Manual indicates three areas for monthly programme monitoring: individual monitoring of admission, treatment process and outcome. Standardised monitoring and reporting forms and tools are used for collection of data during community outreach, outpatient care and inpatient care activities. All data should be distributed according to sex and age groups. Information on supplies should also be reported monthly. Monitoring data from individual OTPs and SFPs should help them (and their supervisors) manage their work. The monthly reports should help supervisors and state-level management to oversee the performance in very general terms.

4.2.4.1 Monitoring and reporting

Except in Gezira where some sites lacked the forms, most sites visited did have the necessary reporting forms, and the reporting was done monthly for outpatient and inpatient care. The evaluation team also noticed that

NGOs in North Darfur and UNICEF/MoH in Kassala used standard National reporting forms for CMAM programme OTP/SFP and standard CMAM job aid. Health workers did not express any difficulties using these reporting forms, except being time consuming for filling up. There is a uniform electronic CMAM data base in which CMAM indicators are reported monthly. However, the CMAM data base is not yet included in the national DHIS for consistency with other national health and nutrition programmes. Health managers interviewed at federal level stated that the monitoring system currently used is fragmented and should be harmonised for consistency.

Each site provides a monthly summary of quantitative information on admissions, discharges, referrals, performance indicators (cure, death, default, non-recovery rates) to MoH at Locality level. Data are aggregated at state level and the electronic format is transferred to federal level. However, except for screening, community activities such as household follow up frequency, sensitisation sessions, themes and participants were not reported in sites where volunteers were not supervised by OTP staff in delivering activities. Overall, as reported by interviewees, there was frequent delay in CMAM reporting at all levels of the health system (locality, state and federal), despite the availability of reporting tools. The reports on stocks were not regularly up to date.

4.2.4.2. Issue of data quality

The quality of national level aggregated data depends on the accuracy of data collection systems that are in place on the ground (health facility level, locality level, state level). The SQUEAC assessment identified some inconsistency in record keeping in the OTP patients' monitoring cards, registration books and monthly reports in most of the OTP sites visited. This is likely to have important implications on the reliability of performance data being compiled at locality, state, and national levels. The team found that weak record keeping was a common problem at almost every site in the three states they visited, except for the sites supported by NGOs. The following issues were most identified in the three states: (a) no reporting of defaulters, (b) under-reporting of defaulters for no known reasons; (c) where defaulting was reported, the monthly reports did not match with what was recorded in the register and/or OTP patients' monitoring cards; and (d) all monitoring methods failed to bring out simple data on proportion of late admissions and/or slow recovery. Upon more in-depth questioning, some health workers (one third of those interviewed) were open enough to say that they do not report defaulters deliberately because they know that defaulting is an undesirable indicator for the programme. A good example of the discrepancy the team found between the aggregated state level data and the primary data collected during the SQUEAC survey is that the aggregated state level data reports very low or zero defaulting rate whereas by contrast, our examination of patient attendance records during field visits in the three states indicated that there were a substantial number of defaulters, but these had often not been identified or recorded. For example, Gezira identified high rates of defaulting that had been incorrectly reported hinting that even the high rates of default reported in the aggregated state level data may be under-estimating the true extent of the problem.

Given the absence of active community outreach workers to do follow-ups on defaulting cases in many localities, the unreported defaulters could have died undetected, with the result being that the death rate associated with the CMAM programme is underestimated.

An additional issue is weak data recording, compilation, and management especially at the OTP level. This was the case in many OTPs in the three states, and this severely undermined the ability of the MoH and partners to monitor CMAM implementation and address problems as they arise in a timely and effective manner. As an illustration, Table 8 shows very important fluctuations in admission data from year to year in some states (numbers coloured in blue seem lower than they should be, when compared the trends), which indicate that data transferred to Federal level might be underreported, or delays occurred in submission of monitoring data. Additional reason reported is the fact that data reporting is usually managed at each level by one person only. Therefore, once the person is absent or moves to another position, there is gap in data compilation and transmission.

Table 8: Gaps observed in FMOH data base on OTP admissions data

	2015	2016	2017	2018	2019	Total
Gezira		7,606	5,632	3,996	2,717	19,951
Blue Nile	9,803	10,885	11,071	10,551	10,885	53,195
Central Darfur	8,852	15,263	18,474	19,213	13,003	74,805
East Darfur	6,712	10,470	12,870	10,182	14,936	55,170
Gedaref	8,946	12,690	12,430	13,386	20,805	68,257
Kassala	10,043	18,093	18,653	22,662	13,810	83,261
Khartoum	4,489	11,158	10,899	11,880	48,070	86,496
North Darfur	39,268	46,545	42,973	45,173	8,945	182,904
North Kordofan	4,460	7,546	6,703	7,592	416	26,717
Northern		340	475	555	14,978	16,348
Red Sea	11,614	15,209	14,552	17,347	1,034	59,756
River Nile		1,343	914	1,212	2,391	5,860
Sinnar	1,938	2,596	3,067	3,496	38,742	49,839
South Darfur	17,372	30,343	32,397	35,474	9,158	124,744
South Kordofan	7,487	8,387	8,875	9,753	8,337	42,839
West Darfur	3,322	9,659	10,752	12,582	11,961	48,276
West Kordofan	8,142	8,057	8,153	9,931	11,332	45,615
White Nile	4,653	8,442	8,529	9,811	19,048	50,483
Total general	147,101	224,632	227,419	244,796	250,568	1,094,516

Source: FMOH data base 2015-2019

4.2.5. Addressing gender and equity concerns in the design, implementation, and monitoring of the programme

Given that access points for treatment of SAM children are government health facilities, the fairness in accessing the services depends on the overall distribution of health facilities across the country. Thus, access is challenging in areas with low health facility coverage, non-functioning health facilities (mostly among those that are far from the main towns and are isolated, scattered distribution of the population, areas with arm conflicts and nomadic populations). The evaluation team also reviewed coverage surveys conducted by NGOs in some localities of the country during the implementation of the programme from 2011 to 2017. Findings showed that point coverage was less than 50%, except a 61,3% recorded in the locality of Hay in the Red Sea state in 2017 (Table 9). Although not representative of the country, these surveys confirmed that adequate access to CMAM services is challenging in the country, and further efforts should be deployed to improve access to services for many children in need.

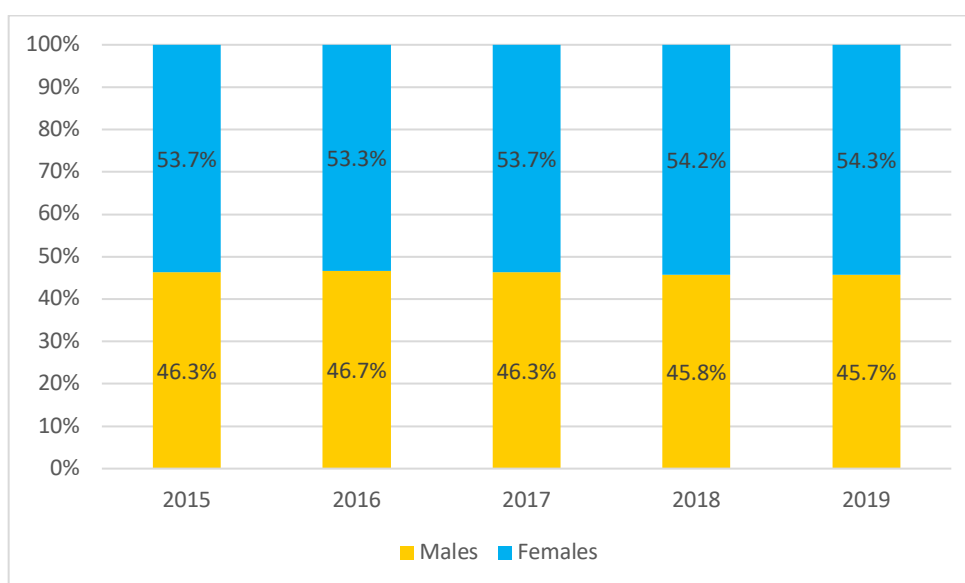
Table 9: Coverage surveys conducted in Sudan during the period 2015 to 2017

Period	Location	Method	Coverage	Sphere recommendations
June 2015	Krenik and Habila localities, West Darfur state	Simple Spatial Survey Method (S3M)	25%	> 50% in rural areas > 70% in urban areas
February 2017	Hay locality, Red Sea state	S3M	61,3%	> 90% in the refugee camps

Sources: the Evaluation Team, using coverage reports available

Data on admissions and programme performance are reported to facilitate traceability. This makes it easy to identify the health centres, villages, localities, and states that are most in need for support. Information on each beneficiary includes the village name, sex, and age. However, OTP database was not disaggregated according to age groups, and performance indicators were not reported according to gender and age groups. An in-depth analysis was therefore not possible. Nevertheless, the evaluation did not identify any discrimination between girls and boys during the implementation of the programme. From 2015 to 2019, slightly more female than male children were admitted (Figure 16) to the programme. Girls were more affected by SAM than boys in the country, but the difference was not statistically significant. During field visits, all participants also reported no discrimination between girls and boys during screening and admission to the programme. Both sexes received equal treatment at home, and caretakers of both sexes received sensitisation messages on malnutrition at health centre and home.

Figure 16: Admissions to OTP according to sex, for the period 2015 to 2019



Source: the Evaluation Team, using the FMOH data base 2015-2019

Conclusions on Effectiveness

EFFECTIVENESS 1: Screening targets have not been reached. Mass screening and screening at households are approaches mostly used by incentivised volunteers to identify SAM children, along with routine screening performed health and CMAM staff at health facilities. Household follow-up and sensitisation are irregular or inexistent, and their effectiveness cannot be assessed because of absence of monitoring data. The community component of CMAM is weak in terms of planning, implementation, monitoring and reporting. Systematic application of the steps for community engagement proposed in the CMAM Manual are likely to produce important improvements.

EFFECTIVENESS 2: Despite good awareness of the programme in Kassala and North Darfur leading to significant numbers of self-referrals, admission targets were not reached. Given the low coverage of health facilities, it is difficult to access the services for isolated populations.

EFFECTIVENESS 3: The CMAM databases at federal level indicated that the programme performed well in terms of cure rate and death rate, despite the apparent late admissions and high default rates in some states. However, underreporting and delay in submission jeopardise accuracy and correctness of data transferred to federal level. The CMAM data base or indicators should be included in the national DHIS for consistency and better planning and implementation.

EFFECTIVENESS 4: Interesting measures such as setting up satellite services or mobile clinics have been taken to minimise the equity gaps. However, adequate access to isolated and mobile populations, and those living in conflict areas remain an important issue. Strong community engagement and community managed services, in addition to strong linkages with food security and livelihood interventions are avenues for better achievements.

4.3. EFFICIENCY

4.3.1. Management of CMAM programme in the states

The delivery of OTP services was assessed through on-site observation, SQUEAC and qualitative assessment during field visits in the three states. Fifteen health centres were observed in each state, for a total of 45 health facilities observed. The observations targeted six key elements, including: (1) infrastructure, staff, and equipment; (2) nutritional assessment and classification; (3) counselling and application of protocols; (4) supply and stock management; (5) supervision and support. Each of the observed elements was assessed against the recommended operational standards in the national SAM guidelines, the team checking whether it was present on site, and the possible reasons if they were not. Point observations describing CMAM process in these health facilities showed the following findings:

4.3.1.1. Infrastructure, staff, and equipment

Infrastructure. In Kassala and North Darfur, most nutrition activities are carried out in an area designated for measuring, registration, and distribution of RUTF, in addition to waiting area. In very few cases there was no designated office or space. In such situation the nutrition and EPI teams share the same space. In Gezira, most nutrition activities are carried-out in a shared space with the EPI team.

Staffing and skills. There are four categories of staff delivering services in the health facilities: (1) medical personnel who is mostly a medical assistant, nurse, health attendant, whose focus is patient oriented, but

occasionally support nutrition activities; (2) nutrition staff working on payroll, trained and accountable; (3) integrated staff who are usually a medical assistant, midwife or nurse, trained to cover all or most health services in the health facility or the area; (4) the volunteers who are working on incentives basis, forming most staff but low skills and accountable to the OTP workers. Volunteers usually means CNVs who are incentivized but not on the payroll. Their main function was intended to cover the community component with awareness raising and regular community MUAC screening, and they were supposed to support the nutrition session in the health facility, focusing on awareness raising and defaulter tracing; but their role has become increasingly drifted to take more responsibilities in the health centre, even running OTP sites. For example, some OTPs in Kassala were run by volunteers (incentivized at a higher level than the CNVs doing screening) with no staff available (the State did not have the permission to employ more staff) – but in all these cases visited the standard of their work was as good as paid workers in other OTPs. All CNVs are female, giving better opportunity to the programme to access houses and perform screening and awareness activities.

In most OTP visited, those working alongside SFPs have incentivised volunteers. SMOH supported volunteers do not receive financial incentives, yet they should deliver similar services than those operating in NGO supported sites. In the three states, most staff and volunteers received full package of CMAM training. The evaluation team tested many of the volunteers' MUAC skills and generally found them to be excellent.

Equipment. In the three states, most health centres (80%) have adults weighing scales, some have salter scale only. SCs or hospitals have new-born weighing scales, but in a fewer number in Gezira state. All centres have height boards and MUAC tapes but many of them (12 out of 37) are broken or missing a piece, but the staff are still using them. Most centres have visible and clear nutrition information and admission protocols.

4.3.1.2. Nutritional assessment and classification

Measurements. In Kassala and North Darfur, the measurement skills of the nutrition staff are accurate and reliable. However, in some sites there are discrepancies between the community MUAC screening, and the health facility staff. The facility staff attributed this to the working conditions in the field where the volunteers walk long distance and must cover high number of houses. This is very evident in the massive MUAC screening campaigns conducted on regular basis in the states of Kassala and North Darfur. In Gezira, measures taken are sometimes not reliable, especially height related measurements. Since there are no volunteers to conduct community screening, cases are either self-referred or referred by the clinicians. OTP workers also conduct screening (MUAC measurement) during EPI sessions but must cope with very crowded conditions during these sessions; otherwise, cases can mostly be admitted during the massive MUAC screening campaigns conducted in the state.

The analysis of secondary data collected from the 56 OTPs visited in the three states during the SQUEC assessment indicated that 92% of cases had been admitted based on MUAC, 3% on oedema and 5% on weight for height (Table 10). Thus, majority of the OTP admissions are based on MUAC. Many sites reported that they do not use W/H Z-score because they have been instructed by the state not to, as this is not included in the newly revised CMAM guidelines. The switch to MUAC only admission criterion therefore serves to simplify protocols, bring them in line with day-to-day practice and facilitate integration into other services for efficiency.

Table 10: Criteria used for admission of SAM children in the OTP sites visited

Admissions by	Kassala state		North Darfur state		Gezira state		Total	
	n	%	N	%	n	%	n	%
MUAC	925	93%	2,562	94%	386	78%	3,873	92%
Oedema	5	1%	106	4%	8	2%	119	3%
W/H Z-score	64	6%	52	2%	100	20%	216	5%
Total	994		2,720		494		4,208	

Source: the Evaluation Team, SQUEAC assessment data collected from health facilities

Registration and admission. In the three states, the measurements are recorded in the card and the registration book. However, in Gezira, the recordings usually are not done accurately. Most of the times the admission is done according to the appropriate criteria in Kassala and North Darfur states, but not in Gezira.

4.3.1.3. Counselling and application of protocols

OTPs. In Kassala state, awareness raising is mostly done on discharge, but some mothers did not know what their children had until they were discharged. In some sites, volunteers do provide mothers advice on appropriate child feeding practices. Nevertheless, in general, communication between the nutrition team and the mothers (or care takers) is limited to: “asking to bring the child, to put the child, to feed the child etc”. There is limited explanation on the child situation, and it is usually referred to as the child is “lost”, meaning wasted. Thus, many mothers still think there is nothing wrong with their child. In Gezira, awareness raising is rarely done. In few sites, nutrition staff do provide mothers advice on appropriate child feeding practices, but this is uncommon. There is almost no explanation on the child nutrition status and the RUTF consumption procedures although taste tests are generally used and can represent orientation on feeding with RUTF. Thus, as it is the case in Kassala, many mothers think that there is nothing wrong with their child. In North Darfur, the situation is much better. Majority of mothers know what their children have on admission and is reaffirmed on discharge. Volunteers are very good in communicating to the mothers about child feeding on admission and during treatment, and personal communication and information sharing is well recognised. Medical personnel whose focus is patient oriented, also support occasionally⁸.

In the three states, most sites have copies of algorithms/guidelines for the management of acute malnutrition in children (the 2015 Operational guide), as well as visual aids (nutritional advice cards) and IEC materials to be used while advising caretakers on prevention and treatment of acute malnutrition.

Stabilisation centres. In the SC in Kassala and North Darfur, staff are qualified nurses and nutrition officers. The nurses deal with the medical condition liaising with the clinicians⁹. The nutrition officers are concerned with the child feeding and the utensils’ hygiene. The tasks are well organised and the SCs are functioning smoothly. Nurses sometimes support mothers in child feeding. Meals for the mothers are sometimes prepared and served. This is not the case in Gezira where SCs are not functioning well, with few admissions, poor follow-ups, and verbally high reported mortality but no recorded deaths¹⁰.

⁸ In all three states the evaluation team regularly heard that mothers were told not to give RUTF to non-SAM children, usually by telling them it can damage their kidneys.

⁹ Stabilisation centres visited: **Kassala** (1. Kassala teaching hospital; 2. Patients helping fund (Kuwait); 3. Girba hospital). **N. Darfur** (1. Fashir hospital; 2. Abu Shouk IDP Camp; 3. Kutum hospital; 4. Malha; 5. Dar el Salam). **Gezira** (1. Wad Medani hospital; 2. Wad Al Hadad).

¹⁰ The main SC in Gezira (Medani Children’s Hospital) appears properly staffed and well organised. But it is very busy (to the extent of bed sharing until the extension that is being built is ready) and has a high mortality. Other SCs in Gezira lack night staff (the time most mortality occurs).

4.3.1.4. Supply and stock management

In Kassala, most sites supported by NGOs are supplied on a periodic basis with the logistics support of the NGOs. In North Darfur, MoH centres, particularly those located in El Fasher and other major cities, receive their supply on a monthly basis. In Gezira, RUTF is delivered to the locality and OTPs must collect it from there. The overall supply of the health facilities is periodic and depends on personal relationships or community support.

In Kassala and North Darfur, there are generally good storage spaces, especially in areas where the facility is built as OTP, otherwise the storeroom is a shared space with the EPI programme, the health centre drug storeroom under the control of the health centre pharmacist, or the nutrition office¹¹. In Gezira, there is no designated storage space for nutrition supplies in most of sites. Sometimes the hospital store is used and sometimes the RUTF is stored in the room shared with EPI. Where OTP had managed to get their own room, they stored the RUTF there – usually on a pallet or table.

In North Darfur, requests and supplies are strongly linked to consumption and to the number of cases/forecasted cases, which is not the case in Kassala where requests and supplies generally depend on storage space available (supply still available) or they are left at the discretion of the supply team at locality or state offices. In Gezira, requests of RUTF are not generally linked to consumption or cases/forecasted cases. However, as reported by health workers in the three states, the situation of RUTF stock-outs which was frequent before 2018 has improved since the last three years. There has been significant improvement to secure RUTF pipes across the country. . In Kassala nearly all SFP sites had been without RUTF for months (but RUTF was generally in stock). The logistics system needs to be reformed, particularly for timely transportation of supplies from localities to the health facilities (CMAM sites). The problem with the selling of RUFs also contributes to the difficulties and needs to be addressed (more details are provided on selling the RUFs in the impact chapter). For example, in North Darfur RUTFs were reported to be often available in markets and people could mentioned the local price.

11 In Kassala there was one case where the RUTF was temporarily being stored in the house of the chair of the village committee.

4.3.1.5. Supervision and support

Ensuring the capacity of workers to do their job depends on training to some extent, but mostly on the provision of supportive supervision, which appraises what could be improved and provides guidance and support on how to do it. The evaluation team assessed to what extent the supervision system and practice for CMAM services (OTPs, SFPs and SCs) considered this assertion.

In Kassala these are generally the responsibility of SMOH, and Locality Nutritionists (alongside NGO supervisors for the sites run by NGOs). OTP workers in most sites visited had received regular supervision visits from the MOH Locality Nutritionists. They had a good knowledge of individual cases that were admitted late or recovering slowly but some of them did not see the trend when they had many such cases, which suggests that the supervisors were missing this aspect of their role. Registers and patient cards were well kept in these sites.

In Gezira supervision is the responsibility of SMOH and Locality Nutritionists. However, OTP workers got little support or supervision. Nearly all of Gezira supervision visits were rare and, when they occurred, did not involve providing support for correcting weaknesses. Locality Nutritionists mostly visited their OTPs when they have to accompany visiting senior staff from Khartoum.

In North Darfur different NGOs used different structures for supervising service provision and there was little attempt to involve Locality Nutritionists in this activity (see more details in the adjacent box).

It was rare in all three states to find examples¹² where management of service delivery (locality to service site and state to locality) had supported or provided guidance for addressing challenges such as large numbers of late admissions and/or slow responders. As a result, the supervisors that we interviewed generally had little understanding that late admissions and slow recovery were challenges that their OTPs should be addressing.

Supportive supervision modalities applied in North Darfur

Considerable supervision and support of OTPs are conducted and this have frequently resulted in very competent and committed teams that provide effective services with excellent record keeping, the habit of focusing on areas of weak performance (to address these) and the strong community engagement.

One NGO clusters their OTPs (sometimes by locality but often with more than one cluster per locality) and a local supervisor visits sites in his/her cluster to supervise and provide support. Where the supervisor had a good grasp of the roles and functioning of OTPs, this resulted in OTPs that functioned quite well. But the quality of supervisors was very mixed, and the evaluation team saw little evidence that the central state management has been engaged in building their capacity.

Another major player in North Darfur supervises OTPs by visiting from some distance but the evaluation team did not find evidence that this was resulting in the development of strong capacities. Some OTP staff capacities were good while others nearby were not.

Most other OTPs are managed and supervised by MOH or local NGOs. In general, these were poorly managed and many of them were performing poorly or failing to address serious weaknesses. The MOH sites seemed to be mixed but we did not encounter a single instance of MOH Locality Nutritionists supervising or supporting any part of the CMAM programme. This partly reflected a lack of resources.

4.3.2. Efficiency in terms of utilizing existing systems and considering value for money

4.3.2.1. Adequacy of case finding and referral

In Sudan, services for treatment of SAM and MAM are delivered through the national health system. Generally, screening of malnutrition has been integrated into other health programmes, and referrals from the health services are the main source of cases admitted in OTP. In the interests of efficient use of resources, OTPs often share a room with the EPI programme and CMAM staff frequently assist in EPI activities, especially in Gezira, although this often happens in very crowded rooms where accurate measurement is difficult (especially with broken equipment). It is widely believed that EPI staff, and their considerable resources (transport, community

¹² GOAL was doing well with this and some RI « clusters » (groups of OTPs/SFPs supervised from relatively locally) were also good. Other RI clusters had poor supervision (it depends on how good the cluster supervisor is – and there was a lot of variation, suggesting that they got little support). SCI's supervision visits were from a distance and the evaluation team saw little indication that it was effective (as good sites were often next to very poor sites).

links etc), contribute to CMAM case finding as they often do in a smaller way in Kassala, where EPI staff often refer children with AM to the OTPs and SFPs. But in Gezira EPI staff together with CMAM staff gather families and children together (usually in the health centre or hospital but sometimes as an outreach activity) for their own purposes. The actual screening is done by the CMAM staff.

In Kassala and North Darfur the main method of case finding was the standard quarterly mass screenings that are part of Sudan's CMAM approach. The quarterly screening approach generally uses the volunteers trained and equipped for the activity. The over-reliance on mass screening paid volunteers was perceived as less effective and wasteful if they are not well supervised. Some cases that should be identified by this method are often missed because they are not present during the screening day. According to health workers and managers interviewed, the use of unpaid volunteers – using CNVs or “mothers’ MUAC” initiated by UNICEF – seemed more effective and, although such methods involve the work of training large numbers of volunteers and mothers, it is perceived as significantly cheaper.

The evaluation team also found through interviews and FGD that many cases were referred early by volunteers, but they often waited several weeks before attending their OTP - particularly in Kassala - having tried other options (traditional healers, self-medication, etc) before resorting to the OTP. This may reflect traditional beliefs influencing their health seeking behaviour. Most OTPs did not follow-up referrals that did not report to their OTP (even though contact information of referred cases is collected).

One strategy that appeared to be successful in case finding was the use of a combination of methods: volunteers for mass screening and mothers’ MUAC, link to other programmes (WASH, IGPs etc) and groups formed for Nutrition Impact for Positive Practice (NIPP) programme. Mothers whose children have successfully been cured in the OTP are trained to undertake MUAC screening and referrals. Given the constraints of working with volunteers, this is an important and scalable solution to improve case finding and the timeliness of admissions, although it can still be challenging in communities that are far from the OTPs - as mothers would find attending OTP sessions difficult.

4.3.2.2. *Timeliness of admissions*

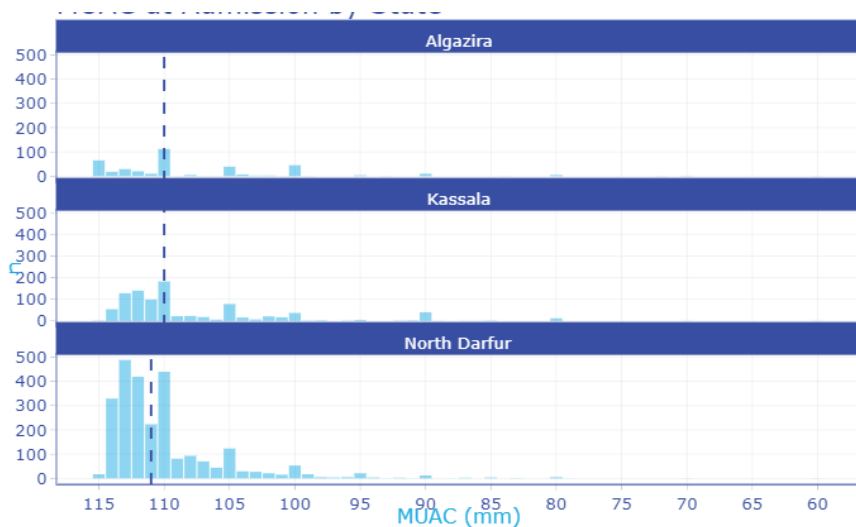
The only available indicator of the timeliness of admission is the MUAC on admission which, according to the CMAM Manual, should be recorded on every patient’s OTP card. Unfortunately, the indicator is not 100% specific and can be confounded by selective admissions and the health environment/concurrent illness, as infectious disease disproportionately reduces MUAC. Thus, low MUAC on admission can provide a useful indicator that further investigation of case finding is required²⁸.

Figure 17 shows that the median MUAC on admission for the CMAM programme (indicated by the blue dotted line) in Gezira and Kassala is 11.0 cm, whilst in North Darfur it is slightly higher at 11.1 cm. Similarly, the percentage of children admitted with a MUAC below 11.0 cm was 63% for Gezira, 35% for Kassala and 42% for North Darfur. These figures imply that the timeliness of admission in the CMAM programme in the three states is reasonable with the majority of cases being caught before their MUACs have dropped too far. However, it is important to note that in all sites a significant proportion of admissions were < 11.1 cm. Thus, although interviews and FGD showed that overall, the populations were not hesitant to access CMAM services, this review of beneficiary cards and registers showed that a significant number of admissions were not very timely, indicating that the barriers to accessing services (whether they be physical, knowledge or cultural) were still an important issue. Given that the programme has been running for several years, it indicates that some children are falling through the cracks and not being admitted in a timely manner. The assumption is that when many cases that get referred are late, they were missed for a while and then picked up (often by mothers becoming worried) – and it is likely that there were others who were not picked up at all. What is more surprising is that even in camp settings the team observed substantial numbers of low MUACs on admission¹³. Considering the proximity of the CMAM sites to the

¹³ For example, 59% of children admitted by MUAC in Rownd A camp (in Tawila locality – North Darfur state) and 53% from Abshock camp (in El Fasher locality – North Darfur state) had their MUAC below the median admission MUAC for the state.

populations in these camps and the presence of community volunteers/outreach workers in the camps this is an unexpected finding. In North Darfur, some of the low MUACs/late presentation can be attributed to seasonal migration resulting in cases of SAM moving between different locations in search for farming or grazing land during certain seasons of the year. However, discussions with OTP staff revealed that the absence of active case-finding within the communities might be also contributing to the late presentation of some children.

Figure 17: Admission MUAC by state from data collected during the SQUEAC assessment



Source: the Evaluation Team, SQUEAC assessment data collected from health facilities

4.3.2.3. Treatment, follow up and supervision

Another issue is the weak supervision and support provided to most field staff of the programme. This, combined with the data issues identified above (section 3.3.1.6), means that problems such as late referrals/admissions and slow response (often caused by sharing or selling of RUFs) are not being identified and addressed timely. Consequently, the community perception of the programme might be damaged, leading to delays in presentation and poorer compliance that, in turn, may affect performance and programme impact.

4.3.3. Engaging communities in the design, implementation and monitoring of the programme

Community engagement is a key element to CMAM success and is the foundation upon which successful CMAM programmes are built. A strong OTP needs good and supportive links with community sheikhs and committees (including the new popular committees who can be very energetic once they have been convinced of the value and importance of the programme), all of which can help solve conflicts, deal with excessive sharing and selling of RUTF, assist in following-up on defaulters, raise needed resources (even volunteers) and enlist the support of other groups. Different tribal and socioeconomic groups might have different representative structures and it will often be important to avoid favouring one over another (which can happen, for example, if you rely on one structure to liaise with the other). Schools and teachers can also be useful. Nutrition is part of the curriculum and many teachers are “outsiders” in the communities where they are based and may seek constructive roles within their host community. Moreover, engaging with women, mothers and grandmothers, is particularly useful in addressing traditional beliefs, and to assisting with case finding and misuse of RUFs. The CMAM programme in all three states showed to have a weak community component with insufficient or no active community volunteers at village level for active case finding, referral or household follow-ups.

It is common for health workers to focus on the more tangible supply side of a CMAM programme (diagnosis, nutritional products, medicines etc), with a focus on service delivery in the health facilities. Working with communities is generally not considered important and is not prioritised in staff training. Although there are certain skills required, these can be relatively easily taught and the most important foundation for successful community engagement is the realisation that this is important and a commitment to undertake it. As community engagement may also involve more work for the OTP staff, time to engage in this activity has to be built into the system and into staff workloads. This is likely to pay dividends as, if done well, it can reduce caseloads (through earlier case finding and faster recovery times) and therefore reduce workload. An idea of the tangible benefits of improved community engagement can be seen in some programmes in North Darfur where enlisting the support of community influencers and good counselling of mothers, has more or less stopped the sale of RUTF and led to faster recovery times.

Another important reason explaining the weakness of the community component is the fact that the programme mostly failed to engage men - community leaders and traditional leaders who are generally men and are influential people. Where communities have been effectively involved in and mobilised by the programme the results are very noticeable in terms of far fewer late admissions and slow responders.

During interviews with health workers in Gezira, the stronger OTP workers recognised that it might be possible to better engage the community even if they were unsure how to go about it. The evaluation team visited a variety of *cambo* communities and spoke with sheikhs in villages. Aside from knowing little about AM and mostly being unaware of the CMAM programme, most of them were convinced that many community members (particularly mothers and fathers) would help with case finding and other outreach activities that currently rely on incentivised volunteers.

The general observation made by the evaluation team in Kassala is that:

- Little was being done to engage with traditional beliefs to ensure that the implications of AM are understood and to build understanding of the value to OTPs and SFP
- Although representative structures (committees, sheikhs etc) had often been involved when OTPs had first been established (resulting in building widespread acceptance of a programme that targeted the distribution of a valued foodstuff to only a few cases), these links had often not been maintained or used to address new difficulties and challenges.
- The Infant and Young Children Feeding (IYCF) programme – with its focus on mothers’ groups in sharing good feeding practices and the possible screening of malnourished children – had been implemented with the support of UNICEF. For example, 720 MSGs have been formed and trained to provide community IYCF counselling services since 2016. This contributed to improve early identification and admission of malnourished children. This engagement is best initiated and handled by the service centres (OTPs and SFPs), although most of them require support and guidance to supervise this activity.

As with Kassala, mass screening by paid volunteers is the main case finding method in the North Darfur CMAM programme. But the weaknesses in relying on this method are exacerbated by the distance of many communities from their OTP in the state. While the majority of sites have done little to avoid an over-reliance on mass screening, North Darfur’s CMAM programme also includes some notable examples of adding other case finding methods to mass screening or even replacing it. For example,

- In Kutum, an NGO trained 8000 mothers to screen children and refer those found to be acutely malnourished. This method, along with mass screening by their unpaid volunteers and the formation and training of a variety of mothers’ groups, resulted in OTPs often achieving fewer late admissions.

- Another NGO supervises their paid volunteers carefully and shows how good mass screening can be if it is done well. This is a community where volunteers have recognised the need to screen before mothers go to their farms or after they have returned.

In Gezira, the evaluation team found that most community members were unaware of the programme and it was apparent that the mothers of those admitted into the programme saw little value in it. Case finding is weak and relies on 'laborious collaborations' with the EPI programme or – in the few OTPs that are staying clear of EPI – on referrals from health workers. However, neither methods had yielded significant numbers of admissions.

At national level, different participants (FMoH, UN Agencies, INGOs, donors) interviewed also recognised that more emphasis was put on treating SAM and MAM in health facilities and through mobile teams than engaging the community (or even treating acute malnutrition within the community). This has generally resulted in weak early case identification (as explained in several sections above), misuse of RUFs (more details in the impact chapter), as well as fragile health and community systems (more details in the sustainability chapter).

4.3.4. Cost of the programme

This chapter presents the findings of the financial analysis of the CMAM programme implemented in Sudan from the period 2015 to 2019. It presents the trends in investments, cost per SAM admitted/treated and per SAM cured, as well as cost-effectiveness of the programme. The analysis was performed through the review of financial data bases provided by UNICEF and the FMoH, review of programme secondary data, and review of literature on CMAM cost-effectiveness studies conducted in different contexts. Microsoft Excel was used to perform the analysis.

4.3.4.1. Trends in investments

The analysis shows that from 2015 to 2019, a total of 86 million US\$ were invested in SAM treatment, ranging from 13 million US\$, in 2017 up to 21 million US\$ in 2019, with an average yearly investment of 17 million US\$ (Table 11).

Table 11: UNICEF investments (US\$) in OTPs for the period 2015 to 2019 in Sudan

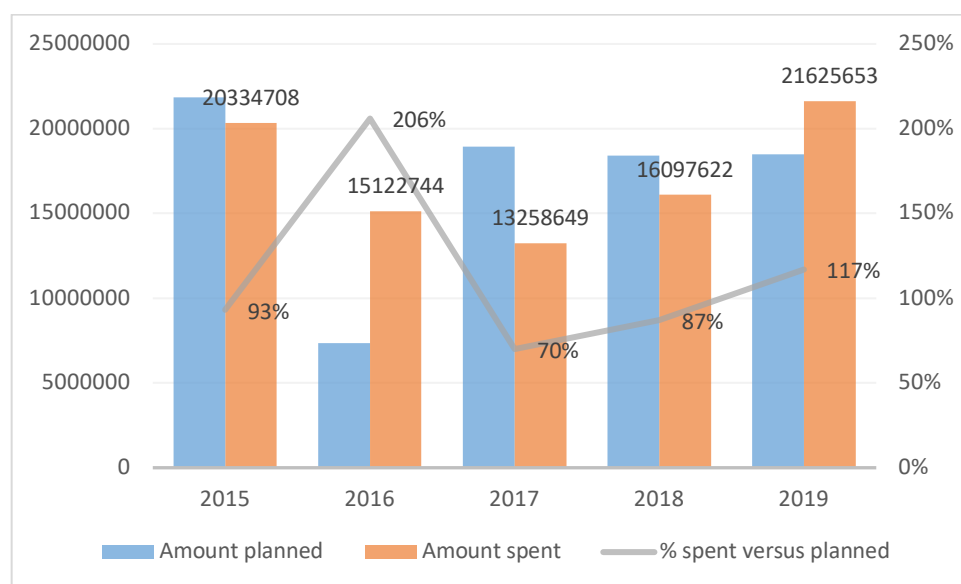
	2015	2016	2017	2018	2019	Grand Total	Mean
Investment over time	20,334,708	15,122,744	13,258,649	16,097,622	21,625,653	86,439,377	17,287,875

Source: the Evaluation Team, using the financial data provided by UNICEF and the FMoH

4.3.4.2. Amount spent versus investment planned

There has been remarkable achievement in terms of investments for treatment of SAM in Sudan during the period 2015 to 2019. The analysis shows that the expenses varied according to the years. In 2015, 2017 and 2018, lower amounts were spent compared to those planned. The expenses were 93%, 70% and 87% for the three years, respectively (Figure 18). These years the programme failed to mobilise the total amount planned. However, in 2016 and 2019, higher amount than planned was spent (206% in 2016 and 117% in 2019). Higher expenditures observed for these two years can be explained by the programme success to mobilise more funds. Moreover, in 2019, expenses were higher than planned due to inflation that had been created by the unstable political and economic situation experienced by Sudan that year.

Figure 18: Amount (US\$) spent versus planned for SAM treatment during the period 2015 to 2019 in Sudan



Source: the Evaluation Team, using the financial data provided by UNICEF and the FMoH

4.3.4.3. Funding sources

A total of 21 donors funded the treatment of SAM¹⁴. Major donors included the European Union – ECHO (25.7%), USAID/Food For Peace (21%), UNOCHA (12.5%) and USAID through its OFDA branch (9.5%). USAID/Food for Peace and UNOCHA have significantly increased their funding since 2018, showing their commitment to the programme. UNICEF's own investment accounted for 6.4% of total investment for the four years (Table 12). Government investment represented 1.5% of the expenses for the five years. Overall, SAM treatment was mostly funded as humanitarian response.

Table 12: Donors and their corresponding funding for OTP from 2016 to 2019 in Sudan

Donor Name	2016	2017	2018	2019	Total	% Funding
EUROPEAN Commission/ECHO	3,964,246	3,188,473	5,524,328	4,343,931	17,020,978	25.7%
USAID/Food For Peace	1,191,419	1,872,572	4,450,209	6,386,887	13,901,087	21.0%
UNOCHA	936,132	16,644	1,388,717	5,906,521	8,248,014	12.5%
USA (USAID) OFDA	1,477,538	946,914	903,916	2,926,915	6,255,283	9.5%
UNDP – MDTF	2,405,002	1,281,131	1,051,885	108,320	4,846,338	7.3%
UNICEF	912,518	1,208,020	1,219,583	873,296	4,213,417	6.4%
Republic of Korea	1,313,165	603,064	6,424	0	1,922,653	2.9%
The United Kingdom	874,606	487,178	-4,297	0	1,357,487	2.1%
Japan	984,141	107,039	285,765	-35,593	1,341,352	2.0%
USA (State) BPRM	0	0	0	0	1,123,014	1.7%
Government of Sudan		1,000,000		10,554	1,010,554	1.5%
Global – Nutrition	0	0	378,186	431,827	810,013	1.2%

¹⁴ Data on funding sources decoded for the four years

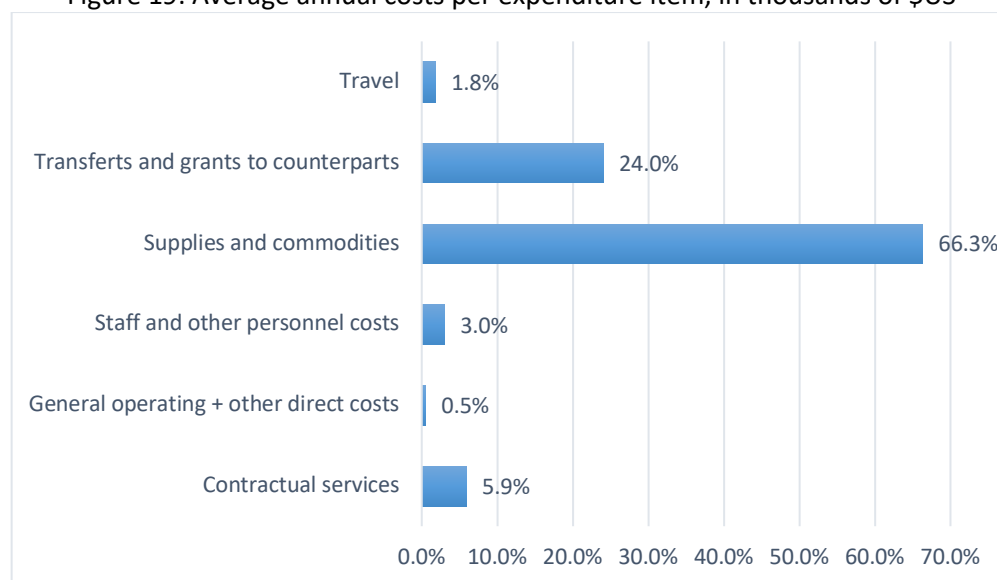
United Nations Joint Programme	438,436	124,237	0	0	562,673	0.9%
SIDA – Sweden	0	101,749	315,871	37,438	455,058	0.7%
Italy	0	208,748	23,898	0	232,646	0.4%
Denmark	249,959	7,146	0	0	257,105	0.4%
Global - Thematic Humanitarian Response	249,959	0	27,037	0	276,996	0.4%
Germany	242,586	108	0	0	242,694	0.4%
Canada	0	218,927	0	0	218,927	0.3%
Consolidated funds from NATCOMS	0	221,047	0	0	221,047	0.3%
African development Bank	0	0	166,240	0	166,240	0.3%
Total	15,122,744	13,258,649	16,097,622	21,625,653	66,104,668	100%

Source: the Evaluation Team, using the financial data provided by UNICEF and the FMOH

4.3.4.4. Distribution of funds according to different expenditure items

The major budget items in the programme accounting on average for about 66% of expenditure (Figure 19 and Table 13) but on occasions, such as 2019 rising to about 75% supplies and commodities (RUTF and medicines) This is followed by transfers and grants to counterparts (24%), contractual services (5.9%), and staff costs (3%). This analysis indicates that most programme expenditures is dedicated to the treatment of beneficiaries (supply and medicines), which is adequate in terms of programme expectations regarding allocation of funds. Since 2018, supplies and commodities represent a greater share of UNICEF's annual budget spent on CMAM.

Figure 19: Average annual costs per expenditure item, in thousands of \$US



Source: the Evaluation Team, using the financial data provided by UNICEF and the FMOH

Table 13: Distribution of expenditures on different items in thousands of \$US from 2015 to 2019

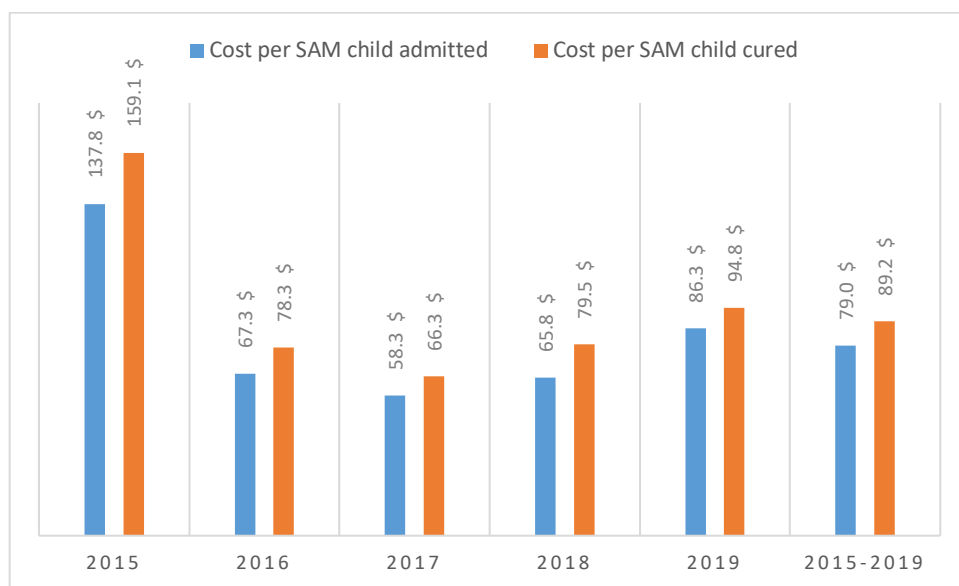
	2015	2016	2017	2018	2019	Total	Mean
Contractual services	1,361,060 6.69%	1,458,004 9.64%	839,407 6.85%	762,468 4.77%	629,431 2.89%	5,050,360	1,010,074
General operating + other direct costs	301,575 1.48%	66,296 0.44%	61,993 0.51%	12,367 0.08%	7,610 0.02%	449,840	89,968
Staff and other personnel	2,034,878 10.01%	137,934 0.91%	55,865 0.46%	281 311 1.73%	74 061 0.33%	2,284,335	516,867
Supplies and commodities	11,706,421 57.57%	8,869,267 58.65%	7,910,737 56.37%	11 608 523 71.94%	16 304 679 75.43%	55,339 746	11,079,949
Transfers and grants to counterparts	4,444,181 21.84%	4,278,745 28.29%	4,083,349 33.31%	3 203 109 20.04%	4 388 211 20.30%	20 394,595	4,078,919
Travel	489,593 2.41%	312,499 2.07%	307,298 2.51%	229 843 1.44%	221 661 1.03%	1,560,894	312,179
Grand Total	20,334,708 100%	15,122,744 100%	13,258 649 100%	16,149,635 100%	21,625,220 100%	86,426,567	17,285,313

Source: the Evaluation Team, using the financial data provided by UNICEF and the FMoH

4.3.4.5. Cost per SAM admitted and cost per SAM cured

The analysis shows that the average cost per SAM child admitted / treated into the programme was 79 US\$ in the country. It was 137.8 US\$ in 2015, decreased to 67.3 and 58.3 US\$ in 2016 and 2017 respectively, then increased to 65.8 and 86.3 US\$ in 2018 and 2019. The cost per SAM child cured in the programme was 89 US\$ on average for the five years, approximately 6% higher due to defaulters, deaths, and failure to respond than the cost per child admitted which was 79 US\$. Trends in each of these costly metrics followed similar patterns with the cost/cured starting at 159.1 US\$ in 2015, decreasing to 78 and 66 US\$ in 2016 and 2017 respectively, then increased to 79.5 and 94.8 US\$ in 2018 and 2019 (see Figure 20 below). The high cost / child cured and admitted in 2015 is most probably explained by high capital cost (investment) versus low admission that year, and probably the fact that most of RUTF was imported (high transportation cost from abroad to Sudan). Similarly, the high cost in 2019 can be explained by higher expenditures due to inflation, versus a lower number of admissions.

Figure 20: Cost per admitted and per treated SAM child during the period 2015 to 2019

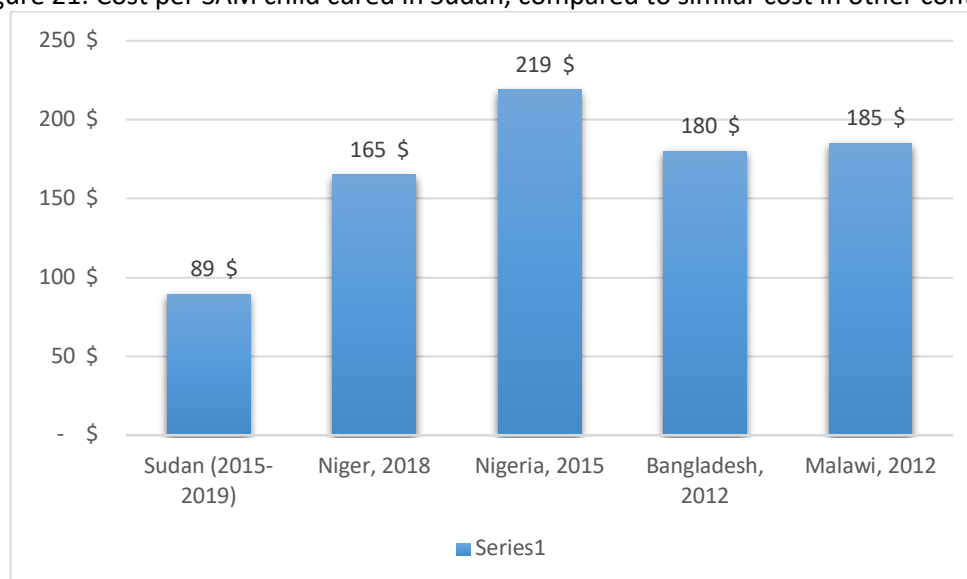


Source: the Evaluation Team, using the financial data provided by UNICEF

4.3.4.6. Cost per SAM cured compared to other contexts

The cost per child cured in Sudan is lower than that observed in contexts such as Niger²⁹, Nigeria³⁰, Bangladesh³¹, and Malawi³² (Figure 21). This can be explained by the fact that, the present analysis considered SAM investments mostly channelled through UNICEF and the FMoH. Investments from other sources were not considered (see limitation section). Moreover, the transportation cost in the current analysis where for the transportation and delivery of supplies from national level to the localities, and the evaluation team did not get figures on the cost of transportation to health centres and hospitals who had to collect the supplies using their own resources. This is not the case in the Niger, Nigeria, Bangladesh, and Malawi costs which considered the transport of commodities up to the last miles (CMAM site). These other studies also considered indirect government investment (staff, infrastructure, equipment), as well the societal costs (opportunity costs supported by families attending the programme, community health workers and volunteers). No data were available to the evaluation team on these additional costs which are therefore not included in the present analysis. Other factors such as the use of locally produced RUTF in Sudan compared to RUTF generally imported from Europe in countries such as Nigeria would be expected to have reduced transportation costs into Sudan.

Figure 21: Cost per SAM child cured in Sudan, compared to similar cost in other contexts



Source: the Evaluation Team, using the financial data provided by UNICEF and the FMOH

4.3.4.7. Cost per life saved

With the caveats on the restricted data set used to calculate costs, the analysis below shows that the average cost per life saved due to the implementation of SAM treatment is 444 US\$ (Table 14). As the costs data excluded numerous items as detailed in the preceding section, this represents a minimum cost / life saved. However even with that caveat, 444 US\$ per life saved, and even if the costs were doubled the programme would still represent very good value for money.

Table 14: Cost per life saved from SAM treatment delivered in Sudan

	2015	2016	2017	2018	2019	Total	Average
Total SAM admitted	165,771	252,405	251,546	270,029	275,083	1,214,834	242,966
Expected deaths ^{&}	28,720	43,729	43,580	46,783	47,658	210,470	42,094
Deaths observed [*]	2,209	4,030	3,493	3,119	2,920	15,771	3,154
Lives saved	26,511	39,699	40,087	43,664	44,738	194,699	38,940
Amount spent	20,334,708	15,122,744	13,258,649	16,097,622	21,625,653	86,439,377	17,287,875
Cost /life saved	767	381	331	369	483	444	444

[&]: expected deaths if no treatment

^{*} Deaths observed in the programme

4.3.4.8. Local production of RUTF

SAMIL industrial company was established in 2011 as a Nutriset franchise, making the Nutriset plumpynut RUTF recipe under license. SAMIL have been supplying locally made peanut milk recipe RUTF in Sudan since 2014. It is made from imported milk powder, mineral vitamin premix and some imported oil but also uses locally grown peanuts, sugar and some locally made oil. SAMIL have steadily increased the quantity supplied from 51,000 cartons (708 MT) worth \$2.884 M USD in 2015 up to 144,000 cartons (2001 MT) worth 6.1 million USD in 2019 (ref UNICEF supply division reports 2015 – 2019). This increase in supply has also seen a marked reduction in product costs and over the period of this evaluation the cost of SAMIL's RUTF has decrease from \$56.44/carton in

2015 down to \$42.10/carton in 2019, with the main price reduction occurring between 2015 (56.44 USD/carton) and 2016 (45.36 USD/carton)¹⁵. The proportion of RUTF used in the CMAM programme that is locally produced has also increased substantially during the evaluation period, up from 27% in 2015 to 85% in 2019. This is an impressive increase and reflects a positive move toward sustainability with SAMIL's use of locally grown ingredients serving to boost the local economy and lessens reliance on imported inputs for the CMAM programme.

Conclusions on Efficiency

EFFICIENCY 1: Overall, the capacity of health staff and volunteers is good. However, appropriate counselling of patients, the quality of records, anticipating stock shortages and the supervision are not adequate. Health staff also often lack skills in community engagement. These weaknesses should be strengthened through intense training and supportive supervision of health staff and volunteers.

EFFICIENCY 2: Insufficient follow up and supervision, relatively late admissions, and stock-outs of RUFs have affected the programme quality, leading to many defaults from earlier attendance of the programme.

EFFICIENCY 3: The linkages of SAM treatment with other programmes delivered within the health facilities such as EPI or IYCF, or in the community (such as ICCM) are not consistent and there is room for improvement through a better understanding of the roles between SAM and these programmes, developing better case finding and referral strategies, particularly for isolated or difficult to reach populations.

EFFICIENCY 4: Low engagement of the community, and frequent stock out of RUSF have resulted in sub-optimal early case identification and treatment, misuse of RUTF leading to frequent stock out and fragile health and community systems.

EFFICIENCY 5: CMAM funding has increased over the years, supplies and commodities absorbing most of expenditures. Most funds are from humanitarian sources. The cost-effectiveness of the SAM treatment is good in the context of Sudan.

¹⁵ <https://www.unicef.org/supply/documents/ready-use-therapeutic-food-rutf-price-data>

4.4. IMPACT

4.4.1. Lives saved with the current CMAM program

The objective of the CMAM programme is to reduce child mortality due to malnutrition. Given the “curative” nature of the programme, its primary outcome is to reduce child mortality, which has been achieved with success (as shown in effectiveness chapter). The evaluation also estimated “the lives saved” based on deaths observed during treatment of SAM children admitted and the expected deaths in the population of SAM children if not treated^{33,34}. It is not possible to know for certain the death rate from untreated SAM in the current context as data does not exist. The best estimate of the death rate of untreated SAM cases has been derived from historical studies in multiple contexts (1986-1994) and is estimated to be between 10.5% and 21.1% (weighted average of 17.325%)¹⁶ and we have therefore used this estimate in the calculations below. Findings showed that from 2015 to 2019, 194,699 lives were saved with the implementation of CMAM, for an average of 38,940 lives saved annually. It increased from 26,511 in 2015 to 44,738 in 2019 (Table 11)¹⁷. The number of lives saved has increased over years, probably linked to the gradual increase in admissions. Thus, it can be concluded that the implementation of OTPs contributed to live saving among under-five children in Sudan.

Table 15: Number of lived saved with CMAM implementation from 2015 to 2019 in Sudan

	2015	2016	2017	2018	2019	Total	Average
Total SAM admitted	165,771	252,405	251,546	270,029	275,083	1,214,834	242,966
Expected deaths	28,720	43,729	43,580	46,783	47,658	210,470	42,094
Deaths observed	2,209	4,030	3,493	3,119	2,920	15,771	3,154
Lives saved	26,511	39,699	40,087	43,664	44,738	194,699	38,940

Source: the Evaluation Team, based on data from FMOH 2015-2019

4.4.2. Changes achieved in children and communities with the implementation of CMAM

One of the targets of the National Nutrition Strategic Plan 2014-2018 was to reduce and maintain childhood wasting to less than 10%. It should be noted however, that CMAM is mainly curative and does not address the underlying causes of malnutrition that requires it to be implemented in conjunction with a range of nutrition specific and sensitive interventions. Thus, the expectation that the CMAM programme would reduce the prevalence of wasting is ‘overambitious’.

During the period 2015-2019 only one nutrition survey was conducted in Sudan, the S3M-II of 2018-2019. The Team compared wasting prevalence of this survey with the one conducted in 2013 (S3M-I). Findings showed that GAM and SAM prevalence slightly decreased but did not meet the expectations. GAM slightly decreased, from 13.7% to 13.6% and SAM slightly decreased from 2.9% to 2.7% for (Figure 18).

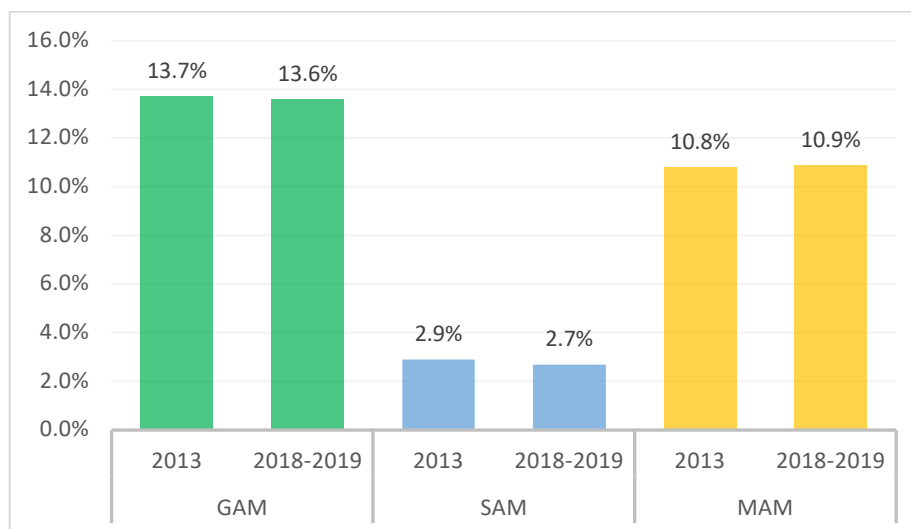
In the states, there was important decrease in GAM prevalence in Blue Nile (from 18.5% to 6.4%) and North Darfur (from 28.3% to 19.4%). Slight decrease in GAM prevalence was also observed in the states of Gedaref, North Kordofan, Red Sea, Sinnar, South Darfur, South Kordofan and West Kordofan. However, the prevalence rather increased in the other states, particularly in Northern and Khartoum (Figure C1 in complementary findings). For SAM prevalence, there was an important decrease in the states of Red Sea, North Darfur, Blue Nile, Kassala and Gezira, as well as a slight decrease in North Kordofan, South Darfur, South Kordofan, West Kordofan and White

¹⁶ It is estimated from the following formula: Expected deaths in the absence of treatment = number of admissions * death rate of untreated SAM (17,325%); Number of deaths observed = total number of deaths among children admitted to OTP and SC. Lives saved = Expected deaths - Deaths observed in OTP and SC.

¹⁷ Keeping in mind that what have been assumed in 90th couldn't be applied for the period of 2015-2019 due to the dramatic changing context in Sudan.

Nile. No change was observed in Sinnar and West Darfur. The SAM prevalence increased in the other states, particularly in Khartoum, Northern and River Nile (Figure C2 in complementary findings). Optimal impact on the nutritional status of children would have probably been achieved if CMAM was strongly linked with nutrition sensitive interventions aiming at addressing underlying causes of malnutrition.

Figure 22: Trend of GAM, SAM and MAM prevalence from 2013 to 2018-2019 in Sudan



Source: the Evaluation Team, using the S3M-I and S3M-II surveys

4.4.3. Positive and negative unintended consequences of CMAM

4.4.3.1. Positive unintended consequence

Increase in attendance of health services and case finding. According to interviews with health workers, the availability of RUTF in OTP sites has increased the attendance at the health centres as the product is perceived by the community as very useful for children, either malnourished or not. Interviewed health workers and volunteers reported that many mothers attended the health centre hoping that their child will be admitted to the programme and receive the RUTF. Health workers then used this opportunity to administer other child health services such as immunisation or growth monitoring. For example, case finding in Kassala sometimes has been successful because of community-wide desire to obtain a valuable resource (RUTF) that could then be shared, as appeared to be the case in the Hadendawa community the evaluation team visited. Case finding in this community was mostly timely but the chance to obtain and share RUTF was an important driving force.

4.4.3.2. Negative unintended consequence

Sharing of RUTF. Some sharing of small quantities of RUTF is common practice. Siblings might also want a taste of the delicious, “sweet medicine” and resisting this demand might be difficult for a mother. Some interviewed mothers were trusting older siblings to oversee the feeding with RUTF to their younger malnourished brother or sister and it is not hard to imagine them sampling the product while doing this, even if only to speed up the chore. But a little sharing should not lead to the extent of slowness of recovery that was observed in some OTPs. Health staff in these OTPs were convinced that the slowness reflected substantial sharing or even the selling of RUTF. Sharing RUTF can contribute to the long stay in the program but also other factors can contribute, such as in appropriate counselling provided to the mothers on healthy feeding practice and individual vulnerability. A few of health staff were tentatively trying out methods to control sharing such as counselling mothers with children

who were recovering slowly, advising that RUTF can be dangerous for children who do not have SAM, and (in one case) even calling on households a day or two after an OTP attendance to check that they still had most of the RUTF they had been given. Sharing of RUTF in mobile sites was mainly associated with long periods between OTP sessions (they received important quantity of RUTF every four weeks) and the apparent community expectation that RUTF is for sharing. Thus, RUTF seemed to be supporting timely admissions as well as recoveries taking a more than three months.

Selling RUTF. As reported by interviewees, the selling of RUTF by families appears to be a problem in North Darfur. A number of OTPs have successfully controlled the problem through counselling, particularly when mothers had a good understanding of the importance of maintaining their malnourished child's consumption of the recommended dose along with enlisting the support of representative community structures (which can ensure that the law concerning the sale of RUFs is effectively enforced and can help build the sense that selling RUTF is an anti-social activity). UNICEF has successfully advocated to the State governor to endorse a decree prohibiting the selling of RUTF in the local market. Still, it was apparent in North Darfur that there is leakage from the RUTF supply chains, with boxes of RUTF available in many markets. There is a need to address this issue. In Kassala, some OTPs located in the very poor communities of the rural localities often have problems with the leakage of humanitarian goods, including RUTF sold in local markets. In one of these OTPs, the evaluation team heard of some mothers being distressed (rather than proud) when their child was discharged as cured (and would no longer be receiving RUTF).

Using RUTF as incentive to attract children in other programmes. This was mainly observed in OTPs operating in the same facility/room with EPI in some localities of Gezira. Given the attractive effect of the RUTF on the community, it was used by health workers delivering EPI services to stimulate enrolment and attendance to different immunisation sessions. However, this was rare incident and cannot be generalized to all CMAM sites.

Conclusions on Impact

IMPACT 1: The implementation of OTP services contributed to nearly 200,000 lives saved among under-five children. However, CMAM has a primary curative focus and requires a strong linkage with preventive interventions to attain the potential to induce higher impact on the nutritional status of children.

IMPACT 2: The availability of RUTF in OTP sites stimulated attendance to other child health services. However, issues such as misuse of RUTF (sharing among siblings and selling in local markets – particularly in North Darfur) exist and is being addressed.

4.5. SUSTAINABILITY

4.5.1. Integration of CMAM, contribution to health system strengthening and in promoting ownership

The purpose of the CMAM scaling up plan 2015-2018 was (for sustainability) to integrate CMAM into the health system during its expansion across the different states of the country. The evaluation team used the framework proposed by the WHO in 2007, which suggests that the assimilation of an intervention into a health system requires that its components be tied up with the six pillars of the health system, including governance, funding, human resources, delivery of services, equipment/supplies, and the health information system. The evaluation team analysed to what extent the implementation of CMAM might have contributed to strengthening each of these pillars, in light of secondary and primary data collected at national level and in the three states of Kassala, North Darfur and Gezira.

4.5.1.1. Governance

Full integration at this level is achieved and ownership promoted when CMAM is included into the national health policies and strategic plans, the state health policies, and plans, as well as the health service delivery package in the localities. Moreover, the coordination and allocation of resources are managed by federal and state authorities. In Sudan, CMAM has increased the visibility of the Nutrition Directorate of the FMOH, in terms of development of strategic plans and coordination. Management of SAM and MAM is part of the strategic objectives of the national nutrition strategic plan (2014-2018), and the national CMAM scaling up plan (2015-2018) was developed in line of this strategic plan. National CMAM guidelines have been developed accordingly, by the FMOH, and they are applied in the states and localities. However, the coordination mechanism, which has improved over time at federal level between UNICEF, WHO and WFP for CMAM planning and implementation, is not consistent in the states and localities. Overall, the implementation of CMAM has partially contributed to strengthen governance at different levels of the health system.

4.5.1.2. Financing

Financing refers to fundraising to support the treatment of acute malnutrition and how these funds are obtained. Integration is achieved and the system strengthened when budget allocation of annual action plans considers all components of CMAM, the programme funding is part of a sector-wide approach financing, and the staff involved in CMAM are financially supported by the government. In Sudan, humanitarian funds have been mobilised to support training, capacity building and supervision, purchasing supplies and equipment, delivering the services through the government health facilities. The implementation of CMAM is mostly funded by external sources. Incentives provided to volunteers performing mass screening are ensured by external funds as well. No government mechanism for taking over this funding exists. The government partially contributed to RUF procurement from 2015 to 2019. Thus, the financial ownership of the programme is still partial.

4.5.1.3. Service delivery

Services are fully integrated if fair health care services to hard-to-reach or vulnerable areas include CMAM, community awareness and active case finding and referral is provided by government systems, inpatient care for acute malnutrition is included in paediatric services, CMAM services are linked with other MCH services such as IMCI, EPI, IYCF, FP, etc., and home referral (community-based primary health care) is provided and includes CMAM. In Sudan, hospitals have been rehabilitated and supported for appropriate delivery of inpatient and outpatient care for AM. Although the geographic coverage of OTPs is still low (27%), CMAM programme is delivered within the government health facilities, the camps and through mobile clinics in some locations with isolated or mobile populations. Government staff have been trained and are treating with some success (good cure rates) SAM cases with or without medical complications. Although most admissions are achieved through self-referrals (which included those referred by health workers), the awareness for acute malnutrition still has to be strengthened. Some OTPs have taken steps to reach out within their communities to raise awareness about

AM and the CMAM service, although in a small scale – engaging informally with mothers support groups and/or mothers of SAM children admitted, providing nutrition knowledge and asking them to share it more widely ... or even to screen using MUAC bands. Mother-MUAC is being piloted with success in some localities, which is strengthening mother and caretaker capacity for early identification and referral. These are important achievements that can last for a long time.

As mentioned in the efficiency chapter, except for a very few OTPs in North Darfur, community engagement and mobilisation are weak throughout the programme. These important aspects of CMAM programming still need improvements for better impact and sustainability.

4.5.1.4. Human resources

Health workers in the sites visited were trained on CMAM guidelines. Most of these staff received in-service training, which strengthened their capacity for appropriate management of acute malnutrition. During field visits in Kassala, the evaluation team noticed that the trained volunteers were as competent as other OTP workers in delivering OTP services. These are community nutrition volunteers (CNVs) or trained cadres who are providing the services but not in the government pay roll. This technical capacity building is an important achievement that can last for a long time, along with the involvement of MSGs, provided supportive supervision is done on a regular basis.

In Kassala, the hand-over of service sites by INGOs to SMOH has been well-managed and Locality Nutritionists are working well with remaining NGOs. In North Darfur, a process is needed to guide the hand-over of OTPs from INGOs to SMOH as there is currently no defined exit strategy¹⁸.

The Gezira programme received little or no NGO support and has been weaker than the other states. However, with strong leadership and sound technical knowledge, it could be turned around to represent a good and sustainable return on what has been invested in it so far.

One difficulty frequently reported by the interviewees at different levels was the important turnover among trained staff, who are appointed to other localities while the new personnel replacing them are not trained for management of acute malnutrition. This creates a gap which affects quality of services, and calls for frequent re-training, as CMAM is not yet included in the curricula of medical schools (for pre-service training).

4.5.1.5. Infrastructure, equipment and supply

As mentioned in the efficiency chapter, most health centres (80%) visited were equipped for anthropometric measurements and visual aids. The implementation of the programme has facilitated the national production of RUFs using some local ingredients. National production covers 60 to 65% of local needs every year, which is a great achievement in the context of Sudan in terms of job opportunities it has created and boosting of local economy. However, the fact that the RUF supply chain is managed outside the national supply chain, although efficient in terms of supply transportation and delivery from federal to state and locality level, has not enhanced national capacity building. The transportation gap from locality to the CMAM sites - which mainly relies on NGO support, community support or money from the hospitals or individuals - should be addressed, as this is one important source of RUF stock outs.

4.5.1.6. Health information system

In Sudan, rigorous and formal data collection and reporting tools have been developed and health workers have been trained on their use. However, although health managers at federal, state and locality levels are currently getting refresher trainings on ensuring better quality of data, with the financial support of UNICEF, CMAM indicators are not included in the DHIS. This represents a limitation for efficiency and sustainability.

¹⁸ The INGOs had not worked with the Locality Nutritionists to develop their capacity to supervise OTPs, and these INGOs are often not doing good supervision either.

4.5.2. Current government investment in CMAM and how it could be maximized

In Sudan, although malnutrition is considered a priority by the government, no national budget line is currently directly allocated to nutrition or specifically to CMAM on a permanent basis, due to government competing priorities. Interview with stakeholders at national level revealed that the government of Sudan contributed to an amount of 1 Million US\$ for the provision of RUTF in 2017, and an additional amount of 10,555 US\$ in 2019 for different CMAM activities. However, this contribution stopped because of difficult economic situation experienced by the country.

The biggest investments by the government in the CMAM programme is in the form of premises and staff involved in the planning and implementation of the programme at federal, state and locality levels, as well as health workers delivering the services in the health facilities. Moreover, the management of acute malnutrition is free of charge, and the ingredients imported for local production of RUF are exempted from taxes (which has, according to interviewees at national level, a positive impact on the price of RUFs). This government indirect contribution has a cost, which was not estimated in the present evaluation as it was not within the scope of the project.

In most SCI and GOAL OTPs and many RI OTPs in North Darfur, MoH staff have been seconded to INGO programmes and have generally had their capacities developed by training and supportive supervision. It is assumed they will revert to being MoH staff when the INGOs pull out but without the INGOs topping up their salaries. While there has been substantial investment by MoH in the development of the Gezira CMAM programme it has not been close to sufficiently build a programme that is effectively managed and steered to address its many weaknesses.

Locality administration and community structures do not yet fund the programme, probably because community engagement is not strong enough. The decentralisation process initiated in 2020 is an opportunity to include CMAM funding in local initiatives.

4.5.3. Opportunities for and the risks for the sustainability of the programme

Much has been achieved in developing a national CMAM programme and many children's lives are saved, however at present our analysis using the WHO's sustainability criteria indicate that the programme is still far from being sustainable and it is likely that that CMAM in Sudan will need international support for the foreseeable future.

Based on the discussion presented above, many achievements can however be considered as opportunities for building a more sustainable CMAM system in the country. They include the policy, plans and guideline development that is occurring, the expansion of the delivery of services within government health facilities, the management by trained OTP staff and Nutritionists, and the local production of RUFs. Key to building on these will be increasing the focus on CMAM in the training of health staff at all levels, so that they understand the importance of the intervention, how it is implemented and the key determinants of success. As mentioned in section 4.3.3, helping all staff to understand the importance of community engagement and the benefits that this can have in terms of lowering the cost of the intervention and increasing impact is an easy win here. This training and awareness building needs to start with the more senior Sudan health professionals so that the importance and benefits of CMAM are established within the health system.

The use of mother-MUAC and other means for mobilising community members such as MSGs also constitute opportunities for improving the coverage of the programme at low cost through early case identification and community ownership. These are good prerequisite for sustainability and will promote a gradual shift in the populations "health seeking behaviours" that should ultimately reduce the pressure on outreach and decrease caseloads.

The delivery of CMAM through government health services is an opportunity for strengthening its linkages with other MCH programmes and prevention programmes implemented at health facility, and with the community for addressing underlying causes of malnutrition. Sudan is part of the SUN movement, and this constitutes an opportunity for imbedding CMAM within a multisectoral approach for efficiency and sustainability.

Donors interviewed are very willing to fund the whole package of CMAM in the future, but also the multisectoral approach in Sudan. At present the majority of this funding is from humanitarian sources and there needs to be advocacy to allow donors to better understand that CMAM although dealing with acute malnutrition is focusing resources on a fundamental development challenge facing Sudan and that cost effectiveness requires long-term predictable funding that allows the government to proactively build a sustainable system through an increased focus on training and community engagement for example rather than just on service delivery. Insecurity, the volatile economic situation, pipeline breaks and the often-poor management and supervision capacity constitute the main risks that can jeopardise the sustainability of CMAM in the country.

Conclusions on Sustainability

SUSTAINABILITY 1: The CMAM programme in Sudan has been a major achievement. Capacities have been built and systems developed. But these gains may be fragile, and it is likely that the system will need international support for the foreseeable future. There is still an important need to ensure that the coordination mechanism is strengthened at state and locality levels, government resources are sufficiently funded; there is a greater focus on raising the importance of CMAM at all levels in the health system and ensuring that staff understand its importance and are trained in its implementation will be important. Increasing the importance placed on the support and supervision of the various aspects of the programme is likely to improve the functioning of the system and its ultimate sustainability as is ensuring that CMAM services are linked with other MCH services and home referral, RUF supply chain is managed through the national supply chain, and CMAM indicators are included in the DHIS. Further, work to build much stronger community involvement and ownership will be critical to lead to a more robust and sustainable programme.

SUSTAINABILITY 2: The government's indirect participation through staff, infrastructure, equipment and services that are free of charge for children is a good practice that should be promoted to enhance more ownership. Donor should support this through a shift to longer term more predictable funding.

SUSTAINABILITY 3: Delivery of CMAM services within government health facilities, the local production of RUFs, the use of different « community-based case finding methods » such as mothers' MUAC, mothers' groups, ICCM are opportunities for sustaining CMAM, along with its implementation within a multisectoral approach for addressing malnutrition.

5. Lessons learned

- **Underemphasising the importance of community engagement** by managers and OTP workers at different levels is a critical issue undermining the effectiveness of CMAM in Sudan. Community engagement is essential if the programme is ever to evolve into a sustainable intervention through altering community health seeking behaviour and their understanding of the cause and how to prevent acute malnutrition. Given the important size and complexity of Sudan, creating sufficient understanding amongst the community so that they identify acute malnutrition and seek treatment early would be the best way to improve coverage in large catchment area or densely populated area.
- The objective of **lowering the prevalence of acute malnutrition** cannot be achieved by treatment of SAM or CMAM programme acting alone. The programme did not establish sufficient linkages with a wide range of nutrition specific and sensitive interventions (social protection, food security, livelihood, etc.) that can benefit the children and concomitantly strengthen the resilience of their households. Impacting on prevalence of acute malnutrition requires strong integration with other programmes.
- Without a **consistent database**, it is difficult to determine whether programme outputs and outcomes reflect the reality. For example, evidence showed that defaulters are under-reported, and given that most of cases default early, it represents a considerable under-reporting of mortality as well. Late admissions and slow recovery are not captured, thus difficult to initiate appropriate action. Strengthening accuracy and reliability of data is important for good management of the programme.
- **Achieving high quality standards** within a health system experiencing multiple challenges is difficult. A more decentralised SAM outpatient service delivered within the community through appropriate linkages with preventive interventions is an alternative that should be explored in the context of Sudan. Optimal community engagement is requisite for implementing such initiative.

6. Final Conclusions

Relevance. CMAM is strongly aligned to national health policies and strategies in Sudan and meets the expectations of beneficiaries in terms of targeting the most vulnerable and addressing acute malnutrition among under-five-children at decentralised levels. It is well accepted by beneficiaries and is adequate for strengthening the capacity of government staff despite challenges experienced such as insufficient coordination between stakeholders at different levels and limited linkages with MCH programmes.

Effectiveness. Major factors contributing to the relative success of the programme include the engagement of national authorities, financial support from donors, technical support from UN Agencies and NGOs and the availability of RUTF. Although programme's performance has improved over time, access to services remains below expectations, and the programme experiences late admissions and high defaults. Community engagement, which is the cornerstone of the programme for optimal access is not adequately implemented. For better planning and implementation, the monitoring and reporting system should be consistent and strengthened.

Efficiency. Significant progress has been achieved in deploying SAM treatment activities within the health centres and through mobile teams. Stock-outs of RUTFs has reduced over time. However, quality standards are not reached because of weak linkages between SAM treatment and other curative and preventive programmes, irregular supportive supervision, and low community engagement.

Impact. The implementation of OTP services strongly contributed to child survival and stimulated attendance to other child health services. Addressing the problem of miss use of RUTF can contribute to better achievement, especially given it absorbs most of programme expenditures. The programme is very cost-effective in life saving of children suffering from severe acute malnutrition.

Sustainability. Delivery of SAM treatment services within government health facilities, the local production of RUTF, relative high awareness of the programme among the population are important characteristics that spur adherence to the programme. Technical sustainability is feasible, but reliance on emergency funding limits the programme's sustainability prospects. The programme would benefit from being implemented within a multisectoral approach for addressing malnutrition in the country.

7. Recommendations

Based on the findings and conclusions of the evaluation, strategic and operational recommendations were developed, discussed, and reformulated during a workshop on preliminary findings held on February 2, 2021.

Strategic Recommendations

Detailed recommendation	Management responsibility	Level of priority
1. Re-organise, revamp, and increase the emphasis of community engagement and mobilization - Ensure rigorous application of the community outreach guidelines by state and locality Nutritionists, health managers, health workers and OTP workers - Define clear community mobilisation indicators to facilitate implementation and reporting on this component (Conduct an in-depth community mobilisation strategy assessment for the CMAM programme to identify the models being used in different states in Sudan including the <i>Jabana strategy</i> which was introduced several years ago. Mapping out the pros and cons of each. This should be conducted by experienced experts in CMAM) - Strengthen MSGs and existing groups assembled for other purposes in case-finding, referrals, and sensitization. Also form father's support groups for the same purposes. The initiation of father groups is also an avenue for reinforcing the role of fathers in parenting and sending the right signal that case identification and management should be done by any caregiver wherever they happen to be (including when travelling to visit relatives) and taking them to the accessible functioning health facility for admission if she/he notices the child is suffering from acute malnutrition.	<i>The FMOH should take the lead in collaboration with UNICEF, WHO, WFP and NGO Implementing Partners</i> <i>FMOH: Nutrition Department, MCH and its different Directorates, Community Health Department</i> <i>Specific high expertise can also be consulted for this purpose</i>	High

○ Adopt and implement the household MUAC approach (involving mothers, fathers, and any carer in the household) to screen and refer cases early for treatment ○ Engage key community figures such as fathers, traditional birth attendants and healers, community "representatives" (sheikhs, committees) for mobilisation and adhesion to the programme ○ Strengthen community awareness using different communication methods ● Institutionalise community mobilisation for the CMAM programme by having a dedicated team of Community Mobilization experts to analyse, implement and evaluate the community mobilisation strategy for the CMAM programme. ○ Clarity about who (in OTPs) is responsible for community engagement and supervision (and takes late admissions and slow recovery seriously) is needed – those involved at all levels should be trained. ○ NGOs often hire staff who are seconded by MOH. Getting them trained along with working to strengthen SMOH, Locality Supervisors and State managers to ensure they are aware of the importance of community engagement and know how to recognize that it is being done. ○ Conduct some randomised trials for the Community Mobilisation strategy to measure and compare impact for example, comparing impact in sites with Mother Support Groups or Mother MUAC with those that depend on mass screening only, etc. ● Standardize the incentive package for volunteer motivation ● Reach migrating groups more often and liaise with their leaders to coordinate with them to monitor children who are in the programme to minimize or reduce the problem of defaulting ● Consider routine direct assessment of coverage to identify low coverage areas (insert coverage assessment in the next S3M) and to design appropriate strategies for hard-to-reach communities		
2. Strengthen the national health information system for real time monitoring and timely reporting ● Strengthen and better utilize the National Nutrition services data platforms (i.e. CMAM database, facility reports, localities and states report, NGOs related facilities reports, standardized the criteria of selection, training the staff: MoH/NGO, channel of communicational and reporting) ● Insert CMAM indicators in the national DHIS to standardize the monitoring and reporting system from locality, state to federal level	<i>UNICEF, WHO, and WFP should take the lead in</i>	

• Update the monitoring tools / check list at state and locality levels, to better capture proportion of late admissions and of slow responders (add late admission to supervision checklists, mean MUAC at admission, length of stay) and to ensure management focus on these issues • Harmonise the monitoring tools used by different partners for consistency and reliability • Strengthen record keeping system and quality of data in the health facilities, locality, and state bureau • Use of data and different reports for evidence generation for future planning (e.g. document Sudan experience on use of CMAM routine medication in improving programme performance)	<i>collaboration with the FMoH and NGO Implementing Partners</i>	High
3. Continue the partnership between Government, donors, and development partners to ensure long term & flexible funding for CMAM & addressing underlying causes of malnutrition • Advocate for more government (Federal and State) funding investment for CMAM • Include CMAM within the nutrition multisectoral approach • Explore innovative funding initiative to expand the traditional funding channels, such as private sector involvement, charity organization...etc	<i>The Nutrition department of FMoH, SMoH and the SUN Directorate should take the lead with the support of UNICEF, WHO, WFP and NGO Implementing Partners</i>	High
4. Strengthen coordination mechanisms at different levels to ensure more commitments • Activate the SUN Secretariat to ensure more commitments for CMAM programme, nutrition, and other sectors (multisectoral strategy) • Strengthen coordination between partners (SMoH, UN agencies, NGOs) at state and locality level for more clarity on the plans, respective roles, expected standards (more engagement of CMAM focal persons in monthly meeting, signing MOU between nutrition and other sectors) • Map interventions targeting under-five children and their families implemented in the health centres and the community • Integrate CMAM key activities within these interventions for efficiency and sustainability: screening, follow up, sensitisation, prevention	<i>The SUN Secretariat should take the lead, in collaboration with the Nutrition Department of the FMoH, the SMoH, Other Line Ministries (Social protection, Food Security, Livelihood, Education, etc...), the technical and financial support of UNICEF, WHO, WFP and NGOs at different levels, and Donors</i>	Medium
5. Strengthen the programme supply chain management to reduce frequency of pipeline breaks and stock-outs of supplies Short term • Review and revise the approach used for forecasting at different levels to anticipate of RUTF stock-outs • Ensure prepositioning of RUTF in preparation of rainy season and regular transportation from localities to health facilities • Review and adopt RUTF leakage action plan developed by UNICEF at federal level to accelerate the implementation of the Action Plan at state and locality level	<i>UNICEF, WHO and WFP should take the lead in collaboration with the FMoH and NGO Implementing Partners</i>	Medium

<u>Long term</u> Advocate for integration of RUFs into National Medical Supply Funds (NMSF) in line with EHA recommendation		
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Operational Recommendations

Detailed recommendation	Management responsibility	Level of priority
6. Strengthen the capacity of health personnel (Capacity Building) - Establish centres of excellence (particularly good OTP and SCs) to develop the capacities of OTP staff - Follow-up / refresher trainings for front line staff and volunteers (more focus on the on-job training and post training supportive supervision and follow-up; improve the capacity of the staff in CMAM monitoring and reporting; ensure proper hand over among the staff) - Re-activate staff training database to avoid duplication - Update the curriculum of medical and health schools to include CMAM, especially community engagement	<i>UNICEF, WHO and WFP should take the lead in collaboration with the FMOH, SMOH and NGO Implementing Partners</i>	High
7. Ensure regular supportive supervision - Develop Action plan for supervision at different levels - Establish core team for monitoring and supervision at federal and state levels - Provide logistic and financial supports - Improve the integration between the nutrition interventions and other MCH such as EPI - Regular support and supervision for locality and state nutritionists (state's role in managing the CMAM system, state's reliance on data), the OTP staff and remedial action points should be developed together with the staff to promote good service delivery and record keeping	<i>The FMOH and SMOH should take the lead in collaborating with UNICEF, WHO, WFP, NGO, and Donors</i>	High

8. Complementary Findings

Effectiveness

Figure A1: Monthly performance (Kassala, N. Darfur, Gezira)

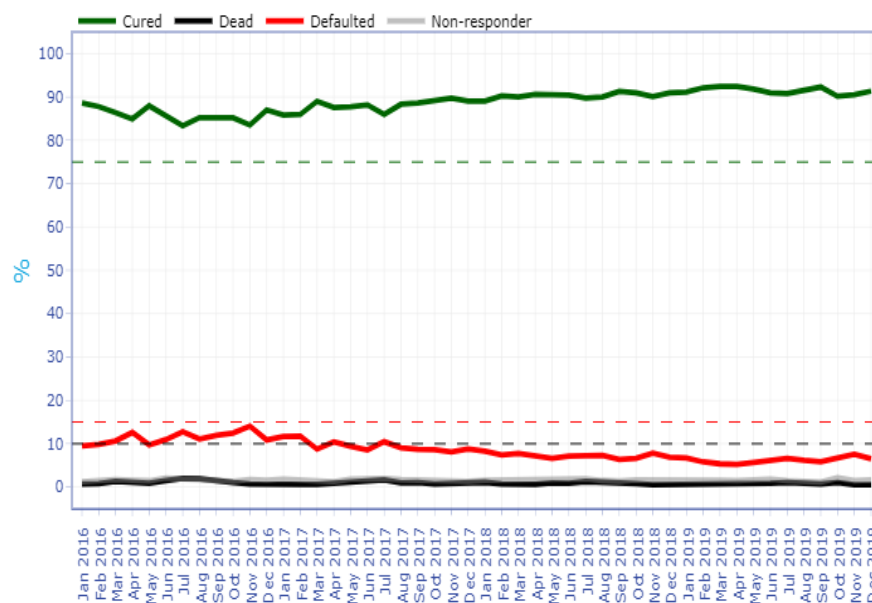


Figure A2: Kassala state monthly performance (2016 - 2019)

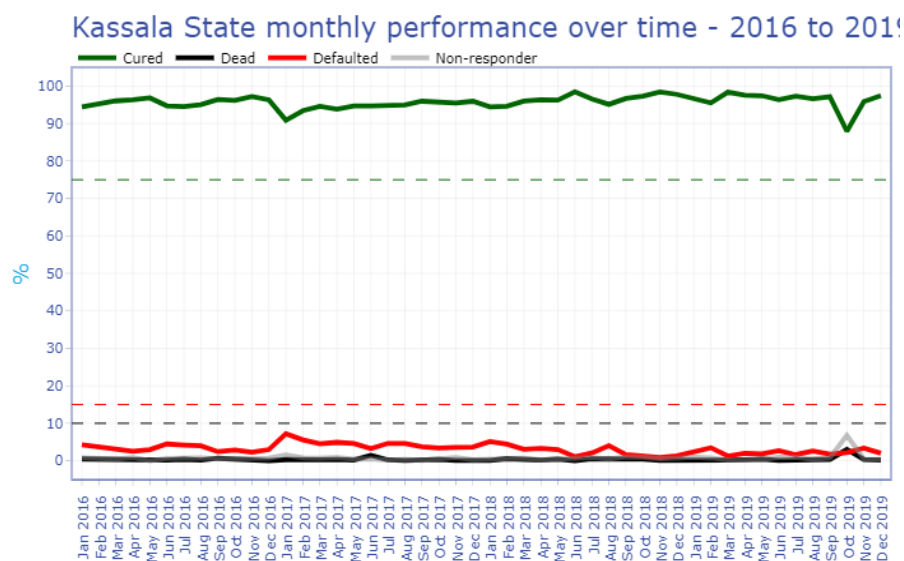


Figure A3: North Darfur state monthly performance (2016 – 2019)

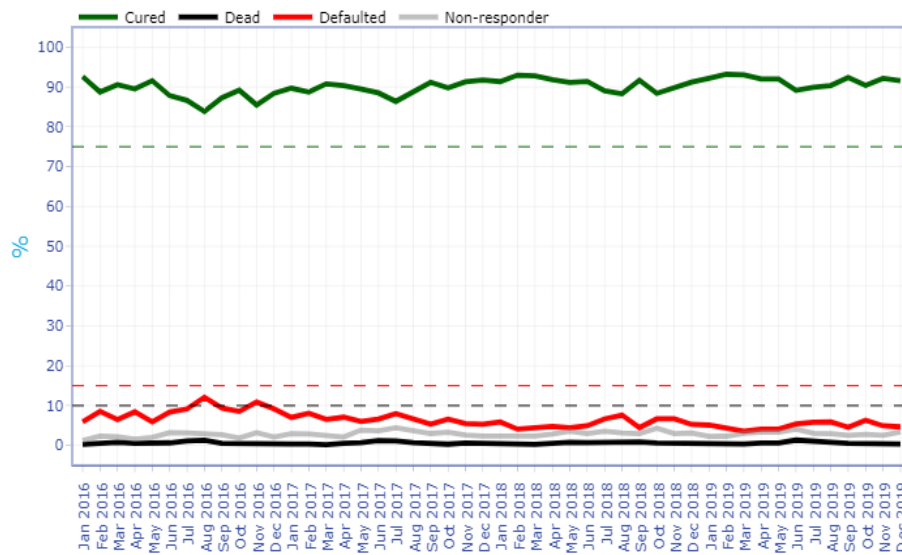


Figure A4: Gezira state monthly performance (2016 – 2019)

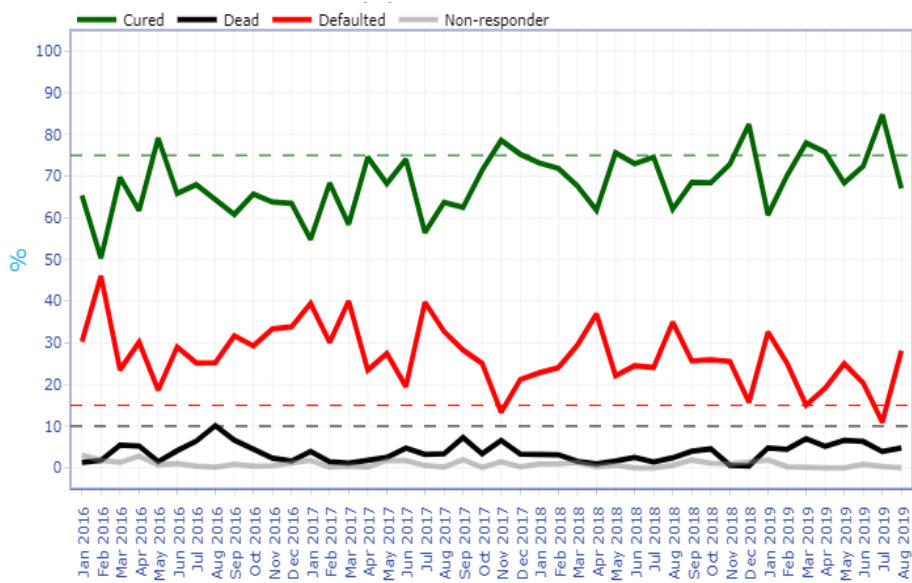


Figure A5: Time to travel (in minutes) by state - Admissions

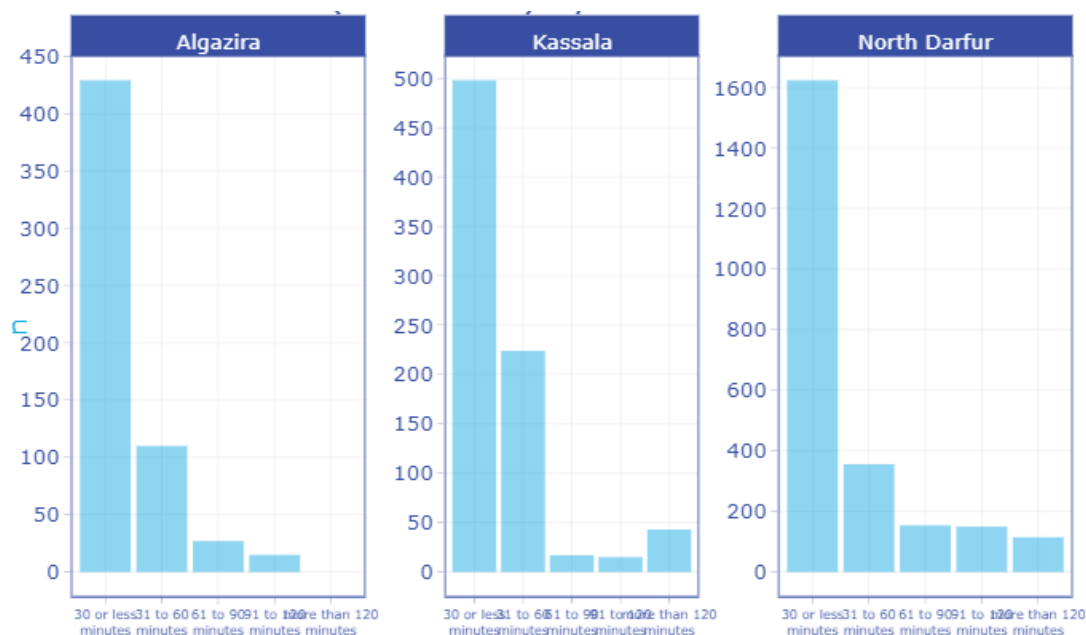


Figure A6: Time to travel (in minutes) by states - defaulters

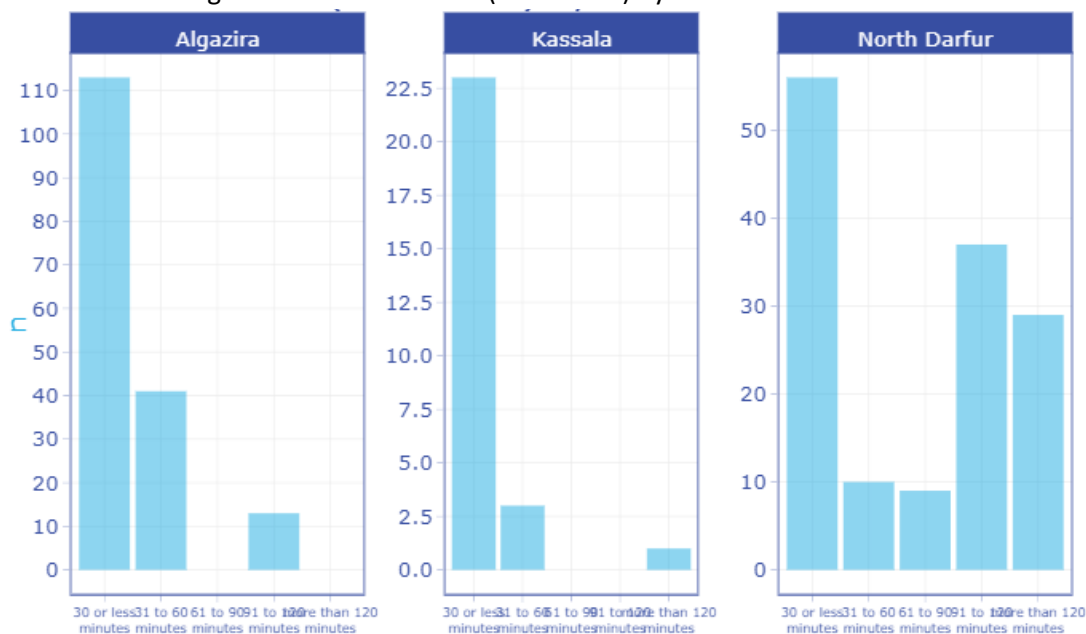
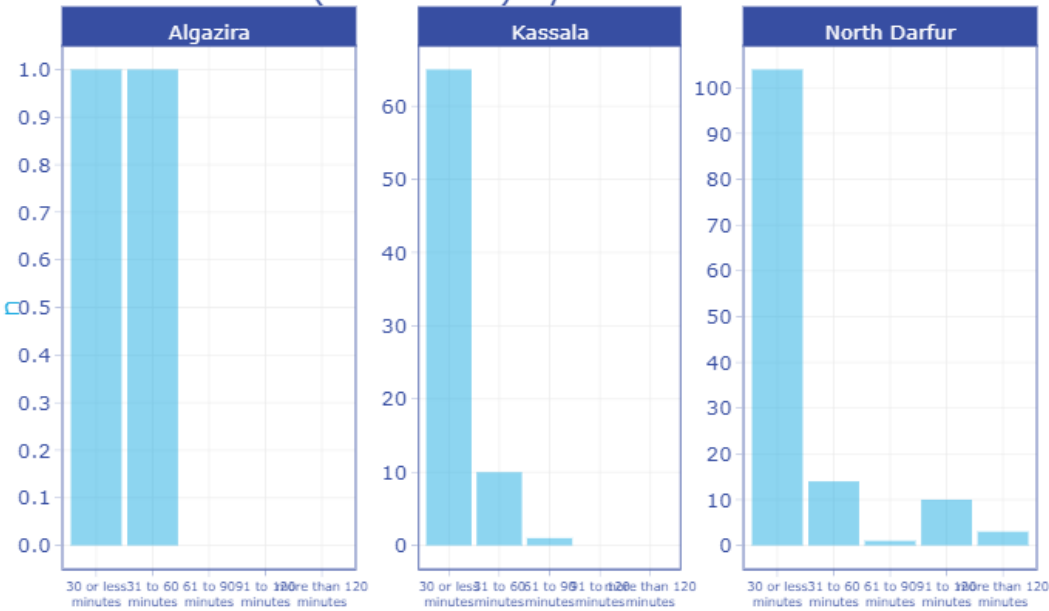


Figure A7: Time to travel (in minutes) by states - volunteers

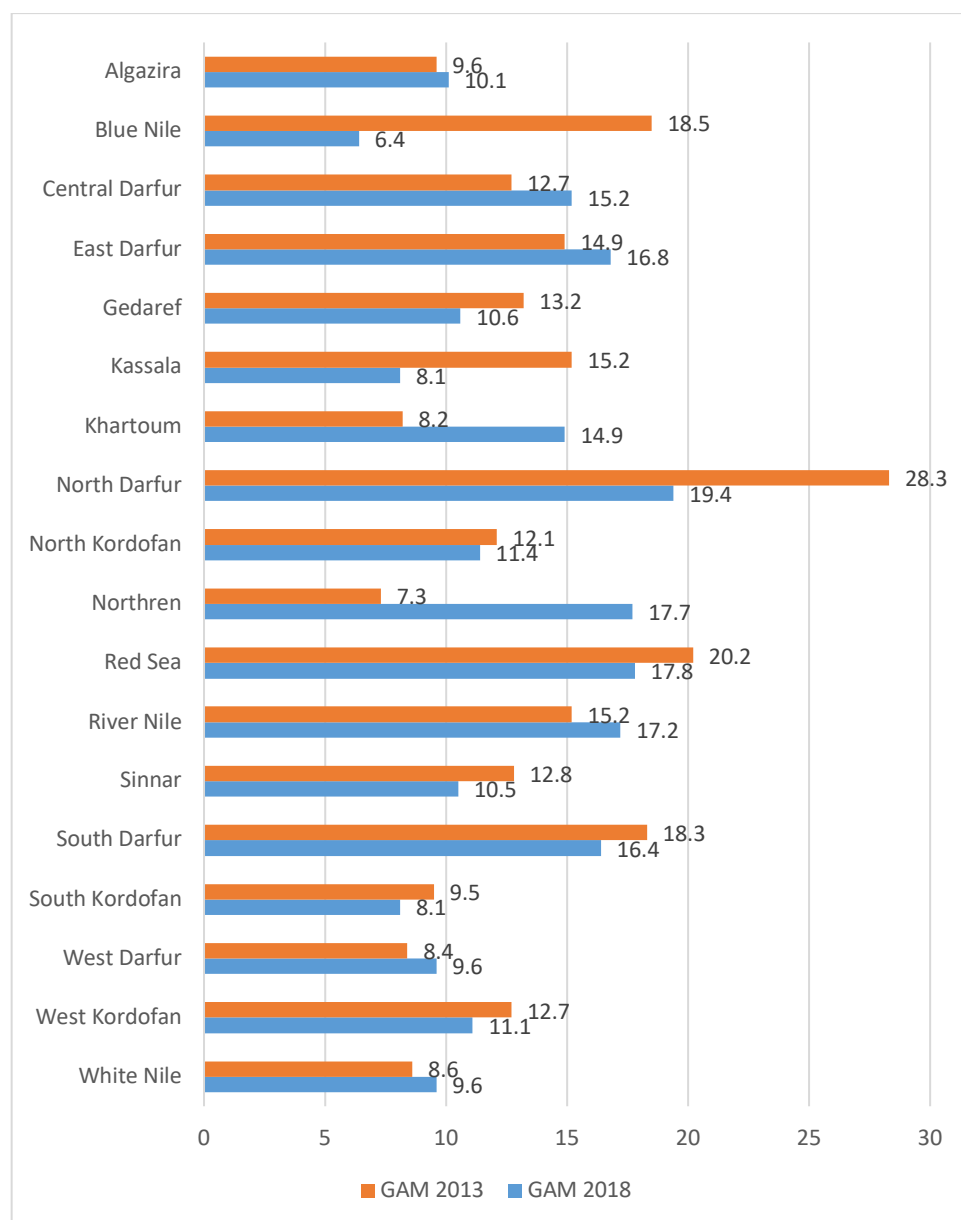


Efficiency

Table B1: CMAM process observed in 45 sites of the state of Kassala, North Darfur and Gezira

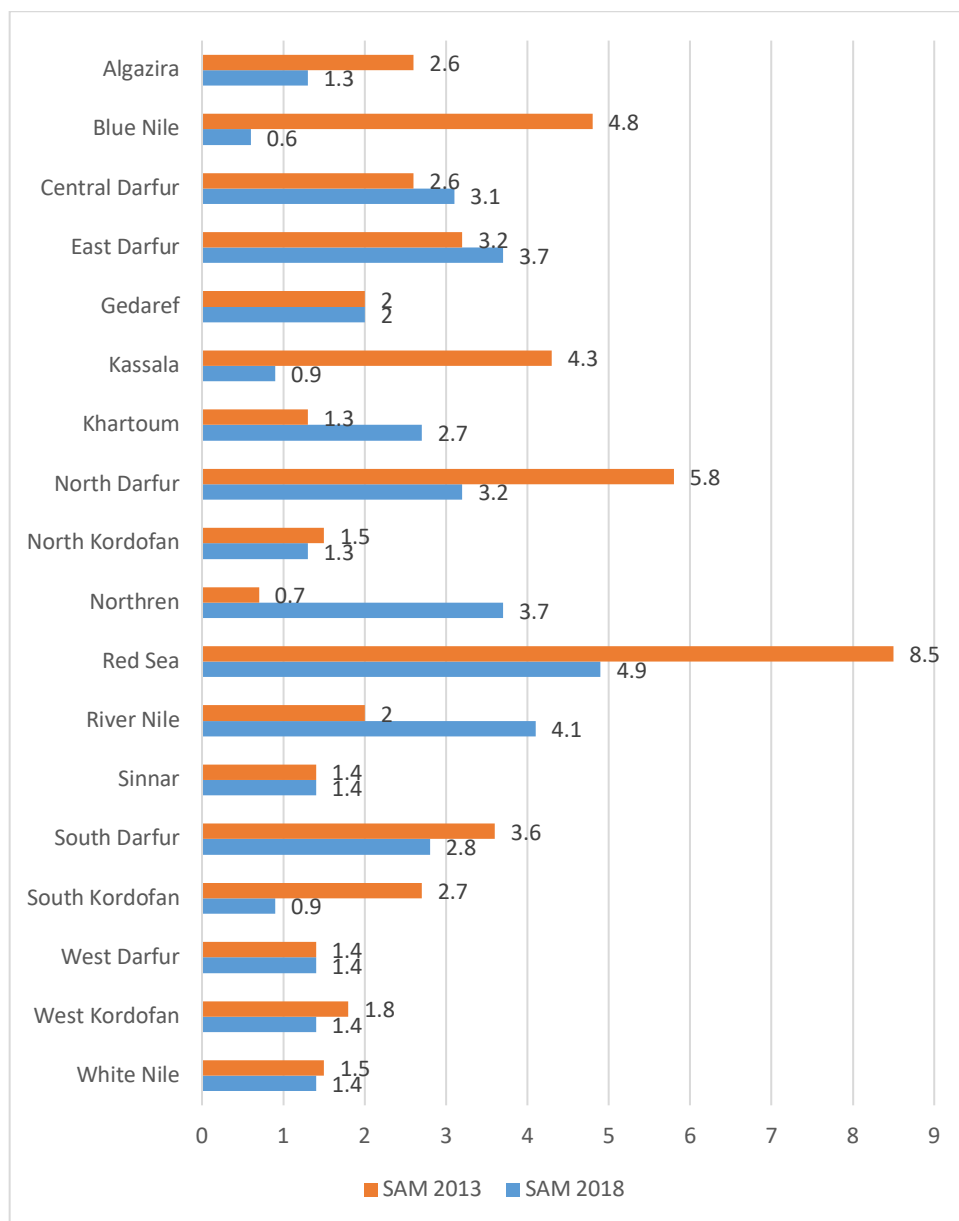
Equipment and Materials	Kassala	North Darfur	Gezira	Mean
The site has at least one functional scale for measuring the weight of children in kg to the nearest 100g.	80%	100%	60%	80%
The site has at least one adult weighing scale/ scale for adults.	93%	100%	73%	89%
The site has at least one height gauge that measures the height of children to the nearest cm.	80%	100%	67%	82%
The site has tape measures for measuring the brachial perimeter of children.	100%	100%	100%	100%
The site has copies of algorithms/guidelines for the management of acute malnutrition in children.	87%	100%	60%	82%
The site has at least one set of nutritional advice cards to be used in advising carers (mothers and fathers) of children on the prevention and treatment of acute malnutrition.	87%	93%	27%	69%
The site has data entry forms and a system for compiling data that includes data on the treatment of acute malnutrition in children under five years of age.	100%	100%	67%	89%
The site has a graph with the weight/height (W/H) thresholds in z-score of the WHO child growth standards, year 2006.	73%	100%	87%	87%
The site has utensils (e.g., bowls, tablespoons, saucepans, kitchen) for cooking demonstrations.	67%	67%	0%	45%
Nutritional Assessment and Classification				
At least two healthcare providers are trained in the management of acute malnutrition in children under five years of age. (within the past year)	67%	100%	0%	56%
For all children arriving at the site for the first time, weight is measured to the nearest 100g, height is measured in cm, P/T index is calculated, and brachial perimeter is measured to the nearest mm.	60%	100%	47%	69%
The weight/height index and/or brachial perimeter are recorded on the registration cards of children under five years of age.	100%	100%	60%	87%
Nutritional Treatment Plans				
MAM child receives therapeutic or supplementary foods based on a treatment plan developed for his or her nutritional and health status.	73%	87%	20%	60%
Each accompanying person receives an explanation on the criteria for entry and exit of the child, the purpose of therapeutic or supplementary food and how to consume it.	0%	0%	0%	0%
Entry and exit criteria for therapeutic foods or dietary supplements are posted in a place easily visible to health workers and caregivers of children under five.	100%	93%	27%	73%
Every SAM child receives enough packets of therapeutic foods to last until the next visit to the health centre, according to national guidelines.	93%	100%	20%	71%
Infrastructure and Amenities				
The site has enough therapeutic foods to handle SAM cases for at least 3 months.	60%	60%	60%	60%
The site has enough supplementary foods to handle MAM cases for at least 3 months.	47%	33%	40%	40%
The site has sufficient space to store therapeutic and supplementary foods/products.	33%	27%	13%	24%
The space available for storage of therapeutic and supplementary foods and related products is clean and sufficiently ventilated.	60%	53%	53%	55%
Inventory Management and Record Keeping				
The head of the health centre submits a regular monthly report on the number of children under five years of age receiving therapeutic foods according to the agreed schedule.	100%	100%	100%	100%
The manager of the health centre regularly submits an estimate of therapeutic food supply needs according to the agreed schedule.	0%	67%	13%	27%
The site store in charge of the nutritional inputs correctly keeps stock records for therapeutic foods.	67%	0%	0%	22%
The health worker completes the counselling record for each client consulted.	0%	0%	0%	0%
The data officer compiles the nutritional data according to the agreed (monthly) schedule	100%	100%	100%	100%
"First to expire, first out" procedures and inventory management are used for therapeutic foods and other commodities.	20%	0%	0%	7%
Therapeutic foods are ordered at least 3 months in advance to avoid stock-outs.	53%	0%	0%	18%
AVERAGE SCORE	67%	70%	40%	59%

Figure C1: Progress achieved in GAM prevalence in each state from 2013 to 2018



Source: the Evaluation Team, using the S3M survey of 2013 and 2018

Figure C2: Progress achieved in SAM prevalence in each state from 2013 to 2018



Source: the Evaluation Team, using the S3M survey of 2013 and 2018

9. Annexes

Annex 1: Overview of the Theory of Change developed by the evaluation team

According to Vogel (2012), “theories of change for evaluation purposes tend to drill down into the detail of theories about cause-effect, the different pathways, actors and mechanisms the programme has influenced, as well as significant contextual conditions that had an influence”. A theory of change (ToC) can be roughly defined in three components: i) explore assumptions; ii) analyse the context; and iii) assess the evidence. The CMAM logic model links intervention investment (inputs) to process and outputs, and to anticipated changes (outcomes) in the target population. The underlying assumptions were explored through exchanges with key informants (KIs) during the inception mission in Khartoum on 23-25 February 2020, along with the identification of indicators that can reflect the evaluation criteria. The description of this model presents how the Evaluation Team understands the functioning of CMAM programme in Sudan.

The **investments/inputs** are provided by the Government of Sudan (GoS), technical partners such as UNICEF, WHO, WFP and donors. Under the support of technical partners, the GoS developed CMAM guidelines and operational plans within the National Health Strategic Plan, trained health workers and CHWs, provided health infrastructure and human resources. Technical partners ensured the provision of adequate equipment and supplies (purchase and delivery of therapeutic milk, RUTF and supplementary foods), with significant investment in logistics, support for materials and capacity building (e.g., training, advocacy, supervision, surveys), leadership and coordination of different stakeholders implementing CMAM in the country. The overall CMAM strategy was funded by different donors (ECHO, FFP, OFDA, UN OCHA).

The **activities/processes** carried out include continuous technical support (training, mentoring, learning sites, outpatient care and community outreach). Additional activities include development of training materials and provision of job aids to health professionals, admission and treatment of SAM and MAM children, facilitation of technical review meetings and workshops, sensitisation of beneficiaries and the community on optimal hygiene and child health and nutrition practices and ensuring linkages between CMAM and other nutrition-specific and nutrition-sensitive interventions. UNICEF, WHO, WFP and NGOs support the integration of CMAM activities into the national health system. They also ensured the development and distribution of quality assurance tools for planning, implementing, monitoring, supervision, and reporting on CMAM, and ensured adequate budget management.

The main **outputs** of the intervention include the availability of health workers, community health workers and volunteers trained on screening, referral and treatment of acutely malnourished children, sensitized communities, children with MAM and SAM identified, referred, admitted, treated, and followed up, and well-equipped and supplied health facilities. The programme also achieved adequate geographic and treatment coverage. Good coordination is ensured within CMAM components and between CMAM and other nutrition-specific and nutrition-sensitive interventions. Health workers, CHWs and volunteers are regularly supervised. Nutrition supplies are regularly ordered and delivered to health facilities.

The expected **outcomes** of CMAM include appropriate management of MAM and SAM children, translated into acceptable Sphere performance indicators (cure rate, death rate, and default rate). The gender and equity gaps are also reduced in the localities.

The overall objective of scaling up CMAM services in Sudan was to contribute to reduced under-five morbidity and mortality rates through increased access to quality services for the management of acute malnutrition (6). Therefore, the **potential impact** of the programme includes improved feeding practices among children under five

years of age along with improvement in their nutritional status. Ownership of the programme by the national authorities is also an important element of the potential programme impact.

The CMAM programme is also implemented in a socio-demographic, political, economic, and cultural context that can influence the expected outputs and outcomes in the country. Socio-political and demographic external factors include, among others, social instability (movement of internally displaced persons and refugees), admission of beneficiaries living outside a health facility's coverage area, high turnover of health staff, lack of qualified human resources, poor coordination among stakeholders, and cultural taboos regarding feeding practices.

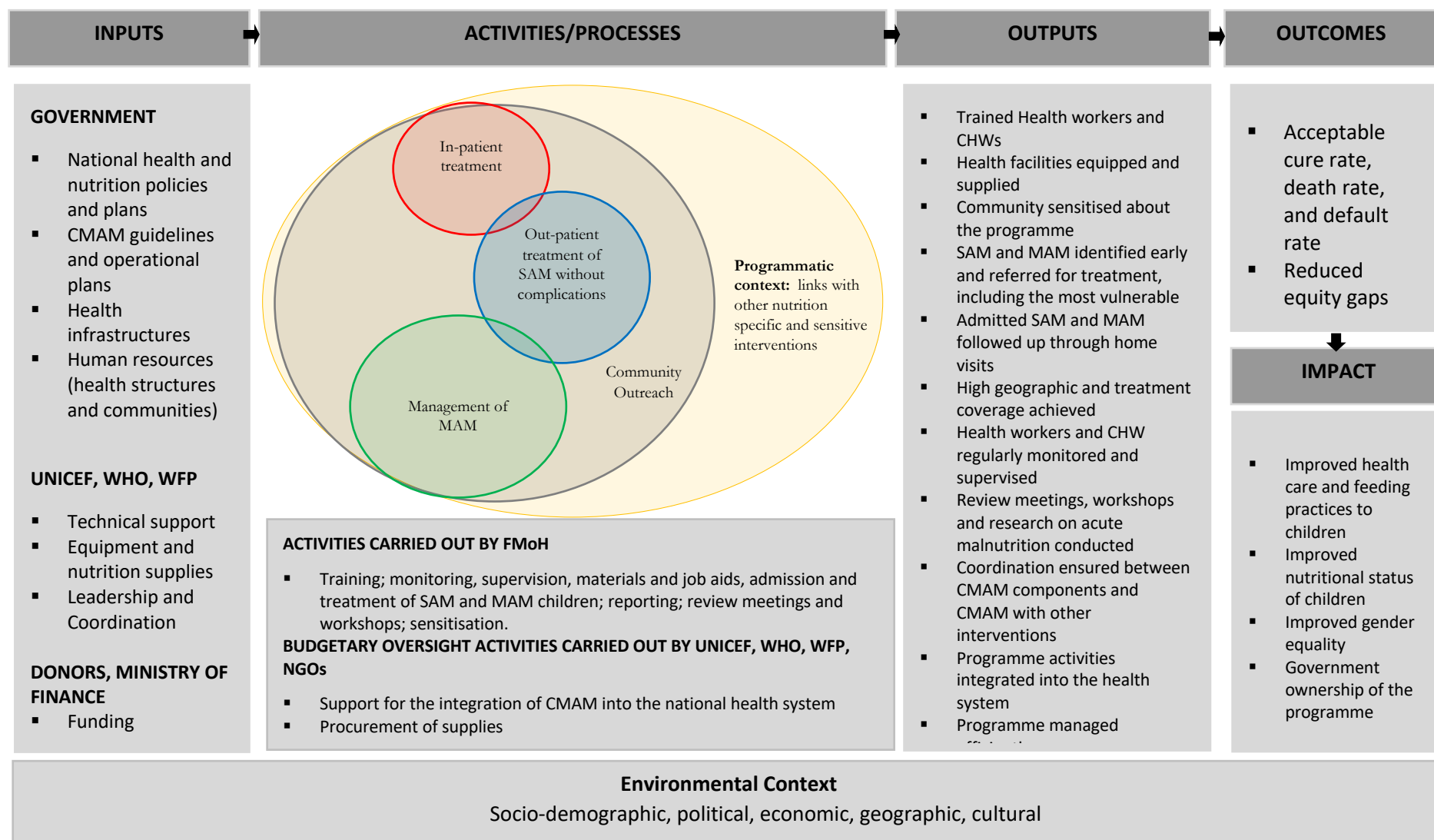
In summary, the investments (inputs) produce changes at the level of children (improved nutritional and health status), the community (awareness and involvement), the health workers (improved management capacity), and the local authorities (ownership of the programme).

Several **assumptions** underlie the proper implementation of the CMAM programme, including but not limited to the following:

- **If** CMAM planning and service delivery are implemented according to the national CMAM protocol and the CMAM scaling-up plan, **then** the resources will be adequately used, **because** the financial and technical resources were based on a good estimation of expected beneficiaries;
- **If** stakeholders at all levels understand the benefit of their participation, **then** the demand, awareness, and utility of the CMAM programme will increase, **because** the interest of individuals and institutions increased;
- **If** there is a good health information system, **then** information will be used to inform strategies and plans, **because** the skills to target vulnerabilities and health priorities will be improved;
- The supply of dietary supplements is assured without stock-outs;
- Behaviour change communication (BCC) activities are provided on a regular basis; and,
- The socio-political and security environment is conducive to the deployment of programme activities in the country.

The Figure below illustrates an overview of programme expected results developed by the evaluation team. It also guided the development of the evaluation matrix and the identification of different indicators for measuring the outcomes that occurred during the implementation of the CMAM programme. Although the ToC is missing, the Evaluation Team believes it will be able to answer the evaluation questions with the existing secondary data and the additional data that will be collected during field visits.

Figure: Overview of CMAM programme expected result and each level used for CMAM evaluation in Sudan



Annex 2: Localities and sites visited in the three states for SQUEAC and Qualitative Assessments

State	Locality	Name of OTP site	SQUEAC assessment	Qualitative assessment
Kassala	Telkuk	Baryay	✓	
		Edrut	✓	
		Gedamaib masjed mobile - OTP	✓	
		Haladet Shareg	✓	
		Maman Almisgid	✓	
		Tahaday Osis	✓	
		Tawayeet	✓	
		Temekref	✓	
		Tkhjaer	✓	
	Naher Atbra	8 – Arab	✓	
		Alazayza	✓	
		Almazar	✓	
		Alshibak	✓	
		Reara	✓	
	Kassala	Alkuweti hospital	✓	✓
		Hamd wkill	✓	
		Mukram	✓	
		Yahyaalhisn	✓	
	Halfa	Alhara alula	✓	
		Masak	✓	
		Omrhaw	✓	
	North Dalta	Oleib		✓
		Angola		✓
	Rural Kassala	Wad Sherifaya (town)		✓
		Fidayeb		✓
	West Kassala	Tagoub Mobile		✓
		Abu Dalha		✓
	Al Gerba	Tagoub Mobile		✓
		Abu Dalha		✓
	Aroma	Jamam		✓
North Darfur	El Fasher	Abu Shock camp	✓	
		Abudegeis	✓	
		El nahada	✓	
		Sid El shohada	✓	
		Golo (A)	✓	
		Zamzam (camp) A		✓
	Tawila	Dalliy	✓	✓
		Rownda A	✓	✓
		Tawilla hospital OTP	✓	
		Tawilla IDPS	✓	

		Tungur	√	
	Kutum	Kassab camp	√	√
		Abdushakor	√	
		ALDor	√	
		Kutum town	√	√
		Amou		√
		Fumong		√
	Kalamendo	Abyat Mararet	√	
		Arida	√	
		Eid albida	√	√
		Kalamendo town - OTP	√	
		Wada	√	√
	Mellit	Saiyah		√
	Malha	Malha town		√
		Kenana		√
		Usha		√
	Umm Keddada	Abyat		√
	Dar el Salam	Dar el Salam town		√
Gezira	Alkamlin	Alsiraiha	√	√
		Elsaha Elmadrasia	√	
		Giad	√	
		Mealig	√	
		Kamlin		√
	Medani Alkupra	Abu snoun	√	
		Arkauet	√	
		Alkareba	√	√
		Banat	√	
	Sharg Gezira	Alganed	√	√
		Alhelalia	√	
		Rufaa	√	√
		Tambool	√	
	South Gezira	Alhoush	√	
		Almadina Arab	√	
		Barakat	√	
		Wad Alhadad	√	
		Wad al Naim		√
		Muslemiya		√
	Qoresh	Qoresh (hospital)		√
	Managil	Kremet		√
	Hassaheissa	Hassaheissa		√
	Umm Algora	Village 27		√

Annex 3: Routine Data Collection Forms for SQUEAC Assessment

Different forms in word format (see Tables 1-12) were used to collect and compile additional data in the field. This data will then be analysed using Excel and manually wherever necessary.

Table 1. Admissions and defaulters month-wise

Site: _____

Month	Total admissions				Total defaulters			
	2015	2016	2017	2018	2015	2016	2017	2018
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
Total								

Table 2. Admissions, Defaulters and Active Outreach Workers/ Volunteers Village Wise for OTP

Site: _____

Villages ¹⁹	Distance to site ²⁰	Number of admissions in the first 6 months of each year	Number of defaulters in the first 6 months of each year	Number of active volunteers/ outreach workers

¹⁹ Complete list for all villages in the catchment area

²⁰ This is time to travel in minutes or hours (one way trip) from home to the programme site which was collected from beneficiary cards

Table 3. Admissions, Defaulters and Active Outreach Workers/ Volunteers Village Wise for SFP for Children
Site: _____

Villages ²¹	Distance to site ²²	Number of admissions in the first 6 months of each year	Number of defaulters in the first 6 months of each year	Number of active volunteers/ outreach workers

Table 4. Admissions, Defaulters and Active Outreach Workers/ Volunteers Village Wise for SFP for PLW
Site: _____

Villages ²³	Distance to site ²⁴	Number of admissions in the first 6 months of each year	Number of defaulters in the first 6 months of each year	Number of active volunteers/ outreach workers

Table 5. Tally Sheet for Number of Visits before Defaulting OTP

Site: _____ **Year:** _____

Number of visits	≥8 th	
	7 th	
	6 th	
	5 th	
	4 th	
	3 rd	
	2 nd	
	1 st	
		Number

21 Complete list for all villages in the catchment area

22 Time to travel in minutes or hours (one way trip) from home to the programme site which collected from beneficiary cards

23 Complete list for all villages in the catchment area

24 Time to travel in minutes or hours (one way trip) from home to the program site which collected from beneficiary cards

Table 6. **Tally Sheet for Number of Visits before Defaulting for TSFP for Children**

Site: _____ Year: _____

Number of visits	≥8 th	
	7 th	
	6 th	
	5 th	
	4 th	
	3 rd	
	2 nd	
	1 st	
		Number

Table 7. **Tally Sheet for Number of Visits before Defaulting for SFP for PLW**

Site: _____ Year: _____

Number of visits	≥8 th	
	7 th	
	6 th	
	5 th	
	4 th	
	3 rd	
	2 nd	
	1 st	
		Number

Table 8. **Tally Sheet for Admission MUAC for OTP²⁵**

Site: _____ Year: _____

MUAC	Tally
13.5	
13.4	
13.3	
13.2	
13.1	
13.0	
12.9	
12.8	
12.7	
12.6	

²⁵ This should be for all admissions in the first 6 months of each of the three years (2015-2019)

12.5	
12.4	
12.3	
12.2	
12.1	
12.0	
11.9	
11.8	
11.7	
11.6	
11.5	
11.4	
11.3	
11.2	
11.1	
11.0	
10.9	
10.8	
10.7	
10.6	
10.5	
10.4	
10.3	
10.2	
10.1	
10.0	

Table 9. Tally Sheet for Admission MUAC²⁶ for TSFP for Children

Site: _____ Year: _____

MUAC	Tally
13.5	
13.4	
13.3	
13.2	
13.1	
13.0	
12.9	
12.8	
12.7	
12.6	
12.5	
12.4	
12.3	
12.2	

²⁶ This should be for all admissions in the first 6 months of each of the three years (2015-2019)

12.1	
12.0	
11.9	
11.8	
11.7	
11.6	
11.5	
11.4	
11.3	
11.2	
11.1	
11.0	
10.9	
10.8	
10.7	
10.6	
10.5	
10.4	
10.3	
10.2	
10.1	
10.0	
9	
8	
7	

Table 10. Tally Sheet for Admission MUAC²⁷ for SFP for PLW

Site: _____ Year: _____

MUAC	Tally
23.0	
22.9	
22.8	
22.7	
22.6	
22.5	
22.4	
22.3	
22.1	
22.0	
21.9	
21.8	
21.7	
21.6	
21.5	

²⁷ All admissions in the first 6 months of each of the three years (2015-2019)

21.4	
21.3	
21.2	
21.1	
≤21.0	

TABLE 11. Outreach Visits/Education Sessions

Site: _____ **Year²⁸** _____

Category of Outreach activities	Number of education sessions held												
	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Education sessions (in waiting areas)													
Peer support groups (at community level)													
Mothers' clubs at centre level													
Individual Counselling Sessions													
Community Sessions (Mobilisation)													

Table 12. Source of Referrals

Site: _____ **Year²⁹:** _____

Referral source	Number of cases referred to		
	OTP	SFP for children	SFP for PLW
Popular committee			
Self/mothers			
THs/TBAs			
CBVs/VMWS			
Other			

28 All sessions in the first 6 months of each of the three years (2015-2019)

29 The first 6 months of each of the three years (2015-2019)

Annex 4: Interview and FGD guides for primary qualitative data collection

Interview guide at Federal and State level

With government officials (Ministry of Health, Ministry of Finance, other key Ministries), UN Agencies, SUN secretariat, Donors, NGOs, Private Sector, institutions for health professions and national research institutions

Introduction, confidentiality, and access to information

This interview is being conducted as part of the evaluation of the CMAM programme in Sudan. The purpose of this evaluation is to examine the process, outputs, outcomes and possibly the impact of the intervention in the country, in order to make appropriate recommendations for its improvement and scaling up. An essential part of the evaluation process is to conduct interviews with key informants such as you, in order to get your opinion on the implementation of the programme. We would like to thank you for giving your consent to participate in this evaluation. Be assured that your answers will be strictly confidential. Although you may be quoted in the evaluation report, the source of the citation will not be identified by your name, title, or institutional affiliation.

This interview will last maximum 60 minutes.

The Evaluation Team³⁰

Participant information

Date:	Name:		
	Name of organisation:	Title/Function:	Contact details:

RELEVANCE

1. Please can you tell us to what extent the design of CMAM programme was consistent with government priorities in addressing the needs of children under five years of age?
2. What are the linkages between CMAM and the other child health and nutrition interventions such as:
 - EPI
 - IMCI
 - IYCF
 - WASH
 - Food Security
3. In this regard, how have local partners implementing CMAM programme activities been chosen and mandated, and what supervision, support and guidance is provided to them?
4. What measures have been taken to ensure the programme is available for all who need it?

EFFECTIVENESS

1. What do you think about the effectiveness of CMAM programme (each component) in terms of:
 - Coverage of health facilities?
 - Coverage of beneficiaries?
 - Do you think there were beneficiaries that have not been reached? If yes, which one? And for which reasons?
 - Procurement of supplies (RUTF, Supplementary Foods, Therapeutic Milk)?

³⁰ **Note to the interviewer:** Questions are structured according to evaluation criteria. Not of them will be asked to each participant. Each question will be addressed to the person most likely to provide the appropriate answer. The pre-test phase will help to better adjust and orient the questions according to each stakeholder.

- Meeting the Sphere Standards(performance)?
 - Monitoring of the programme?
 - Addressing inequalities due to age, sex, location?
2. What factors contributed to these achievements?
 3. What were the main challenges for achieving the expected results? How did you address these challenges?
 4. What improvement still needs to be done?

EFFICIENCY

1. During the planning process of CMAM, how did partners collaborated in designing the different component?
2. How is the collaboration of partners managed?
3. How do these arrangements ensure that duplication of efforts is avoided?
4. Compared to the implementation of CMAM by NGOs in parallel to the health system (as practiced before), what positive changes have you observed with the implementation of the programme within the health system?
5. Tell us about your interactions with the communities during the planning and implementation phases of CMAM

IMPACT

1. What changes have you observed on the nutritional status of children as a result of being admitted to the programme?
2. What would happen to the children if there was no CMAM intervention in the country/state/locality?
3. Were there positive changes that were not expected?
4. Was there any unexpected negative outcome?

SUSTAINABILITY

1. To what extent has CMAM strengthened the national health system in terms of:
 - Financing the intervention? / government investment or commitment to invest in CMAM
 - Government human resource involvement, development, and retention?
 - Delivery of services in primary health care services in the health facilities and the communities?
 - National procurement and delivery of supplies?
 - National monitoring, supervision, and reporting system?
 - Development of national nutrition guidelines and operational plans?
2. What were the main challenges for full integration of each of the above components?
3. What is the government strategy to take over the intervention?
4. What exit strategies does UNICEF/WHO/WFP and the Government have in place for CMAM?

PROTOCOLS for Work in Communities

Notes

a) Choosing **sites** within a state will aim for variety – different types of community, different modalities for CMAM delivery, different agencies, communities that are less or more isolated etc.

b) When visiting a site, we should aim to get a good range of the **communities** served – those near the site, those getting a mobile clinic, those distant from the site; different ethnic groups and subsistence methods – as well as agencies serving them. We will be guided in choosing communities by the FGD at the site centre (clinic?).

c) In the communities there are four different things we might want to do (but we may not do all four in all communities):

- Key informants – noted for involvement in health work, teachers (if available), other civil society leaders.
- Focus group of mothers ... (including mothers who have used CMAM service).
- Focus group of community health volunteers.
- Visit individual households with young children.

d) Sometimes information we receive will lead to our wanting to follow up a case.

e) We will always need to be careful of social distancing and should wear masks during these activities.

Key Village Informants

Identify a person (or two – or more depending on range of responses) who have a good overview of the CMAM programme. Depending on what responses we are getting, this may be a very quick discussion or a longer one.

Probe some, or all, of:

1. What they understand about the CMAM programme, its history, and achievements.
2. Is Acute Malnutrition (AM) an important issue in this village and is it recognised by mothers and carers?
3. Do community education activities take place concerning AM and CMAM? Who runs them? Are they also engaged in other health initiatives and how do these fit together?
4. Are there community workers (volunteers) who help in screening for or the recognition of AM? How is AM identified at this stage (method – MUAC or just visual)?
5. Referral for treatment – and follow-up. Do most AM cases access the CMAM service? Are defaulters and non-responders followed up by anyone?
6. Who (outside the village) manages & supports community CMAM activities?

Mothers Groups (5-10 mothers is ideal) FGD

Any of the above questions that feel incompletely answered plus:

- Discussion of AM – how it is recognised, what can cause it and what can be done about it?
- How did they learn this?
- Discussion of the CMAM programme – has anyone accessed it? What was their experience of it? What is its value?
- Has anyone wanted to access it but not been able to? Why? What obstacles and difficulties are there for accessing service?
- Discussion of the roles of health volunteers in this (and other) projects.
- I assume we may get a lot of male observers and might then hold a separate session (same questions) with them?

Community health volunteers (at least 4) FGD

- How were they chosen?
- Do they work on many public health issues? In this village, how important is AM among these issues? How valuable is the CMAM programme for this community?
- What is the *purpose* of this work and do they achieve it?
- What supervision, training and support do they get? And how often?
- What activities do they undertake? Community mobilisation and education? Case finding, screening and referral, also?
- Why do they do it – what rewards are there? (Financial, social, satisfaction).
- What methods do they use for health education and for screening – group sessions, household visits etc? How often do they do these activities? Do they have decided whether to refer to SFP or OTP?
- Do mothers access CMAM services when needed? Those who don't – why not? Could they be helped to access it? What about defaulters and non-responders? Do the volunteers have a role in locating them and helping to resolve the problem? Stories of how this help can work.

Visits to Households

Visit 3 or 4 households – we should aim for variety (families that are doing okay and families that may be struggling). We should cover mothers who have accessed the CMAM service for a child, mothers who have not needed to and, where possible, mothers where a child is AM but has not accessed CMAM service. In our discussions we are often looking for stories and anecdotes – we are a question and get an answer but then explore what examples support this answer.

- Observation (gives us some background of the family and child rearing practice).
- AM - what it means (prognosis) and what to do about it.
- Has this mother ever used CMAM service? Or does she know of others who have? What does she think of the service – good things and less good things? When and how did she become aware of it?
- What does this mother think of the community volunteers? What do they do and why (in her opinion) do they do it? And what does she feel about the CMAM programme?

PROTOCOLS for Focus Group Discussions (FGDs)

At two different levels – CMAM responsible people in states' central offices and in sites (clinics). The emphasis is different, but the questions are similar.

It is best to ask open questions and that we then probe to fill in the gaps.

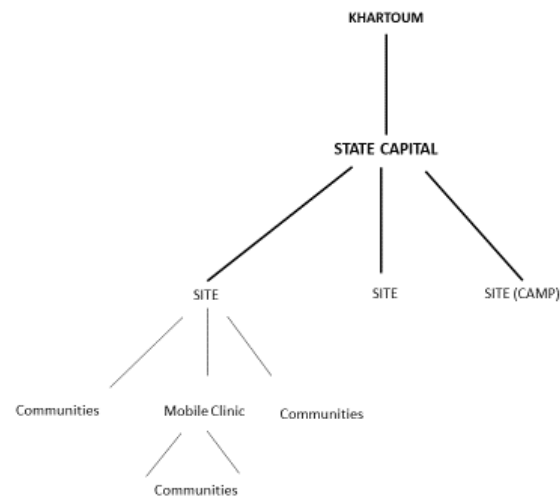
Because of COVID 19 discussions outside are preferred. Masks worn.

Before the state capital meeting we will need to meet with one or two key informants – discussing our programme, seeking guidance on what to look for and which sites may be best to sample.

STATE CAPITALS

Here we are talking with senior managers, so the questions are quite high level and managerial. I am not sure that FGD is the best method for this group – where many different agencies are involved it may be better to treat them as key informants (even though that will be more time consuming)? The questions we need to cover are the same:

1. Map out the CMAM system (activities) in the state – the structure rather than the geography. Example:



Explore how each part is staffed and managed and where it reports into. Explore how CMAM in the whole is coordinated.

1a. Then quickly explore the geography of this – where the various sites are, their size (rough population and estimate of size), which agency runs the CMAM and how they differ (ecology, cultural etc). Agencies involved (NGOs, UNICEF, WFP, MOH) and how they fit together.

2. Management – supervision and support. How they address the problems of coordination, supervision, and support between MoH, UNICEF, WFP, NGOs. How are challenges identified and addressed? Training of nutrition officers and workers; training of volunteers; orientation to health workers in other programmes.

2a. It is interesting to explore the history of setting up the service – who did it at first, what processes were used to involve communities etc – and how it developed after that? What changes has it brought about? And also how integration with other health and development programmes is managed?

2b. Role of state-level management (MoH and NGO) in planning, monitoring and information – where these activities “come from” (and how – top-down, bottom-up and methods used) and goes to and what is done about it?

2c. Logistics and stock outs (RUTF, RUSF) – is it state-centralised or does each NGO do its own? How does the state-level management know more RUTF is needed in a site and how do they address this? How well does this system work?

3. Brief exploration in general of CMAM activities that each of the sites managed is responsible for –

- community mobilisation – what is done and by who?
- methods for screening and case finding (and referral)?
- who determines if case is OK for OTP or requires referral to SC?
- system and methods for treatment and follow-up + what is done about drop-outs and cases not improving?
- what records are kept and where (for cases and for logistics, storage etc)?

4. Results. What is working well (probe for examples and anecdotes) and what are the main challenges?

5. Advice on which sites to sample and why.

SITES

Here we are talking with more hands-on people who are closer to the CMAM clients, so we need to look for the practical and the human.

1. Map out the CMAM system (activities) under the site. List villages/communities served. For each note distance from centre, ethnicity, wealth, and level of development (education, presence of schools, notable resources etc), livelihood and the different ways that the CMAM service is delivered (mobile or by referral etc). Also, links with other health and development interventions.

1a. Where is CMAM working well and where are the main challenges?

2. CMAM activities that the site (/clinic?) is responsible for. It would be good to start with a question about “the journey” from being screened and referred and treated. Then:

Logistics and stock outs – how do centre know more RUTF is needed in the site? Discussion.

Staffing and volunteers. How are volunteers remunerated (costs + reward) and motivated? How were they trained? Brief discussion.

Community mobilisation – who does it and how are they chosen and trained. How are they supervised and retrained? Examples if possible.

Case finding, screening (and referral to CMAM service) – methods used, who does it and how (methods)? Discussion. Examples if possible.

Verification case is OK for OTP (or requires referral to SC) – where does this happen and who does it? Discussion.

Treatment and follow-up (defaulters, cases not responding – possibly leading to referral) – who and where? Discussion with example. What are the causes

Record keeping (for cases and for logistics, storage etc) Review register and stock records. Discuss.

3. Management – supervision and support. How are challenges identified and addressed? Role of site/clinic and role of higher management (NGO and MoH). Training.

4. Results – benefits of the programme, improvements in children’s health? Significant challenges and how they are addressed? Children who are discharged but get readmitted later – are causes followed up?

Notes:

In both cases (state capitals and sites) responses may lead to our wanting to explore other aspects.

Annex 5: Evaluation Matrix

	Evaluation criteria/ questions	Sub-questions	Indicators	Sources of information	Data collection methods/ data analysis
1. Relevance					
1.1	To what extent CMAM programme objectives, programming and implementation are well aligned to national priorities and strategies; and have been adequate and implemented to address the specific needs of SAM and MAM children?	- Was the design of the CMAM programme consistent with government priorities? - How does this programme address the needs of children under five years of age? - Is the CMAM intervention coherent with other child health and nutritional protocols?	- Extent to which CMAM objectives, activities are in line with national priorities - Links between programme activities and the needs of children under five years of age - Interactions between the CMAM programme and other child health and nutritional interventions	- National health and nutrition policies targeting children under five years of age - UNICEF Country Programme - Key informants	- Document review - Individual interviews
1.2	To what extent has CMAM programme coordination been implemented in partnership with the relevant various actors/sectors in order to avoid gaps or overlapping interventions including coordination within UNICEF and with WHO, and WFP?	- How has the CMAM programme been implemented in coordination with partners so as to avoid gaps or overlaps? - What referral mechanism has been put in place to coordinate programme activities with other partners? - What was the coordination between CMAM and other nutrition-specific and nutrition-sensitive interventions?	- Functioning of the referral mechanism and counter-referral with other nutrition programmes and other sectors (criteria for targeting beneficiaries, referrals and counter-referrals) - Existence of coordination with other nutrition programmes (influence on the implementation of CMAM)	- Programme Progress Reports - Key informants	- Document review - Individual interviews - Focus group discussions
2. Effectiveness					
2.1	To what extent has the CMAM programme contributed to achieving expected results of the results framework (outcomes and	- To what extent have the performance indicators been met? - What was the coverage (geographic and treatment) of the programme?	- Achievements of the programme against Sphere Standards (recovery rate, death rate, default rate) - Proportion of health centres offering TSFP,	- Programme Progress Reports - Coverage reports - Quantitative programme databases - Key informants	- Document review - Individual interviews - Focus group discussions - Quantitative data analysis

	Evaluation criteria/ questions	Sub-questions	Indicators	Sources of information	Data collection methods/ data analysis
	outputs) of the National Nutrition Strategy, the Nutrition Investment Case, the Country Programme of Cooperation 2013-2017?	- Was the procurement adequate with regards to the expected beneficiaries for SAM and MAM? - What factors have contributed or limited the achievement of acceptable coverage?	outpatient SAM and MAM services - Proportion of the eligible population (children) participating in the programme - Barriers and boosters of acceptable coverage - Proportion of total children under five years screened for malnutrition - Proportion of referred children that are admitted to services - Proportion of caretakers attending counselling and sensitisation sessions - Proportion of RUTF delivered against planned		
2.2	Has CMAM achieved expected standard quality of care of children admitted to OTP, SC and SFP centres? If expected result and quality are not achieved what have been the main factors that hindered the achievement and how could this be improved?	What were the enablers and constraints for achieving the programme standards?	- Acceptable standards on the following targets - Nutritional assessment and classification - Application of treatment protocols - Record keeping - Equipment and material	- Programme Progress Reports - Key informants	- Document review - Individual interviews - Observation - Focus group discussions
2.3	To what extent has the CMAM programme contributed to reducing the bottlenecks and barriers that determine equity	- What are the categories of beneficiaries that have not been reached? - What are the socio-demographic characteristics of admitted families?	Proportion of children not reached among the most vulnerable ones (distance, disability, culturally marginalised)	- Programme progress reports - Key informants	- Document review - Individual interviews - Focus group discussions

	Evaluation criteria/ questions	Sub-questions	Indicators	Sources of information	Data collection methods/ data analysis
	gaps affecting vulnerable children?				
2.4	What is the current CMAM programme monitoring mechanism? Is it sufficient to monitor the expected results? If not how can it be improved and decentralised to the health facility in real time and in an adaptable way?	- What mechanism has been put in place to monitor the CMAM programme? - What are the main elements/ indicators monitored at the different levels of the health system?	- Comprehensiveness of the existing monitoring mechanism/ system - Indicators monitored at all levels - CMAM reporting & data collection/ data flow	- Programme progress reports - Key informants	- Document review - Individual interviews
2.5	How have gender and equity concerns been addressed in the design, implementation and monitoring of the programme?	- What elements of the programme determine the active participation and commitment of women and men in CMAM? - What measures have been taken to address inequalities due to age, gender and/ or location? - Have principles of equality been incorporated into the nutrition messages?	- Participation of women and men in the different activities (screening, management, follow-up, prevention) - Effects of key messages used in community and advocacy activities to promote gender equality and prevent cultural and/ or social barriers that may negatively impact on nutritional status	- National health and nutrition policies targeting children - Project proposal from UNICEF - Key informants	- Document review - Individual interviews - Focus group discussions
3. Efficiency					
3.1	How well has the CMAM programme implementation been managed in the programme states?	- How did stakeholders collaborate in planning and implementing? - What was their involvement in the management so as to avoid duplication of efforts?	- Duplication of activities and reports - Participation of other stakeholders	- Programme Progress Reports - Quantitative databases of the programme - Key informants	- Document review - Individual interviews
3.2	To what extent is current CMAM implementation cost efficient? Could the same be achieved using different	What are the best practices that determine programme efficiency?	Programme costs compared to similar interventions in other contexts	- Programme progress reports - Programme financial reports - Programme financial databases	- Document review - Individual interviews - Financial analysis

	Evaluation criteria/ questions	Sub-questions	Indicators	Sources of information	Data collection methods/ data analysis
	strategies and with less resources? What are the good practices/ comparative advantages between programming in different states?	- How could these elements be used to improve the efficiency of CMAM programme? Could the same results be achieved with fewer resources? - How did CMAM implementation evolve across states? - What are the good practices that are replicable within and between states?	- Alternatives to the treatment of SAM children - Implementation modality across different states - Good practices	Key informants	
3.3	To what extent was the CMAM programme efficient in terms of utilising existing systems and considering value for money?	What is the added value of integrating CMAM into the different pillars of the health system versus implementation in parallel to the health system?	Financial and operational benefits of implementing CMAM through the health system	- Programme Progress Reports - Key informants	- Document review - Individual interviews
3.4	To what extent has the CMAM programme engaged communities in the design, implementation and monitoring of the programme?	- To what extent were individuals, in all their diversity, consulted to judge the relevance prior to the implementation of the programme? - What consultations have been initiated? - How do these consultations influence programme design and implementation?	- Number of interaction sessions between UNICEF, WFP, NGOs and the community - Content of exchanges between the interactions and their consideration for improving the programme - If interactions are not happening, the reasons why	- National health and nutrition policies targeting children - UNICEF country programme document - Programme progress reports - Key informants	- Document review - Individual interviews - Focus group discussions
4. Impact					
4.1	What significant changes happened to children and communities with the implementation of CMAM in terms of improving malnutrition status	What is the influence of the intervention on the nutritional status of children aged 6 to 59 months?	Anecdotal evidences of changes in health and feeding practices to children	- Programme progress reports - Key informants	- Document review - Individual interviews - Focus group discussions

	Evaluation criteria/ questions	Sub-questions	Indicators	Sources of information	Data collection methods/ data analysis
	(prevalence) and reduction in mortalities due to severe acute malnutrition?				
4.2	What were the positive and negative, intended and unintended consequences of the CMAM programme?	- What were the unexpected positive outcomes? - What were the unexpected negative outcomes? - To what extent has the availability of therapeutic and supplementary foods in health facilities had a positive or negative influence on participation in and use of other health and nutrition services?	- Unexpected results - Anecdotal evidences on the trends in admissions to other health and nutrition services	- Programme progress reports - Key informants	- Document review - Individual interviews - Focus group discussions - Quantitative data analysis
5. Sustainability					
5.1	To what extent has CMAM been integrated and contributed to health system strengthening?	- To what extent has CMAM been integrated into the health system? - To what extent has this integration contributed to health system strengthening?	Level of CMAM integration measured against WHO Health System Strengthening framework	- Programme progress reports - UNICEF Country Programme - Key informants	- Document review - Individual interviews
5.2	What is the current government investment in CMAM and how could this investment be maximised?	- To what extent has the government been influenced to increase investments in CMAM? - To what extent has the programme influenced government involvement in nutrition?	- Government commitment to invest in CMAM and in nutrition in the country - Government advocacy for attracting the funds	- Programme progress reports - Financial reports - Key informants	- Document review - Individual interviews
5.3	What are the opportunities and the risks for the sustainability of the programme's	To what extent will the benefits of the intervention continue for children after the end of donor support?	- Government strategy to take over the intervention - UNICEF and other partner exit strategies	- National Policies and Strategies - UNICEF Country Programme - Key informants	- Document review - Individual interviews

	Evaluation criteria/ questions	Sub-questions	Indicators	Sources of information	Data collection methods/ data analysis
	benefits in the short, medium and long term?	- What is the Government's policy on the sustainability of nutrition interventions? - What exit strategies do UNICEF and other partners have in place for the government to take over the programme?			

Annex 6: Free and Informed Consent Template

Section for the Interviewer/Facilitator of the focus group discussion

- You are cordially invited to participate in this evaluation of the programme for *Community Management of Acute Malnutrition (CMAM)* in Sudan, implemented from 2015 to 2018. This evaluation is sponsored by the UNICEF Country Office, and it is implemented in collaboration with the Government of Sudan. If you agree to participate, we will ask you a few questions on different topics, and we may have access to your records, documents and databases.
- Participation in this project does not present any risk to you. The information collected will be kept strictly confidential and will be reviewed only by those responsible for the evaluation. It will not be shared with anyone outside of this independent team.
- Your participation is voluntary, and you are free to request the removal of your information and responses at any time.
- Participation will not provide any immediate benefit to you, however the information you provide will help to improve the design and implementation of the CMAM programme in the country.

FGDs Only

- Please do not share anything you hear in this group with people who are not present now.

The interview/discussion today is being run by the following team:	They can be contacted later by calling:

Section reserved for the participant(s)

I, the undersigned Mr/Mrs/Ms.....

Having received a detailed explanation of the evaluation being conducted by UNICEF and having received a satisfactory response to all the questions I asked to the evaluation team, I give my voluntary and free consent to participate in this evaluation.

I retain the right to suspend my participation at any time and without any prejudice.

Conducted at....., on.....

Mr/Mrs/Ms

For all purposes, you may contact the evaluation team or the UNICEF Deputy Country Director in Sudan at any time if you have any questions about the evaluation.

Annex 7: List of people interviewed during the evaluation at Federal level (Khartoum)

Name	Organisation and function
Federal Ministry of Health (FMoH)	
Dr. Mohamed Abumanga	National Nutrition Program Director
Dr. Eman	CMAM focal person at the nutrition program
Osama Mohamed Ismail	Head of M&E and information management
Najlaa Osman Khidir	Head of Emergency Unit/SUN focal point
UNICEF	
Abdullah Fadil	Country Representative
Dr Rasha Al-Ardhi	Nutrition Specialist (CMAM)
Alyoa Hibal	Nutrition Officer
Sarah Sami Yousif	Nutrition Officer
Filippa Morgan	Multi Country Evaluation Specialist
Dina Eltayeb Ali	Monitoring, Knowledge and Evaluation Specialist
Mark Okingo	Procurement and Logistics Manager
WHO	
QURESHI, Abdul Baseer	Head of Nurition
WFP	
Dr Ali Ahmad Khan	Head of Nutrition Unit
Meezan Mohamed	Senior Nutrition Officer
Private sector	
Ahmed Mubarak Ahmed	General Manager, SAMIL Industrial Co.
Enaam Mohammed	Deputy Operation Manager, SAMIL Industrial Co.
Donors	
CRABU Francesca Paola	Coordinator for Nutrition interventions, ECHO Khartoum Office
Whitney Marie-Sophie	Regional Nutrition Expert, ECHO Regional Office, Nairobi
Mboya Aluoch Maureen Suzanne	Programme Officer ECHO Regional Office, Nairobi
NGO	
Mohamed Hassan	Experts for UNICEF intervention within CRS
Ezaldin Yousif	Nutrition Senior Project Officer in Central Darfour and West Darfour, CRS
Sarah Ibrahim	Nutrition coordinator, GOAL
Manahil Rahman Adam	Program Coordinator, North Darfur Sub Office Patient's Helping Fund (PHF)
Khobaib Osman Ali	Senior Health & Nutrition Manager Kuwaiti Patients Helping Fund (KPHF), Khartoum

UNITED NATIONS CHILDREN'S FUND
SUDAN COUNTRY OFFICE
TERMS OF REFERENCE (TOR) FOR INSTITUTIONAL CONTRACTORS

Project/Program Title: e.g. Planning, Evaluation and Innovation	
Position Title/Services description:	CMAM Evaluation
Duration of Contract:	6 months
Duty Station:	Khartoum with travel to the states
RWP Reference Details:	
Output Details:	4020/A0/07/885/001
Activity Details:	4020/A0/07/885/001/052
Supervisor:	Chief Planning, Monitoring and Evaluation
1. Background: The Global agenda of SDG 2030 aims to achieve the elimination of all forms of malnutrition including the reduction of stunting by 45%. At the country level, the national goal related to child nutrition within the Health-Nutrition sector five-year national strategy of Maternal, Neonatal and Child Health 2016-2020 is to reduce wasting prevalence from 16% to 6%. The purpose of the costed Nutrition Investment Case 2015-2019 was to achieve the reduction of stunting from 35% to 25% the wasting from 16% to 6%. As one of the approaches to decrease prevalence and incidence of acute malnutrition, UNICEF Sudan has significantly focused on scaling up community management of acute malnutrition in Sudan since 2009 to date. To achieve this end, that the Federal Ministry of Health of Sudan adopted, endorsed and implemented CMAM scale up plan for years 2015-2017. In Sudan, currently there are 1,450 SAM treatment sites which cover all 18 states of Sudan, (1310 outpatient treatment centers and 140 inpatient treatment centers). The scaling up plan for CMAM was developed based on the S3M national survey results (2013) and recommendations of CMAM review (2013). More than USD 20 million are spent annually for CMAM interventions funded mostly through humanitarian funds from Donors but since the last three years also includes Government's contribution. These are implemented through an extensive partnership established for the implementation of CMAM including with the MoH playing a key leadership role at all levels, sector line ministries, Communities engagement, UN agencies joint efforts (UNICEF, WFP, FAO and WHO), Donors and CSOs. Sudan has also endorsed the global SUN movement which ensures adequate overall multi sectoral coordination at policy level. Government of Sudan is moving into many strategic directions to achieve universal health coverage such as expanding primary health care program and also strengthening health systems at district level. The transitioning strategy will contribute to moving the focus of the CMAM programme from that of a siloed program to being part of an integrated system within Ministry of Health plans and programmes. The UNICEF country program for 2018-2021 is also focusing more on programmatic integration and moving from solely humanitarian based interventions in to more development focus while continuing to address humanitarian needs. These changes are expected to influence the development CMAM scale up plan 2019-2022.	

In this context the findings and recommendations of the evaluation of the CMAM programme will be instrumental in defining the CMAM scale up plan 2019-2022 to effectively contribute to achieving both FMOH and UNICEF strategic visions for children and provide insights on how to improve the existing strategies achieving how high quality CMAM program.

2. Purpose of Assignment:

The CMAM evaluation is commissioned in response to the need to evaluate the overall progress in implementing the CMAM scale up plan for years 2015-2018, the effectiveness and efficiency of its strategies and issue related to sustainability, equity, gender and national/sub-national ownership. The evaluation aims to serve **two purposes** of:

1. **Learning** of strengths/good practices and determinants factors of shortfalls of expected results for adjustment and doing business differently;
2. **Accountability** to affected population and communities and donors about the return of investments made in Darfur in responses to the huge humanitarian needs of displaced populations and host communities.

3. Basic objectives of consultancy/contractor (assignment) services (2-5 Objectives).

- Assess CMAM related interventions relevance and appropriateness, efficiency and quality of services (2015-2018) and explain how program effectiveness could be increased/improved
- Assess the impact of the current CMAM program (2015 – 2018) in terms of lives saved, reduction of acute malnutrition prevalence and how can the programme be sustainable and ensure nationwide coverage.
- Measure the current level of integration between CMAM program, WASH, IMCI/ICCM and EPI as well as IYCF program and advise how this integration could be fostered in a way that contribute to health system rather than over burden it.

Objective 1: Assess CMAM related interventions relevance and appropriateness, efficiency and quality of services (2015-2018) and explain how program effectiveness could be increased/improved

Key Activities/ Tasks	Output(s)/ Deliverable(s)	Expected Time Frame
A. Design the CMAM evaluation plan and develop inception report	• Inception report including: a summary of the evaluation plan, the methodology to be used, the evaluation matrix, a work plan/schedule and a proposed table of content of the evaluation report is developed and shared	November 2019
B. Conduct field Data collection, and Client satisfaction survey including collection of series of routine data from State Line Ministries on Health, Nutrition and WASH.	• Field Data collection/ Client satisfaction survey including collection of series of routine data from State Line Ministries on Health, Nutrition and WASH is completed	December 2019
C. Complete data analysis, processing and finalize draft evaluation report	Draft Evaluation Report is submitted	February 2020
D. Finalize the evaluation report	• Final evaluation report is submitted	March 2020

Objective 2: Assess the impact of the current CMAM program (2015 – 2018) in terms of lives saved, reduction of acute malnutrition prevalence and how can the programme be sustainable and ensure nationwide coverage.		
Key Activities/Tasks	Output(s)/Deliverable(s)	Expected Time Frame
A. Design the CMAM evaluation plan and develop inception report	Inception report including: a summary of the evaluation plan, the methodology to be used, the evaluation matrix, a work plan/schedule and a proposed table of content of the evaluation report is developed and shared	November 2019
B. Conduct field Data collection, and Client satisfaction survey including collection of series of routine data from State Line Ministries on Health, Nutrition and WASH.	Field Data collection/Client satisfaction survey including collection of series of routine data from State Line Ministries on Health, Nutrition and WASH is completed	December 2019
C. Complete data analysis, processing and finalize draft evaluation report	Draft Evaluation Report is submitted	February 2020
D. Finalize the evaluation report	Final evaluation report is submitted	March 2020
Objective 3: Measure the current level of integration between CMAM program, WASH, IMCI/ICCM and EPI as well as IYCF program and advise how this integration could be fostered in a way that contribute to health system rather than over burden it.		
Key Activities/Tasks	Output(s)/Deliverable(s)	Expected Time Frame
A. Design the CMAM evaluation plan and develop inception report	Inception report including: a summary of the evaluation plan, the methodology to be used, the evaluation matrix, a work plan/schedule and a proposed table of content of the evaluation report is developed and shared	November 2019
B. Conduct field Data collection, and Client satisfaction survey including collection of series of routine data from State Line Ministries on Health, Nutrition and WASH.	Field Data collection/Client satisfaction survey including collection of series of routine data from State Line Ministries on Health, Nutrition and WASH is completed	December 2019
C. Complete data analysis, processing and finalize draft evaluation report	Draft Evaluation Report is submitted	February 2020
D. Finalize the evaluation report	Final evaluation report is submitted	March 2020

4. Estimated cost of Consultancy/Contractor Service and WBS and Grant: (For Internal Planning purposes)
5. Amount budgeted (Overall Approved Budget in AWP Activity) TBD
6. Qualification or specialized knowledge/experience/expertise required for the assignment: - An experienced consultant or team, or legally registered consulting firm with an extensive experience of evaluation of complex projects, research methods, analytical skills and approaches in the nutrition and health sector. - Good understanding of development issue and knowledge of the country context, including policy and programming, including: National Nutrition Programme, and other associated policies. - Extensive knowledge of CMAM, especially capacity building approaches. - Understanding of health systems - Ability to communicate clearly with a wide range of stakeholders. - Previous experience working with the UN - Excellent writing skills in English.
NB. Please see below on page#6&7
<u>Annex 1 Proposal Evaluation Criteria (Technical and Financial, and Minimum Contents of Proposal)</u>
7. General Terms and Conditions of the Contract: - Under the consultancy agreements, payment is deliverable based as defined in the ToR - All remuneration must be within the contract agreement. - No contract may commence unless the contract is signed by both UNICEF and the consultant or Contractor. - For international consultants outside the duty station, signed contracts must be sent by fax or email. - Unless authorized, UNICEF will buy the tickets for the consultant. In exceptional cases, the consultant may be authorized to buy their travel tickets and shall be reimbursed at the “most economical and direct route” but this must be agreed to beforehand. - Consultants will not have supervisory responsibilities or authority on UNICEF budget. - Consultant will be required to sign the Health statement for consultants/Individual contractor prior to taking up the assignment, and to document that they have appropriate health insurance, including Medical Evacuation. - Mention is it as per the General Terms and Conditions of the Contract. - Mention “Grace Period” for submission of deliverables, after which payment will not be processed

Annex 1 Proposal Evaluation Criteria (Technical and Financial, and Minimum Contents of Proposal)

The proposals will be evaluated against the Technical Evaluation Criteria (70%) and Price Proposal Evaluation Criteria (30%). The details of the Evaluation Criteria and the minimum content of the technical and financial proposal is as below.

Technical evaluation criteria:

All technical proposals will be evaluated using the evaluation criteria as indicated below. Bidders are advised to devote chapters of their submissions to demonstrate each of the criteria and be consistent with the tasks detailed in the ToR under Section #. Bidders are advised to avoid submitting brochures and pamphlet that have no direct bearing on the requirements under this RFP.

Category	Points allocated to each factor
1. Organizational Capacity and Quality Control	(25)
1.1. Credential of the organisation in terms of reliability, experience, and capacity:	
a) Organization's/institution's background and experience in conducting a quantitative and qualitative evaluation of high complexity, including the presence of effective mechanisms for recruitment and management of relevant staff, managing logistics and funds (two recent audit reports attached).	10
b) Understanding of the purpose of the assignments to be completed as well as results expected to be achieved under the Terms of Reference through brief introduction/overview of the assignment. Clear presentation of thoughts in a logical sequence.	15
2: Adequacy of the proposed work plan & approach	(20)
2.1. Approach	
a) Proposed work plan and approach of implementation of the tasks as per the ToR, including (i) detailed methodology, guidelines, and proposed tools for collecting information; (ii) methodology in selecting participants for FGDs and/or KIIs; (iii) data analysis, validation of findings and report writing.	10
b) Proposed quality control mechanism for data collection/analysis, oversight, and supervision.	5
c) Risk management and flexibility of proposal in the context of needs to make changes regarding time, duration, location, and kind of activities.	5
2.2. Planning and Schedule:	(10)
a) Background and experience of implementation team; adequate and right staff combination in relation to the respective expected outputs of the assignment.	5
b) Proposed supervision and implementation plan with timetable and key indicators as per ToR.	5
Category	Points allocated to each factor
3: Expertise of the organization:	(15)
a) Proven track record of previous experience in conducting similar evaluations, reviews and assessments (reports of 2 recent evaluations conducted attached).	5
b) Expertise in Country Programme Sectors, particularly in Nutrition programming, in developing countries, especially in Africa (any work in Sudan will be an asset).	5
c) Demonstrated experience in working with large stakeholder group (UN, international development organizations, government departments, NGOs, etc.) in conducting an evaluation in relation to similar scope and complexity of this assignment.	5
Total Marks	70
Minimum score for technical compliance	55
Total Maximum for Commercial evaluation (Overall Price)	30
TOTAL POINTS (Total of combined evaluation)	100

Annex 9: Elaboration of the Evaluation Questions in the Terms of Reference

The purpose of the evaluation is to assess the performance of CMAM programme in terms of its

- i) Relevance/appropriateness,
- ii) Effectiveness,
- iii) Efficiency/cost-effectiveness/value for money
- iv) Coverage,
- v) Impact; and
- vi) Sustainability of CMAM program

The OECD/DAC will be applied to programme objectives and strategic result areas. The evaluation will seek to answer, but not limited to the following evaluation questions:

Relevance/Appropriateness

1. To what extent CMAM program programming and implementation are well aligned to the national priorities and strategies; and have been adequate and implemented to address the specific needs of SAM children?
2. Were the CMAM objectives appropriate in the overall problem context, needs and priorities?
3. To what extent adequate the CMAM programme coordination has been implemented in partnership with the relevant various actors/sectors in order to avoid gaps or overlapping interventions including coordination within UNICEF and with WHO and WFP.

Effectiveness

4. To what extent has the CMAM program contributed in achieving expected results of the results framework (outcomes and outputs) of the National Nutrition Strategy, the Nutrition Investment Case, the Country Programme of Cooperation 2013-2017?
5. Have CMAM achieved expected standard quality of care of children admitted to OTP centers, if expected result and quality are not achieved what have been the main factors that hindered the achievement and how this could be improved?
6. To what extent the CMAM programme contributed to reducing the bottlenecks and barriers that determine equity gaps affecting vulnerable children.
7. What is current CMAM program monitoring mechanism? is it sufficient to monitor the expected results? if not how can it be improved and decentralized to the health facility in real time and adaptable way?
8. How have gender and equity concerns been addressed in the design, implementation and monitoring of the programme.

Efficiency:

9. How well the CMAM programme implementation been managed in the programme states.
10. To what extent current CMAM implementation is cost efficient? Could the same be achieved using different strategies and with less resources.

11. To what extent the CMAM program was efficient in terms of utilizing existing systems and considering value for money.
12. To what extent UNICEF and other partners have adequately supported CMAM for achieving results. What are the missed opportunities that if used CMAM support would have been maximized?
13. To what extent CMAM program engaged communities in the design, implementation and monitoring of the programme
14. What are the good practices/comparative advantages between programming in different states?

Coverage

15. Is CMAM program coverage within acceptable range?
16. What factors that have acted as barriers and boosters for achieving acceptable coverage?
17. How could coverage increase and measured not only at state or locality levels but at health facility levels?

Impact

18. What significant changes happened to children and communities with the implementation of CMAM in terms of improving malnutrition status (prevalence's) and reduction in mortalities due to severe acute malnutrition?
19. How many lives were saved with the current CMAM program?
20. What were the positive and negative, intended and unintended consequences of CMAM program?

Sustainability

21. To what extent, CMAM has been integrated and contributed into health system strengthening?
22. To what extent has the intervention contributed to promoting ownership, including capacity building of national/State stakeholders.
23. What is the current government investment in CMAM and how this investment could be maximized?
24. What are the opportunities for and the risks for the sustainability of the programmes benefits in the short, medium and long term?

10. References

- ¹ Central Bureau of Statistics, Sudan, 2018.
- ² Sudan S3M II (2018): Report of a Simple Spatial Surveying Method S3M II in Sudan. Federal Ministry of Health, Sudan. 2018.
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