



TANA RIVER COUNTY

Semi Quantitative Evaluation on Access and Coverage (SQUEAC) Report



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The parents and caretakers for providing valuable information by patiently providing their time to be interviewed and allowing their children to be measured

Abbreviations and Acronyms

CHW	Community Health Workers
CU	Community Unit
CHMT	County Health Management Team
FFA	Food for Asset
GFD	General Food Distribution
HINI	High Impact nutrition Interventions
IEC	Information Education and Communication
IMAM	Integrated Management of Acute Malnutrition
IMC	International Medical Corps
KFSSG	Kenya Food Security Steering Group
MAM	Moderate Acute Malnutrition
MOH	Ministry of Health
MUAC	Mid Upper Arm Circumference
NDMA	National Drought Management Authority
OTP	Outpatient Therapeutic Program
OJT	On Job Training
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Program
SQUEAC	Semi Quantitative Evaluation of Access and Coverage
TBAs	Traditional Birth Attendants
THPs	Traditional Health Practitioners
UNICEF	United Nations Children's Fund
URTI	Upper Respiratory Tract Infection

Executive Summary

Tana River County is located in the Coastal region of Kenya. The County borders 5 counties with Kitui to the West, Garissa to the North East, Isiolo to the North, Lamu to the South East, Kilifi and Indian Ocean to the South. It occupies an area of approximately 38,437 km² with an estimated population of 324,054¹ people. The county has 3 main livelihood zones namely pastoral (accommodating 14% of the population), marginal mixed farming (47%) and mixed farming (37% of the population)

Tanariver county Ministry of Health with support from UNICEF conducted second SQUEAC assessment for both OTP and SFP program in the County. The main objectives of the assessment were to assess the overall coverage for both OTP and SFP programs in the County, identify barriers and boosters for OTP and SFP uptake, build the capacity of program staff (MoH & Partners) in the assessment of IMAM coverage using SQUEAC methodology and provide recommendations for future programming.

This assessment was carried out in the entire Tana River County between 5th and 22nd December 2017. SQUEAC methodology was used:-

- **Stage 1:** Analysis of routine data and any other relevant data to identify areas which suggest low or high coverage. It also involve collection of information from target communities, beneficiaries and health staff, to explain and better inform the program coverage and build on the hypothesis of high and low coverage.
- **Stage 2:** Testing on the hypothesis.
- **Stage 3:** Use of Bayesian methodology to estimate the overall coverage.

The assessment showed that overall OTP coverage estimate is **48.0%** (36.0% - 60.1%) and SFP coverage estimate is **50.5%** (40.6% - 60.1%). SFP coverage estimate is within the 50% SPHERE standard for coverage in rural set ups however, OTP coverage estimate is slightly below.

Table 1: A summary of Tanariver IMAM Program Boosters and Barriers

Boosters to IMAM Program Coverage	Barriers to IMAM Program Coverage
– Good health seeking behaviour (<i>health facility first priority to visit in cases of sick children</i>)	– Health workers absence (<i>Absenteeism & nurses strike</i>) noted as a major barrier that led to the program being handled by CHWs
– Availability and Continuity of IMAM services and nutrition supplies at the health facilities	– Inaccessibility of the service (<i>health facility location, outreach service inconsistency and nomadic lifestyles</i>) due to the vastness of the county
– Availability of integrated outreach services especially in hard to reach areas	– Lack of active case finding and defaulter tracing due to dormant or no community Units
– Capacity to provide quality services by health care providers (Health workers/CHVs)	– Poor health seeking behaviors (<i>children taken to local herbalist other than the health facility</i>)
– Community able to identify sign and symptoms of Malnutrition and have positive program opinion	– Negative opinions & cultural beliefs and stigmatization (<i>malnutrition caused by infidelity by husband</i>).
– Community positive attitude towards health workers are aware of the importance of IMAM services	

¹ DHIS (2017 population estimates)

A Summary of the Recommendations

- There is need for routine spot checks and supervision need to be done by health managers (*SCHMT/CHMT*) to health facilities and address staff absenteeism
- Map out county health work force (nurses and nutritionist available) and advocate for county government for employ more staff (*at least 2 health workers in every health facility*)
- County government and Health managers to work out on ways to retention staff
- Train CHEWs & CHVs on nutrition module and MUAC taking then Supply MUAC tapes to all CHVs within the CUs for HH case finding
- Strengthen and establish more community units in order for CHWs to reach out to many community members
- County government to invent in integrated medical outreaches especially in hard to reach areas.
- Involve lead mothers from MTMSGs in community nutrition screening and referral
- County government factor CHWs incentives/payments within the health budget

1.0 Introduction

1.1 Background Information

Tana River County is located in the Coastal region of Kenya. The County borders 5 counties with Kitui to the West, Garissa to the North East, Isiolo to the North, Lamu to the South East, Kilifi and Indian Ocean to the South. It occupies an area of approximately 38,437 km² with an estimated population of 324,054² people. There 3 main tribes (Wardhei, Pokomo & Orma) who are both Christians and Muslim. The county has 3 main livelihood zones namely pastoral (accommodating 14% of the population), marginal mixed farming (47%) and mixed farming(37% of the population) as shown in *figure 1*.

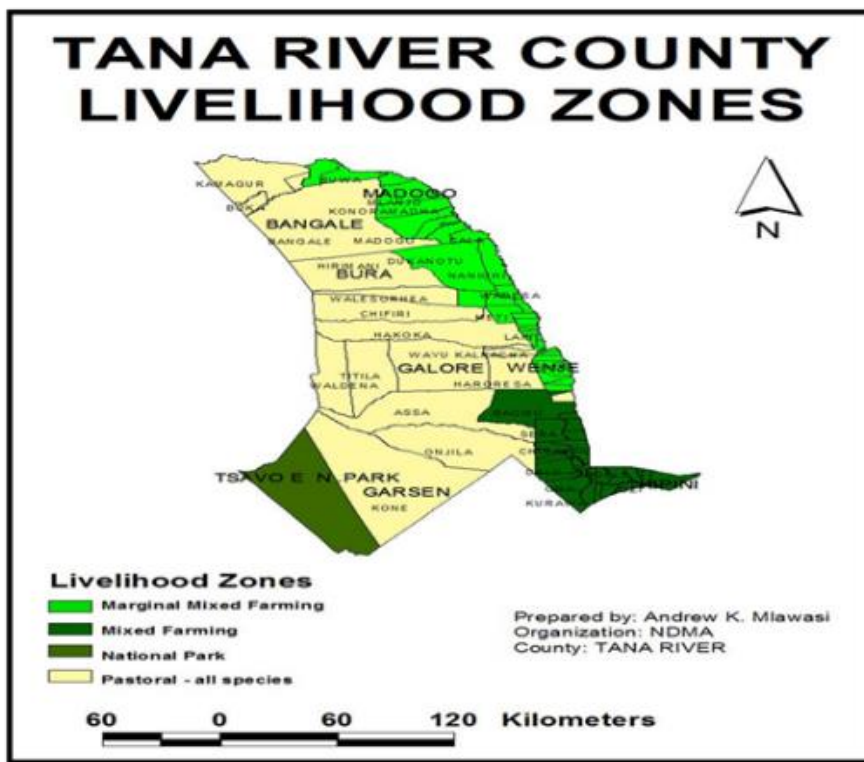


Figure 1: Tana River County Livelihood map

The county has only one water source (River Tana) that traverses the county from the northern border all the way to the Indian Ocean in the south. The county experiences bimodal rainfall pattern with long rains falling between April and June and short rains between October and December. Tanariver County has poor network across the entire county. The assessment was done during short rains season.

The County Department of Health with support of partners namely UNICEF, International Medical Corps and Word Vision has been implementing high impact nutrition and Maternal Child and nutrition Program with key thematic areas of focus (Health system strengthening, Advocacy and Nutrition resilience) all with a goal of reducing maternal, infant and young child mortality within the county.

² DHIS (2017 population estimates)

One of the key components under health system strengthening that IMC has been supporting is management of acute malnutrition. Malnutrition in Tana River county has remained high above the Minimum standard for emergency setting, According to a nutrition SMART survey conducted in the county in January 2017, the level of acute malnutrition (wasting) in the county was **13.7 % (10.1 - 18.2%, 95%CI)** compared to the previous survey (July 2016), where the rate of acute malnutrition was **14.0 % (10.5 - 18.5, 95% CI)**. However, the rate of severe acute malnutrition went up from **1.5 % (0.6 - 3.8, 95% CI)** in 2016 to **3.0% (1.3 – 6.4, 95% CI)** in 2017.

Long Rain Assessment done in June 2017 in Tana River County classified the county under **Stressed (IPC Phase 2)** across all the 3 livelihood zones, with the likelihood of the pastoral livelihood zone sliding into Crisis (*IPC Phase 3*)

Tana River County has 68 health facilities including private and faith based facilities. Three (3) are level four, Three (3) level three and sixty four (64) level two. However, only 55 facilities of the GOK and faith based are operational. 45 of the operational facilities offer IMAM services. Health workers absence (*Absenteeism & Nurses industrial strike*) noted as a major barrier that led to the program being handled by CHWs.

Last SQUEAC assessment conducted in the county focused only on SAM, showed an overall program SAM coverage estimate of **47.5% (34.5%- 60.8%)** which is slightly below the current estimate at **48% (36.0% - 60.1%)**.

1.2 Objectives of the Assessment

Main objective: To assess the overall coverage for OTP and SFP in Tana River County

Sub-objectives:

1. To identify barriers and boosters for OTP and SFP uptake in Tana River County.
2. To build the capacity of program staff in the assessment of IMAM coverage.
3. To come up with recommendations to improve on OTP and SFP coverage in the county

1.3 Methodology

This assessment was carried out in the entire Tana River County and SQUEAC methodology was applied. The methodology is a low resource 3 stage model that can be used on regular basis to monitor program performance, identify barriers and boosters to service access and uptake and hence evaluate coverage. In the first stage, areas of high and low coverage were identified through the analysis of routine program data. It also involve collection of information from target communities, beneficiaries and health staff, to explain and better inform the program coverage and build on the hypothesis of high and low coverage.

A hypothesis is formulated based on the information collected. In stage 2, the hypothesis is tested and confirmed or rejected. Stage 3 involves the use of Bayesian methodology to estimate the overall coverage.

2.0 Investigation Process

2.1 Identification of Areas of Low and High Coverage

2.1.1 IMAM Program Data Analysis

In order to identify areas of high and low coverage analysis of routine program data was done. Data was collected in all 45 sites (health facilities) that offer IMAM services (OTP & SFP) in the entire county from October 2016 (period of one year) to November 2017. Data collected from the sites included; OTP & SFP monthly admission trend, admission by MUAC, exit MUAC, exits over time and length of stay (cured, defaulters, deaths, length of stay) on monthly basis and defaulting based on weeks. Seasonal calendar borrowed from the county NDMA office since they have been monitoring the county seasons regularly over a period of time.

Monthly Admissions

Analysis of both OTP & SFP admission within the year over time revealed that, admissions in March to May 2017 increased significantly due to intensive integrated outreaches and mass screening done in the month. As illustrated in figure 2 and 3 below, there was a drastic decrease in admissions from June to September 2017, both OTP & SFP admissions went down. This can precisely be attributed to absence of health workers who participated in industrial nurse's strike that lasted for 5 months affecting health and nutrition service delivery especially at the level 2 health facilities that are managed by nurses.

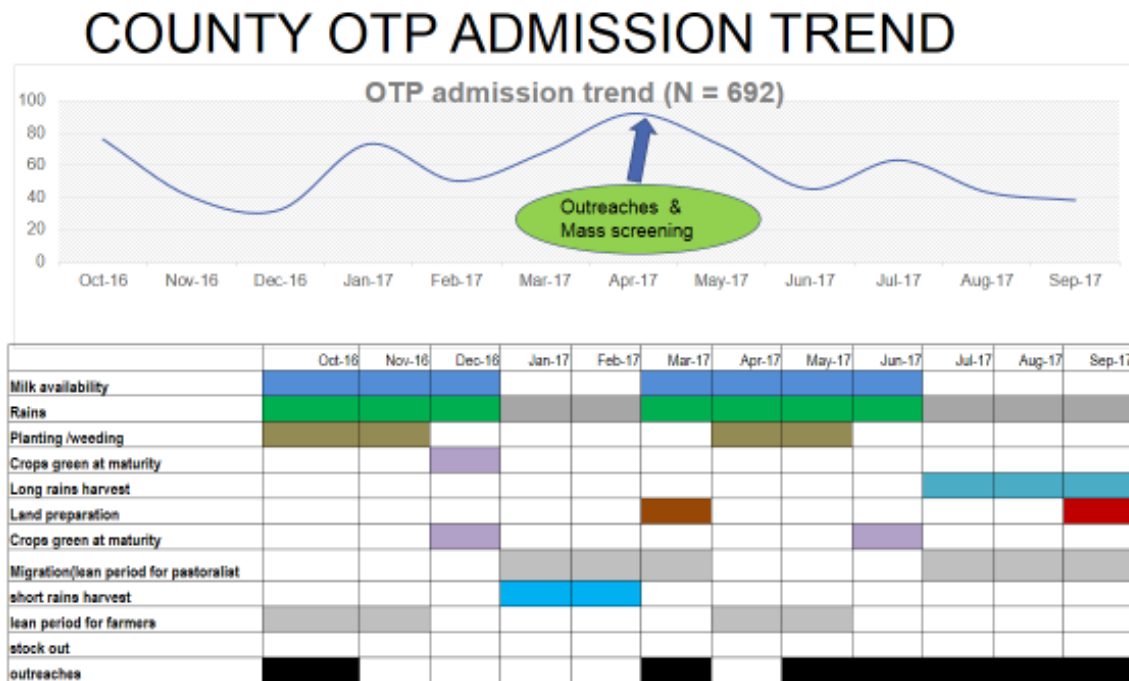


Figure 2: OTP admission trends

COUNTY SFP ADMISSION TRENDS

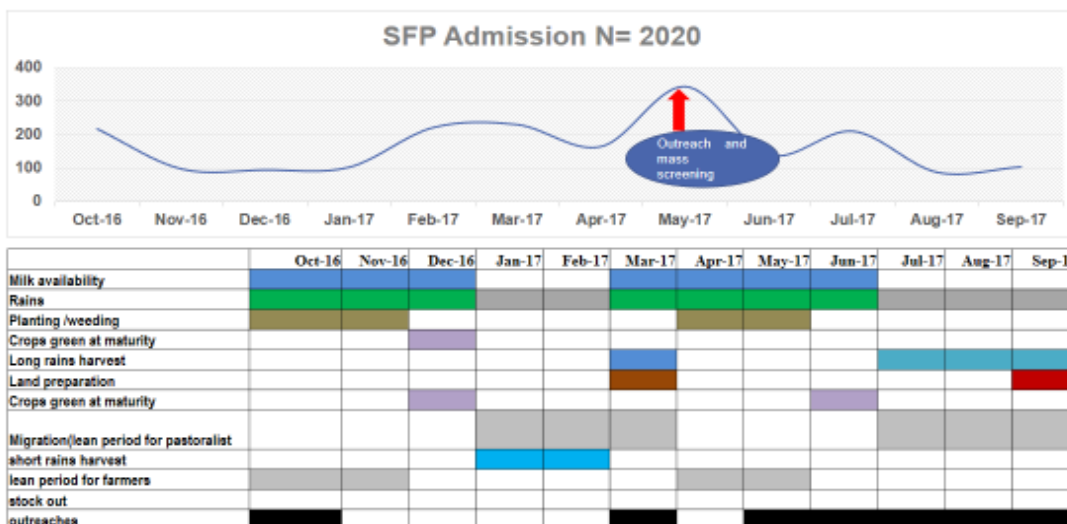


Figure 3: SFP admission trends

Admission MUAC

Good IMAM program coverage is determined by the number of children who meet the admission criteria (*OTP: MUAC <11.5cm and or with nutrition oedema and SFP: MUAC <12.5cm*) and are admitted on time. If many of these children are legible for admission and are not in the program, then the coverage is low (Valid International 2012). Late admission is usually associated with low program coverage. Plotting MUAC on admission will help in determine the health seeking behavior. Children who are admitted later in the program (with lower MUAC) are those who have remained uncovered for some time despite being eligible. Admission MUAC was collected and analyzed as shown in *figure 4* and *5*. From the analysis, more than two thirds of children were admitted using MUAC. The median MUAC on admission fell at a MUAC range of 110 -106 mm (OTP) and median MUAC for SFP was 123 mm signifying early admission, which is a booster to the program. Few cases were admitted with lower MUAC <9cm. This means that most cases are admitted with MUAC close to the admission cut off for both OTP & SFP. Early admission is a booster to the program as children get admitted with few complications; they stay in the program for a short time and are unlikely to default. Ultimately, there is good outcome.

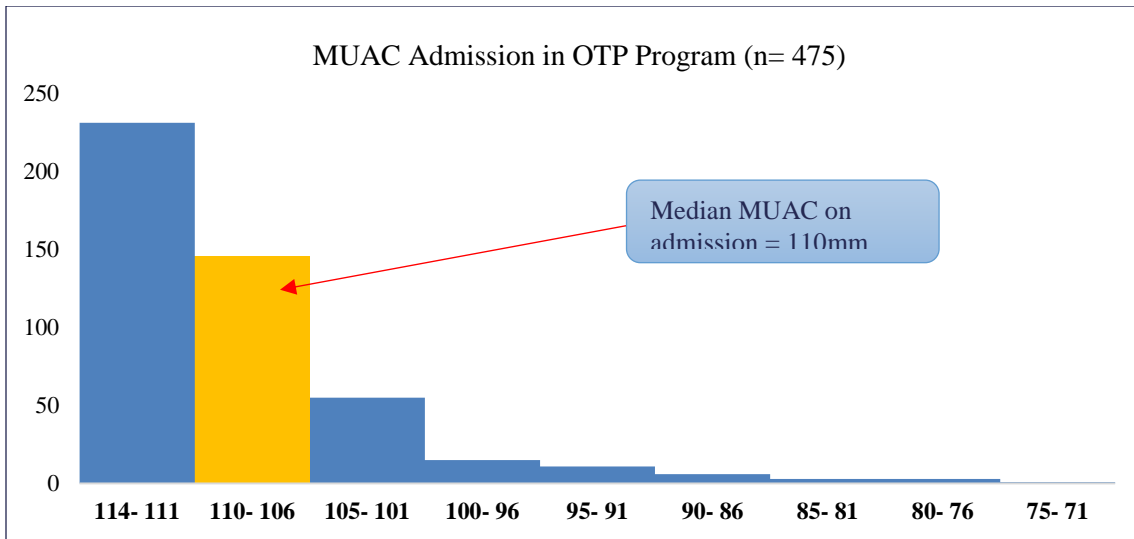


Figure 4: MUAC Admission in OTP Program

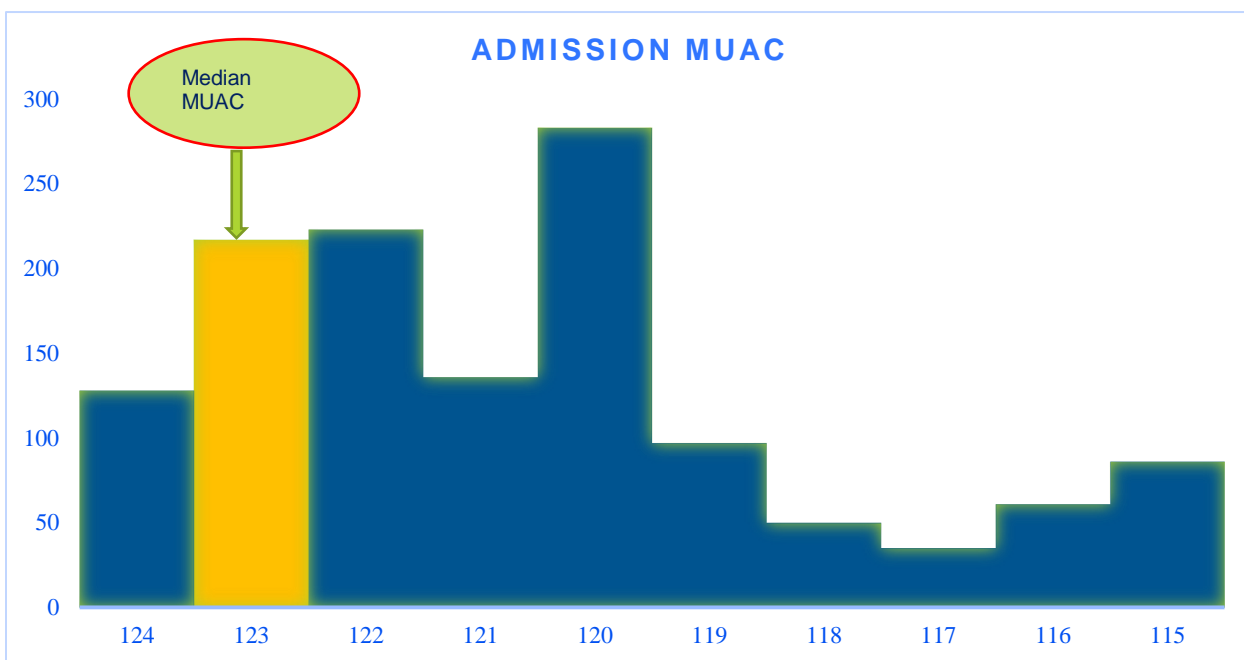


Figure 5: MUAC Admission in SFP Program

Exit Outcomes

Admissions alone do not determine the effectiveness of IMAM i.e. OTP & SFP. Program retention should also be considered³. The program exits which include, cured cases, deaths and defaulters were analyzed to obtain a standard program indicator graph shown in *figure 6*. For a standard program that meet the SPHERE standard the cured line should be at the top of the graph (above 75% minimum threshold), while defaulter and death line should be at the bottom of the graph(below 15% and 10% minimum threshold for defaulter and death rate respectively). In a situation where the cure line is below 75% line, defaulter line and death line are above 15% and 10% respectively, there is a concern. OTP cure rates dropped between the months May – August while defaulting rates were high with some months surpassing 15% threshold. This was especially noted during the months when industrial

³ Myatt, Mark et al. 2012. *Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)/Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) Technical Reference*. Washington, DC: FHI 360/FANTA.

nurse's strike was on. SFP analysis too depicted drop of cure rate and increase of defaulting trend especially between May to September and this can be attributed to the nurse's strike as most health facilities remained closed.

High defaulting rate is an ultimate indicator that there is no good compliance with the IMAM program since children leave the program before meeting the discharge criteria. In Tana River County it is attributed to among other things; lack of proper defaulter tracing mechanism, inadequate case finding and nomadic way of lifestyle especially among the pastoral community. Distance to the health facilities as well as health staff absenteeism (industrial nurse's strike) and competing activities could contribute to defaulting.

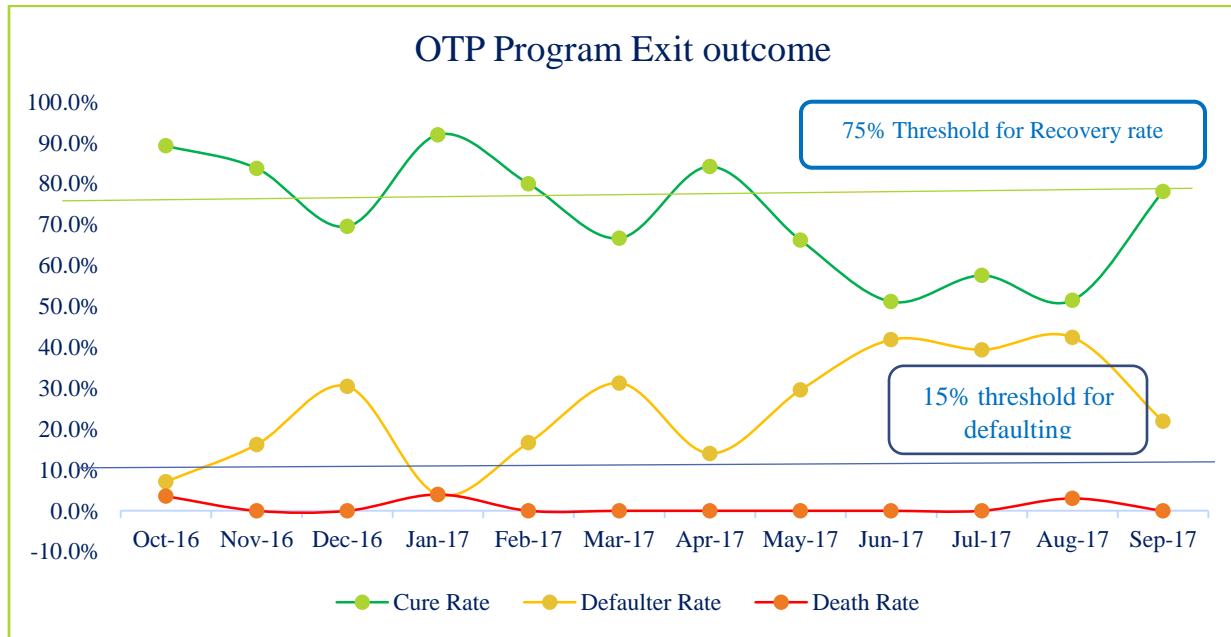


Figure 6: Exit Outcome for OTP Program

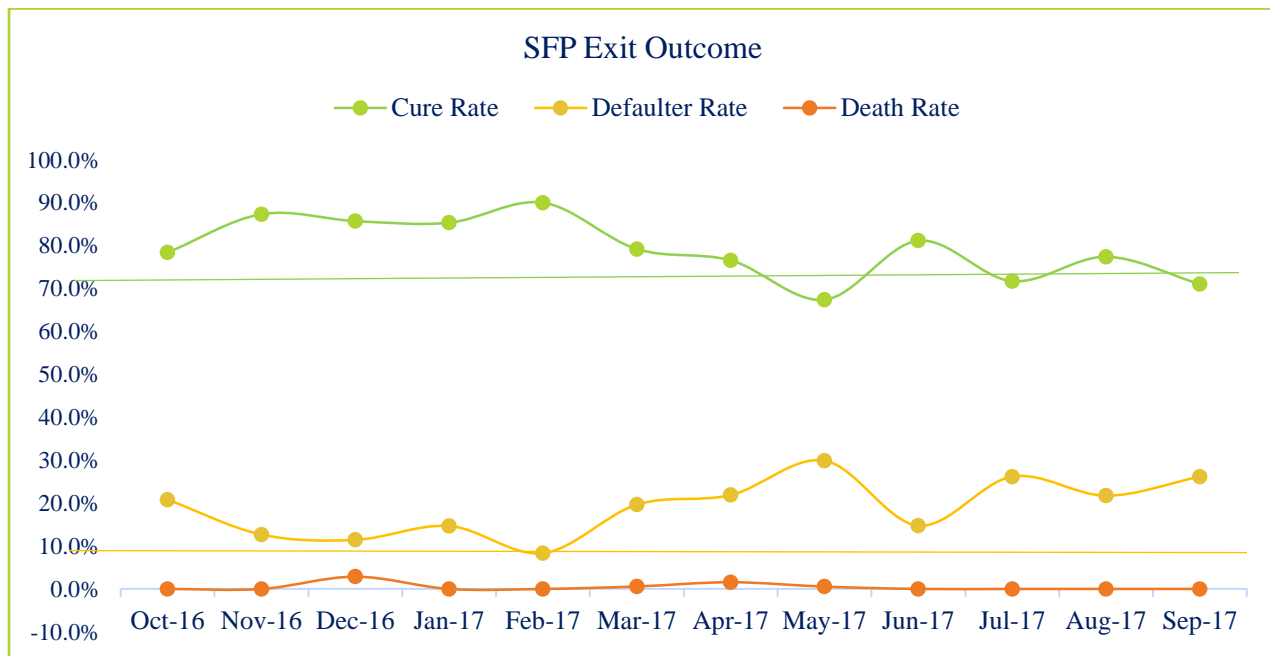


Figure 7: SFP Program Exit Outcome

Defaulting Time

Analysis of defaulting time was done from the program data and within OTP program early defaulting was detected: the median defaulting time being week 4 (*figure 8*). At the same time SFP program defaulting time was late at week 14. Documentation was also seen as a challenge across the program. Early defaulting is a weakness of the program as earlier defaulters are likely to be active cases compared to late defaulters who could be recovering cases or recovered cases in the community.

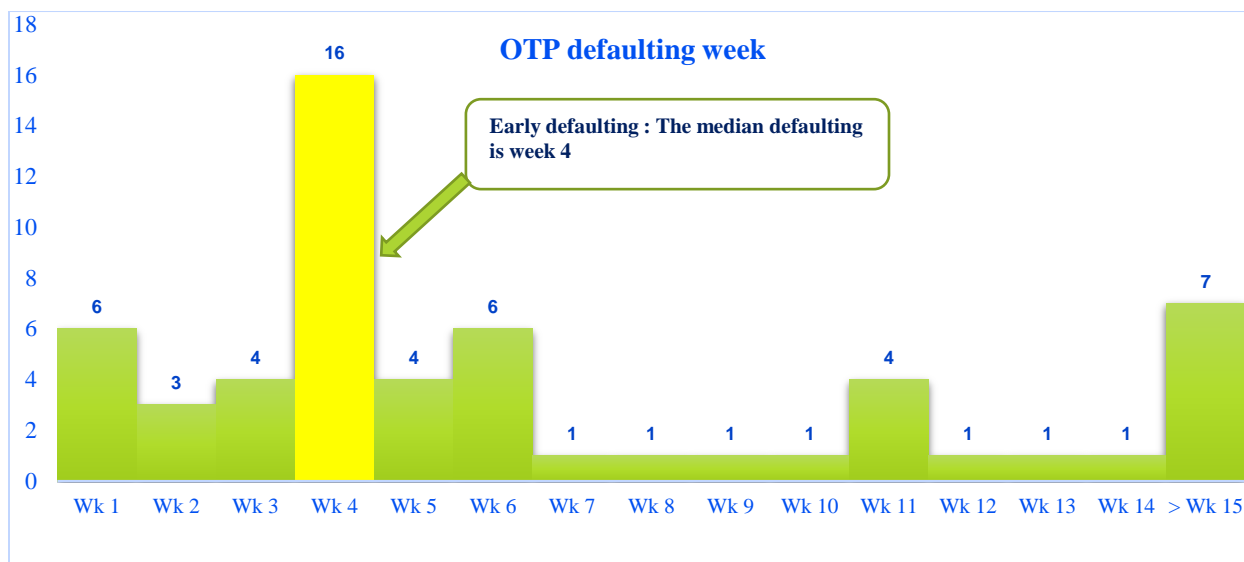


Figure 8: Defaulting time: OTP

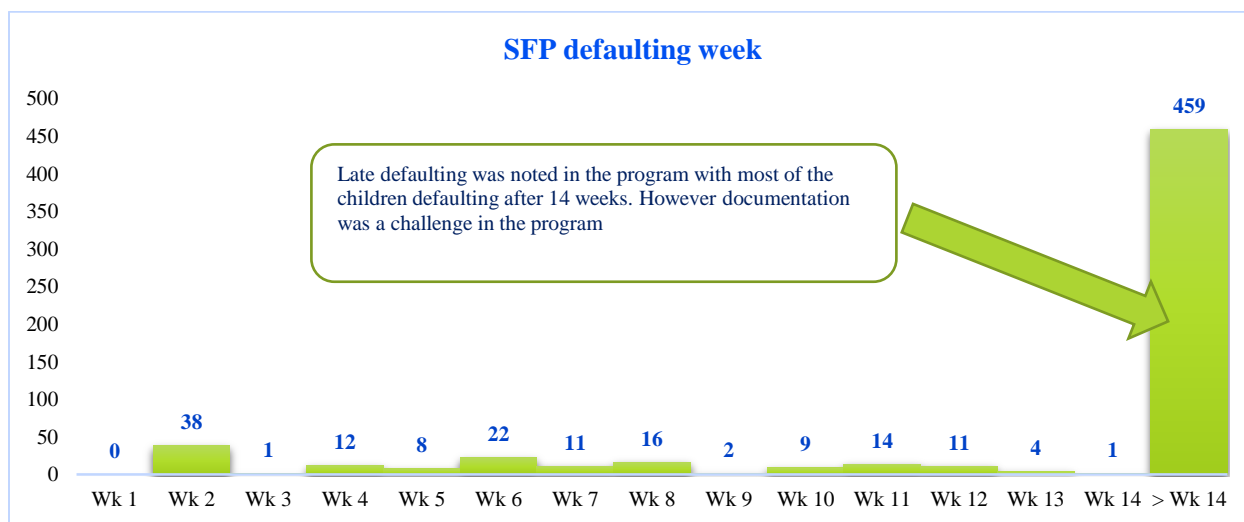


Figure 9: Defaulting time (SFP)

MUAC at Discharge and Length of Stay

Analysis of MUAC at discharge and Length of stay was done and the Median MUAC at discharge was 118mm and 126mm for OTP and SFP respectively. Median MUAC at discharge for both programs indicated that children did not overstay in the program after getting cured. Length of stay for both OTP and SFP was noted to be short with the median length of stay being between weeks 7 – 9, an indication that children were not overstaying within the programs.

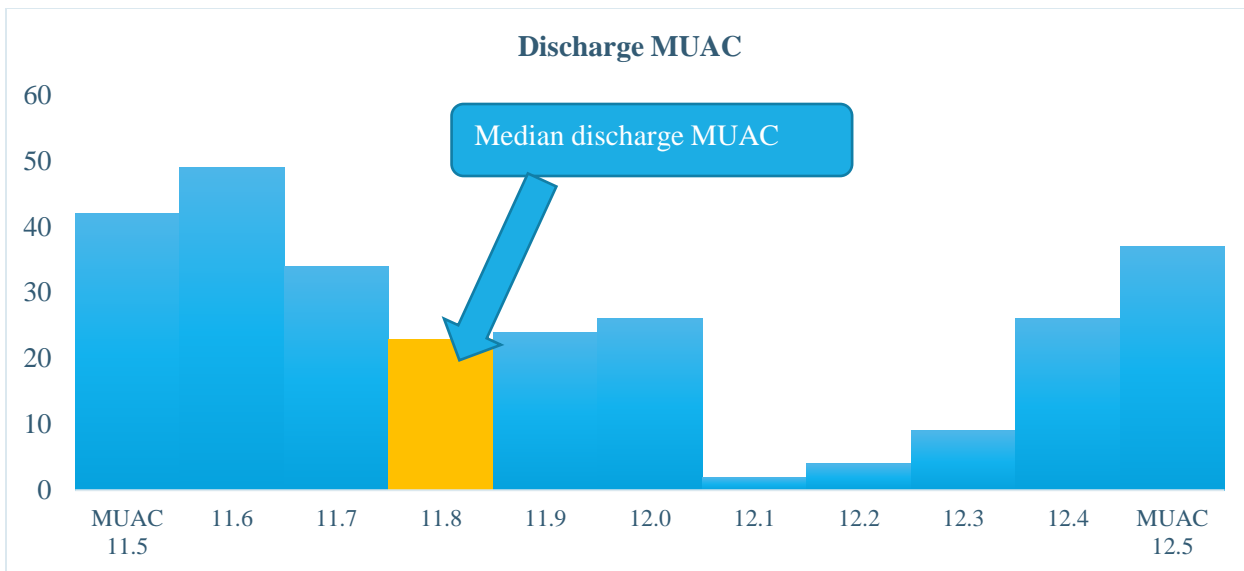


Figure 10: OTP Discharge MUAC

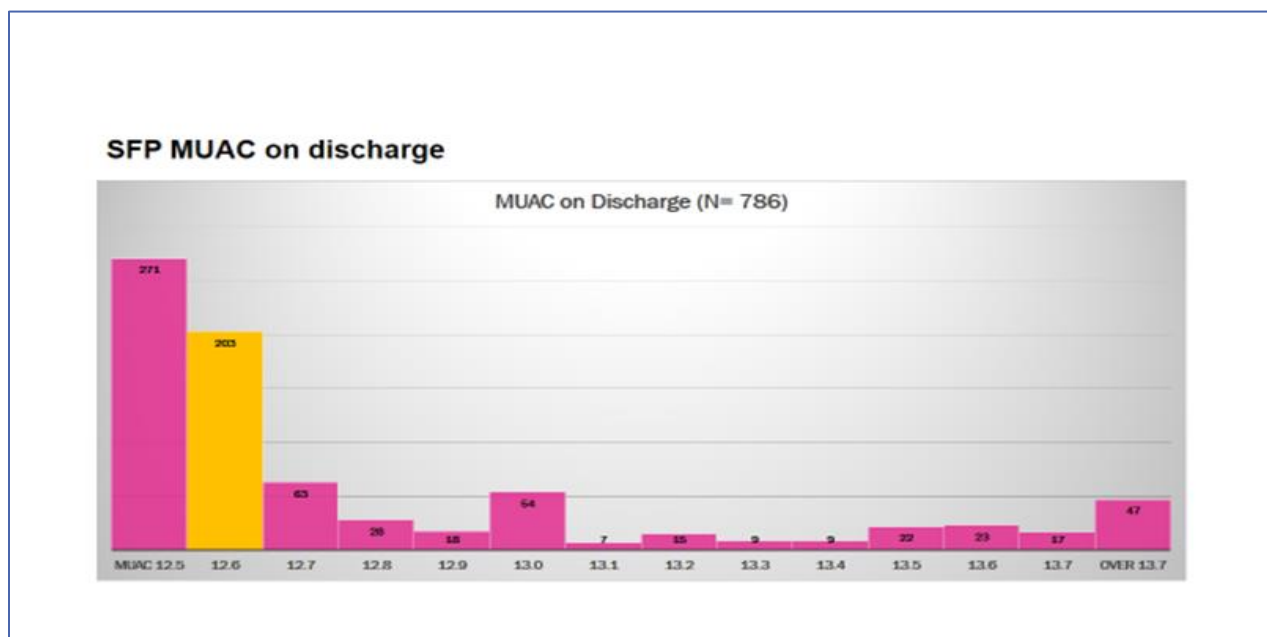


Figure 11: SFP Discharge MUAC

2.1.2 Qualitative Data Collection and Analysis

The investigation used 6 teams that comprised of 2 members per team; 1 MoH (Survey coordinator) and partners. Three methods were used to collect qualitative information. Qualitative information collected was triangulated using different sources.

The methods used to collect qualitative information included;

- a. **Semi structured interviews:** information was collected from facility in charge/program staff and CHWs

- b. **Informal group discussions** by community leaders, TBAs/THPs, pastoralists and care givers in the community.
- c. **In-depth interviews** with caregivers of children in program and defaulting children.
- d. **Observation** an observation checklist was also used to collect information regarding; the presence of IEC materials, RUTF stock, OTP and SFP registers and ration cards and also program organization. Each Method and data source was assigned a symbol for ease analysis of program barriers and boosters as illustrated in table 1 and 2 below.

Table 2: Summary of qualitative data collection methods

Method	Symbol
Semi structured interviews	B
Informal group discussions	C
Observation	D
Program Data (Not qualitative but used to unveil program boosters and barriers)	E

Table 3: Qualitative Data Sources

Source	Symbol
TBA	1
Lay women	2
Laymen	3
Traditional healer	4
Religious leader	5
CHV	6
Chief	7
Combined lay groups	8
Mother to mother support groups	9
Carers of OTP or SFP	10
Program Staff	11
NGO agent	12
OTP/SFP Staff	13
Carers of defaulting children	14
Health facility data	15

Concept-mapping is a graphical data-analysis technique that is useful for representing relationships between findings. Concept-maps show findings and the connections (relationships) between findings (Mark Myatt 2011). Qualitative and quantitative data collected was further analyzed and organized in a concept map as shown in *figure 12*.

OTP Concept Map	SFP Concept Map
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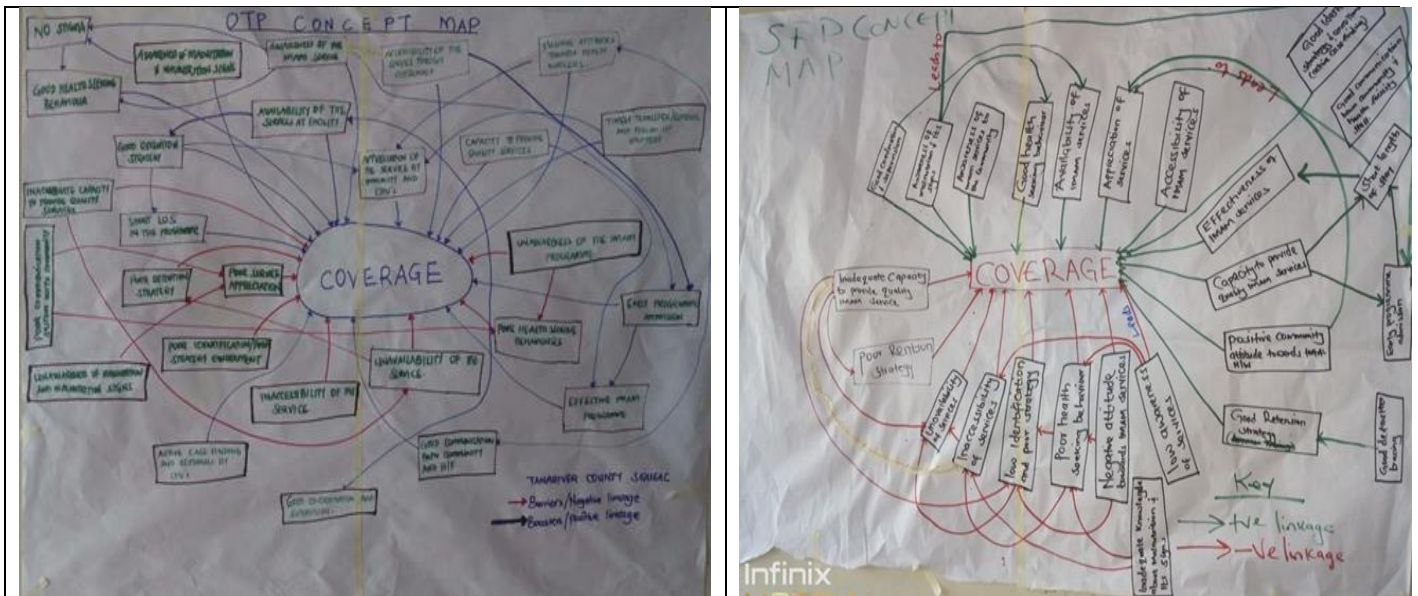


Figure 12: OTP and SFP concept maps

2.2 Hypothesis Testing

2.2.1 Stage 2: Small Area Study

The objective of this stage was to confirm areas of high and low coverage based on the data collected from stage 1.

The hypothesis; *Villages closer to the river line (mainly mixed farming and marginal mixed farming livelihood) have a high coverage compared to those in the hinterland (mainly pastoral livelihood) was formulated due to the following reasons;*

- Qualitative data indicated that there was no active case finding as a result of weak and few community units (CHWs in the community) and children accessed treatment of malnutrition through the health facilities which are concentrated along river line.
- Outreach services are inconsistent and partner dependent funding rather than the County government

The hypothesis was tested using the simplified LQAS formula $d = \lfloor n/2 \rfloor$ in comparison with 50% SPHERE threshold for rural areas.

Small Area Study

The small area study was conducted in purposively selected villages both closer to the river line and in the hinterland. 6 teams (each with 2 members), were divided into two, teams visited villages closer to the river line and the others visited villages in the hinterland. Each team was provided with a MUAC tape and a packet of RUTF. When they reached the village, they looked for a key informant who lead them to household of caregivers of children under five years of age where they asked whether they were aware of any program that treat malnutrition. They confirmed by showing them MUAC and RUTF.

Table 4: Small Area survey Result (OTP)

Purposively sampled villages	Location	No of SAM cases in program	No of SAM cases not in program	Total
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High coverage Villages: (Baomo, Sera, Bohoni, Bahamas, Hemesa A, village 6)	River line	3	0	3
Low Coverage(Gururi, Hakoka, Gafuru, Murukani, Walsolea, Bilbil)	Hinterland	1	3	4
High coverage: Villages (Baomo, Sera, Bohoni, Bahamas, Hemesa A, village 6)	Program coverage Standard (p)	50%	No. of SAM cases in program = 3 which is more than 1.	The hypothesis is confirmed
	Decision rule (d)	$d = [3/2] = 1.5$		
	No. of SAM cases in program	3		
Low Coverage (Gururi, Hakoka, Gafuru, Murukani, Walsolea, Bilbil)	Program coverage Standard (p)	50%	No. of SAM cases in program is 1 which is less than 2	The hypothesis is confirmed
	Decision rule (d)	$d = [4/2]$		
	No. of SAM cases in program	1		

Table 5: Small Area Results (SFP)

Purposively sampled villages	Location	No of MAM cases in program	No of MAM cases not in program	Total
High coverage Villages (Baomo, Sera, Bohoni, Bahamas, Hemesa A, village 6)	River Line	5	3	8
Low Coverage (Gururi, Hakoka, Gafuru, Murukani, Walsolea, Bilbil)	Hinterland	7	17	24
High coverage Villages (Baomo, Sera, Bohoni, Bahamas, Hemesa A, village 6)	Program coverage standard (p)	50%	No. of MAM cases in program = 5 which is greater than 4	Hypothesis is confirmed
	Decision rule (d)	$d = [8/2] = 4$		
	No. of MAM cases in program	5		
Low Coverage (Gururi, Hakoka, Gafuru, Murukani, Walsolea, Bilbil)	Program coverage standard (p)	50%	No. of MAM cases in program is 7 which is less than 12	Hypothesis is confirmed
	Decision rule (d)	$d = [24/2] = 12$		
	No. of MAM cases in program	7		

From the analysis of both qualitative and quantitative data, the team came up with program barriers and boosters as summarized in *table 6 to 9* below. The team gave each barrier or booster a weighted score based on how the team felt the factor negatively affected the program coverage (for barriers) or how it positively impacted on the program (for boosters)

Table 6: OTP Boosters

OTP Boosters	Source	Method	Weight
Good health seeking behaviour (health facility first priority to visit in cases of sick children)	$1, 2, 3, 7, 5, 8, 9$	B^7, C^5	3
No stigmatization towards Malnutrition	$1, 2, 8, 5$	C^1, B^3	2
Community able to identify sign & symptoms of Malnutrition	$1, 2, 5, 8, 7, 9$	B^4, C^4	3
Awareness of the services	$1, 2, 3, 5, 7, 8, 11, 13, 10, 14, 7, 5, 9$	B^6, C^2	4
Availability and Continuity of IMAM services at the health facilities	$1, 2, 3, 9, 11, 1, 3, 7, 8, 5, 13$	B^6, C^3	3

Availability of outreach services	3,6,5	B ² ,C	2
Positive Program opinion	5,7,6 ¹ ,8 ¹ ,9 ² ,10,12,14 ¹ 5,6,7,9,10,14, 1,9	B ¹¹ ,C ⁹	3
Capacity to provide quality services	2,6,9,7,2,5,8, 12, 13, 14,6	B ⁷ ,C ²	2
Active case finding and referral done by CHVs	6,9,6	B ² ,C	1
Referral /transfer and follow up strategy	7,13,14,6	B ³	1
Good NGO/MoH partnership	12,7	B ²	1
Community +ve attitude towards health workers	5,6,7,9,10,14	B ⁴ ,C	3
Good communication between community and health facility	7 ² ,9,6	B ³ ,C	1
program IMAM is effective (children cured)	5,	B	3
Total Weight			33

Table 7: OTP Barriers

OTP Barriers	Source	Method	Weight
Health workers absence (Absenteeism and Nurses strike)	6,7 ²	B ³	-4
Inaccessibility of the service (health facility location, outreaches inconsistency and nomadic lifestyles)	13, 6, 10, 14 ¹ ,2 ³ ,3 ⁶ ,5 ² ,7 ² ,9 ¹ ,8 ⁴ ,3 ³ ,6 ²	C ⁸ ,B ²⁵	-4
Lack of active case findings due to dormant or no CHVs at the community units	1, 11,3, 10,14,5,8,7,2, 6 ³ ,2,3,1,7 ³ ,8 ⁴ ,9 ²	B ²³ ,C ⁶	-4
Poor health seeking behaviors (children taken to local herbalist other than the health facility)	3	c	-1
Negative cultural believes and stigmatization	10,11,13 ³ ,14,8, 12,3,6,7,9	B ¹¹ ,C ⁴	-3
Negative opinions of IMAM services and commodities	6 ⁴ ,11,5 ³ ,3 ² ,2 ² ,7 ⁵ ,13,1,8 ⁷	B ¹⁹ ,C ⁵	-2
Language barrier	1,2,5,6,7,8 ² ,12,9	B ⁸ ,C ¹	-1
Capacity to provide a quality service (from health staff) including documentation, inadequate training, poor coordination and unavailability of tools such as MUAC tapes	1, 6 ¹¹ ,7 ³ ,9, 10,12 ³ , 13 ² , 14 ³ ,15 ² ,8	B ²⁴ ,C ² ,D ²	-4
Negative opinion towards IMAM service	6,1,10	B,D	-2
Lack of defaulter tracing	6,7		-3
Defaulting	15	E	-3
Total weight			- 31

Table 8: SFP Boosters

SFP Barrier	Source	Method	Weight
Good health seeking behaviour (health facility first priority to visit in cases of sick children)	1,2,3 ¹ ,7 ² ,5 ² ,8 ¹ ,9 ²	B ⁷ ,C ⁵	3
Community able to identify sign & symptoms of Malnutrition	1,2 ¹ ,5,8,7,9	B ⁴ ,C ⁴	3
Awareness of the services	1 ² ,2 ³ ,3 ¹ ,5 ² ,7 ¹ ,8 ¹ ,11,13 ¹ ,10,14,7 ³ , 5,9	B ⁶ ,C ²	3
Availability and Continuity of IMAM services at the health facilities	1 ¹ ,2,3 ¹ ,9 ² ,11,1,3,7,8,5, 13	B ⁶ ,C ³	2

Availability of outreach services	3,6,5	B ² ,C	3
Positive Program opinion	5,7,6 ¹ ,8 ¹ ,9 ² ,10,12,14 ¹ 5,6,7,9,10,14, 1,9	B ¹¹ ,C ⁹	3
Capacity to provide quality services	2,6,9,7,2,5,8, 12, 13, 14,6	B ⁷ ,C ²	2
Active case finding and referral done by CHVs	6,9,6	B ² ,C	1
Referral /transfer and follow up strategy	7,13,14,6	B ³	1
Good NGO/MoH partnership	12,7	B ²	1
Close follow up of non-responding children by the CHVS			
Community +ve attitude towards health workers	5,6,7,9,10,14	B ⁴ ,C	2
Good communication between community and health facility	7 ² ,9,6	B ³ ,C	1
program IMAM is effective (children cured)	5,	B	3
Early program admission	15	E	3
Total weight			33

Table 9: SFP Barriers

SFP Barriers	Source	Method	Weight
Health workers absence	6,7 ²	B ³	-4
Inaccessibility of the service (health facility location, outreaches inconsistency and nomadic lifestyles)	13, 6, 10, 141 ³ , 2 ⁶ , 3 ² , 5 ² , 7 ¹ , 9 ⁴ , 8 ³ ,6 ²	C ⁸ ,B ²⁵	-3
Lack of active case findings due to dormant or no CHVs at the community units	1, 11,3, 10,14,5,8,7,2, 6 ³ ,2,3,1,7 ³ ,8 ⁴ ,9 ² ,	B ²³ ,C ⁶	-3
Negative cultural believes and stigmatization	10,11,13 ³ ,14,8, 12,3,6,7,9	B ¹¹ ,C ⁴	-2
Negative opinions of IMAM services and commodities	6 ⁴ ,11,5 ³ ,3 ² ,2 ² ,7 ⁵ ,13,1,8 ⁷	B ¹⁹ ,C ⁵	-2
Language barrier	1,2,5,6,7,8 ² ,12,9	B ⁸ ,C ¹	-1
Capacity to provide a quality service (from health staff) including documentation, inadequate training, poor coordination and unavailability of tools such as MUAC tapes	1, 6 ¹¹ , 7 ³ , 9, 10,12 ³ , 13 ² , 14 ³ ,15 ² , 8	B ²⁴ ,C ² ,D ²	-4
Negative opinion towards IMAM service	6,1,10	B,D	-4
Lack of defaulter tracing	6,7		-3
Defaulting	15	E	-3
Total			- 29

2.3 Prior Development

This was done through calculating an average of;

- Simple boosters and barriers
- Weighted boosters and barriers
- Histogram
- Concept maps

Histogram

The analysis of routine program data (quantitative), qualitative data and the findings of small area survey provided a numerical representation of a belief about the program coverage (prior). Program barriers and boosters were organized and weighted based on the number of sources. Qualitative data was categorized as booster (positives) or a barrier (negatives) to the program. The prior mode was determined as an average of boosters (build up from 0%) and barriers (knock downs from 100%) as shown in *figure 13*.

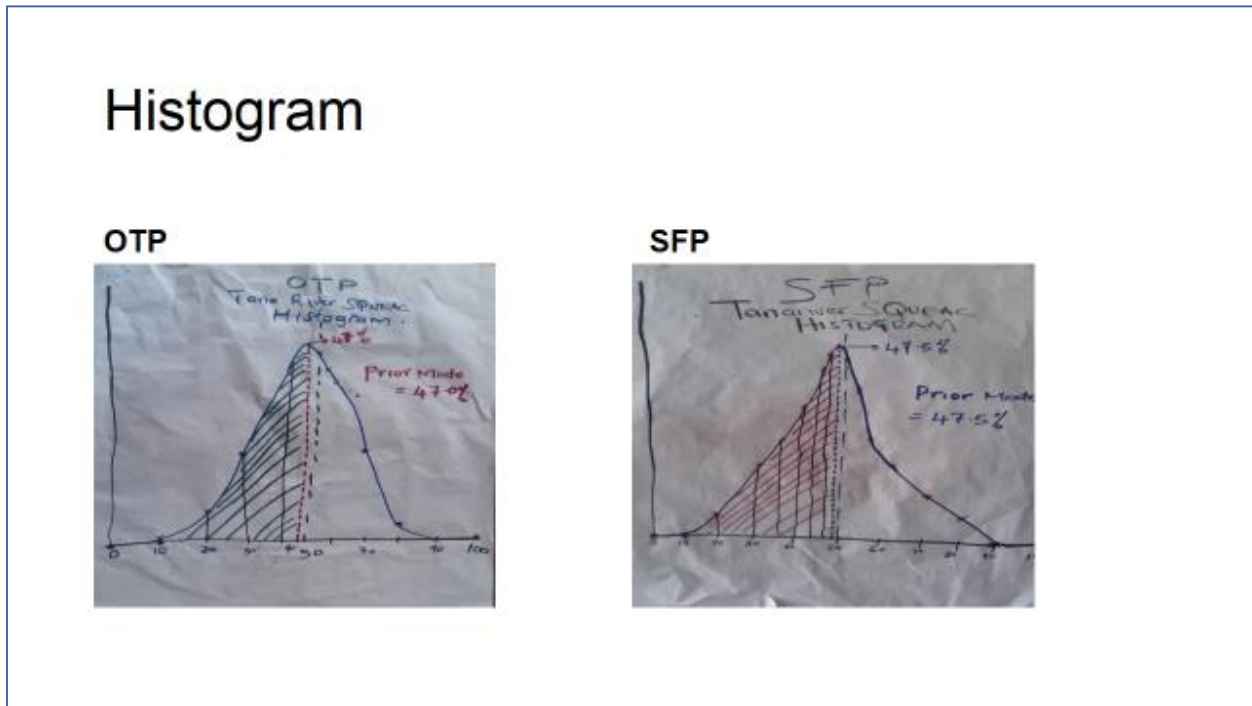


Figure 13: Estimated coverage (Histogram)

Prior Mode (OTP)

- Weighted boosters and barriers= $\{33+ 100- 31/2\} = (33+69)/2 = 102/2 = 51\%$
- Concept map: Positive links= 30; Negative linkages= 14
 $\{30+ 100- 14\}/2 = 30+ 86 = 116/2 = 58.0\%$
- Prior mode based on Histogram = 47.0%
- Average= $(51+ 58+ 47)/3 = 52.0\%$

Prior Mode (SFP)

- Weighted boosters and barriers= $\{33+ 100- 29/2\} = (33+71)/2 = 104/2 = 52$
- Concept map: Positive links= 23; Negative links= 22
 $\{23+ (100- 22)\}/2 = \{23+78\}/2 = 101/2 = 50.5$
- Prior Mode based on histogram = 47.5%
- Average= $(52.0+ 50.5+ 47.5)/3 = 50$

By weighing barriers and boosters, a prior mode of 51% (OTP) and 52% (SFP) was obtained. Prior Mode based on concept maps was 58% (OTP) and 50.5% (SFP) after weighing the positive and negatives links.

Bayes SQUEAC Coverage Estimate Calculator (version 2.02) was used by adjusting the prior α and the prior β until the mode was obtained with an uncertainty of ± 25 .

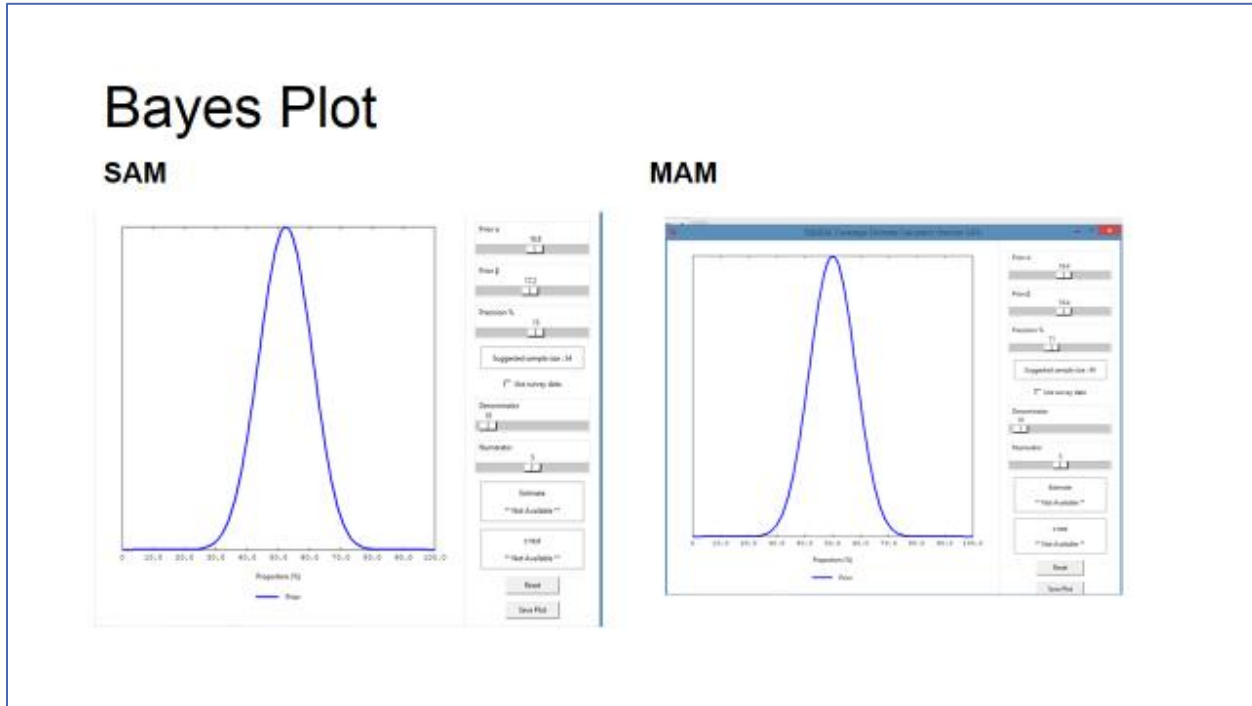


Figure 14: Bayes plot for SAM and MAM

2.4 Wide Area Survey

2.4.1 Sample Size Calculation

Sample size was calculated using the formula below

$$n = \left\{ \frac{\text{Mode}(1-\text{mode})}{\left(\frac{\text{Precision}}{1.96}\right)^2} - (\alpha + \beta - 2) \right\}$$

Where

- n= the sample size for the children
- Mode= 52.0
- Precision= 11%
- α = 18.8
- β = 17.2

$$n = \left\{ \frac{0.52(1-0.52)}{\left(\frac{11}{1.96}\right)^2} - (18.8 + 17.2 - 2) \right\}$$

$$n = 34$$

Calculation of villages Sample

- $n \text{ villages} = \frac{n}{[\text{Average village population} * (\% \text{ children } 6-59\text{m}) * \% \text{ SAM Prevalence}]}$

- Where

n= 34

Average village population= 584

% children 6- 59m = 20.6

% SAM Prevalence by MUAC = 0.6%

- $n \text{ villages} = \frac{34}{[584 * (0.2) * 0.006]}$

n = 48 villages

Systematic Sampling was done to sample 48 villages

Wide Area Survey Sample Size (MAM)

$$n = \left\{ \frac{\text{Mode} (1 - \text{mode})}{\left(\frac{\text{Precision}}{1.96}\right)^2} - (\alpha + \beta - 2) \right\}$$

Where

- n= the sample size for the children
- Mode= 50.0
- Precision= 11%
- α = 19.4
- β = 19.4

$$n = \left\{ \frac{0.52 (1 - 0.52)}{\left(\frac{11}{1.96}\right)^2} - (19.4 + 19.4 - 2) \right\}$$

n= 47 MAM cases

Calculation of villages Sample (MAM)

- $n \text{ villages} = \frac{n}{[\text{Average village population} * (\% \text{ children } 6-59\text{m}) * \% \text{ SAM Prevalence}]}$

- Where

n= 47

Average village population= 584

% children 6- 59m = 20.6

% SAM Prevalence by MUAC = 4%

- $n \text{ villages} = \frac{47}{[584 * (0.2) * 0.04]}$

n = 10 villages

2.4.2 Data Collection: Wide area Survey

Wide area survey was carried out in 48 villages for 4 days. Active case finding was used to search for SAM and MAM cases in the sampled villages Those children who qualified (MUAC < 11.4 cm for SAM and 11.5 to < 12.5 cm) and were not in program were referred to the nearest OTP or SFP sites.

Two stage sampling was used during stage 3 (Likelihood survey);

- **Stage 1** involved selection of villages based on health facility catchment. Since a recent village list (based on health facilities catchment) was available, *spatially stratified systematic sampling method* (As recommended by SQUEAC guidelines) was used at this stage.

- In *stage 2*, active case finding (SAM and MAM cases were actively searched in all the households in sampled villages) was used for sampling.

Six teams each with 2 members were for data collection which took 4 days. Thirty one children had a MUAC reading (MUAC < 11.4cm). *Table 10* shows a summary of SAM and MAM data collected during the Wide Area Survey.

Table 10: Summary of Likelihood survey results

	SAM	MAM
Cases in Program (Cin)	6	14
Cases not in program (Cout)	15	32
Recovering Cases in Program (Rin)	5	19
Recovering cases not in program (Rout)	0	0
Total	26	65

Single Coverage Estimate

Single coverage estimator was used to estimate the program coverage. Single coverage estimator includes both recovering cases that are admitted and those that are not in the program as illustrated below.

$$\text{Single Coverage} = \frac{Cin + Rin}{Ci + Ri + Cout + Rin + Rout}$$

Where

Cin = Active cases in Program

Rin= Recovering cases in program

Cout= Active cases not in program

Rout= Recovering cases not in program

Sum of Active and recovering cases in program was used as the numerator i.e. 11 for SAM and 33 for MAM while Active and recovering cases in and out of program i.e. 26 for SAM and 65 for MAM was used as a denominator. This information was fed in a Bayes Coverage Estimator Calculator. Combining prior estimate and likelihood information in the calculator generated a posterior which showed the overall coverage for OTP in Tana River County as **48.0% (36.0- 60.1)** and **50.5% (40.6- 60.1)** as illustrated in *figures 15* and *16*.

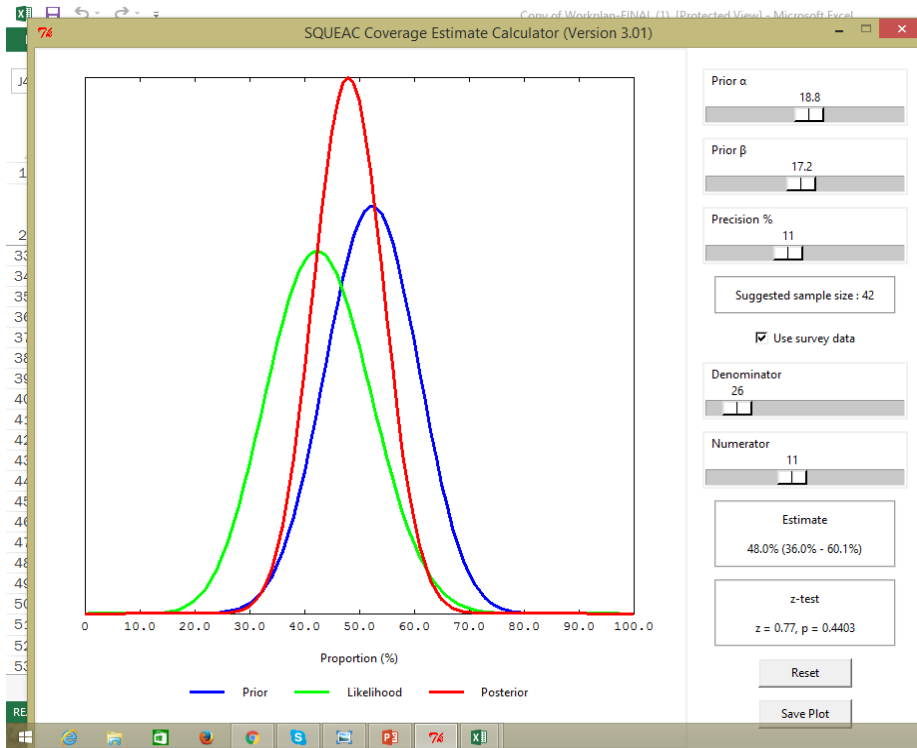


Figure 15: OTP Program Coverage Estimate

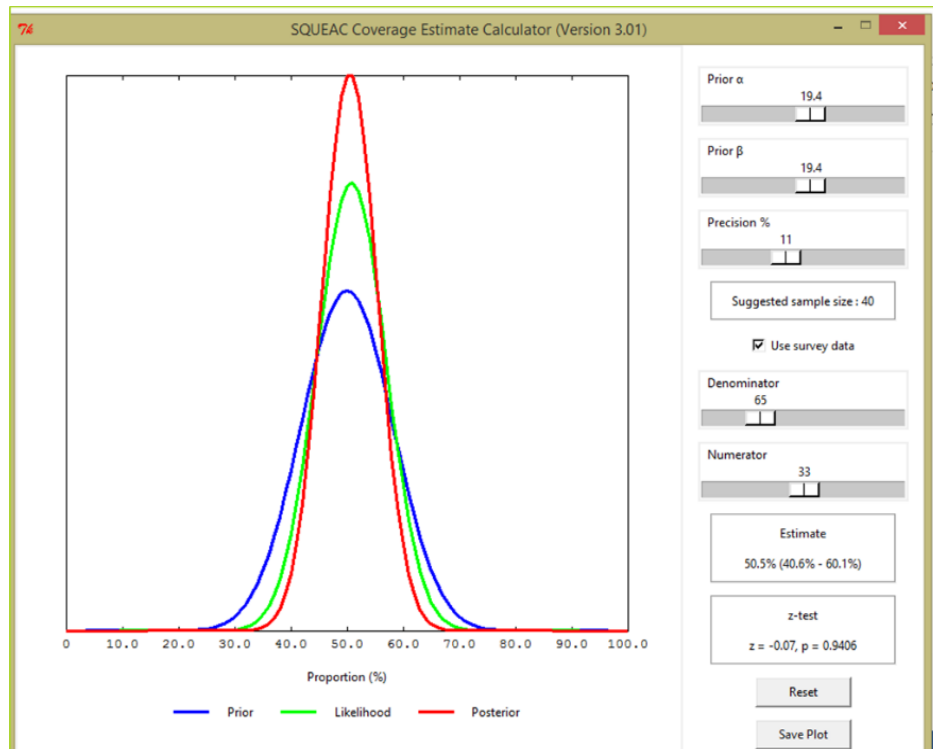


Figure 16: SFP Program Coverage Estimate

3.0 Discussion and Recommendations

3.1 Discussions

The assessment showed that overall OTP coverage estimate is **48.0%** (36.0% - 60.1%) and SFP coverage estimate is **50.5%** (40.6% - 60.1%). SFP coverage estimate is within the 50% SPHERE standard for coverage in rural set ups however, OTP coverage estimate is slightly below.

Good health seeking behaviour (*health facility first priority to visit in cases of sick children*), availability and continuity of IMAM services and nutrition supplies at the health facilities and availability of integrated outreach services especially in hard to reach areas was identified to improve coverage. Capacity to provide quality services by health care providers (Health workers/CHVs). In addition, community members being able to identify signs and symptoms of Malnutrition and having positive opinion about IMAM program also contributes to high coverage. Community positive attitude towards health workers are aware of the importance of IMAM services.

However, health workers absence (*Absenteeism & nurses' strike*) was noted as a major barrier that led to the program being handled by CHWs together with inaccessibility of the service (*health facility location, outreach service inconsistency and nomadic lifestyles*) due to the vastness of the county. Lack of active case finding and defaulter tracing due to dormant or no community Units, poor health seeking behaviors (*children taken to local herbalist other than the health facility*) coupled with negative opinions and cultural beliefs and stigmatization (*pregnant mothers with malnourished child, malnutrition caused by infidelity by husband*) affect IMAM Coverage negatively.

Therefore, there is need for routine spot checks and supervision need to be done by health managers (*SCHMT/CHMT*) to health facilities and address staff absenteeism. Map out county health work force (nurses and nutritionist available) and advocate for county government for employ more staff (*at least 2 health workers in every health facility*). There is also need for the County government and Health managers to work out on ways to retention staff. Train CHEWs & CHVs on nutrition module and MUAC taking then Supply MUAC tapes to all CHVs within the CUs for HH case finding. Strengthen and establish more community units in order for CHWs to reach out to many community members

Distance coupled with few, inconsistent and un-integrated outreaches in the county are also a big barrier to the OTP program. From the small area survey, it was established that communities living in villages far away from an OTP site are less aware of the program. Nonattendance according to wide area survey is as a result of lack of program awareness as well as long distances.

3.2 Key Recommendations

#	BARRIER	RECOMMEDATION
1	Health workers absence (Absenteeism & nurses strike)	<ul style="list-style-type: none">• Routine spot checks and supervision need to be done by health managers (SCHMT/CHMT) to health facilities and address staff absenteeism• Map out county health work force (nurses and nutritionist available) and advocate for county government for employ more staff (at least 2 health workers in every health facility). County government and Health managers to work out on ways to retention staff.

2	Inaccessibility of the service (health facility location, outreach service inconsistency and nomadic lifestyles)	<ul style="list-style-type: none"> • Consistent integrated medical outreaches • Open closed facilities and equip new facilities in the county • County government to employ more staff for use within new facilities. • Logistical and financial support need to be provided
3	Lack of active case finding due to dormant or no community Units	<ul style="list-style-type: none"> • Train CHEWs & CHVs on nutrition module and MUAC taking then Supply MUAC tapes to all CHVs within the CUs for HH case finding • Strengthen and establish more community units in order for CHWs to reach out to many community members • County government to invent in integrated medical outreaches especially in hard to reach areas. • Involve lead mothers from MTMSGs in community nutrition screening and referral. • County to factor CHWs incentives/payments within the health budget.
4	Poor health seeking behaviors (children taken to local herbalist other than the health facility)	<ul style="list-style-type: none"> • Health educate the community on good health seeking behaviors through existing community structures (Chief's baraza's, community dialogues) • Involve religious leaders (IMAMs/Pastors) to educate the community on good health seeking behaviors
5	Negative opinions & cultural beliefs and stigmatization (pregnant mothers with malnourished child, malnutrition caused by infidelity by husband)	<ul style="list-style-type: none"> • Health educate the community on malnutrition through existing community structures (Chief's baraza's, community dialogues) • Involve religious leaders (IMAMs/Pastors) to educate the community on malnutrition • There is need to make community and community leaders aware of what malnutrition is all about
6	Lack of Defaulter tracing and defaulting by clients	<ul style="list-style-type: none"> ▪ Thorough health education on malnutrition need to be given to the caregivers/mothers ▪ There is a need to strengthen defaulter tracing mechanism within all the facilities ▪ Regular home visits need to be done by the CHWs ▪ Inter facility linkages need to be enhanced to curb defaulting that results from nomadism
7	Poor Documentation Challenge	<ul style="list-style-type: none"> ▪ More OJTs, mentorship and supervision need to be done to all facilities implementing IMAM. ▪ Utilize facility in charges meetings for data review ▪ Routine data quality audits
8	Low program awareness	<ul style="list-style-type: none"> ▪ Thorough sensitization needs to be done to the communities ▪ Use of media (radio messages) to explain the project and its goals. ▪ Educate the public on the adverse effects of malnutrition.
9	OTP program mainly handled by CHWs	<ul style="list-style-type: none"> ▪ There is need to enhance program ownership ▪ There is need to inform the health administrators in the county to include nutrition as one of the counties health agenda ▪ Need to employ more nutritionists in the county
10	Negative attitudes by Health Workers	<ul style="list-style-type: none"> ▪ There is need to integrate all nutrition activities to other health services

4.0 ANNEXES

Annex I: Coverage Assessment Team

Name	Organization	Position
Flora Abio	Tana River County Government	Sub County Nutrition Officer (Galore)
Caroline Muriithi	Tana River County Government	Nursing Officer
Ziporah Musyoki	Tana River County Government	Nutrition Officer
Naomi Mwangeli	Tana River County Government	Nursing Officer
Mwasada Maro	Tana River County Government	Sub County Nursing Officer(Bura)
Pauline Kamotho	Tana River County Government	Nutrition Officer
Abdirahaman Abdullahi	Tana River County Government	Nutrition Officer
Ann Mutheu	Tana River County Government	Nursing Officer
Kahidi Tuva	Tana River County Government	Sub County Nutrition Officer (Garsen)
Said Billy	Tana River County Government	Sub County Nursing Officer (Galore)
Joyce Kombe	Tana River County Government	Nursing Officer
Ann Zawadi	Tana River County Government	Nutrition Officer
Coordination		
Makopa Omari	Tana River County Government	County Nutrition Coordinator
Odha Dae	Tana River County Government	County Community Health Strategy Coordinator
Onesmus Randu Yeri	Tana River County Government	County Nursing Officer
Nicholas Musembi	UNICEF	Nutrition Support Officer
Mark Murage	NITWG	Technical Support

Annex II: Coverage Assessment Timelines

SQUEAC Assessment Timelines		
Activity	No of days	Timelines
Training	1	5th December 2017
Quantitative Data collection	4	6th to 9th Dec. 2017
Qualitative data	5	10th to 14th Dec.2017
Hypothesis testing	2	15th & 16th Dec. 2017
Wide area Survey	6	17th to 22nd Dec. 2017
Total	18	

Annex III: Sampled Villages

Sub county	CATCHMENT VILLAGES	POPULATION
Bura Sub county	VILLAGE 8 & 9	570
	VILLAGE 7	237

	SABUKIYE	564
	YEDHI	139
	BURA DAM	372
	ON-LON WATDUTT	161
	JAJAVO CHINI	424
	MATAGALA	485
	TAWFIQ /V 13	1314
	ADELLE	255
	CARLFONIA 'B'	245
	LAGBADABA 'B'	401
	MALKAMANSA	173
	BULTO BANTA WELLS	457
	LEHALE	400
	KOTOLE 'B'	305
	USHAD/MEYE	248
TESO	226	
Galole Sub County	MATANYA	375
	LIBERIA 'B'	202
	BUBUBU	296
	MALBATI	269
	MIKINDUNI A/MUTILE	683
	KELOKELO	242
	MAKERE	386
	FANJUA	764
	MAKUTANO	258
	KOMOLI/GOLECHA CHAR	296
Garsen Sub County	NGAO MAIN	1020
	DALU ORMA	110
	FURAHA	175
	MADELTE	310
	NDURUPOKOMO	800
	BURAMOYO	200
	MATANGENI	547
	CHAMWANAMUMA	236
	MILIMANI	459
	MWANJA	282
	MAHOMBE	222
	MAWENI A	174
	JUAKALI	600

BILISA B	250
MINJILA CENTRE A	250
LAZIMA B	89
ABAGANDA	60
KIBAONI	750
IDI	250
MAVULI	55

Annex IV: Assessment Tools



EN Qualitative
Questions.doc