



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

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



Contents

Acknowledgements	3
Acronyms.....	4
Executive summary.....	5
1. Introduction.....	7
2. Assessment Methodology.....	9
3. Investigation Process – Stage 1	10
3.1 Quantitative Data.....	10
3.1.1 Program Admissions.....	10
3.1.2 Defaulters	12
3.1.3 Time/Distance to travel.....	14
3.1.4 Length of Stay (LOS).....	14
3.1.5 Active and Passive Case Finding.....	15
3.2 Qualitative Data.....	17
3.2.1 Concept Map.....	20
4. Investigation Process – Stage 2: Small Area Survey.....	20
4.1 Hypothesis Formation.....	21
4.2 Small Area Survey.....	21
5. Investigation Process – Stage 2: Small Area Survey.....	23
5.1 Developing a prior.....	23
5.2 Methodology for Wide area Survey.....	26
5.3 Program Effectiveness.....	29
6. Recommendations.....	31

List of figures

Figure 1 Snapshot of SQUEAC Training Workshop.....	8
Figure 2 Map of South Kordofan.....	8
Figure 3 :MUAC Admissions – South Kordofan	10
Figure 4 Facility Based Admission Trend.....	11
Figure 5 MUAC wise Admissions South Kordofan	11
Figure 6 Admission Trend from December 2014- May 2015 and Seasonal Calendar.....	12
Figure 7 Health Facility wise Defaulters.....	12
Figure 8 Defaulter Time to Travel.....	13
Figure 9 Length of Stay before Default.....	13
Figure 10 Admission Time to Travel.....	14
Figure 11 Length of Stay.....	15
Figure 12 Referrals by Facility.....	15
Figure 13 Referrals Source.....	15
Figure 14 Summary of Quantitative findings.....	16
Figure 15 Visit of an OTP Site.....	16
Figure 16 Group Discussion with OTP staff.....	16
Figure 17 Brainstorming Exercise.....	18
Figure 18 Brainstorming Exercise	18
Figure 19 Qualitative Findings -South Kordofan (Urban).....	19
Figure 20 Qualitative Findings -South Kordofan (Rural).....	20
Figure 21 Concept Map.....	21
Figure 22 Prior – Rural.....	25
Figure 23 8 Prior – Urban.....	27
Figure 24 Wide Area Survey Preparation.....	27
Figure 25 Prior likelihood and posterior modes – Rural.....	29



Figure 26 Prior likelihood and posterior modes – Urban.....	30
---	----

List of Annexures

ANNEX 1: Mind Map – South Kordofan.....	35
ANNEX 2: SQUEAC Workshop Agenda.....	36

Acknowledgements



Save the Children would like to thank everyone who was involved in the Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) in South Kordofan for their tireless support and contribution, which has made this survey a success.

Special thanks go to the State Ministry of Health in South Kordofan. Without this support, the SQUEAC in South Kordofan could not have been successfully carried out.

Save the Children also wish to thank each individual team member whose tireless engagement throughout the mission is highly appreciated.

Last but not least, we wish to thank the people in South 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 Feeding 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 Algoz, and Dilling of South Kordofan. The objectives of SQUEAC were to evaluate the CMAM program in South 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 40.1% (31.6 %-49.0%) in Urban area and point coverage estimate of 20.2% (13.6%-29.3%) in Rural areas of South 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 South Kordofan.

Table 1: Barriers and Key Recommendations

Barriers	Recommendations
Limited number of Volunteers in program and No regular incentive of Volunteers from MOH/SCS / Inactive volunteers/low motivation	• 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.
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	• Allocate financial resources to cover Volunteers reward based incentives / provision of IEC material to ensure their active involvement in program.
Poor follow up of SAM cases –High absenteeism -High defaulters	• 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,
Lack of awareness about the program and limited access to OTP sites (especially in far areas)	• 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.
Lack of /No formal involvement & support by Key community figures in the program by referring children and support outreach activities	• 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.
Distance- Population Movement , Insufficient influx of cases	• 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.

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



Sharing of Food, Caregiver's want to admit all children to OTP	Enhance /improve volunteers skills for accurate MUAC measurement/conducting awareness raising events to strengthen community ownership and reduce rejections in program.
Poverty, sudden weaning; Seasonal barriers/Seasonal Variation	Define mechanism for improvement of follow up cases / tracing of absentees and defaulters.
Lack of financial resource by carers to cover transportation cost to access facility.	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.
Lack of awareness about the program (especially in far areas)	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).
Stigma (RUTF cause diarrhea)	Conduct Value Clarification Workshop for relevant stakeholder to promote accountability and to increase joint efforts to achieve coverage threshold as per standard
Lack of awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated (far areas).	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.
Previous rejections / Long waiting times	Development of road map to further improve integration of PHC and CMAM.
No Data use for Programmatic Actions	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.
Alternative Health practitioner for community to treat SAM cases	Fundraising to support integrated programming such FSL/Reproductive Health with Nutrition.
Temporal reasons - Carers busy, multiple children responsibility	

1. Introduction



South Kordofan lies in the south central part of Sudan. The multicultural and multiethnic population of South Kordofan State is estimated to be 2.5 million people. The population suffers from chronic poverty and this has been exacerbated by recent conflict. The region was afflicted by conflict for over two decades, leading to death, destruction and population displacement. Sudan's South Kordofan state has been at the center of armed conflict between the Sudan Armed Forces (SAF) and the Sudan People's Liberation Army-North (SPLA-N) since June 2011. Aerial bombardments and attacks on civilian populations have persisted throughout these years, disrupting life and driving hundreds of thousands from their homes. Most of South Kordofan's rain-fed sorghum belt has historically been self-sufficient in terms of agriculture production.² The ongoing conflict has interrupted farmers' ability to plant, and what they have planted has frequently been burned up in aerial bombardments at the time of harvest. The communal nature of the people in the region has contributed to their survival in these difficult times; however, these coping mechanisms are gradually eroding in the face of the protracted conflict.

According to the S3M survey³ conducted by UNICEF and MOH in June 2013, the Global Wasting (WHZ) for South Kordofan states, except capitals, shows that the situation is "serious" as the GAM rate was 9.45% (7.65 - 11.95 95% C.I) for South Kordofan state. Wasting based on MUAC, except capitals, shows the same serious to critical situation as the GAM rate with 12.43% (10.40 - 14.74 95% C.I) for South Kordofan state. The prevalence of stunting (HAZ) is classified as high (>30%), showing rates of 35.72% (32.31 - 38.66 95% C.I) for South 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 23.69% and 11.25% with "good" IYCF indicator to be 42.19% for South Kordofan state. The table below shows S3M malnutrition results for the South Kordofan state.

Table 2: S3M Malnutrition Results for the South Kordofan
Indicators (S3M Survey, June 2103)

State	Indicators (S3M Survey, June 2103)				
	Global Wasting (WHZ)	Global Wasting (MUAC)	Global Stunting (HAZ)	Maternal Wasting (MUAC < 230 mm)	"Good" Infant and Young Child Feeding (IYCF)
South Kordofan	9.45% (7.65 - 11.95 95% C.I)	12.43% (10.40 - 14.74 95% C.I)	35.72% (32.31 - 38.66 95% C.I)	23.69% (20.20 - 27.50 95% C.I)	42.19% (38.53 - 45.92 95% C.I)

The Ministry of Health (MOH) in South Kordofan state have limited capacity to respond to the nutritional needs of the affected populations, given the 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 the ongoing fighting and its implication on the population, especially children.

² Famine Early Warning Systems Network, "Livelihoods Zoning 'Plus' Activity in Sudan".

³ Simple Spatial Surveying Method (S3M) survey Sudan 2013



Prior to the start of the planned coverage surveys, Save the Children held two days training workshop on 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 presents the basic steps of conducting a SQUEAC assessment (Agenda Annexed). Before the start of the training a pre-test was 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.

Figure 1: SQUEAC Training Workshop



To evaluate coverage and access of the OTP program in Delling and Algoz, a team of 14 members drawn from Save the Children Sweden and MOH technically 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 Delling and Algoz 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 South Kordofan State - Localities

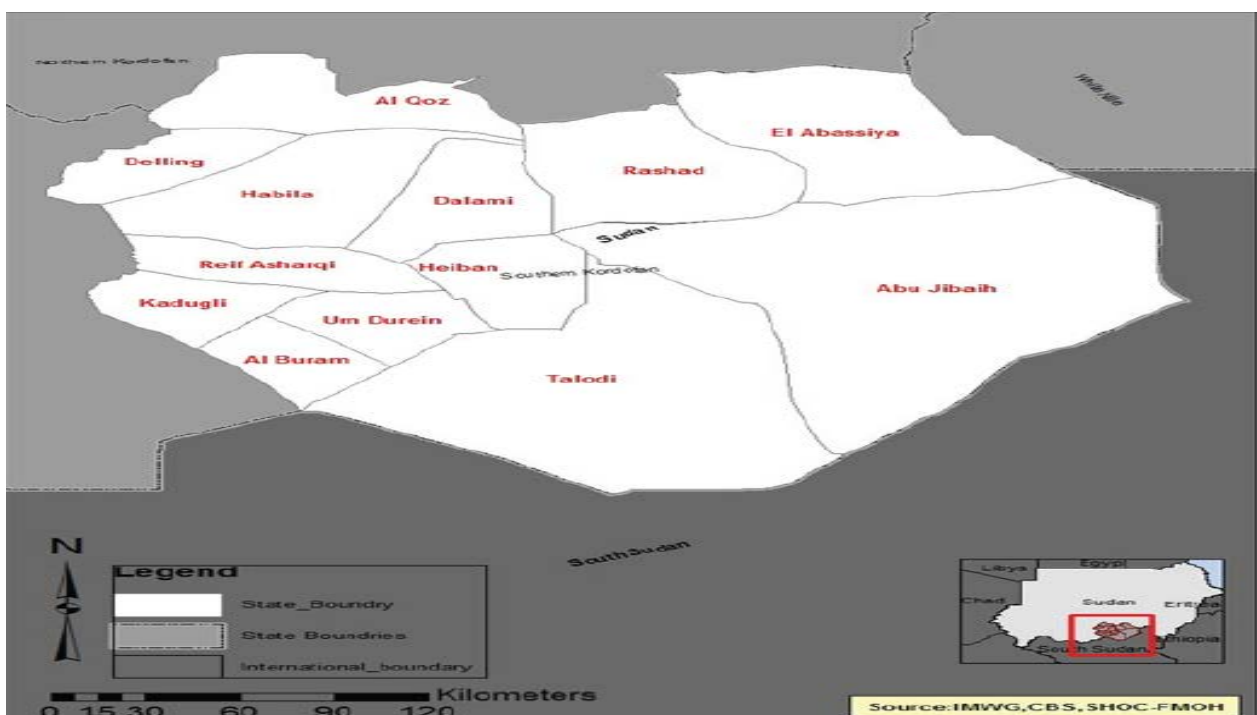


Table 3: Geographical location of OTP sites

Sate	Locality	Project Site	Catagorization	Opening Date	Duration up to now
South Kordofan	Algoz	Al Dibaibat	Rural	14-Feb-12	3year ,4 month
South Kordofan	Dilling	Dilling Hospital Center	Urban	9-Sep-14	9 month
South Kordofan	Dilling	Safa	Urban	9-Mar-14	1year ,3 month
South Kordofan	Dilling	Hila Gadida	Urban	9-Sep-14	9 month
South Kordofan	Dilling	Widay	Urban	14-Feb-12	3year ,4 month
South Kordofan	Dilling	Elfarshaya	Rural	10-Sep-14	9 month

2. Assessment Methodology

The SQUEAC assessment activities in South 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 was a mixture of quantitative (numerical) data collected from routine 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.⁴ 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 South 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 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.

Figure 3: Group Work – Role Play



⁴ “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



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

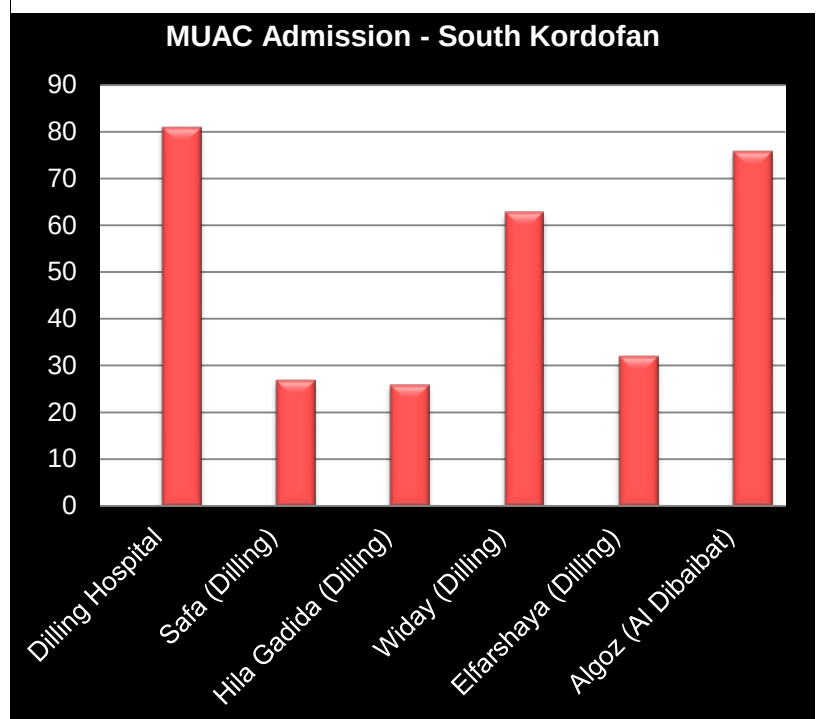
3. Investigation Process – Stage One

The main objective of this stage was to identify potential differences in coverage within Urban and Rural areas of Delling and Algoz of South 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 six 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, however need identified for refresher training session among few of OTP staff for timely validation of data and use of data for programmatic actions. In South Kordofan, information collected at the OTP sites showed that during last six months (Dec 2014 – May 2015) admission trend was more in Delling Hospital, Al Dibaibat and Widay as compare to Safa, Hila Gadida and Elfارشaya which indicates insufficient influx of SAM cases to OTP sites based on catchment population of targeted project sites. More admission was from close areas of catchment population of OTP sites and close to MUAC admission criteria with few critically low MUAC. The median range of the MUAC at admission was 11.4cm. The median Length of Stay (LoS) was 6 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 Widay 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 Mar 2015 and most defaulters experienced during the Jan-Feb 2015

Figure 4: MUAC Admissions –South Kordofan



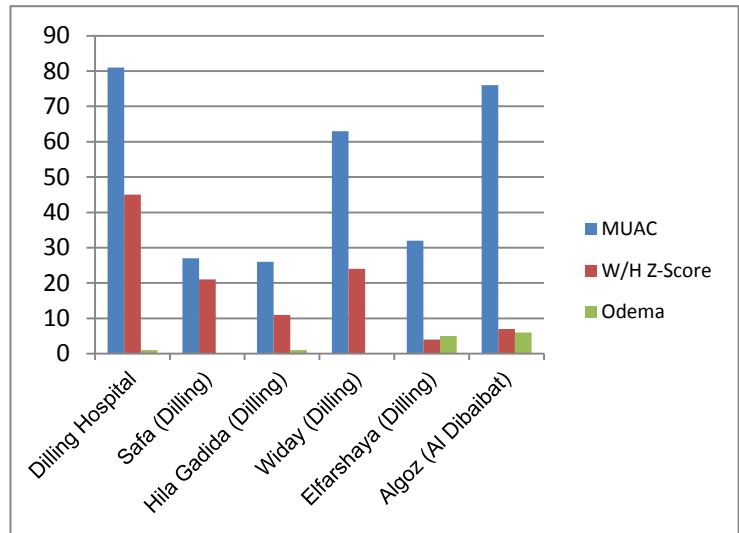
3.1.1. Program admissions

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.



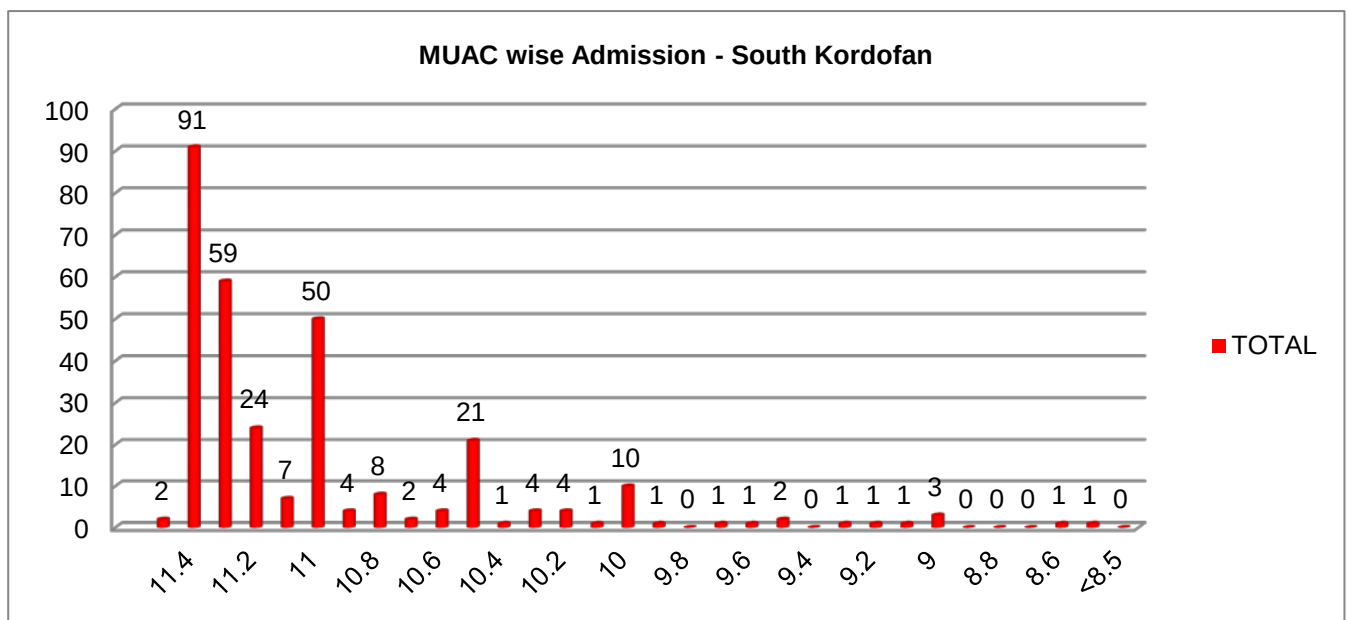
During last six months, approximately 26% of admissions were using the criteria of W/H Z-score with 3% admitted with odema, and more admission 71% admitted using the MUAC criteria. It might be important to investigate in the community whether there are children with oedema who are not recognized as being 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 11.4cm, 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.

Figure 5: Facility based Admission trend



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 below figure.

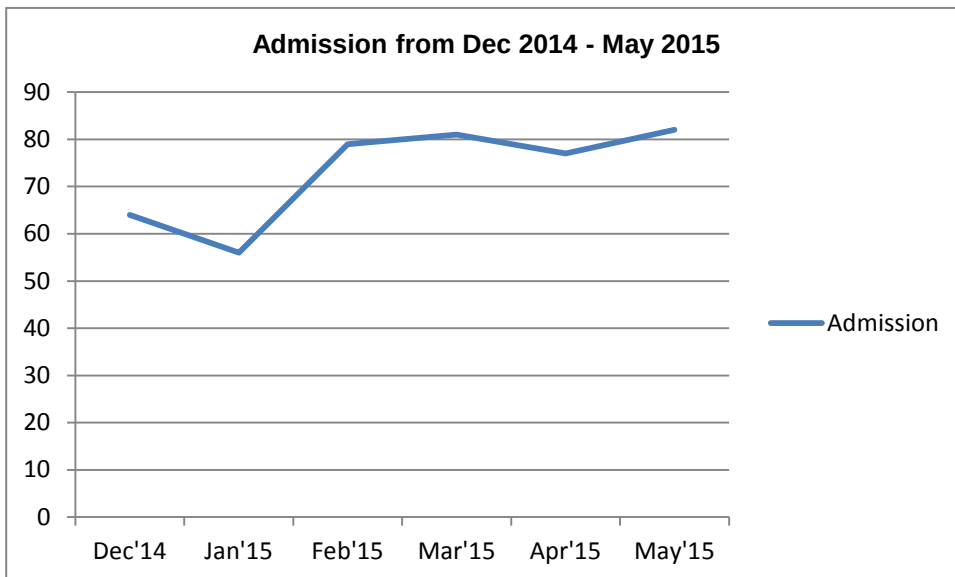
Figure 6: MUAC wise Admissions South Kordofan





The admission trend also points to the below seasonal calendar, high admissions reported in the period of mid-January to February 2015 when respiratory tract infection was common, followed by the period of harvesting and land preparation from March to April when admission trend declined.

Figure 7: Admissions trend from Dec 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 Aladha				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.. Early Defaulters (within 4 weeks from admission) were reported, indicated low coverage and poor follow up at community level except in Widay.



Figure 8: Health Facility wise Defaulters

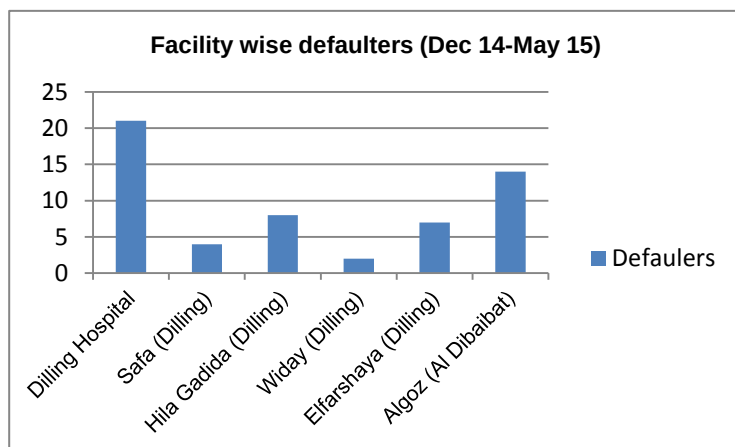
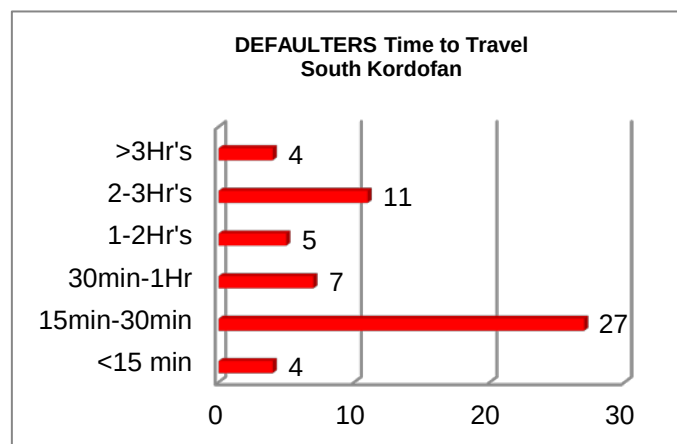


Figure 9: Defaulter Time to Travel

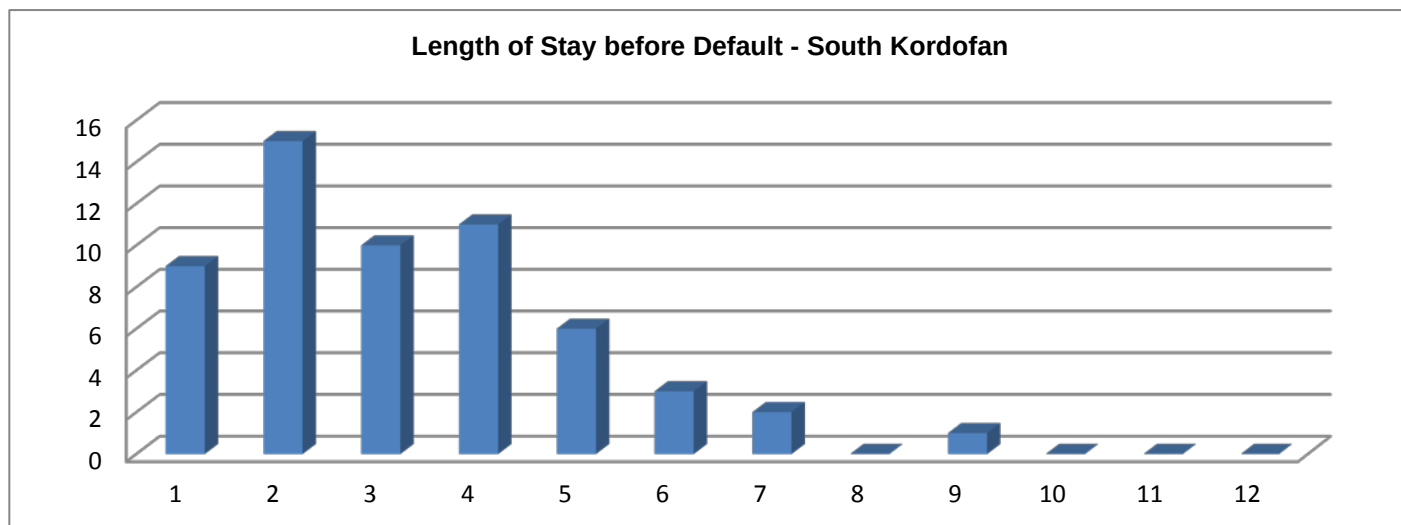


The program staff traced some of the defaulters, but the challenge was to retain the SAM cases from near as well as from far villages, particularly those without reliable transport means. Since defaulting is a direct coverage failure, these findings could be used as a beginning point to investigate limited program coverage. Most of the defaulters were not belong to very far away areas from the OTP site, hence follow up and tracking of cases was not up to the mark in the near catchment population. 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, carers show lack of interest in follow up for therapeutic management of malnutrition.

Figure 8 indicates early Defaulters (within 4 weeks from admission) which is one of prime causes for low coverage resulted from inadequate geographical coverage by OTP sites, poor outreach activities and follow up at community level.

Figure 10: Length of Stay before Default

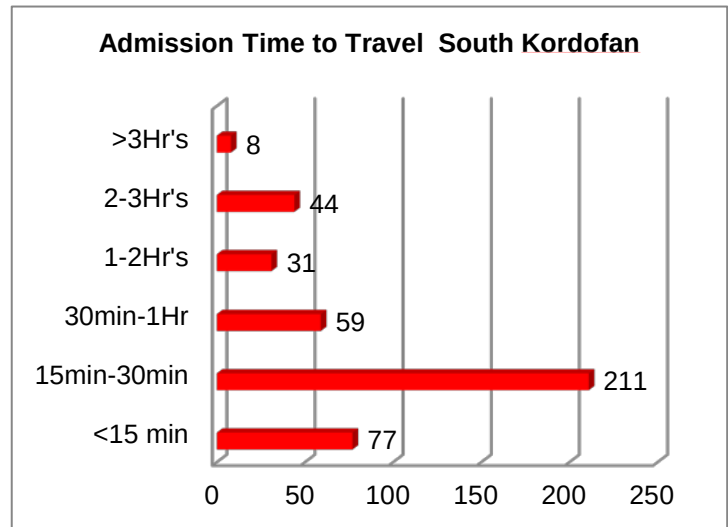




3.1.3. Time/ Distance-to-travel

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 analysis does not consider factor relevant to travelling such as means of transportation, quality of roads, geographical barriers, etc. There were 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 raises the question of heterogeneity of the access to the CMAM services. This data contributes to other qualitative findings in suspecting patchy coverage. This is 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 are 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.

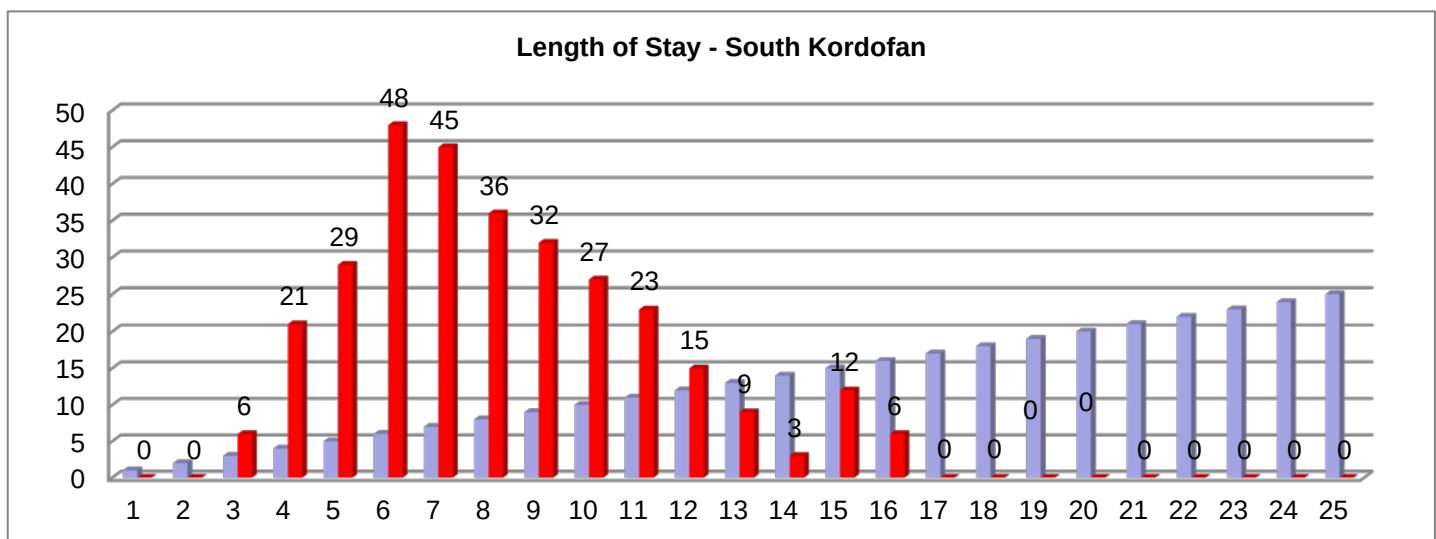
Figure 11: Admission Time to Travel



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 is 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. They were counted as children who had a prolonged episode of treatment, resulting in a longer LOS. The median length of stay for cases admitted with MUAC in the programme was 6 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. They were cases admitted from far villages and also cases who had erratic attendance to the OTP resulting in delayed recovery. As we can see from the data, more than half of the children stayed in the programme for longer than 6 weeks with quite a substantial number and upto 10% staying for longer than 12 weeks.

Figure 12: 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 in catchment population located nearby or within health facility. Few children were identified through outreach activities and/or through screening done by program volunteers. It could be said that there are lost opportunities of timely identification of *incident* cases in the community. This is the reason why it is important that the Volunteers/Key Community figures in the village would be well involved in the program so as to capitalize on opportunities of active case finding. SAM cases referral sources shows 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 13: Referrals by Facility

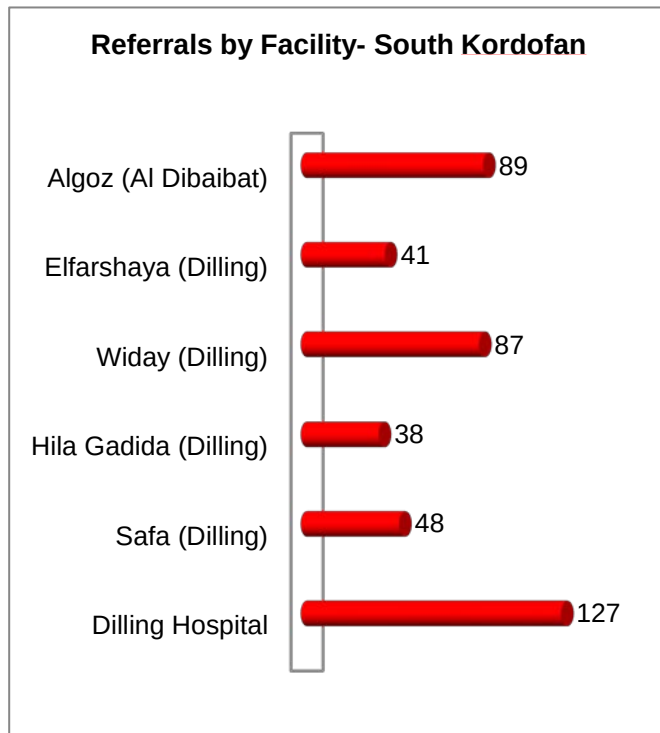
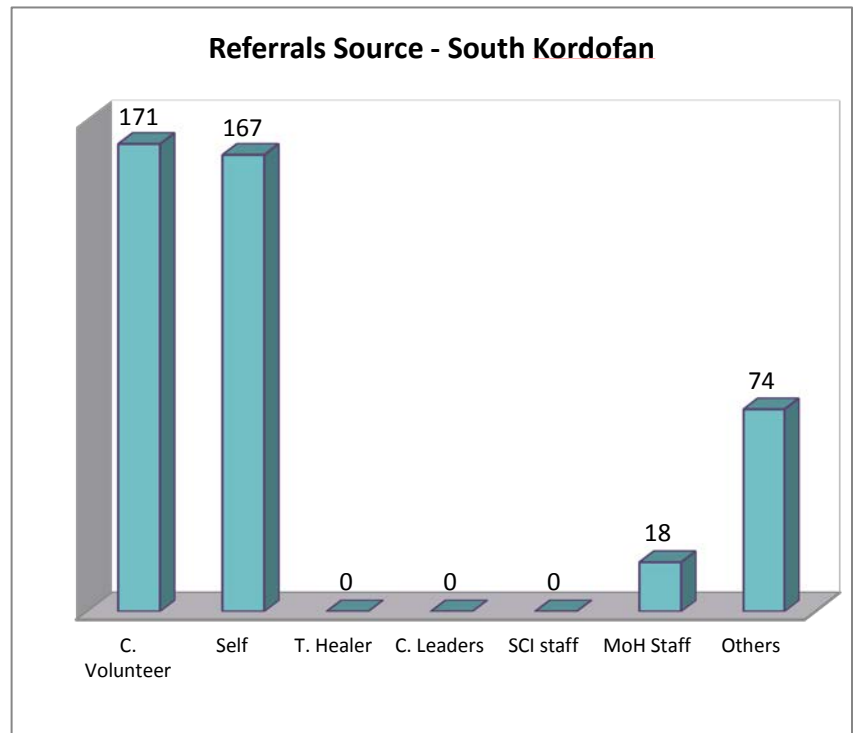
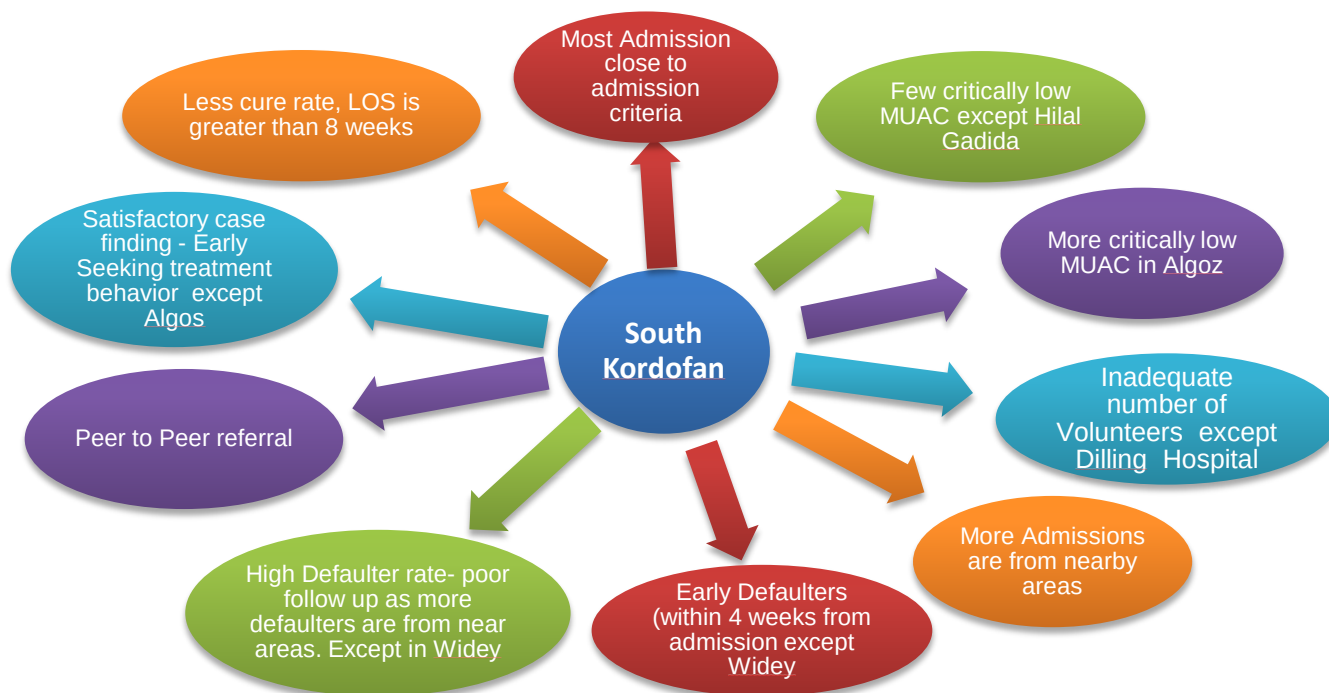


Figure 14: Referrals Source



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. It is highly encouraged that OTP staff received regular supply of RUTF from UNICEF and no gap in supply chain reported in last six months with provision of essential medicines. Similarly, separate register were maintained for supportive supervision of facility, however there is high need for data analysis on timely manner identified by the team during assessment for appropriate programmatic actions to improve the quality of service delivery.

Figure 15: Summary of Quantitative findings



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 is 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 included 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 Outreach interventions	Insufficient number of Volunteers 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 even some of community member from near areas of facility 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 Volunteer's outreach activities.
Previous Rejections / Long waiting time	Weak Volunteers skills for accurate MUAC measurement, in screening days high caseload leading to long waiting time.
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.
Alternative Health practitioner for community to treat SAM cases	Traditional Healers / alternative practitioner are first choice of SAM treatment from community members.
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 Elfارشaya and Al Dibaibat)
Other barriers	No regular Data analysis and use for programmatic action, inefficient patient flow at program sites, Stigma (RUTF cause diarrhea).

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 group.

Facility Maps

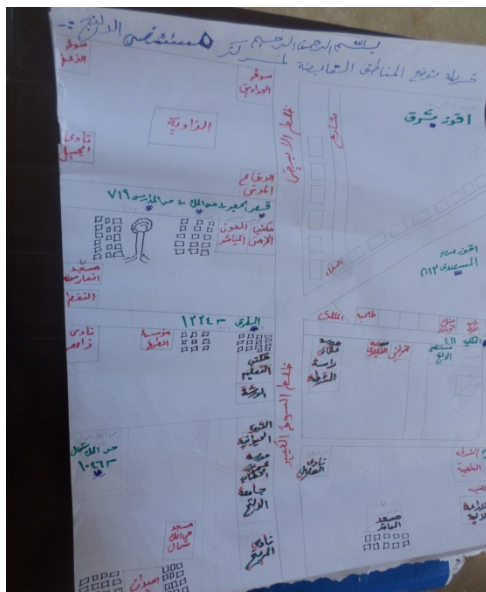




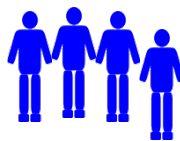
Figure 16: Qualitative Findings -South Kordofan (Urban)



**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 and Volunteers to meet programmatic need

Established referral linkage from community to OTP site (mostly in near catchment areas)

Short waiting times/insufficient patient flow at program site

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

Recording and reporting system meet the compliance as per protocols.

No Data use for programmatic actions.

Proper follow up of SAM cases from stabilization center.

Provision of SFP

Poverty, sudden weaning; Seasonal barriers

Insufficient outreach planning at community level by Volunteers in coordination with OTP staff

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 for Volunteers at the community level

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)

Awareness that the treatment is free of charge with Self-referral and peer to peer referral. (except in Safa)

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

No alternative practitioner for community to treat SAM cases



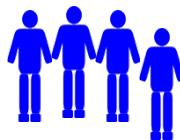
Figure 17: Qualitative Findings -South Kordofan (Rural)



**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 but limited Volunteers to meet programmatic need

Established referral linkage from community to OTP site (mostly in near catchment areas)

Long waiting times/inefficient patient flow at program site

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

Recording and reporting system meet the compliance as per protocols- but need improvements

No Data use for programmatic actions.

Provision of SFP

Poverty, sudden, Seasonal barriers

Insufficient outreach planning at community level by Volunteers in coordination with OTP staff

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 for Volunteers at the community level

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)

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

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

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

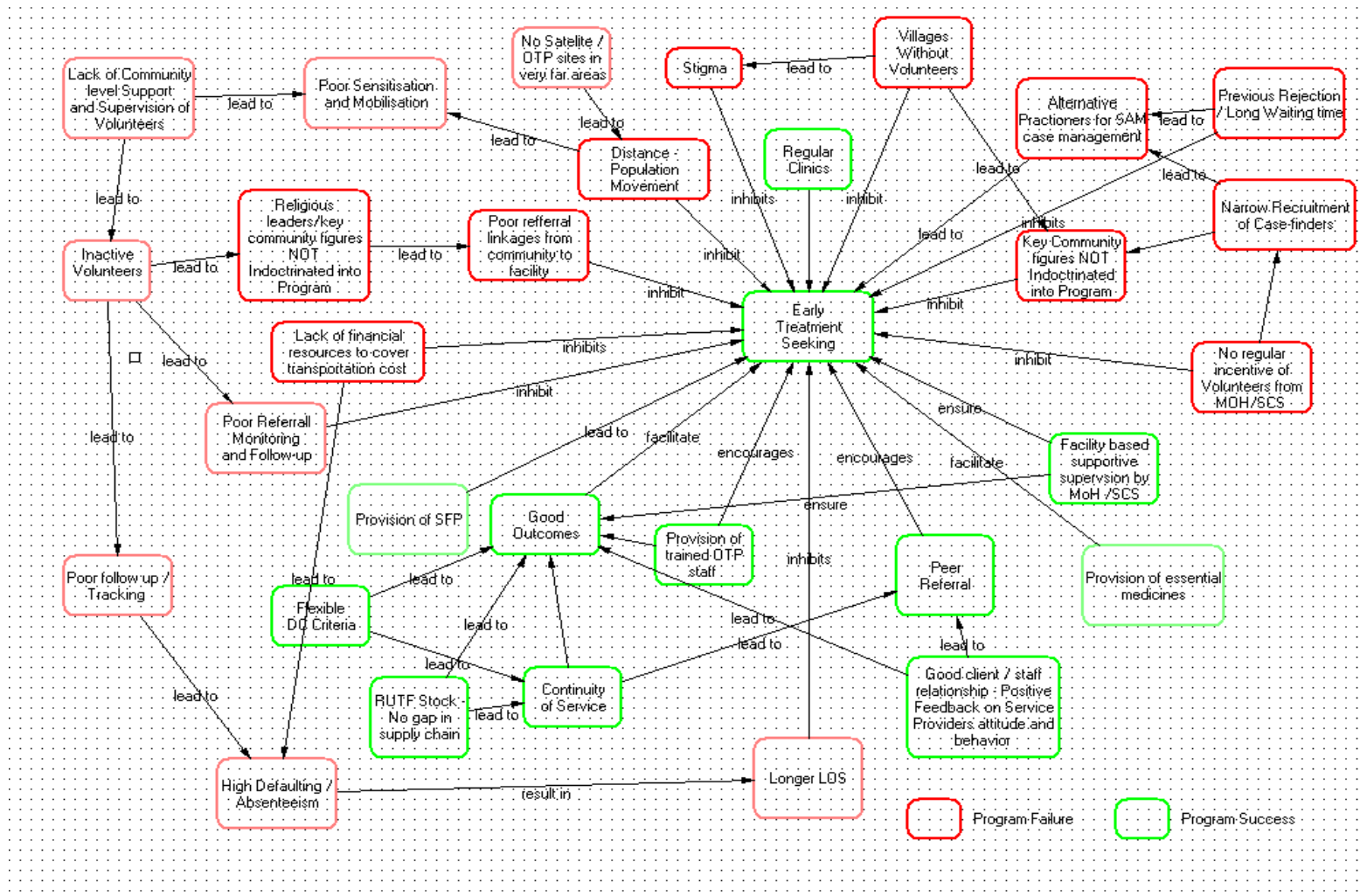
Aalternative practitioner for community to treat SAM cases



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 prioritize the action points to improve the coverage of program.

Figure 18: Concept Map – South Kordofan



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; 8 villages were selected depending on their distance to OTP sites (4 far away and 4 close by), 4 villages selected from rural settings and 4 from urban setting of South 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 confirmed, as per below table:

Table 6: Small Area Survey

Small Area Survey – Data Analysis and Results South Kordofan										
Type	Distance	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	Total	Rural Threshold value (d)	Urban Threshold value (d)	Scenario I	Scenario II	Conclusion (As per hypothesis) Yes/No
Rural	Near	19	5	14	33	16.5	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



	Far	0	0	9	9	4.5	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	10	15	10	20	NA	14	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	7	1	4	11	NA	7.7	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	South Kordofan	
	Rural	Urban
Active cases	42	31
Cases In Progroram	19	17
Cases Not in Program	23	14
Recovering Cases	5	16
	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:

of current (SAM) cases in the program / # of current (SAM) cases found * 100

For Rural = $19 / 42 * 100 = 45\%$

For Urban = $17 / 31 * 100 = 55\%$



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: For Rural: Boosters and Barriers

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, B1, B3, C8	3	Insufficient number of Volunteers in program and No regular incentive of Volunteers from MOH/SCS	B3, B3, A4, B3, A5, B1	5
Planned outreach activities at community level by CHVs in coordination with OTP staff	B1, C8,	2	No regular outreach activities, 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	B1, A2, A4, B6, A2, A5, B6	5
Supportive supervision provided by MOH/Save the children with adequate Nutrition Supply Chain Management (RUTF)	B2, A2, C8, B1, B2, A2, B6, C8	3	Weak referral linkages from community to OTP site, active volunteers in program (poor Referrals from the community: Carers of previous patients Village leaders; Traditional healers, TBAs)	B1, B3, B6, A5, A5, C8	4
Recording and reporting system meet the compliance as per protocol and Data use for programmatic actions	B3, C8, C8	3	Lack of awareness about the program and limited access to OTP sites (especially in far areas)	B1, B3, B2, A2, A5, B6, B1, B3, A2, A5, B6	5
Awareness that the treatment is free of charge with Self-referral and peer to peer referral	A2, B2, B2, A2, B6	3	Sharing of Food, Caregiver's want to admit all children to OTP	B2, B1, A2	4
Awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated effectively	B2, A2, A5, B1, A4, B6	3	Stigma, Seasonal barriers, Lack of means of transportation	B1, B1, B3, A2,	5



Good client / staff relationship with Absentee and high risk cases follow up / Proper follow up of SAM cases from stabilization center	B2, A2, B3, B1, B3, B2, A2	3	Previous Rejections	B1, B3	5
Reduction of stigma associated with malnutrition by seeking early treatment behavior (admission MUAC)	A5	2	Long waiting time	B1,B2, A2, A5, B6, C8, B3, B2, A5, B1	4
Sum of Scores		22	.No follow up of SAM cases –High absentism -High defaulters -Long length of stay in the program	B1, B3, C8,B1, C8	5
			Temporal reasons - Carers busy, careless attitude and behavior of carers	B3, A6, B6,B3, A6, B6	4
			Alternative health practitioner for community to treat SAM cases	A2, A4, B6,	5
Sum of Scores					51

Prior Mode = Positive Finding+ (100%-Negative Findings)/2 = 22+ (100-51)/2=35.5%
Uncertainty = ±25

Minimum probable value =10.5% Maximum probable value=60.5%

Alpha Prior = 9.68 Beta Prior =17.59

Using Bayesian Coverage Calculator, the prior was set at 35.0% with alpha- 9.7 and beta- 17.6 with uncertainty of ± about 25% as shown below:

Figure 19: Prior - Rural Areas

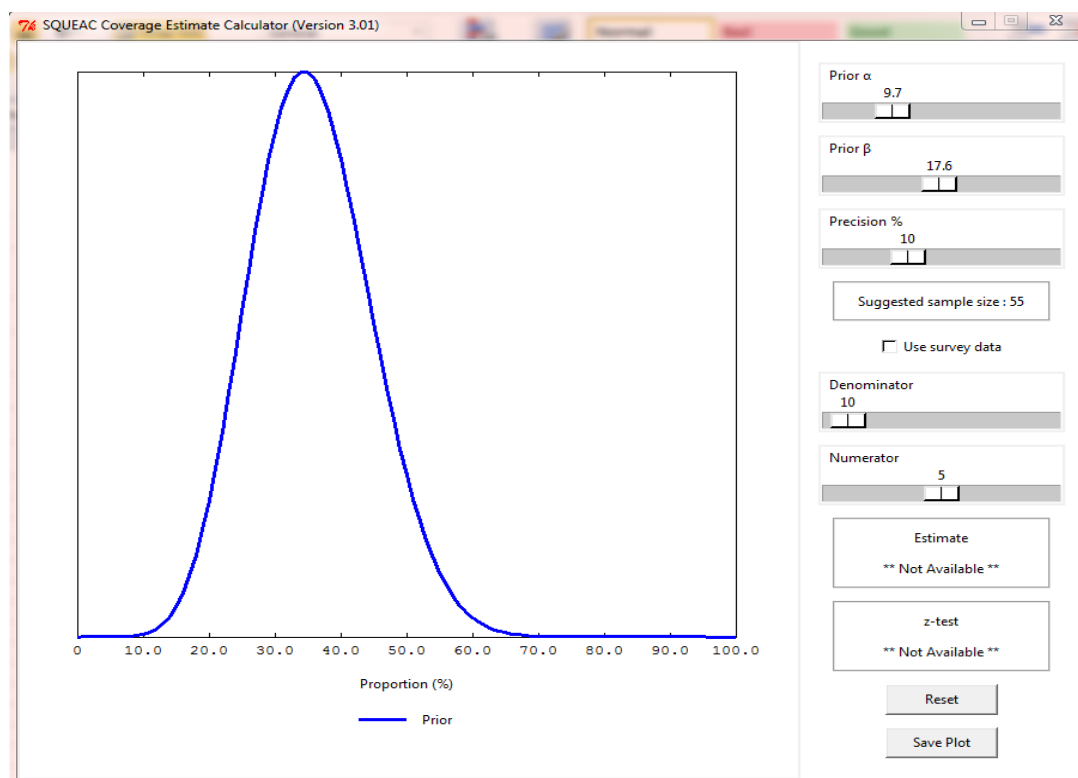



Table 8: For Urban: Boosters and Barriers

Boosters			Barriers		
Boosters	Source + Method	Weightage	Barriers	Source + Method	Weightage
Provision of sufficient trained OTP staff and Volunteers to meet programmatic need	B1, B3, C8; A2,A5, B1, B3, C8, B1, C8, B3,B1, C8, B3	4	No regular incentive of Volunteers from MOH/SCS	B3, B3, A2, B3, B3,	5
Planned outreach activities at community level by CHVs in coordination with OTP staff	B1,B2,B3,A2,B6, B1, B3,B1,B3,A2, B1, A2,	4	No regular outreach activities, 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, A5, A4, B6, B3, A2, A5, B6, B1, B2, B3, A2, B6, A5,B3,B2, A2,A5	5
Supportive supervision provided by MOH/Save the children with adequate Nutrition Supply Chain Management (RUTF)	B1, A2, B2, B1, B2, A2, C8, B1, B3, B2,	5	Population Movement - Distance	B3,A2,C8, B1, B3, C8, B6, A5, B3, B1, C8, B3, A5	5
Recording and reporting system meet the compliance as per protocol and Data use for programmatic actions	B1,B3, B3, C8, B3, C8, B1, B3, B1, C8	3	Long waiting times/ Inefficient patient flow at program site	B2, B6, C8, B1, A6	4
Awareness that the treatment is free of charge with Self-referral and peer to peer referral	B2,B3,A4,A2, B1,A6,C8, B1, A2, B2, A5, B2, A2, A5,	4	Lack of awareness about the program (especially in far areas)	B6, A5, A4, A2, B3, A5, B2, B1, B2, B3, A2, B6, A5, A4, B1,A4,	4
Awareness of sign and symptoms of SAM /Childhood illness and that SAM can be treated effectively	B3,B2,A5, B1,B3,B2,A5,A6, B2.B6,A6, A5, B6,	4	Lack of /No formal involvement & support by Key community figures in the program by referring children and support CHW's activities	A4,A5, A4, B6, A5, C8, B6,A5	5
Good client / staff relationship with Absentee and high risk cases follow up / Proper follow up of SAM cases from stabilization center	B1,B3, B1, A2, B2, B1,A6, B1, B3, B2, A2,	5	No follow up of SAM cases -High absenteeism -High defaulters	B1, C8, B1, C8, B1, C8	5
Reduction of stigma associated with malnutrition by seeking early treatment behavior (admission MUAC)	A5, B6, C8, B2, B3, C8, B6, A5, B3, B2, C8, B2, A2, B3, A5, B6,B2, A5,	4	Previous rejections	B1,B3, B1, B3, C8	4
Sum of Scores		33	Alternative Health practitioner for community to treat SAM cases	A4, B6,	3
			Poverty, sudden weaning; Seasonal barriers	B1, A4; B1, B1, B2, A2, B1, C8	3
			Sum of Scores		43

Prior Mode = Positive Finding+ (100%-Negative Findings)/2 = 33+ (100-43)/2=45.0%

Uncertainty = ±25

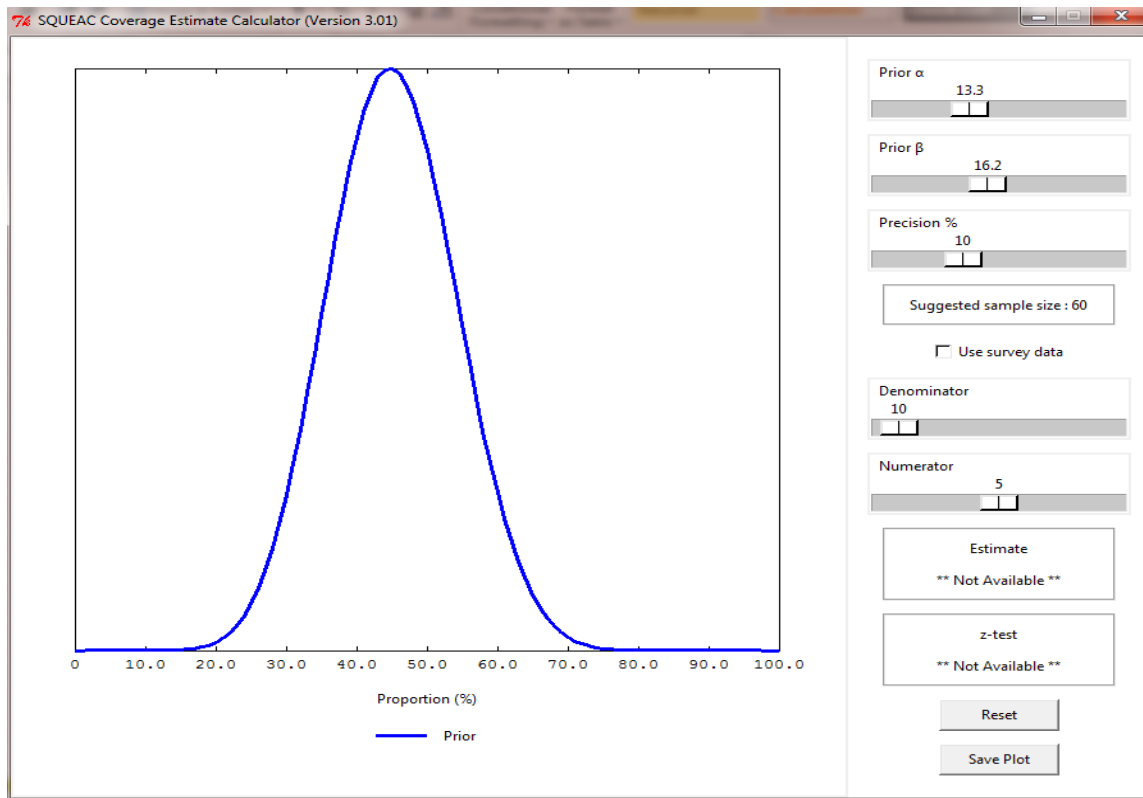
Minimum probable value =20% Maximum probable value=70%

Alpha Prior = 13.3 Beta Prior =16.26



Using Bayesian Coverage Calculator, the prior was set at 45.0% with alpha- 13.3 and beta- 16.2 with uncertainty of $\pm$ about 25% as shown below:

Figure 20: Prior - Urban Areas



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

5.2 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 55 cases and for Urban 60 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 of each locality with estimated population (taken from latest micro-plans for EPI campaign) was drawn for all the areas of OTP sites in South Kordofan. The percentage of under- fives 17% per village was obtained and a prevalence SAM (2.7%) was used. By using the above formula 5 villages systematic selected with a sampling interval of 6 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 South 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 9: SAM Cases – Rural catchment area

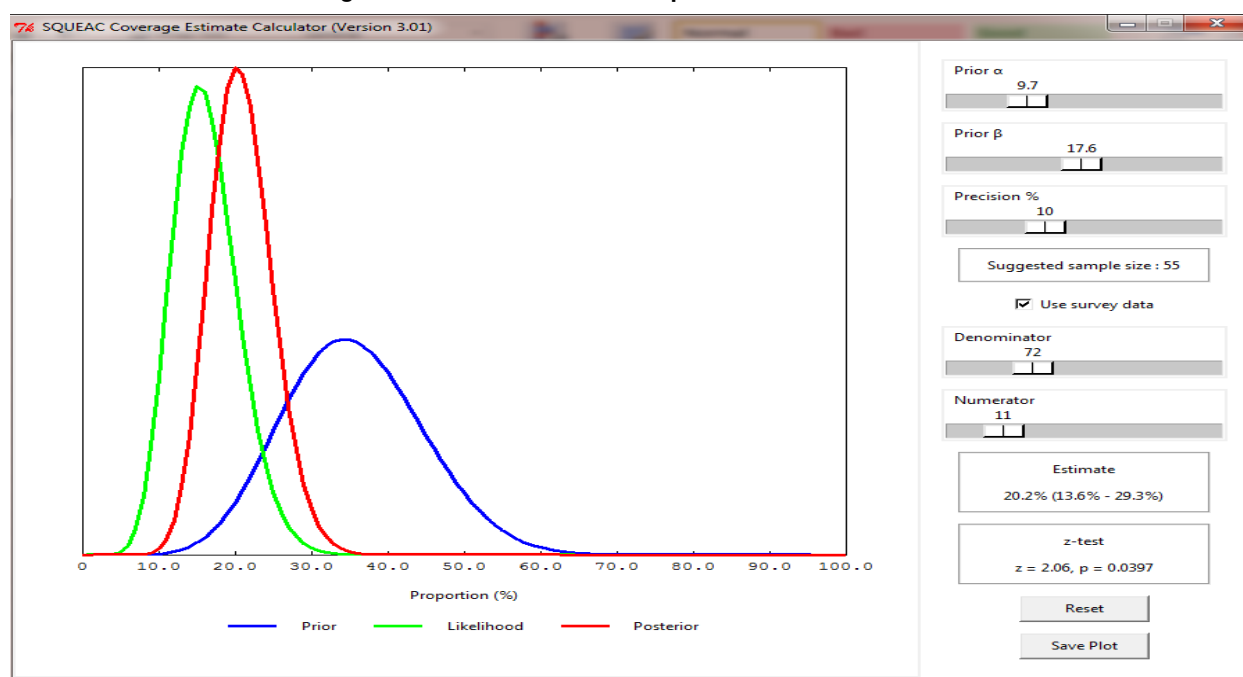
S.NO	Village Name	Catchment Population	SAM cases in the program (MUAC <11.5cm or Edema)	SAM cases Recovering (MUAC 11.5cm or greater & in the program)	SAM Case not in Program
1	Village Timat	Elfarshaya (Dilling) - Rural	3	0	6
2	Village Nabagaia	Elfarshaya (Dilling) - Rural	1	0	2
3	Village Umbada	Algoz (Al Dibaibat)- Rural	0	0	5
4	Village Elnasir	Elfarshaya (Dilling) - Rural	7	1	48
5	Village Thoura	Algoz (Al Dibaibat)- Rural	0	0	0

To calculate the 'Point coverage' for OTPs in rural areas of South Kordofan below equation was used:

Point coverage = Number of current (SAM) cases attending the programme (Y) / Number of current (SAM) cases (X)

For point coverage estimation, the denominator is 72, i-e current SAM in program. + current SAM cases not in program) and numerator 11 i-e current SAM cases in programme was inserted to Bayesian SQUEAC calculator while same Alpha and Beta values (α 9.7 β 17.6) and precision $\pm 10\%$ has been used from the pre-set 'Prior'. The Bayesian-Software estimated 'Point' coverage at 20.2% rate with Credible Interval (CI 13.6% - 29.3%), and P value= 0.00397, there is reasonable overlap between 'prior' and 'likelihood'

Figure 21: Prior likelihood and posterior modes - Rural





For Urban:

By using the above methodology, 5 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 South 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 Population	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	Village Marwa	Dilling	3	0	3
2	Village Maasir	Dilling	2	2	4
3	Village Mtar	Dilling	5	7	9
4	Village Hai Almakk	Dilling	2	8	10
5	Village Tourg	Dilling	0	5	9

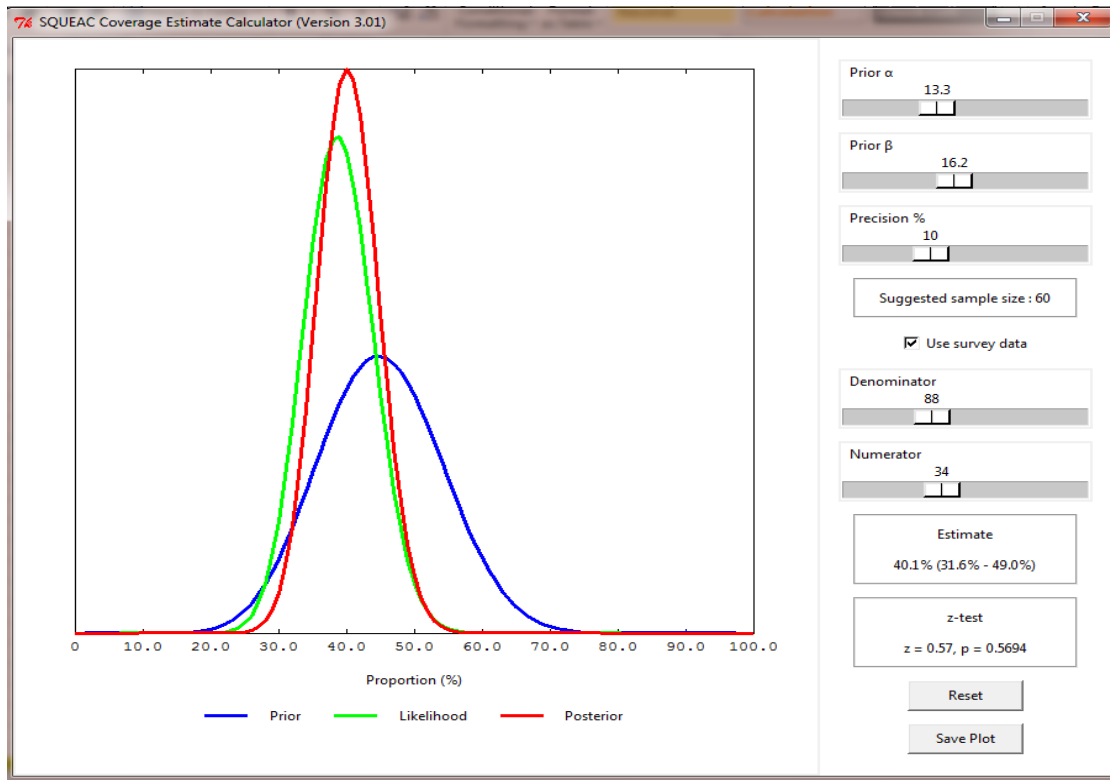
To calculate the 'Single coverage' for OTPs in urban areas of South Kordofan below equation was used.

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	12	
C _{out} = Current SAM cases not in the programme	35	
R _{in} = Recovering SAM cases in the program	22	
R _{out} = Recovering SAM cases not in the programme	19	

For single coverage estimation, the denominator is 88 (12+35+22+19), i-e current SAM in program. + current SAM cases not in program. + recovering cases + recovering cases not in program) and numerator 34 (12 + 22) i-e current SAM cases in programme + recovering cases) was inserted to Bayesian SQUEAC calculator while same Alpha and Beta values (α 13.3 β 16.2) and precision $\pm 10\%$ has been used from the pre-set 'Prior'. The Bayesian-Software estimated 'Single' coverage at 40.1% rate with Credible Interval (CI 31.6% - 49.0%), and P value= 0.5694, there is reasonable overlap between 'prior' and 'likelihood'.



Figure 22: Prior likelihood and posterior modes - Urban



5.3 Programme Effectiveness:

Programme effectiveness was estimated at 17.77% only ($88 \times 20.2 / 100 = 17.77\%$) in rural settings and 34.89% only ($87 \times 40.1 / 100 = 34.89\%$) in urban setting of South Kordofan. This calculation is based on 20.2% and 40.1% estimated point and single coverage in rural and urban areas respectively, and 88% and 87% cure rate. This means that if there was low coverage, the overall programme effectiveness was estimated as low, even with good programme performance (cure rate). We can increase the programme effectiveness by focusing on outreach activities to increase the coverage and to decrease defaulter rate/absenteeism, as there was high potential observed among the Service Providers competencies to adhere strictly to the CMAM protocols to meet the compliances level in program both in urban and rural settings.

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	23
Defaulted / child with diarrhea as potential result of RUTF	1
Temporal reasons: Carers busy / Carers sick	3
Carers not aware of sign and symptoms of malnutrition	1



Previous Rejection from OTP	1
Child has relapsed after discharge cure	1
Population Movement - Distance (OTP site is far)	5

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

6. Recommendations

The recommendations are 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
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
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 - 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 - 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)



Annexures

ANNEX 1: Mind Map – South 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 Ul Hassan Ali Nasr Elbadawi
16:15 - 16:45	Post-Test	Nauman Ul Hassan
16:45 – 17:30	Question & Answers Closing Remarks	Nauman Ul Hassan Representative from MOH