



State Ministry of Health North Kordofan-Sudan and Save the Children Sweden

Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) Report
North Kordofan State June-July 2015



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Last but not least, we wish to thank the people in North Kordofan for their responsiveness and kind cooperation.



Acronyms

CI	Credible Interval
CMAM	Community Management of Acute Malnutrition
FGD	Focus Group Discussion
GAM	Global Acute Malnutrition
KII	Key Informant Interviews
LoS	Length of Stay
MAM	Moderate Acute Malnutrition
MOH	Ministry Of Health
MUAC	Mid Upper Arm Circumference
OTP	Outpatient Therapeutic Programme
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SFP	Supplementary Feed Programme
SSI	Semi Structure Interview
SQUEAC	Semi Quantitative Evaluation of Access and Coverage
UNICEF	United Nations Children's Fund
WFP	World Food Program



Executive Summary

Protracted and acute conflicts, recurring natural disasters and chronic underdevelopment in Sudan will continue to affect the lives of approximately 4.2 million children in 2015, contributing to what is one of the worst crises for children in the world today. It is projected that the total number of people in need in 2015 will rise to over 7 million, from 6.1 million at the beginning of 2014¹. Limited access to treatment, food insecurity, high incidence of diarrheal diseases, and poor feeding practices have been long standing contributing factors to the high acute malnutrition rates in Greater Kordofan states. In addition to this, current instability and conflict is set to exacerbate the already high malnutrition rates in the two states of Kordofan, leading to a nutritional emergency. The SQUEAC was conducted in June-July 2015 by the State Ministry of Health with support from Save the Children Sweden. The survey covered 2 localities in rural and one locality in urban area of North Kordofan. The objectives of SQUEAC were to evaluate the CMAM program in North Kordofan and build capacity in SQUEAC methodology so that the tool can be adopted and used to improve nutrition programs.

Findings from the assessment indicated a single coverage estimate of 32.1% (23.6% - 41.7%) in Urban area and 31.7% (23.8%-40.7%) in Rural areas of North Kordofan. This estimate lies below the Sphere standard of 70% in urban and 50% in rural program areas. The table below indicates a summary of the barriers to be overcome and recommendations in order to enhance program coverage in North Kordofan.

Table 1: Barriers and Key Recommendations

Barriers	Recommendations
Lack of Supplementary Feeding Programme (SFP)	• Strengthening of Community sensitization and mobilization by identification and recruitment of additional Volunteers in program from Near and Far catchment areas of targeted CMAM sites.
Limited number of Volunteers in program and No regular incentive of Volunteers from MOH/SCS	• Allocate financial resources to cover Volunteers reward based incentives / provision of IEC material to ensure their active involvement in program.
No regular outreach activities/screening, No Education Awareness Raising Sessions conducted at community level, No provision of IEC material with lack of supportive supervision for CHVs at the community level	• Revision of TORs for Volunteers in programme with additional responsibility to conduct regular outreach activities such as Education Awareness Raising Sessions at community level, distribution of IEC material,
Poor follow up of SAM cases	• Develop micro planning for Community Coverage that ensure proper deployment/working of volunteers in their assigned areas (Near/Far) with settle monthly targets for regular screening and referrals along with awareness raising sessions at community level.
–High absenteeism	• Ensure use of duplicate printed copy of referral slips in a book form by Volunteers (One copy for Volunteer's record and one copy for facility record.

¹ Sudan 2015 Humanitarian Needs Overview (HNO) and Sudan 2014 HNO



-High defaulters	• Development of Supportive supervision checklist for outreach activities in programme and nomination of relevant Staff (Coordinator / Officer) from SCS/MoH to conduct community based supportive supervision of Volunteers on monthly or quarterly basis.
Lack of awareness about the program and limited access to OTP sites (especially in far areas)	• Enhance/improve volunteer's skills for accurate MUAC measurement/conducting awareness raising events to strengthen community ownership and reduce rejections in program.
Lack of /No formal involvement & support by Key community figures in the program by referring children and support outreach	• Define mechanism for improvement of follow up cases / tracing of absentees and defaulters.
Insufficient influx of cases	• Stimulate the engagement of "role models" (e.g. mothers or fathers of previously malnourished children) in a variety of sensitization activities in order to share their testimonials and act as potential tipping points of
Distance- Population Movement	• Positive Deviant Mothers (PDM) can support the program as tracing source in program by promoting program awareness through Volunteers (as already there is established Peer-to-Peer referrals exist in most
Sharing of Food, Caregiver's want to admit all children to OTP	• Allocate resources for provision of routine medicines for North Kordofan and assign staff to maintain regular supply chain and avoid stock out.
Poverty, sudden weaning; Seasonal barriers/Seasonal Variation leads to Defaulters	• Conduct Value Clarification Workshop for relevant stakeholder to promote accountability and to increase joint efforts to achieve coverage threshold as per
Stock out/stock breaks of essential medicines at OTP site	• Ensure joint supportive supervision by SCS and MoH with quarter based analysis of facility and community based program data for adopting collaborative approach for programmatic actions.
Lack of financial resource by carers to cover transportation cost to access facility.	• There is need of SFP in North Kordofan especially for PLWs.
Stigma (RUTF cause diarrhea)	• Development of road map to further improve integration of PHC and CMAM.
Lack of awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated (far areas).	• Strengthening of case referral mechanism with formal involvement of Community key figures and plan for a gradual shift of responsibility (especially for screening) onto local key community figures to promote ownership
No Data use for Programmatic Actions	• Fundraising to support integrated programming such FSL/Reproductive Health with Nutrition.
Limited or No planned outreach activities at community level.	
Inactive volunteers/low motivation	
Alternative health practitioner for community to treat SAM cases	



1. Introduction

North Kordofan (NK) State is located in the centre of Sudan. It is delimited by six states; they are the Northern State, Khartoum State, the White Nile State, South Kordofan State, Western Kordofan State and North Darfur State. The state is located in the dry semi - arid region between latitudes 11.15 to 16.45 degrees north and longitude between 27.5 - 32.15 east in an area of 244.700 square kilometres. The state population is about 1,994,619 people (CBS, 2008) 79 % of them work in Agricultural sector. The state contributes to about 30 % of the total non-oil exports of Sudan. The population is distributed between urban 19.7 %, rural 67.2 % and nomads 13.1% in 8 localities.

According to the S3M survey² conducted by UNICEF and MOH in June 2013, the Global Wasting (WHZ) for North Kordofan state, except capital, shows that the situation is “serious” as the GAM rate was 12.07% (10.98 - 13.25 95% C.I). Wasting based on MUAC for the Kordofan states, except capitals, shows the same serious to critical situation as the GAM rate with 8.68% (7.86 - 9.67 95% C.I) for North Kordofan state. The prevalence of the Stunting (HAZ) is classified as high (>30%) across the Kordofan states, showing rates of 41.63% (39.17 - 43.59 95% C.I) for North Kordofan state. This indicates poor maternal nutrition, poor feeding practices, poor food quality as well as frequent infections, which can slow down growth. The Maternal Nutrition is indicated by the rate of undernourished mothers (with MUAC <230 mm) who were found to be 11.25% for North Kordofan state.

The S3M survey results have shown that the IYCF practices are still a challenge in Kordofan states. The “good” IYCF indicators were found to be 42.17% for North Kordofan state.

The table below table shows S3M malnutrition results for the North Kordofan state

Table 2: S3M malnutrition results for the North Kordofan state

State	Indicators (S3M Survey, June 2013)				
	Global Wasting (WHZ)	Global Wasting (MUAC)	Global Stunting (HAZ)	Maternal Wasting (MUAC < 230 mm)	“Good” Infant and Young Child Feeding (IYCF)
North Kordofan	12.07% (10.98 - 13.25 95% C.I)	8.68% (7.86 - 9.67 95% C.I)	41.63% (39.17 - 43.59 95% C.I)	11.25% (10.01 - 12.80 95% C.I)	42.17% (39.68 - 44.96 95% C.I)

The MOH in North Kordofan state have limited capacity to respond to the nutritional needs of the affected populations, given the high prevalence of GAM and the presence of aggravating factors such as household food insecurity, increased food prices, lack of quality health services and high disease burden due to inadequate WASH services in addition to increased number of displaced populations due to the on-going fighting in South Kordofan and Darfur states and its implication on the hosting communities in North Kordofan sates and the pressure on existing limited services.

² Simple Spatial Surveying Method (S3M) survey Sudan 2013



Figure 1: Snapshot of SQUEAC Training workshop

The need for baseline coverage in the area as well as the development of capacity amongst stakeholders formed the basis for the assessment in the area. Prior to the start of the planned coverage surveys, Save the Children held two days training workshop on the SQUEAC survey methods. Save the Children in collaboration with Ministry of Health provided technical support in the design and conduct of the training, including financial support to conduct the SQUEAC training. This training package was developed based on the SQUEAC Technical Reference document, published by FANTA in 2012. The training package included the basic steps of conducting a SQUEAC assessment and taught the required skills (Agenda Annexed). Before the start of the training a pre-test conducted. The same test was given as a post-test at the end of the training. The average pre-test score was 33%; the average score increased to 82% on the post- test.



To evaluate coverage and access of the OTP program in Shaikan and Elrahad, a team of 10 members drawn from Save the Children Sweden and MOH led by Senior Specialist Nutrition (HRP) from Save the Children USA, used the SQUEAC methodology with the following specific objectives:

- Enhance local capacity to undertake coverage investigation using SQUEAC methodology
- Identify boosters and barriers to accessing CMAM services
- Classify coverage of CMAM at Service Data Unit (SDU) level – targeted OTP sites in Urban and Rural areas of Shaikan and Elrahad localities.
- Estimate the overall Coverage of CMAM program
- Develop specific recommendations based on investigation outcomes to improve coverage of the nutrition programme

Figure 2: Map of North Kordofan State - Localities

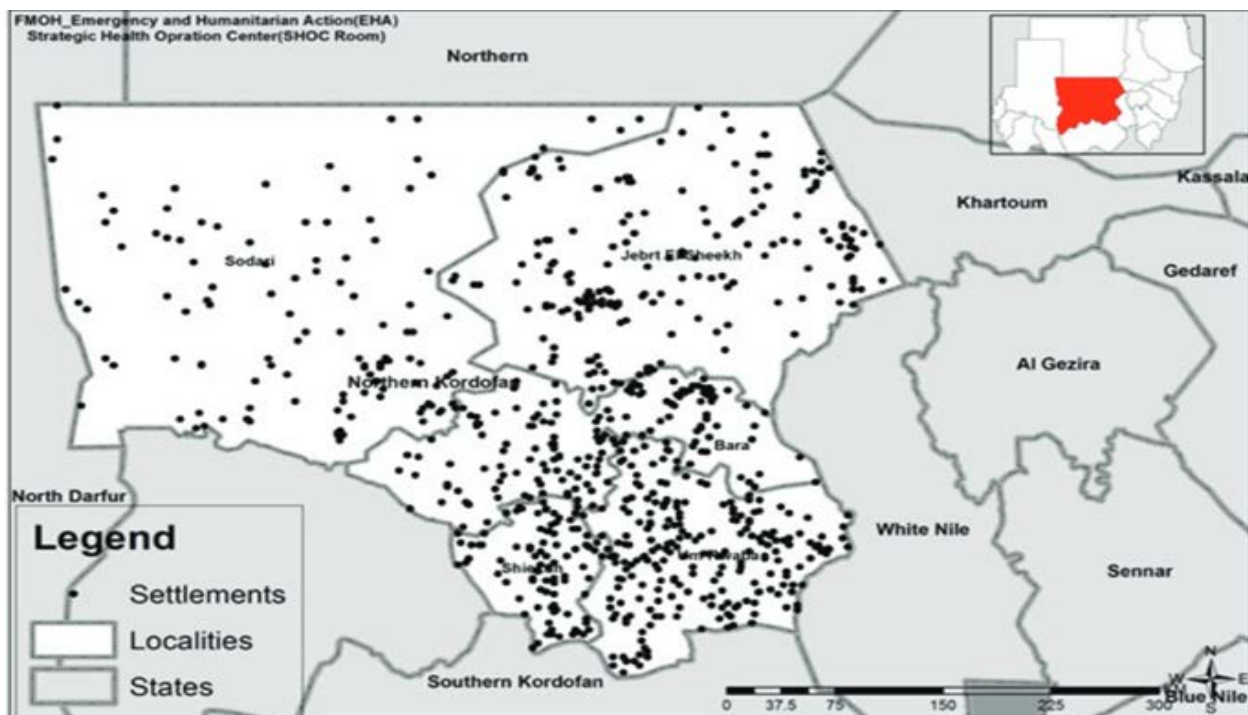


**Table 3: Geographical location of OTP sites**

S.No	State	Locality	Project Sites	Catagorization	Opening date	Duration up to now
1	North Kordofan	Errahad	Sidra	Rural	8-Apr-14	1year ,2 month
2	North Kordofan	Errahad	Errahd (Haja Batool)	Urban	19-May-13	2year ,1 month
3	North Kordofan	Shaikan	El Obied (Algabalian)	Rural	19-May-13	2year ,1 month

2. Assessment Methodology

The SQUEAC assessment activities in North Kordofan undertook between June 15, 2015 and July 05, 2015, consists of a set of tools designed to identify and investigate CMAM program coverage and factors influencing it. The approach used a mixture of quantitative (numerical) data collected from routine program records, monitoring activities, small-area survey and wide area survey as well as qualitative data collected from informal group discussions and interviews with program staff, Volunteers in programme, carers of beneficiaries, community key figures and religious leaders, lay persons and traditional Healers, calendar of events data obtained from the informal group discussions with variety of informants to inform the trends in seasons, labor demands, climate conditions, diseases and hunger gaps. The information was collected interactively through triangulation by source and method and sampling to redundancy. The process of SQUEAC can be described as investigative, iterative, innovative, interactive, intelligent, informal and in the community process.³ Thus the stages used in the SQUEAC method are as follows:

Stage 1: Identified areas of low and high coverage in urban and rural settings of North Kordofan as well as reasons for coverage failure using routine program data. This was done mainly through visits to the OTP sites to get information from program staff, carers, Volunteers in programme and community members through informal group discussions and semi structured interviews. The information obtained was analyzed into barriers, boosters and questions. The information obtained from the respondents was triangulated by source and method to validate the findings.

Stage 2: This confirmed the location of areas of high and low coverage and the reasons for coverage failure identified in stage 1 through using small area surveys. The information obtained was analyzed into barriers, boosters and questions. The information obtained from the respondents was triangulated by source and method. The barriers and boosters were ranked in a series of analysis to develop a prior for the Stage 3 survey (see below). This was developed into belief of what the program coverage would likely to be in the light of the available information.

Stage 3: Bayesian techniques were used to estimate overall program coverage with a wide area sample survey. Statistical analysis was done using the Bayes SQUEAC software.

The trainees were taken through these stages through active participation in every stage and learning was taking place by action.

³ “Mark Myatt et al (October 2012). Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)/ Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) Technical Reference” for the details of SQUEAC approach



3. Investigation Process – Stage One

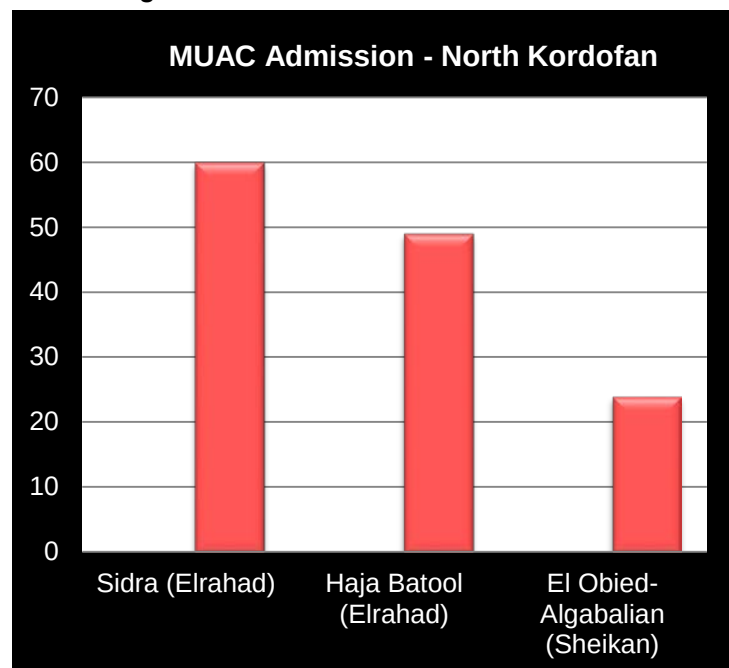
The main objective of this stage was to identify potential differences in coverage within Urban and Rural areas of Shiakan and Elrahad of North Kordofan (high versus low coverage areas) and reasons for coverage success/failure using routine program data and qualitative data. Various routine program data obtained from program registers was analyzed. These included trends in admission, MUAC on admission, length of stay, recovery, defaulting and many other aspects.

3.1 Quantitative data:

Routine program data from all 3 facilities offering OTP services was available since the start of the program. The data was satisfactory and records included very detailed information about each case admitted to the CMAM program. Recording and reporting system meet the compliance as per protocols, there is need identified for refresher training session among few of OTP staff for timely validation of data and use of data for programmatic actions.

In North Kordofan, information collected at the OTP sites showed that during last six months (Dec 2014–May 2015) admission trend was more in Sidra as compare to Haja Batool and Algabal, however there was insufficient influx of SAM cases to OTP sites based on catchment population of targeted project sites. More admission was from near areas of catchment population of OTP sites and was close to admission criteria with low MUAC and few critically low MUAC. The median range of the MUAC at admission was 11cm. The median Length of Stay (LoS) was 5 weeks among children cured in the program. The median time to travel to the OTP sites was 15 to 30 minutes in both urban and rural settings. Except Algabal, rest of the facilities data revealed early Defaulters (within 4 weeks from admission) that indicated serious issue of low coverage and poor follow up of the SAM cases. Program performance is measured by the program outcome data according to Sphere standards. Majority of the admitted cases were exit as cured from Dec 2014 to Mid Feb 2015 with most defaulters experienced during the last three months (more than 30% defaulters from Feb 2015 to May 2015).

Figure 3: MUAC Admissions –North Kordofan



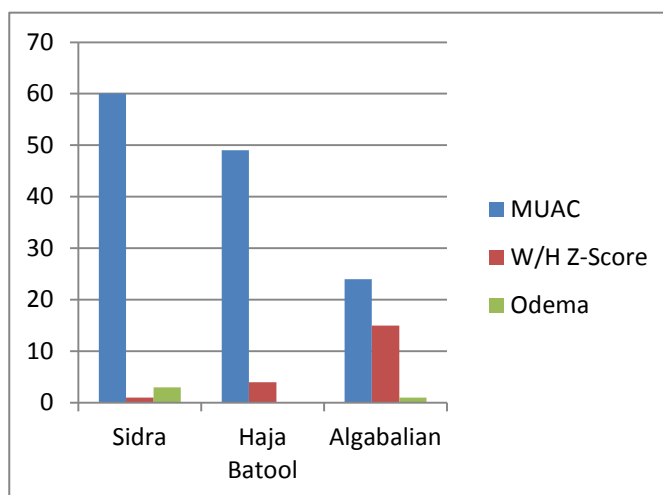
3.1.1. Program admissions

Admission MUAC is an indicator that reports on the timeliness of case detection, presentation and admission; a low median admission MUAC can indicate late presentation, an example of direct coverage failure as SAM cases have spent a considerable amount of time non-covered before admission. Late presentation also affects coverage directly because it is often associated with the need for inpatient care, extended lengths of stay in the OTP, defaulting and overall poor treatment outcomes.



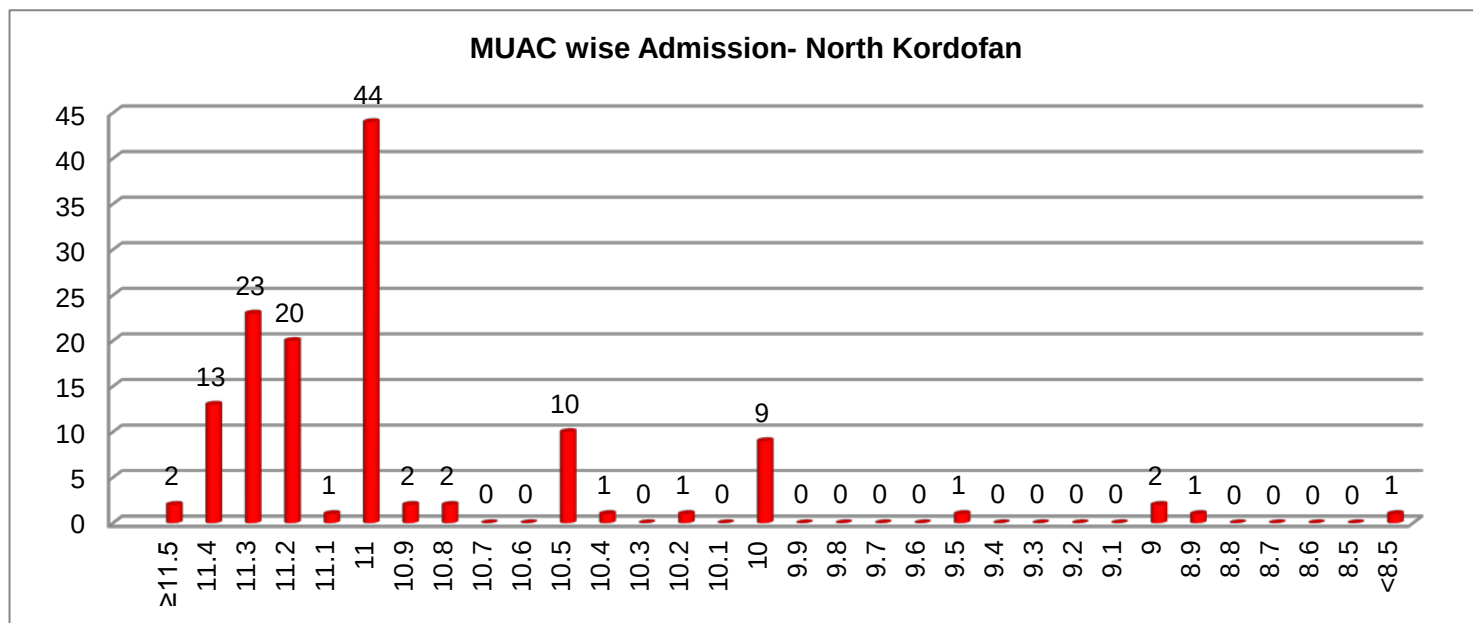
Figure 4: Facility Based Admission Trend

During last six months, approximately 13% of admissions were using the criteria of W/H Z-score with 2% admitted with odema, and more admission 85% admitted using the MUAC criteria. It might be important to investigate in the community whether there are children with oedema who are not recognized as being malnourished. MUAC at admission data were collected from a subset of OTP sites and it appeared that the majority of SAM cases were admitted with a MUAC close to admission criteria. The median MUAC at admission was 11mm, indicating that more than 50% of the children were admitted into the OTP program in a timely manner and were recruited early in the program with active case finding and early treatment seeking behavior.



However program had cases registered in with MUAC low to critical admission level. These were mostly the cases from far placed areas (even from areas that were not covered by program) who visited health facilities due to recurrent illness (like diarrhea and fever in malnourished child) and got enrolled in program by virtue of referrals through medical officer/pediatrician of health facility to CMAM program. Most of cases with very low MUAC were those who visited health facilities which are secondary level health care facilities in the locality or visited OTP site during market days from very far areas. Data on MUAC on admission (for children admitted with MUAC criteria) was plotted for all recorded admissions from Dec 2014 to May 2015 as shown in the figure 5.

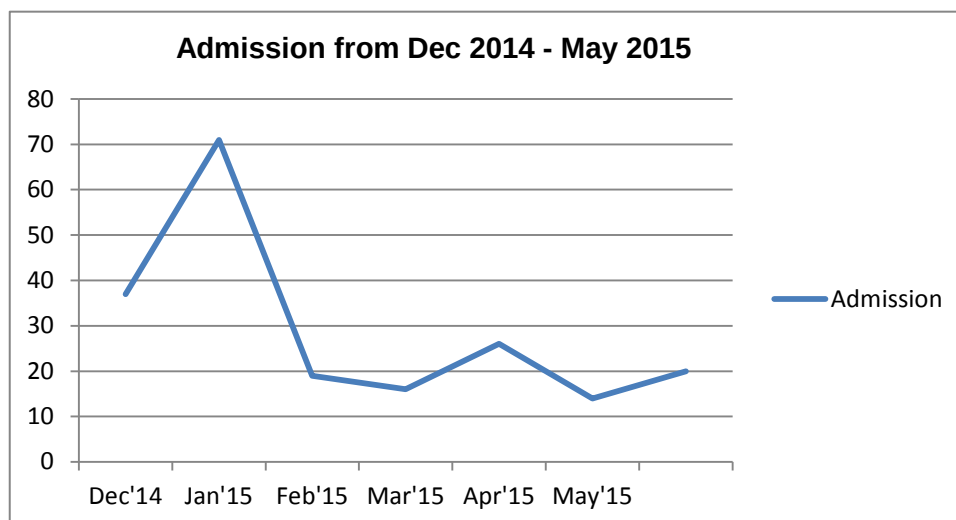
Figure 5: MUAC wise Admissions North Kordofan



The admission trend also points to the below seasonal calendar, high admissions reported in the period of Dec to Jan when respiratory tract infection was common , followed by the period of harvest, land preparation and peak lean season from March to May when admission trend declined.



Figure 6: Admission Trend from December 2014- May 2015 and Seasonal Calendar

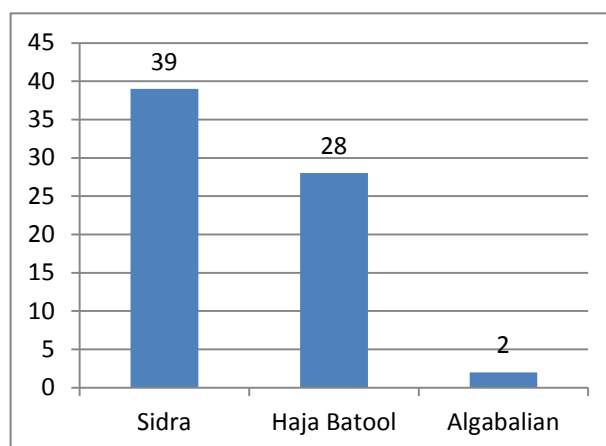


Seasonal Calendar											
Planting											
Peak Lean Season											
Rainy Season											
					Winter Season Planting						
					Millet and Sorghum Harvest			Harvesting		Land Prep	Peak lean Season
Eid Alfiter				Eid Alad ha			Christmas			Al Mawlid Al Nabawi	
Diarrhoea/Malaria/ Outbreaks						Respiratory Tract Infections			Dry Season		
JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY

3.1.2. Defaulters

While analyzing the database we were also able to see the provenance of defaulters and to analyze whether distance had any impact on the defaulting. Time-to-default is a measure of how long a defaulter stays in the program before defaulting. This measure distinguishes an early defaulter (i.e. defaults within 4 weeks from admission) from a late defaulter (i.e. defaults after 4 weeks from admission). It is important to distinguish these two classes of defaulter's particularly early defaulters because they are most likely current cases who are not covered by the program. The defaults occurring early in the course of treatment (early defaulters) could be attributed to the fact that beneficiaries originally admitted at OTP site would not keep up regular attendance to the OTP sites where they were referred. Early Defaulters (within 4 weeks from admission) reported

Figure 7: Facility wise Defaulters

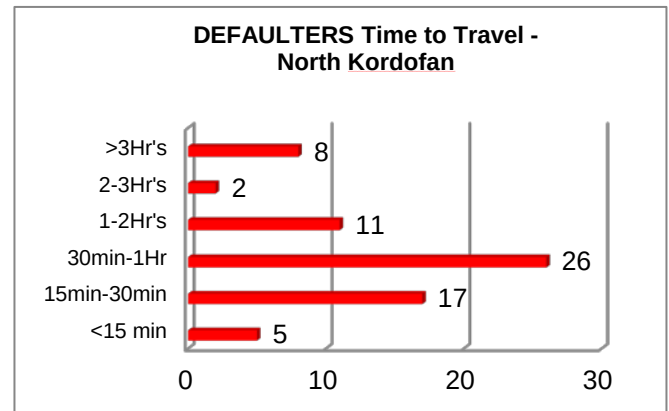




was and indicator of low coverage and poor follow up at community level except in Algalabian.

Figure 8: Defaulter Time to Travel

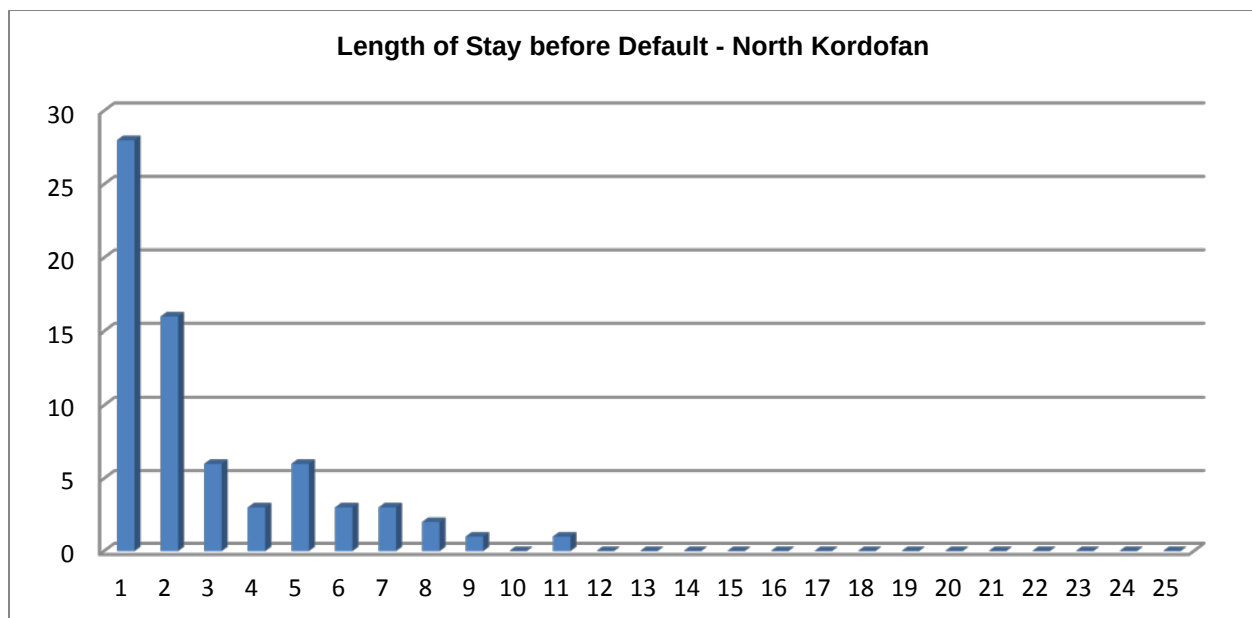
The program staff traced some of the defaulters, but the challenge was to retain the SAM cases from near as well as from far villages, particularly those without reliable transport means. Since defaulting is a direct coverage failure, these findings could be used as a beginning point to investigate limited program coverage. The findings of distance to OTP site as a possible cause of heterogeneous program coverage. Most of the defaulters were not coming from far away areas from the OTP site and some were also close to other OTP sites. Therefore distance does not seem to be the problem in those cases. The major causes of defaults according to program staff and carers interview can be summarized as follows:



- The unwillingness of the carers to travel long distances to the OTP sites particularly where public transport was hard to find and due to out of pocket expenses and program operational/financial constraints for limited outreach.
- Seasonal variations and barriers, labour demand resulting in migration of carers who had to relocate to areas where casual work in crop fields was available.
- Carers referred by Medical Assistance especially during market days, enrolled their children in program, once child medical condition improves, carer show lack of interest in follow up for therapeutic management of malnutrition.

Figure indicated early Defaulters (within 4 weeks from admission) which was one of prime causes for low coverage resulted from inadequate geographical coverage by OTP sites, poor outreach activities and poor follow up at community level.

Figure 9: Length of Stay before Default



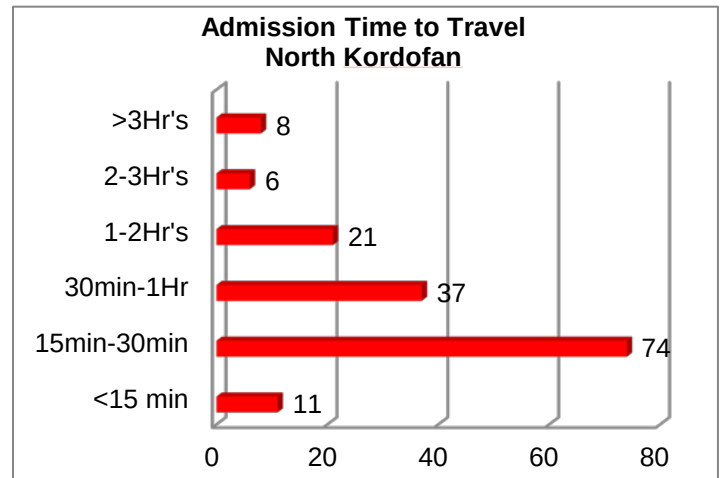
3.1.3. Time/ Distance-to-travel



Distance-to-travel is one tool for assessing the impact on coverage, distance of beneficiaries home and program sites. Note that a limitation of distance-to-travel analyses did not consider factors relevant to travelling such as means of transportation, quality of roads, geographical barriers, etc

Figure 10: Admission Time to Travel

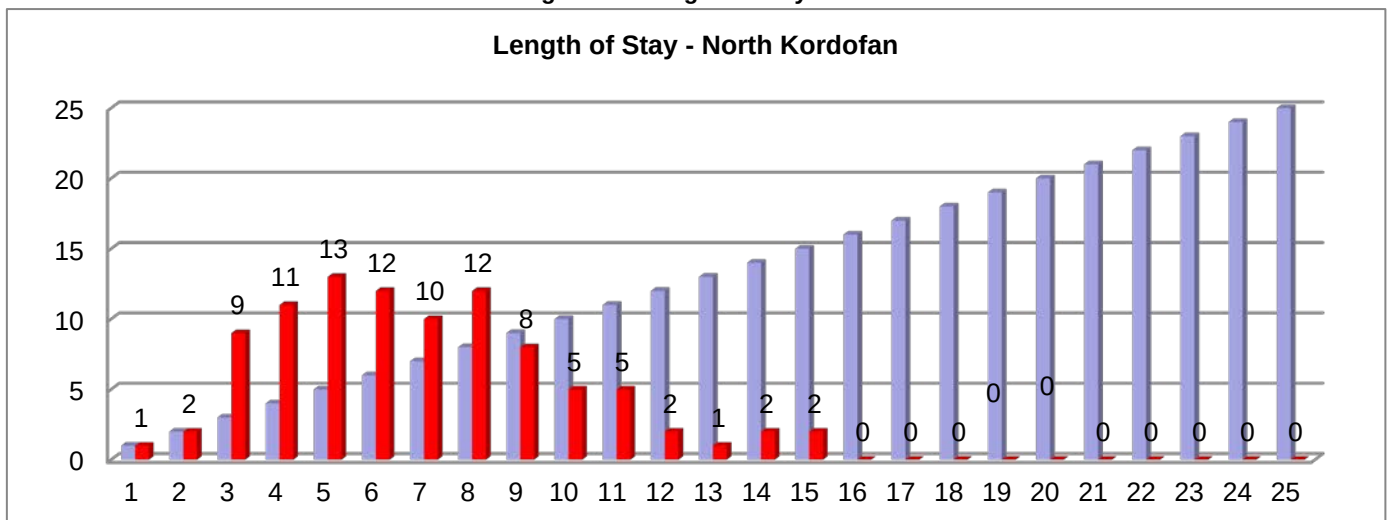
There was a limited number of admissions from areas where time to travel to CMAM site goes beyond 1/2 hour of travel. This was one indicator of probable patchy coverage when the beneficiaries who generally come from far areas become much less than those coming from areas close to the program. The distribution of the observed cases from this data raised the question of heterogeneity of the access to the CMAM services. This was in the sense that the areas that seem to be within 30 minutes of travel to the OTP site had more beneficiaries accessing services than areas that were beyond 30 minutes travel time to the OTP site to a large extent. There were also some lost opportunities in the villages that are closer to the OTP site that had not been profiled to be in the catchment population.



3.1.4. Length of Stay (LOS)

The ideal average LOS in OTP is 56 days (8 weeks) according to CMAM guidelines and SPHERE standards. It was important to note that when children attained discharge MUAC of 115mm or 11.5cm and had also gained weight up to 15% weight gain, the program discharged them as cured from OTP. At the time of SQUEAC investigation the majority of these children who had stayed beyond 8 weeks in OTP were in the 'waiting list' because of no provision of Supplementary Feeding Programme SFP. They were counted as children who had a prolonged episode of treatment, resulting in a longer LOS. This is a good practice of the OTP program in the sense that every individual child is kept from a SAM condition, reducing relapse incident cases in the community. The median length of stay for cases admitted with MUAC in the programme was 5 weeks, which is a length often considered as close to maximum (8 weeks) length of stay in the CMAM program. Recalling the few cases that had very low MUAC at admission, they were also the cases that would contribute significantly to longer LOS. These were cases admitted from far villages (during market days especially in Haja Batool) and also cases who had erratic attendance to the OTP resulting in delayed recovery. As we can see from the data above, more than half of the children stayed in the programme for longer than 5 weeks with quite a substantial number (around 15-20%) staying for longer than 12 weeks. There might be a few reasons contributing to the longer length of stay. One of them was the shortage of Amoxicillin at the facility level and therefore potential increased length of stay in the program because the underlying infections not being treated hence the children take longer to recover, RUTF sharing, absenteeism and sickness episodes during the course of treatment leading to prolonged stay.

Figure 11: Length of Stay





3.1.5. Active and passive case finding

The CMAM program relied significantly on screening and admission through outreach interventions that were conducted within CMAM areas. Program data indicated that the larger number of screenings was done by program volunteers within health facility or in nearby catchment population. Few children were identified through outreach activities and/or through screening done by program volunteers. It could be said that there are opportunities of timely identification of *incident* cases in the community. SAM cases referral sources showed lack of formal involvement from community key figures for case-finding, referral and tracking / follow up of cases. There was mother-to-mother / peer-to-peer referral which reflects good health seeking behavior of community.

Figure 12: Referrals by Facility

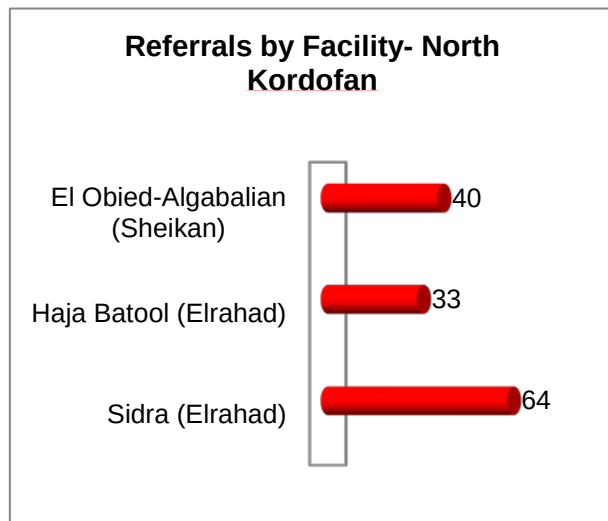


Figure 13: Referrals Source

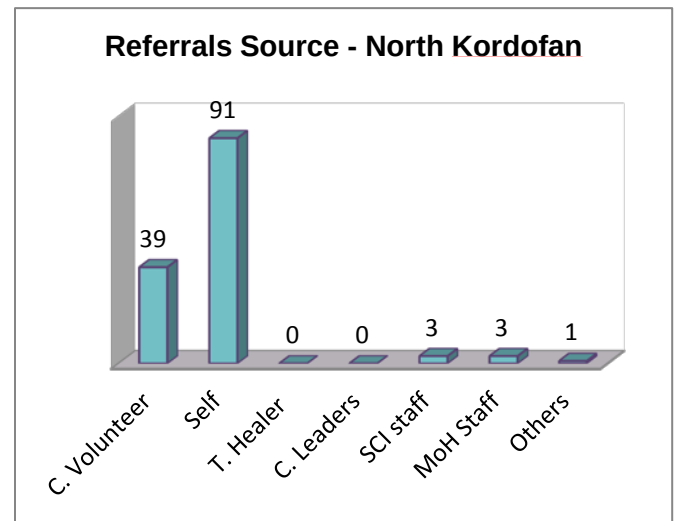
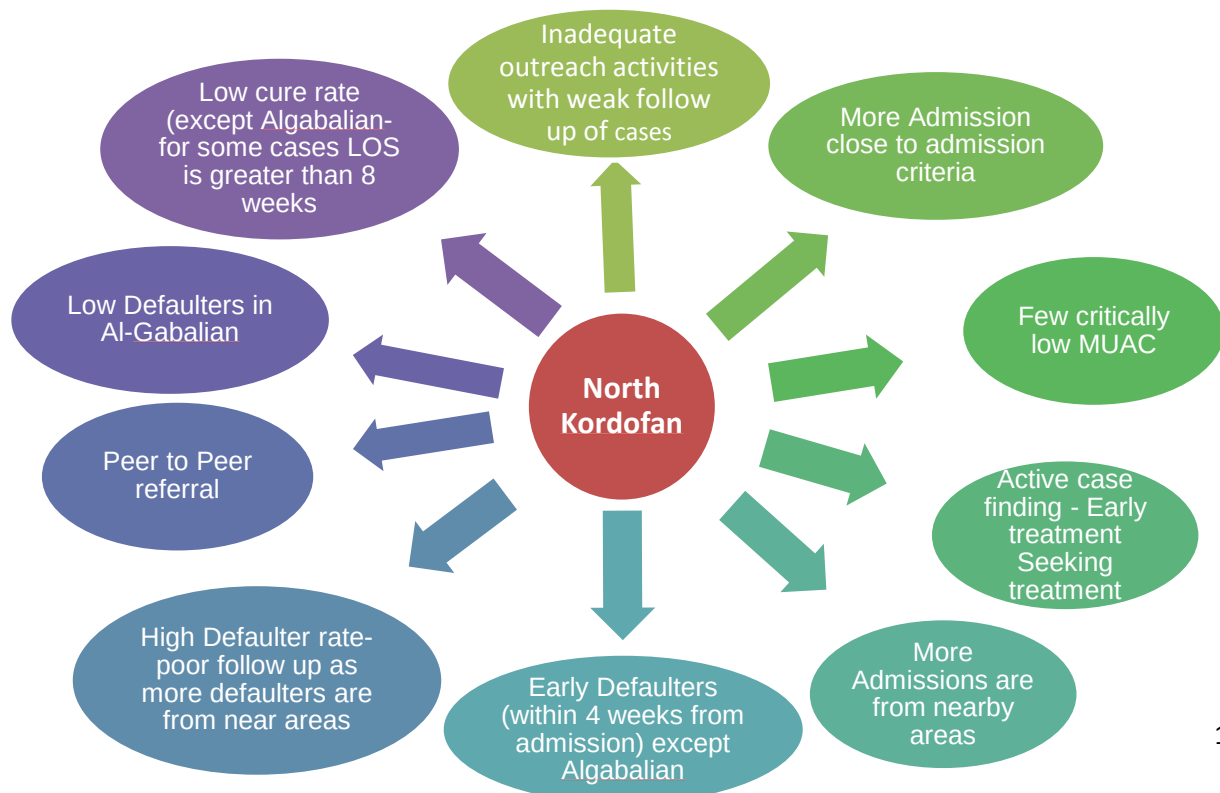


Figure 14: Summary of Quantitative findings





Additionally, we have found the database extremely detailed and with a lot of useful information, which allowed the analysis of multiple indicators. The registers have also been examined by the team and some information was compared with the compiled database provided by SCS. While doing validation of database from enrollment cards and facility based registers some inconsistencies were found like few extra number of SAM cases reported in the database in comparison with facility based record. Some of the referral slips were not available in the record. Similarly, separate register were maintained for supportive supervision of facility, however there is high need for data analysis on timely manner identified by us during assessment for appropriate programmatic actions to improve the quality of service delivery.

It was highly encouraged that OTP staff received regular supply of RUTF from UNICEF and no gap in supply chain reported in last six months while in Algabalian and Haja Batool essential medicines stock out reported since last 3 months. There was proper follow up of SAM cases from stabilization center by the OTP staff and high need for SFP for children and PLWs has been identified in North Kordofan.

3.2: Qualitative data

Qualitative data was collected and triangulated by various sources and methods. Qualitative methods used included in-depth group discussions, semi-structured interviews, simple structured interviews, and observations. These various methods helped to uncover various boosters and barriers (positive and negative elements) that influence coverage and access / uptake of CMAM services. Interviews and discussions took place at various community and OTP sites across the intervention zone that was strategically selected to assure equal representation. Trainees oriented to facilitate the collection of data that was pertinent to program coverage and barriers to access. Finally, the investigation team also elaborated a list of local terminology employed when referring to malnutrition and ready-to-use therapeutic foods (RUTF); Interviews were conducted at the OTP sites listed below in table between 25th June and 29th June 2015. In-depth and semi-structured interviews were undertaken with lay people, careers attending the OTP sites and with OTP clinical and other program staff including MOH staff and program volunteers and key community figures. All results were regularly categorized with regular brainstorming exercise with team and organized by using the BBQ (Boosters, Barriers and Questions) tool.

The aim of collecting qualitative data was to allow more detailed development of the coverage hypotheses and an in-depth analysis of the existing information & routine programme data described in the previous section. This data also provides vital information concerning the underlying causes of low or high coverage, including key barriers and accessibility of the services. The table below includes description of some of the most pertinent barriers found in the community while gathering the qualitative data.

Table 4: Barriers with Description

Barriers		Description
Inadequate	Community	No Volunteers in Haja Batool / insufficient number of Volunteers in

Figure 15: Visit of an OTP Site



Figure 16: Group Discussion with OTP staff





Outreach interventions	Sidra to meet programmatic needs, No regular outreach activities/screening, No Education Awareness Raising Sessions conducted at community level, No provision of IEC material with lack of supportive supervision for Volunteers at the community level. There was a mixed knowledge about the CMAM program in the community. In most far away villages and many close by the community did not know at all about the program.
Lack of formal involvement of community key figures	Lack of /No formal involvement and support by Key community figures in the program by referring children and support to Volunteers outreach activities.
No SFP	There is no provision of SFP for MAM children and MAM PLWs.
Lack of Awareness about programme	In far areas, lay people are not well aware of sign and symptoms of SAM, OTP site and that SAM can be treated effectively.
Stock out/stock breaks of essential medicines at OTP site	In Haja Batool and Algalbalian stock out of medicines reported since last 3 months, which may be one of the cause for prolong LOS
Distance to OTP site	This barrier came strongly in some far away villages (over 15km far from OTP).
Lack of explanation about the treatment	Sharing of Food (RUTF), Caregiver's want to admit all children to OTP.
Opportunity cost	Reasons for not attending program and high defaulting include; competing activities like seasonal and household workload, and additionally travel cost (especially in Sidra and Haja Batool)
Other barriers	No regular Data analysis and use for programmatic action, inefficient patient flow at program sites, Stigma (RUTF cause diarrhea), Alternative health practitioner for community to treat SAM cases.

On the positive note, malnutrition was recognized as a health problem by majority in the community. Beneficiary mothers appreciated very much the treatment as they could see their children's improvement and provided very positive feedback regarding attitude and behavior of service providers (facility based staff). Service quality was overall very satisfactory and there was no discrimination towards any groups.

Figure 17: Brainstorming Exercise



Figure 18: Brainstorming after Field Visit





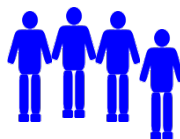
Figure 19: Qualitative Findings -North Kordofan (Urban)



Facility based findings



Volunteers



Community Lay People



Carers of beneficiaries



Key Community Figures

Key Factors influencing Program Coverage (Boosters/Barriers)

- Provision of sufficient trained OTP staff however No volunteers to meet programmatic needs
- Established referral linkage from community to OTP site, active volunteers in program)- Near areas & in market days from far areas.
- Short waiting times/insufficient patient flow at program site
- Stock out essential medicines at OTP site
- Recording and reporting system meet the compliance as per protocol
- Supportive supervision by MOH/Save the children with adequate Nutrition Supply Chain Management (RUTF)
- No Data Use for Programmatic Actions
- Facility based Health Education sessions
- Poverty, sudden weaning; Seasonal barriers
- No provision of SFP

- No Volunteers in program
- No Planned outreach activities at community level
- No regular incentive of Volunteers from MOH/SCS
- No Regular outreach activities,
- No Education Awareness Raising Sessions conducted at community level with lack of supportive supervision
- Poor follow up of SAM cases,-High absenteeism and High defaulters

- Awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated. (Near areas)
- Lack of Awareness that the treatment is free of charge.
- Self-referral and peer to peer referral (Market days from far areas)
- Lack of awareness about the program and limited access to OTP sites (especially in far areas)

- Reduction of stigma associated with malnutrition by seeking early treatment behavior (admission MUAC)
- Good client / staff relationship - Positive Feedback on Service Providers attitude and behavior
- Lack of financial resources to cover transportation cost

- Lack of formal involvement of key community figures for case-finding and referral
- Alternative practitioner for community to treat SAM cases



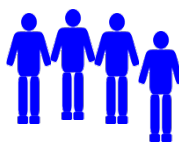
Figure 20: Qualitative Findings -North Kordofan (Rural)



Facility based
findings



Volunteers



Community Lay
People



Carers of
beneficiaries



Key Community
Figures

Key Factors influencing Program Coverage (Boosters/Barriers)

Provision of sufficient trained OTP staff however insufficient volunteers to meet programmatic needs.

Established referral linkage from community to OTP site, active volunteers in program (Referrals from the community)

Short waiting times/Sufficient patient flow at program site

Recording and reporting system meet the compliance as per protocol

Supportive supervision by MOH/Save the children with adequate Nutrition Supply Chain Management (RUTF)

Limited Data Use for Programmatic Actions

Stock out essential medicines at OTP site except Sidra.

High proportion of cured in Algabalian

Poverty, Seasonal barriers

No provision of SFP

Planned outreach activities at community level by Volunteers in coordination with OTP staff in Algabalian

No regular incentives of Volunteers from MOH/SCS

No Regular outreach activities,

No Education Awareness Raising Sessions conducted at community level with lack of supportive supervision for Volunteers at the community level

Awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated. (Near areas).

Awareness that the treatment is free of charge with Self-referral and peer to peer referral in Algabalian

Lack of awareness about the program and limited access to OTP sites (especially in far areas) in Sidra

Reduction of stigma associated with malnutrition by seeking early treatment behavior (admission MUAC)

Good client / staff relationship - Positive Feedback on Service Providers attitude and behavior

Sharing of Food, Caregiver's want to admit all children to OTP

Lack of formal involvement of key community figures for case-finding and referral

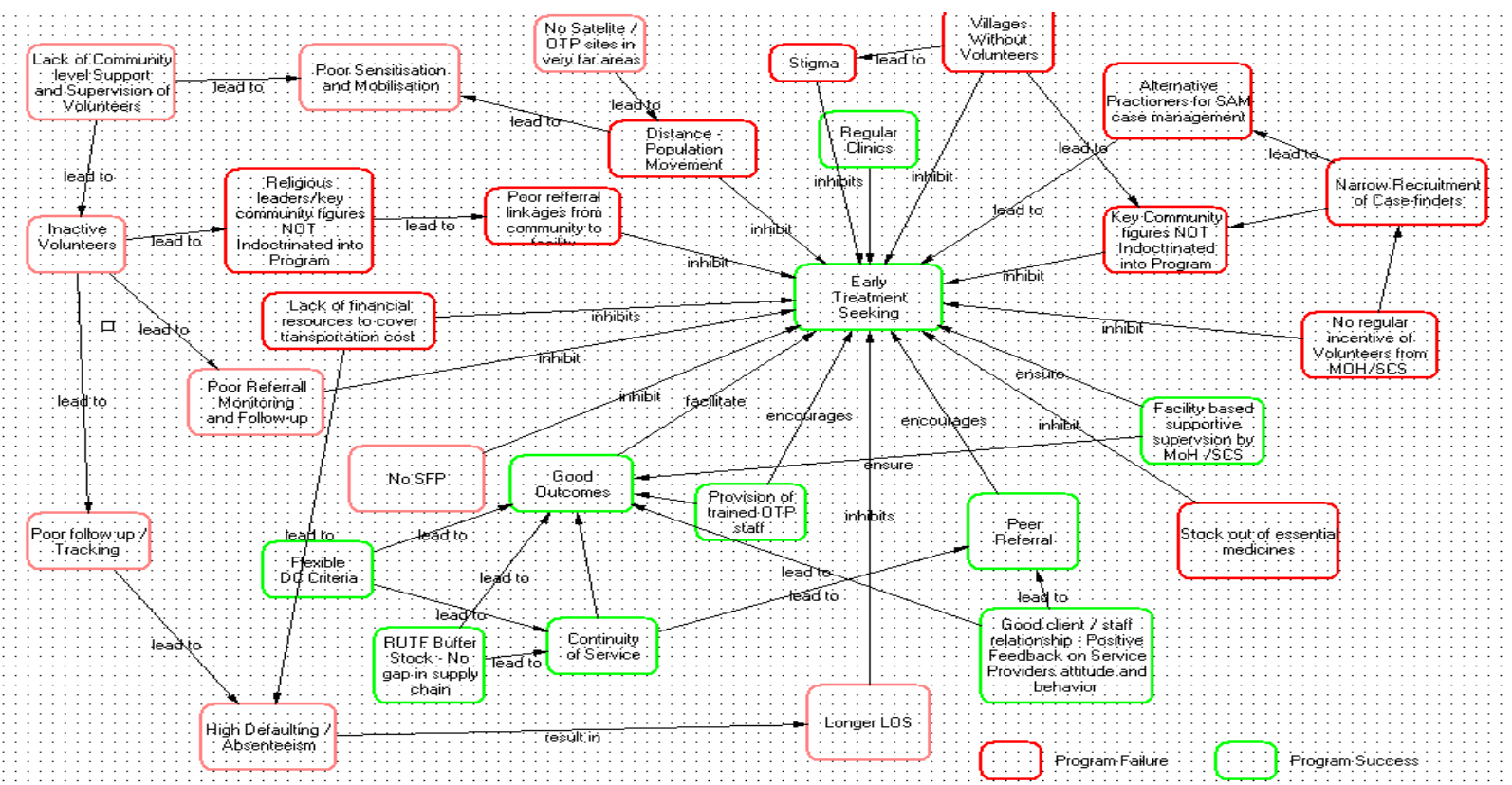
Low preference to alternative practitioner from community to treat SAM cases



3.3 Concept Map

Boosters and barriers were interlinked with coverage which helped us to understand the strength of boosters and barriers for coverage and to prioritize the action points for improving coverage of the program.

Figure 21: Concept Map



4. Investigation Process – Stage Two (Small Area Survey)

In this stage, qualitative data gathered above was analyzed, validated and then used to develop formal hypothesis. This was tested using quantitative techniques. Additionally, one in-depth questionnaire was developed to understand better potential factors affecting the coverage.

4.1 Hypothesis formation

Data analysis during stage 1 revealed that the distance between beneficiaries' home villages and OTP sites played a key role in coverage.



Table 5: Hypothesis formation

<i>Hypothesis – North Kodofan Urban and Rural</i>	
Coverage is High	Coverage is Low
High admissions	Few Admission
Proximity to health centre	Distance between program sites and communities is a significant barrier to access.
Active case finding by volunteers	Patchy coverage of outreach services, particularly with regard to the ongoing follow-up of children with marginal anthropometric status.
Village Abu Dhakana (Urban)	Village Al Oundraba Al Madrasa (Urban)
Village Alresseres (Rural)	Village Kamla Algedy (Rural)
Village Hi Arab (Rural)	Village Alkharasana (Rural)
Coverage >Threshold	Coverage <Threshold

4.2 Small Area Survey

The small-area survey is used to test hypotheses regarding the spatial distribution of coverage. A small-area survey was conducted in 2 villages strategically sampled from catchment population of every OTP Site in the intervention zone; 6 villages were selected depending on their distance to OTP sites (3 far away and 3 close by), four villages selected from rural settings and 2 from urban setting of North Kordofan to test hypothesis that distance between program sites and a community is a significant barrier to access CMAM services. The results of the 'Small area survey' revealed that the hypothesis of Low and High coverage areas of rural setting was confirmed and proved. However for urban setting the hypothesis was not verified, as per below table:

Table 6: Small Area Survey

Small Area Survey – Data Analysis and Results North Kordofan										
Type	Distance	SAM cases in the program	SAM cases Recovering	SAM Case not in Program	Total	Rural Threshold value (d)	Urban Threshold value (d)	Scenario I	Scenario II	Conclusion (As per hypothesis) Yes/No
Rural	Near	3	0	1	4	2	NA	Because Result Value is not higher than our threshold value , coverage is classified as being <50%	Because Result Value is higher than our threshold value , coverage is classified as being >50%	As per hypothesis
	Far	1	1	9	10	5	NA	Because Result Value is not higher than our threshold value , coverage is classified as being <50%	Because Result Value is higher than our threshold value , coverage is classified as being >50%	As per hypothesis



Urban	Near	3	2	9	12	NA	8	Because Result Value is not higher than our threshold value , coverage is classified as being <70%	Because Result Value is higher than our threshold value , coverage is classified as being >70%	Not as per hypothesis
	Far	0	1	1	1	NA	1	Because Result Value is not higher than our threshold value , coverage is classified as being <70%	Because Result Value is higher than our threshold value , coverage is classified as being >70%	As per hypothesis

Description	North Kordofan	
	Rural	Urban
Active cases	14	13
Cases In Program	4	3
Cases Not in Program	10	10
Recovering Cases	1	3
	Coverage is classified as being <50%	Coverage is classified as being <70%

Based on the above data of 'Small area survey' the point coverage is estimated, using the formula below:

$$\# \text{ of current (SAM) cases in the program} / \# \text{ of current (SAM) cases found} * 100$$

For Rural = $4 / 14 * 100 = 29\%$

For Urban = $3 / 13 * 100 = 23\%$

5. Investigation Process – Stage Three (Wide Area Survey)

5.1 Developing a Prior (For Rural and Urban Areas)

Prior information about the coverage expressed as probability density. The process involved making an informed guess about the most likely coverage value, that is, the mode of the probability density. Positive values (boosters) were built up from zero while the negative values (barriers) were used to “knock down” from the highest possible coverage of 100%. For rural and urban areas separate exercises were conducted and two prior were developed one for rural and one for urban localities keeping in mind the minimum coverage as per Sphere standards for both areas respectively.

Boosters and Barriers were valued according to the weight they contribute to coverage. Each group provided weight with score ranging between 0 and 5; to each barriers and boosters on the basis of their importance for coverage. Average of those weights was calculated which are shown in the table below. Thereafter, the boosters were added to the minimum coverage (0%) while the barriers were deducted from the maximum coverage (100%), and then the mean value of the two calculated.


Table 7: Boosters and Barriers - Rural

Boosters			Barriers		
Boosters	Source + Method	Weightage %	Barriers	Source + Method	Weightage %
Provision of sufficient trained OTP staff and Volunteers to meet programmatic need	B1, C8, B3, A4, B1, C8	4	No SFP	B1, B2, B1	5
Program indicators: High proportion cured; Low mortality; Low defaulting	B1, B2, A2, C8	3	Insufficient Volunteers in program and No regular incentive of Volunteers from MOH/SCS	B3, B1, B1, B3	5
Planned outreach activities at community level by CHVs in coordination with OTP staff	B1, B3	3	No regular outreach activities/screening, No Education Awareness Raising Sessions conducted at community level, No provision of IEC material with lack of supportive supervision for CHVs at the community level	B3, B1, C8, B3, C8, B2, A2, B6	5
Supportive supervision provided by MOH/Save the children with adequate Nutrition Supply Chain Management (RUTF)	B1, C3, B1, B2, A2, B1, B2, C8	4	Poor follow up of SAM cases -High absenteeism -High defaulters	B2, A2, B6	4
Recording and reporting system meet the compliance as per protocol and Data use for programmatic actions	C8, B1, B1, C8	3	Lack of awareness about the program and limited access to OTP sites (especially in far areas)	B3, B2, A2, A5, B6, B3, C8, B1, B2, A2, A5, B6	5
Awareness that the treatment is free of charge with Self-referral and peer to peer referral	B2, A2, B6, C8, B1, B2, B6, A4, A6	4	Sharing of Food, Caregiver's want to admit all children to OTP	B2, A2,	5
Awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated	B2, A2, A4, A5, A6, B2, A2, A4	4	Lack of / No formal involvement & support of Key community figures in the program by referring children and support outreach activities	A5, B2, A4, A5, B6	5
Good client / staff relationship with Absentee and high risk cases follow up / Proper follow up of SAM cases from stabilization center	B1, B2, A2,	3	Seasonal barriers/Season Variation leads to Defaulters	B1, B2, A2	4
Sum of Scores		28	Stock out/stock breaks of essential medicines at OTP site	B1, B2, A2	5



	Stigma (RUTF cause diarrhea, Carer feels that taking child to OTP site is shame as they believe child became malnourished due to in proper attention/care from their side- this effect their image in the community).	B2, A2, B6	4
Sum of Scores			47

Prior Mode = Positive Finding+ (100%-Negative Findings)/2 = 28+ (100-47)/2=40.5%
Uncertainty = ±25

Minimum probable value =15.5% Maximum probable value=65.5%

Alpha Prior = 11.64 Beta Prior =17.11

Using Bayesian Coverage Calculator, the prior was set at 41.0% with alpha- 11.7 and beta- 17.0 with uncertainty of ± about 25% as shown below:

Figure 22: Prior - Rural

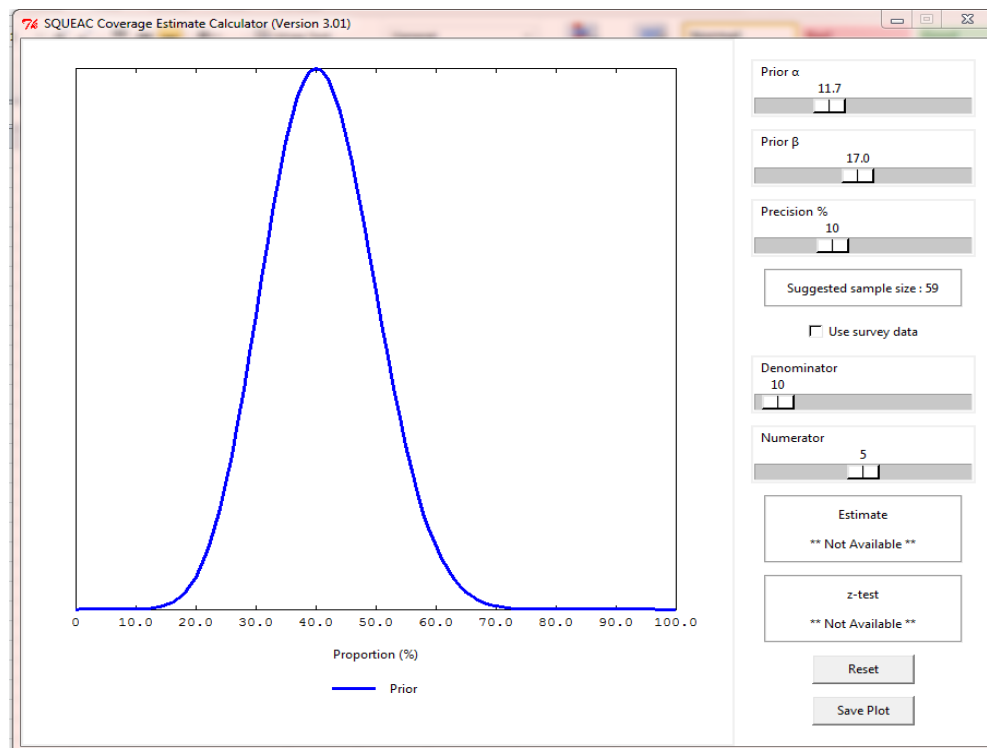



Table 8: Boosters and Barriers- Urban

Boosters			Barriers		
Boosters	Source + Method	Weightage	Barriers	Source + Method	Weightage
Provision of sufficient trained OTP staff to meet programmatic need	B1, C8,	3	No provision of SFP	A2, B1	4
Supportive supervision provided by MOH/Save the children with adequate Nutrition Supply Chain Management (RUTF)	B1, A2, C8	4	Distance- Population Movement	B1,A5,B6	5
Recording and reporting system meet the compliance as per protocol and Data use for programmatic actions	C8, B1,	4	Sharing of Food	A2	4
Good repetition of program in community in catchments area (Self-referrals and peer to peer referral)	A2, B1, C8, A6	4	Lack of /No formal involvement & support by Key community figures in the program by referring children and support CHW's activities	A5	4
Awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated effectively	A2, A5, A6	4	Lack of awareness about the program /OTP Site	A4.A5,B6	5
Reduction of stigma associated with malnutrition by seeking early treatment behavior (admission MUAC)	A2, A5, A6	4	No Volunteers /No Awareness/No screening in community	B1,A2,A5,B6	5
Proper follow up of SAM cases from stabilization center	B1, C8,	3	Insufficient influx of cases	C8, B1	4
Sum of Scores		26	Alternative health practitioner for community to treat SAM cases	A4	4
			.No follow up of SAM cases -High absenteeism -High defaulters -Long length of stay in the program	B1,A2, C8	5
			Seasonal barriers /Season Variation leads to Defaulters	B1,	3
			Stock out essential medicines at OTP site	B1, C8	4
			Sum of Scores		47

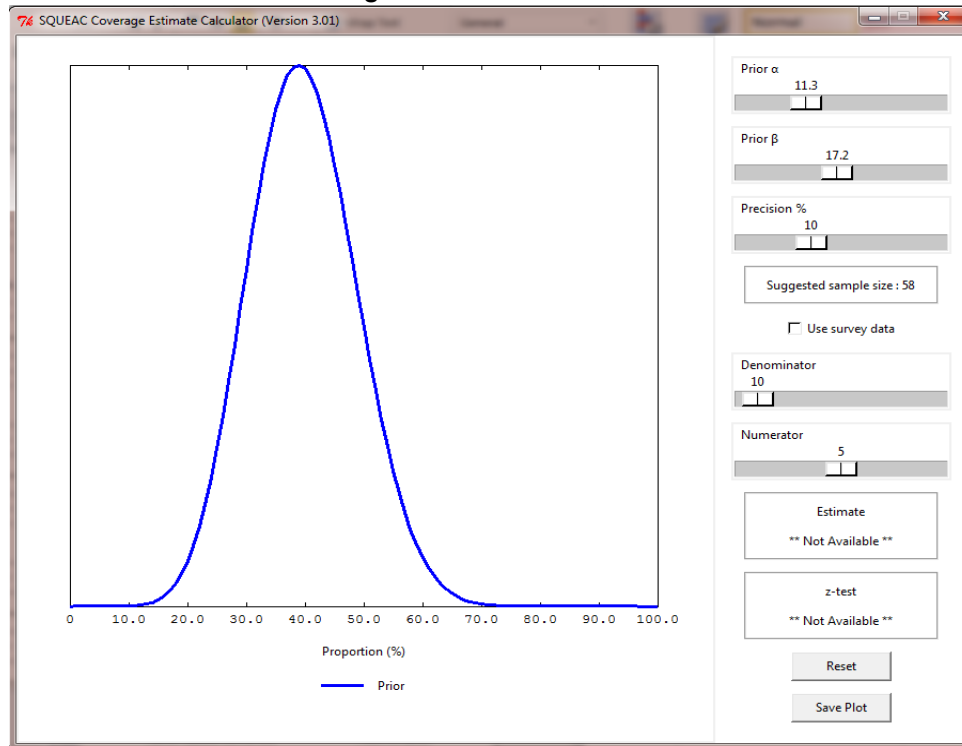
Prior Mode = Positive Finding+ (100%-Negative Findings)/2 = 26+(100-47)/2=39.5%
Uncertainty = ±25

Minimum probable value =14.5% Maximum probable value=64.5%

Alpha Prior = 11.26 Beta Prior =17.24

Using Bayesian Coverage Calculator, the prior was set at 42.0% with alpha- 11.3 and beta- 17.2 with uncertainty of ± about 25% as shown below:

Figure 23: Prior - Urban



The sample size for the 'Wide area survey' was estimated based on the results of Small area survey with the assumption the coverage should be within the 50% or 70% (SPHERE minimum standard expected coverage for rural areas >50% and for urban areas > 70%).

4.2 Methodology for Wide Area Survey

Simulation of the Bayesian Coverage Calculator was used to estimate the sample size of the wide area survey (suggested sample size for Rural 59 cases and for Urban 58 cases). Following formula is used to calculate number of villages need to be sampled to achieve this sample size

$$n_{\text{villages}} = \left\lceil \frac{n}{\text{average village population}_{\text{all ages}} \times \frac{\text{percentage of population}_{6-59 \text{ months}}}{100} \times \frac{\text{SAM prevalence}}{100}} \right\rceil$$

For Rural:

List of villages with estimated population (taken from latest micro-plans for EPI campaign) was drawn for all the areas of OTP sites in North Kordofan. The percentage of under-fives 17% per village was obtained and a prevalence SAM (2.8%) was used. By using the above formula 5 villages systematic selected with a sampling interval of 5 from EPI village list. The teams screened all the children in the sampled village to find all or near all SAM cases in the 5 selected villages from rural areas of North Kordofan to estimate the coverage and confirm the prior. MUAC of the SAM cases were taken and semi structured questionnaire-annexed to this report was administered on non-covered

Figure 24: Wide Area Survey Preparation





cases. Identified SAM cases were categorized as i) SAM cases who were currently in treatment / attending the program, ii) SAM cases who were not enrolled in the program, and iii) recovering cases (those that have MUAC 11.5cm or greater & in the program).

Table 9: SAM Cases – Rural catchment area

S.NO	Village Name	Catchment Facility	SAM cases in the program (MUAC <11.5cm or Edema)	SAM cases Recovering (MUAC 11.5cm or greater & in the program)	SAM Case not in Program
1	El Gabaleen	Algabaleen	6	2	3
2	Sedra	Sidra	1	4	4
3	Farla	Sidra	0	8	5
4	Kandakro	Sidra	1	2	13
5	Shakro	Sidra	0	1	13

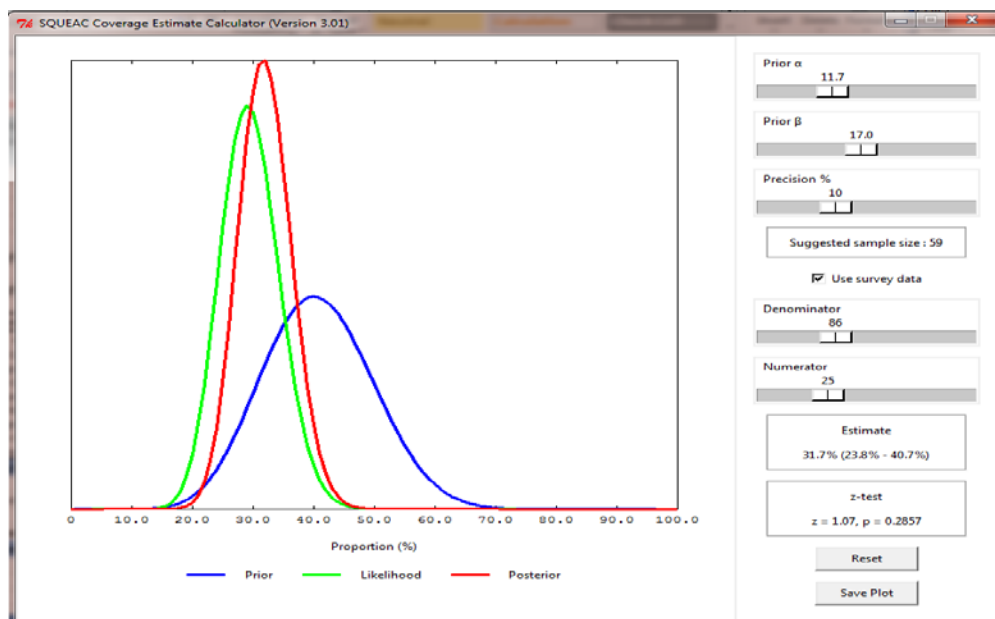
To calculate the 'Single coverage' for OTPs in rural areas of North Kordofan below equation was used.

Description of SAM survey data	Number	Equation
K = a correction factor	3	$R_{out} \approx \frac{1}{k} \times [R_{in} \times \left(\frac{C_{in} + C_{out} + 1}{C_{in} + 1} \right) - R_{in}]$
C _{in} = Current SAM cases in the programme	8	
C _{out} = Current SAM cases not in the programme	38	
R _{in} = Recovering SAM cases in the program	17	
R _{out} = Recovering SAM cases not in the programme	23	

For single coverage estimation, the denominator is 86 (8+38+17+23), i-e current SAM in program. + current SAM cases not in program. + recovering cases + recovering cases not in program) and numerator 25 (8 + 17) i-e current SAM cases in programme + recovering cases) was inserted to Bayesian SQUEAC calculator while same Alpha and Beta values (α 11.7 β 17.0) and precision $\pm 10\%$ has been used from the pre-set 'Prior'. The Bayesian-Software estimated 'Single' coverage at 31.7% rate with Credible Interval (CI 23.8% - 40.7%), and P value= 0.2857, there is reasonable overlap between 'prior' and 'likelihood'



Figure 25: Prior likelihood and posterior modes - Rural



For Urban:

By using the above methodology, 7 villages systematic selected from EPI village list of urban area. The teams screened all the children in the sampled village to find all or near all SAM cases in the 5 selected villages from rural areas of North Kordofan to estimate the coverage and confirm the prior. MUAC of the SAM cases were taken and semi structured questionnaire-annexed to this report was administered on non-covered cases. Identified SAM cases were categorized as i) SAM cases who were currently in treatment / attending the program, ii) SAM cases who were not enrolled in the program, and iii) recovering cases (those that have MUAC 11.5cm or greater & in the program).

Table 10: SAM Cases – Urban catchment area

S.NO	Village Name	Catchment Facility	SAM cases in the program (MUAC <11.5cm or Edema)	SAM cases Recovering (MUAC 11.5cm or greater & in the program)	SAM Case not in Program
1	Al sheaf	Haja Batool	3	2	9
2	Al shati	Haja Batool	0	0	3
3	Elbangaded East(Falasteen)	Haja Batool	0	5	2
4	Al soog East	Haja Batool	2	2	12
5	Ban Gadeed East	Haja Batool	5	0	4
6	Safa	Haja Batool	0	0	8
7	Ban Gadeed West	Haja Batool	1	1	1

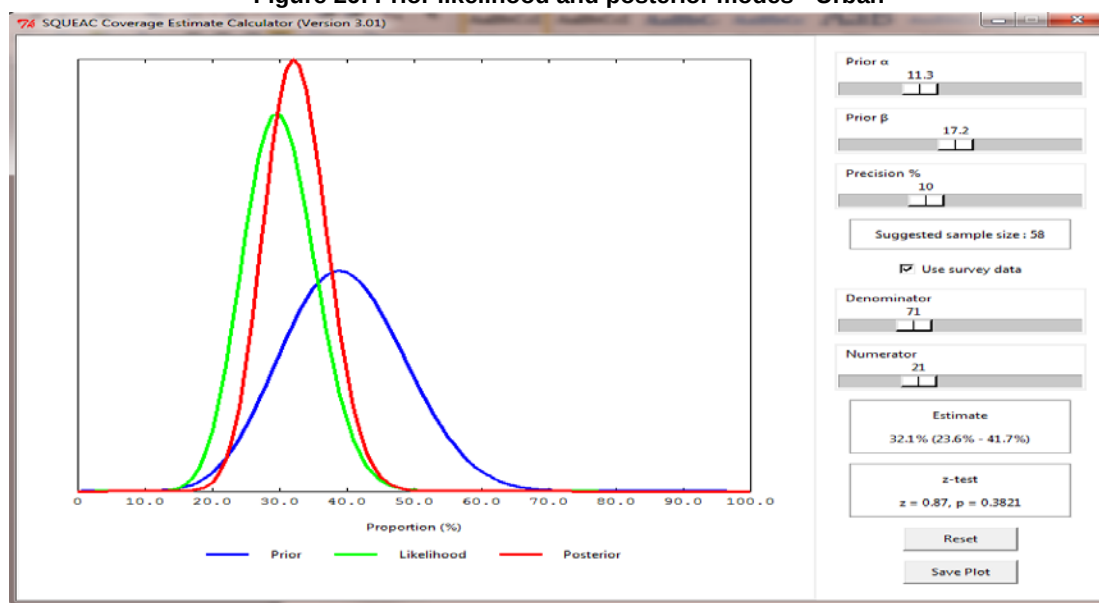
To calculate the 'Single coverage' for OTPs in urban areas of North Kordofan below equation was used.



Description of SAM survey data	Number	Equation
K = a correction factor	3	
C _{in} = Current SAM cases in the programme	11	$R_{out} \approx \frac{1}{k} \times [R_{in} \times \left(\frac{C_{in} + C_{out} + 1}{C_{in} + 1} \right) - R_{in}]$
C _{out} = Current SAM cases not in the programme	39	
R _{in} = Recovering SAM cases in the program	10	
R _{out} = Recovering SAM cases not in the programme	11	

For single coverage estimation, the denominator is 71 (11+39+10+11), i-e current SAM in program. + current SAM cases not in program. + recovering cases + recovering cases not in program) and numerator 25 (11 + 10) i-e current SAM cases in programme + recovering cases) was inserted to Bayesian SQUEAC calculator while same Alpha and Beta values (α 11.3 β 17.2) and precision $\pm 10\%$ has been used from the pre-set 'Prior'. The Bayesian-Software estimated 'Single' coverage at 32.1% rate with Credible Interval (CI 23.6% - 41.7%), and P value= 0.3821, there is reasonable overlap between 'prior' and 'likelihood'.

Figure 26: Prior likelihood and posterior modes - Urban



4.3 Programme Effectiveness:

Programme effectiveness was estimated at 17.44% only ($55 \times 31.7 / 100 = 17.44\%$) in rural settings and 17.65% only ($55 \times 32.1 / 100 = 17.65\%$) in urban setting of North Kordofan. This calculation is based on 31.7% and 32.1% estimated single coverage in rural and urban areas respectively, and 55% cure rate. This means that with low programme performance and the low coverage the overall programme effectiveness was estimated as low. There was no international standard to measure the programme effectiveness.

Further investigation on the reasons why the malnourished children were not enrolled in the program was done during active case finding and the results are as follows;



Table 11: Reasons SAM cases not in the program

REASONS SAM cases NOT in the program	
Do Not know about CMAM program	42
Defaulted / child with diarrhea as potential result of RUTF	2
Temporal reasons: Carers busy / Carers sick	9
Carers not aware of sign and symptoms of malnutrition	7
Previous Rejection from OTP	2
Child has relapsed after discharge cure	1
Population Movement - Distance (OTP site is far)	14

We can see very clearly from the results of the questionnaires that insufficient community outreach activities to promote awareness about the program were the main cause for the caretakers not to bring their children to the program.

6. Recommendations

The recommendations were presented in two tables below. First table includes the rationale and evidence as gathered during the investigation and second includes actions to be taken.

Table 12: Recommendation

RECOMMENDATION	RATIONALE	EVIDENCE
Strengthening of Community sensitization and mobilization by Identification and recruitment of additional Volunteers in program from Near and Far catchment areas of targeted CMAM sites.	Inadequate community sensitization on CMAM due to insufficient number of volunteers in the programme, most of them selected from near catchment population of OTP site results in poor awareness and coverage of CMAM program in far areas.	-Lack of awareness of CMAM program in the community (especially farther away communities) -Very few home visits for follow up, little follow up for defaulters -Irregular screening
Allocate financial resources to cover Volunteers reward based incentives / provision of IEC material to ensure their active involvement in program.	Low level of motivation seen among volunteers as no regular performance / reward based incentives in the program. No or limited job aid material such IEC provided to volunteers to promote awareness among community members.	-Inactive volunteers in the programme - No education awareness raising sessions conducted at community level in last six months



Revision of TORs for Volunteers in programme with additional responsibility to conduct regular outreach activities such as Education Awareness Raising Sessions at community level, distribution of IEC material and follow up of absentees.	There is high need to strength outreach interventions with active involvement of volunteers in program by formal revision in TORs of volunteers.	Limited support to program by volunteers –mostly active in screening months, no regular outreach activities conducted.
Develop micro planning for Community Coverage that ensure proper deployment/working of volunteers in their assigned areas (Near/Far) with settle monthly targets for regular screening and referrals along with awareness raising sessions at community level.	Most of catchment population especially in far areas not covered by Volunteers, to ensure their regular deployment, there is high need for development of Community Coverage Plan at micro level.	Uncovered areas in programme Insufficient influx of SAM cases from community to OTP sites No targets for Volunteers to measure their performance.
Ensure use of duplicate printed copy of referral slips in a book form by Volunteers (One copy for Volunteer's record and one copy for facility record) to trace who Do Not Attend (DNA) to program after referral.	Source of referral of cases is important to determine referral linkages from community to facility. Referral slips were missing at facility level and no proper record was maintained by the volunteers for referral of cases.	Missing referral slips – for some cases no source of information to reconcile / validate referral information.
Development /use of Supportive supervision checklist for outreach activities in programme and nomination of relevant Staff (Coordinator / Officer) from SCS/MoH to conduct community based supportive supervision of Volunteers on monthly or quarterly basis.	Quality of outreach interventions need to monitored on regular basis to identify area of improvement and for corrective measures in programme. It was observed that no regular monitoring was done in past to access volunteer's quality of work at community level.	Lack of Supportive supervision of outreach team at community level.
Enhance/improve volunteer's skills for accurate MUAC measurement/conducting awareness raising events to strengthen community ownership and reduce rejections in program.	Inappropriate screening by Volunteers is one of the poor compliances, even in near areas of facility SAM cases identified which were screened by the volunteers but not referred to facility.	High Number of SAM cases identified not in programme in Volunteer's covered areas and some rejected cases due to inaccurate measurements



Define mechanism for improvement of follow up cases / tracing of absentees and defaulters.	There is no mechanism exist for proper follow up and tracking of cases at community level	High defaulters / high absenteeism in programme
Stimulate the engagement of “role models” (e.g. mothers or fathers of previously malnourished children) in a variety of sensitization activities in order to share their testimonials and act as potential tipping points of community change.	Mothers / carers of beneficiaries provided positive feedback on services/ attitude and behavior of service providers that reflect good repetition of program. Program can involve them in outreach activities as role model to promote positive image of program at community level.	No sharing of program success stories with community members
Positive Deviant Mothers (PDM) can support the program as tracing source in program by promoting program awareness through Volunteers (as already there is established Peer-to-Peer referrals exist in most of the locations).	There is good peer-to-peer referral in program with the opportunity to establish tracking mechanism with active involvement of positive deviant mothers to reduce defaulters/absenteeism in programme.	Peer-to-peer / mother-to-mother referrals in programme
Create a “risk map” in terms of accessibility to services/defaulting to serve as a base for the establishment of additional OTP sites especially in very far areas to reduce the defaulter rate in program	Some OTPs have large catchment areas and are not accessible for far away population due to distance which results in poor coverage of program	-No OTP in very far areas, so there is influx of cases in market days from those areas. These cases faced problem in follow up – contributing to high defaulters /high absenteeism in program
Allocate resources for provision of routine medicines and assign staff to maintain regular supply chain and avoid stock out.	Shortage of Amoxicillin at the facility level increases the potential for longer length of stay in the program because the underlying infections not being treated hence the children take longer time to recover.	Stock out of essential medicines (since last 3 months)
Conduct Value Clarification Workshop for relevant stakeholder to promote accountability and to increase joint efforts to achieve coverage threshold as per standard.	There is need of promoting accountability for resource management and for achieving desired results - improve programme coverage through joint efforts.	Lack of effective community outreach and coverage planning by relevant stakeholders in past.



Ensure joint supportive supervision by SCS and MoH with quarter based analysis of facility and community based program data for adopting collaborative approach for programmatic actions	This is highly encouraged that MoH and SCS conducted supportive supervision in past, timely data analysis and use of data for programmatic actions is needed to enhance effectiveness of programme.	No / limited data use for programmatic actions
There is need for provision of SFP.	There is high number of children and PLWs with need of SFP.	No SFP
Development of road map to further improve integration of PHC and CMAM.	There is need for further strengthening of referral linkages from Medical staff to OTP staff.	Few referrals from Medical staff
Strengthening of case referral mechanism with formal involvement of Community key figures and plan for a gradual shift of responsibility (especially for screening) to local key community figures to promote ownership at community level	Key community figures in most of areas are not aware about the program.	No referral of cases from key community figures.
Fundraising to support integrated programming such FSL/Reproductive Health with Nutrition	There is lack of financial resources among community member with multiple children responsibility- high need for RH was observed during the SQUEAC investigation.	Lack of financial resources to cover transportation cost to access facility Multiple children responsibilities with carers.

Coverage assessment using SQUEAC methodology should be repeated during first part of next year to measure changes after implementing the recommendations.



Table 13: Recommendations and Action Plan

RECOMMENDATION	ACTIONS TO BE TAKEN	RESPONSIBLE
Strengthening Community Outreach interventions	- Develop micro planning for Community Coverage that ensure proper deployment/working of volunteers in their assigned areas (Near/Far) - Revision of TORs for Volunteers in programme - Identification and recruitment of additional Volunteers. - Enhance/improve volunteer's skills for accurate MUAC measurement/conducting awareness raising events to strengthen community ownership and reduce rejections in program - Stimulate the engagement of "role models" (e.g. mothers or fathers of previously malnourished children) in a variety of sensitization activities in order to share their testimonials and act as potential tipping points of community change. - Development of Supportive supervision checklist for outreach activities in programme and nomination of relevant Staff (Coordinator / Officer) from SCS/MoH to conduct community based supportive supervision of Volunteers on monthly or quarterly basis.	MOH / SCS / UNICEF
Established referral / tracking linkages	- Adopt duplicate printed copy of referral slips in a book form by Volunteers (One copy for Volunteer's record and one copy for facility record). - Define mechanism for improvement of follow up cases / tracing of absentees and defaulters. - Positive Deviant Mothers (PDM) can support the program as tracing source in program by promoting program awareness through Volunteers (as already there is established Peer-to-Peer referrals exist in most of the locations). - Strengthening of case referral mechanism with formal involvement of Community key figures and plan for a gradual shift of responsibility (especially for screening) onto local key community figures to promote ownership at community level.	MOH / SCS / UNICEF
Allocation of resources for program	- Allocate financial resources to cover Volunteers reward based incentives / provision of IEC material to ensure their active involvement in program - Allocate resources for provision of routine medicines and assign staff to maintain regular supply chain and avoid stock out. - Create a "risk map" in terms of accessibility to services/defaulting to serve as a base for the establishment of additional OTP sites especially in very far areas to reduce the defaulter rate in program - Provision of SFP - Fundraising to support integrated programming such FSL/Reproductive Health with Nutrition	MOH/SCS/ UN agencies



Promote accountability for resource management and results

- Conduct Value Clarification Workshop for relevant stakeholder to promote accountability and to increase joint efforts to achieve coverage threshold as per standard
- Ensure joint supportive supervision by SCS and MoH with quarter based analysis of facility and community based program data for adopting collaborative approach for programmatic actions
- Development of road map to further improve integration of PHC and CMAM.

MOH/SCS/ UN agencies

* Timelines for each action is to be set in stakeholders meetings (report dissemination meeting/workshop)



Save the Children®

Annexures

ANNEX 1: Mind Map – North Kordofan





ANNEX 2: SQUEAC Workshop Agenda

Greater Kordofan-Sudan

Saturday– June 20, 2015		
Time	Topic & Activities	Facilitator/Presenter
9:00 - 9:15	Welcome and Introduction of team	Nauman UI Hassan
9:20 - 9:45	Pre-Test	Nauman UI Hassan
9:45 - 10:30	What is Coverage & why it is important What is SQUEAC Elements of SQUEAC	
10:30 – 10:45	Break	
10:45-11:30	Introducing - Stage I Qualitative and Qualitative Methods	Nauman UI Hassan
11:30 - 12:00	Orientation on Data Collection Tools (Quantitative)	Ali Nasr Elbadawi
12:00 – 13:00	Orientation on Data Collection Tools (Qualitative)	
13:00 - 13:30	Break	
13:30 - 14:00	Factors Affecting Programme Coverage- Mind Map, Concept map	Nauman UI Hassan
14:00 – 15:00	Group Exercises on Tools (Quantitative)	Nauman UI Hassan Ali Nasr Elbadawi
15:00 - 15:30	Break	
15:30 – 17:30	Group Exercises on Tools (Qualitative)	Nauman UI Hassan Ali Nasr Elbadawi
Sunday – June 21, 2015		
Time	Topic & Activities	Facilitator/Presenter
09:00 - 09:30	Recap from Day 1	Nauman UI Hassan
09:30 - 10:30	Introducing Stage II - Small Area Survey Sampling, Methodology	Nauman UI Hassan
10:30 - 11:15	Break	
11:15-12:30	How does active/adaptive case--finding work in practice? Example	Nauman UI Hassan
12:30 - 13:00	Break	
13:00-15:00	Introducing Stage III – Prior, Wide Area Survey, Sampling, Point and Period Coverage, Examples, Scenarios	Nauman UI Hassan
15:00 -15:15	Break	



15:15-16:15	Group Discussion and Exercise	Nauman UI Hassan Ali Nasr Elbadawi
16:15 - 16:45	Post-Test	Nauman UI Hassan
16:45 – 17:30	Question & Answers Closing Remarks	Nauman UI Hassan Representative from MOH