SQUEAC COVERAGE SURVEY FINAL REPORT

BELEDWEYNE DISTRICT

December 2019
ACKNOWLEDGEMENT

The Consultant would like to thank SCI staff in both Mataban and Beledweyne and the entire SQUEAC team who made this assessment possible. All of your hard work and dedication made for a productive SQUEAC assessment.

My profound gratitude goes to all care givers and other informants for setting aside some time for interviews and allowing assessment teams to access their daily lives. Lastly, the consultant is indebted to AIMWG/nutrition cluster for finding the time to review the protocol and validate the final report.
# Table of Contents

1.0 **INTRODUCTION** ...................................................................................................................... 6

1.1 **PURPOSE OF THE SURVEY** ................................................................................................. 6
1.2 **SPECIFIC OBJECTIVES** ......................................................................................................... 6

2.0 **METHODOLOGY: THE SQUEAC APPROACH** ......................................................................... 7

2.1 **DURATION OF THE SURVEY** ............................................................................................... 7

3.0 **THE SQUEAC INVESTIGATION** ............................................................................................. 8

3.1 **ROUTINE DATA ANALYSIS** ................................................................................................. 8
3.1.1 **ADMISSIONS OVER TIME OTP** .................................................................................... 8
3.1.2 **ADMISSIONS PER OTP SITE** ....................................................................................... 9
3.1.3 **PROGRAM INDICATORS OTP** ..................................................................................... 9
3.1.4 **MUAC AT ADMISSION OTP** ....................................................................................... 10
3.1.5 **MUAC AT ADMISSION TSFP** ....................................................................................... 10
3.1.6 **MUAC AT DISCHARGED CURED OTP** ........................................................................ 11

3.2 **QUALITATIVE DATA ANALYSIS** ......................................................................................... 12
3.2.1 **SAMPLING** ................................................................................................................... 12
3.2.2 **METHODOLOGY** ............................................................................................................. 12

3.3 **BARRIERS, BOOSTERS AND QUESTIONS** .......................................................................... 13
3.3.1 **BARRIERS** ..................................................................................................................... 13
3.3.2 **BOOSTERS** .................................................................................................................... 14
3.3.3 **MIND MAPPING** ............................................................................................................. 16

3.4 **STAGE TWO: HYPOTHESIS TESTING** ............................................................................... 17
3.4.1 **HYPOTHESIS** ............................................................................................................... 17
3.4.2 **SMALL AREA SURVEY** .................................................................................................. 17
3.4.3 **CASE FINDING** .............................................................................................................. 17
3.4.4 **FINDINGS FROM THE SMALL AREA SURVEY** ............................................................. 18
3.4.5 **HYPOTHESIS ON PROGRAM COVERAGE** ..................................................................... 18

3.5 **STAGE 3: WIDE AREA SURVEY** ....................................................................................... 20
3.5.1 **BUILDING THE PRIOR** .................................................................................................. 20
3.5.2 **LIKELIHOOD SURVEY** .................................................................................................. 25
3.5.3 **FINDINGS OF THE WIDE AREA SURVEY AND COVERAGE ESTIMATION** ................ 26
3.5.4 **SINGLE COVERAGE ESTIMATE FOR OTP PROGRAM** ................................................. 26
3.5.5 **SINGLE COVERAGE ESTIMATE FOR TSFP PROGRAM** ............................................... 27

4.0 **DISCUSSION** ......................................................................................................................... 28

5.0 **RECOMMENDATIONS AND ACTION PLAN** ....................................................................... 29
List of figures
Figure 1: Admission over time ................................................................. 8
Figure 2: Total admissions per site ......................................................... 9
Figure 3: Program performance indicators .............................................. 9
Figure 4: MUAC at admission OTP .......................................................... 10
Figure 5: MUAC at admission TSFP ....................................................... 11
Figure 6: MUAC at discharge OTP ........................................................... 11
Figure 7: Length of Stay for OTP program ............................................. 12
Figure 8: Conjugate analysis showing the relationship between the prior, likelihood and posterior .... 20
Figure 9: Prior representation OTP ......................................................... 24
Figure 10: Prior representation TSFP ....................................................... 25
Figure 11: Single coverage estimate OTP program .................................. 27
Figure 12: Single coverage estimate TSFP program ................................. 27

Table 1: Seasonal calendar trends ............................................................ 8
Table 2: List of Source, Methods and number of interviews conducted during qualitative assessment .... 13
Table 3: Small Area Survey results in Early Health seeking behavior Villages ........................................ 18
Table 4: Small Area Survey results in Late Health seeking behavior Villages ........................................ 18
Table 5: Parameters on number of required villages in the Likelihood Survey for OTP ......................... 25
Table 6: Likelihood Survey Results for SAM cases .................................... 26
EXECUTIVE SUMMARY

Over the past seven years, Save the Children International (SCI) has been in operating in Beledweyne district implementing lifesaving interventions that include treatment of malnourished children. SMART surveys conducted in Beledweyne in June 2019 indicated high rates of malnutrition; a GAM rate of 18.8% and proxy coverage indicator estimated low coverage of the program. To ascertain the actual coverage, the SMART survey recommended a standard coverage investigation.

Semi-Quantitative Evaluation of Access & Coverage (SQUEAC) methodology was employed during the investigations. SQUEAC methodology uses three stages to establish coverage of programmes. SQUEAC objective included; assessing point and/or period coverage, Identification of factors (boosters and barriers) affecting the access to the CMAM programme, developing of specific recommendations to improve acceptance and coverage of the programme. The exercise also resulted in increased capacity of programme staff in undertaking coverage assessments.

Results
The single coverage for the OTP program in Beledweyne district was found to be 64.3% with credible interval of 52.7%-74.4%). The coverage estimation is well above the recommended minimum sphere standard of 50% for rural population.

Barriers and Boosters

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care givers/mothers competing priorities.</td>
<td>Beneficiary mothers mentioned that sometimes the caregiver falls sick, others mentioned that they don’t get someone to look after the other children</td>
</tr>
<tr>
<td>Long waiting hours at the OTP site.</td>
<td>Few mothers reported that they spend a substantial amount of time waiting to be served. Further inquiry to the OTP outreach team revealed a standard protocol where beneficiary ration cards are collected from each caregiver upon arriving at the facility and that waiting time usually depends on one’s arrival time.</td>
</tr>
<tr>
<td>Limited program awareness especially in distant villages</td>
<td>Community members indicated to not being aware of whether their children are malnourished.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boosters</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good understanding of the CMAM programme. MUAC uses</td>
<td>The community in Beledweyne district is generally aware of the CMAM programme. Interviews with community lay men and women, IMAMs, Local leaders indicated that they understand how the programme admission with specific reference to the red and yellow colors of the MUAC tape</td>
</tr>
</tbody>
</table>
No stigma associated with malnutrition

Interviews from the qualitative assessment indicated that the community understands malnutrition as disease just like any other and that there don’t discriminate against malnourished children.

Early treatment seeking behavior of beneficiaries as indicated by the number of early admissions

Data from the OTP registers show that most admissions are by self-referrals. This information is further corroborated by qualitative interviews to the effect that beneficiaries’ first point of seeking help for their sick children is the nearest OTP site.

Active and dedicated CNVS.

CNVs recognized for their roles in the community. Some even mentioned by name by the beneficiaries as well as the community members when asked who regularly screens children in their village.

Conclusions

The SQUEAC investigation in Beledweyne revealed that coverage was satisfactory and in fact exceeded SPHERE standards for coverage in rural areas (i.e. 50%). This highlights the progress made by the program since then and is a welcome move in a district with consistently high GAM rates year in year out.

Key Recommendation

<table>
<thead>
<tr>
<th>Finding/Area of focus</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock outs and gaps were a defining feature particularly in the TSFP program</td>
<td>Ensure that stock requirements are adequately forecasted in order to avoid stock outs</td>
</tr>
</tbody>
</table>
| There is an apparent record keeping problem of nutrition data. Key registers such as OTP/TSFP registers are not updated as required | Conduct refresher training for nutrition staff at District level  
Ensure all future SQUEAC is done by the nutrition team and not external enumerators |
1.0 INTRODUCTION

Beledweyne District is among the four districts in Hiiran region and is comprised of three distinct livelihood zones; riverine, agro-pastoral and pastoral zones. Over the years, the district has become synonymous with both floods and prolonged drought reversing crucial gains made in improving the food security and nutrition situation in the area. For instance, over the past five years, the district has recorded critical GAM rates.

SCI has been operating in Beledweyne over the last seven years implementing crucial services in the areas of nutrition, FSL, WASH among others. However, the region and the district in particular has consistently reported high GAM rates which exceed WHO’s emergency threshold. For instance, in Beledweyne, the GAM rate has been 20.8% with a SAM rate of 4.2%. this represents critical levels of malnutrition.. As at the time of this assessment, there were nutrition programs that were and are still ongoing. they include BRiCs, SHF and MI which this assessment sought to evaluate as a standard practice.

1.1 Purpose of the survey

The overall goal is to carry out SQUEAC Survey of Save the Children Nutrition programs in Beledweyne and Beledweyne districts to help understand the community dynamics that influence access to care and the coverage of CMAM programme, identify any existing overlap, barriers and extent of changes in programme coverage.

1.2 Specific objectives

- To assess single, point and/or period coverage of SAM & MAM treatment in Beledweyne and Beledweyne districts
- To identify factors affecting uptake of the CMAM services in area of operation (barriers and booster)
- To develop competencies and skills of technical staffs in SQUEAC methodology
- To develop specific recommendations to improve access and coverage of the program
2.0 METHODOLOGY: THE SQUEAC APPROACH

SQUEAC allows for the regular monitoring of programs at low cost, helps identify areas of high or low coverage and provides explanations for such situations. All of this information allows the planning for specific and concrete actions in order to improve the coverage of programme.

The investigation process included the following three main stages;

**Stage 1:** Analysis of quantitative data (routine programme monitoring data compared with sphere standards) and qualitative data. This stage also includes the identification of programme boosters and Barriers.

**Stage 2:** Confirmation of areas of high and low coverage and other hypotheses relating to Coverage identified in stage 1 using small studies, small surveys and small area surveys. Reasons for coverage failure were documented to further bolster the barriers and boosters to program access and uptake identified in stage 1. These barriers and booster

**Stage 3:** Bayesian techniques were used to estimate overall program coverage with a wide area survey using a sample size generated by Bayes SQUEAC software.

Participants
The survey team comprised of 10 enumerators of which two were drawn from the three Health centers operating in Beledweyne district

2.1 Duration of the Survey

The assessment took place over the course of two weeks from 16th November- 1st December 2019.
3.0 THE SQUEAC INVESTIGATION

3.1 Routine Data Analysis

3.1.1 Admissions over time OTP

This stage involved quantitative data analysis for OTP beneficiaries in the program. Data was collected from standard monthly reporting tools in Excel as well as the OTP register. The data analyzed covered the period between January 2019-Oct 2019.

![Admissions over time](image)

**Figure 1: Admission over time**

**Table 1: Seasonal calendar trends**

<table>
<thead>
<tr>
<th>Seasons</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jilaal</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Gu’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xagaa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deyr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Local diseases:

- Malnutrition: ++ ++ ++ + + + ++ ++ ++ +
- AWD: + + + ++ ++ ++ + + + +
- ARI: + + + ++ ++ ++ + + + ++

Food security:

- Limited pasture
- Plenty of pasture & milk

The figure above shows the number of admissions over time for the period November January-October 2019. A total of 2323 OTP admissions were recorded during this period. During the formative months, the program records considerable low number of admissions but as they gradually increase and peak during the xagaa season. This period coincides with a time when a SMART Survey assessment was undertaken in the district with a record GAM level of 18.8%. However, admissions slowly decline as the rainy season begins.
3.1.2 Admissions Per OTP Site

Admissions were further analyzed per OTP site to identify potential differences in admissions. Xawotaako recorded the highest number of admissions during the investigation period Siigalow. This is due to the fact that these two sites are located in Beledweyne town where the population is substantially higher as compared with the rural areas. Xawotaako serves four big villages namely; Xawotaako, Bundaweyn, Koshin and a section of Hilaac in Howlwadag. Xawotaako OTP site also serves two IDP Camps; Bulo Yaquub and Bilisdiid. Whereas Sigalow OTP site is located in Howlwadag, beneficiaries only come from a specific sub village owing due to the prevailing security tension between two clans that inhabit Howlwadag village. On the other hand, Takarale, Bacaad and Bacadbuke recorded the lowest number of admissions.

3.1.3 Program Indicators OTP
Program performance indicators such as cure rate, defaulter rate are critical when evaluating the coverage of nutrition programs. Higher cure rates as well as lower default and deaths rates indicate that the overall program performance is satisfactory and meets the SPHERE standards. From the graph above, the exit indicators for default, death and non-response are zero cases from January to October giving the program a 100% cure rate. In part, this could be that the program is doing well and has good retention with relatively successful default tracing capabilities. However, defaulters are an indication of the failures of a CMAM program and are usually a common occurrence. The zero cases of default in particular, is questionable given that the program had experienced a supply gap in the months of March and April. Moreover, this is highly unlikely for a mobile nutrition program in a pastoral set up. Zero cases for all these key indicators highlight a program with challenges in accurate reporting of cases with basically no structures for verification as well as minimal supervision of outreach nutrition staff.

3.1.4 MUAC at admission OTP

![MUAC at admission OTP](image)

As shown in the figure 4 above, median MUAC at admission was found to be at 11.1. It also shows that majority of the SAM cases were admitted in the early stages of the SAM period between(110-114mm). This is an indicator of a programme that has a good and early health seeking behavior or a strong case finding and recruitment by the CNVs. This is followed by a steady decrease in admissions by lower MUACs although a number of late admission cases of below 90mm were recorded.

3.1.5 MUAC AT ADMISSION TSFP

The admission by MUAC for TSFP program follows the trends of that the OTP program. The program appears to have early recruitment of cases given that the median MUAC at admission for TSFP was found to be 12.2cm. However, cases appear to be admitted beyond the 12.5 cut-off but this could be due to admission by WH z-score criteria.
The median MUAC at discharge for OTP was at 12.1cm which indicates poor adherence to discharge criteria.
Figure 7: Length of Stay for OTP program

The length of stay in the OTP before discharge for cured SAM cases is an indicator that reports on the duration of the treatment episode (i.e. the time between admission and discharge). A programme that has poor recruitment strategies—where SAM cases are admitted late—usually leads to longer length of stays greater than 8 weeks. For this programme, analysis of the OTP cards has revealed the median length of stay to be at 5 weeks which complies with the international SPHERE standards of less than 8 weeks as the prescribed mean length of stay for cases in OTP programme. Less than 2.5% of all cases were discharged at 9 and 11 weeks therefore, the overall length of stay for cured cases for the programme is commendable.

3.2 Qualitative data analysis

Qualitative assessment was conducted for a period of three days in order to complement data already obtained from quantitative routine data. Qualitative data collection was carried out according to the “qualitative sampling matrix” developed in collaboration with key members of the assessment team. Proper sampling was done to ensure the representativeness of all zones as well as the unbiased participation of all key informants.

3.2.1 Sampling

The first step during this process was identifying the program stakeholders that would take part in the qualitative assessment. The stakeholders identified included beneficiary caregivers, village leaders, religious leaders, traditional healers, men and women from the community, nutrition team, traditional birth attendants as well as community nutrition volunteers.

To ensure representatives, all the five Nutrition sites were selected. Further, catchment villages under the 5 main OTP sites were also selected based on their relative distance to Nutrition sites. For instance, both near and far locations were selected.

3.2.2 Methodology
A full-day training on qualitative data collection was done for the 10-member survey team. The teams were paired into two and trained on how to conduct key informant interviews as well as focus group discussions using coverage monitoring interview guides. The survey manager closely supervised the teams during the entire two days of data collection.

Table 2: List of Source, Methods and number of interviews conducted during qualitative assessment

<table>
<thead>
<tr>
<th>Source</th>
<th>Total number of interviews</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SSI/KII</td>
</tr>
<tr>
<td>Beneficiaries</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Local leaders</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Community laymen/women</td>
<td>38</td>
<td>36</td>
</tr>
<tr>
<td>TBAs</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>IMAMs</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>CNVs</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Nutrition staff</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

3.3 BARRIERS,BOOSTERS AND QUESTIONS

Findings from the programme monitoring complemented by the qualitative assessment were summarized and categorized into boosters and barriers as shown in the table below.

3.3.1 Barriers

<table>
<thead>
<tr>
<th>No</th>
<th>Barriers</th>
<th>Description</th>
<th>Source</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Care givers/mothers competing priorities.</td>
<td>Beneficiary mothers mentioned that sometimes the caregiver falls sick, others mentioned that they don’t get someone to look after the other children.</td>
<td>Beneficiaries</td>
<td>KII and FGD</td>
</tr>
<tr>
<td>2</td>
<td>Long waiting hours at the OTP site.</td>
<td>Few mothers reported that they spend a substantial amount of time waiting to be served. Further inquiry to the OTP outreach team revealed a standard protocol where beneficiary ration cards are collected from each caregiver upon arriving at the facility and that waiting time usually depends on one’s arrival time.</td>
<td>Beneficiaries</td>
<td>KII</td>
</tr>
<tr>
<td>3</td>
<td>Limited program awareness especially in distant villages</td>
<td>Community members indicated to not being aware of whether their children are malnourished.</td>
<td>Community laywomen, TBAs</td>
<td>SSI and KII</td>
</tr>
<tr>
<td>4</td>
<td>Beliefs/Perceptions about RUTF</td>
<td>Some community members indicated that they are not convinced that RUTFs can help treat a malnourished child.</td>
<td>Community men and women, local leaders</td>
<td>SSI and KII</td>
</tr>
</tbody>
</table>
5 Absence complementary primary health care

While some sites have integrated health and nutrition services aided by Brics, majority of the MI sites run stand-alone OTP and TSFP services only.

Beneficiaries, community laymen/women, local leaders

SSI, KII and FGD

6 Refusal to bring children to OTP site owing to weird religious beliefs(Takfir).

Some believers of a religious sect in Siigalow and Bula Yacqub catchment area strictly forbid/refuse malnourished children to be admitted in an OTP site.

Community members, CNVs, local leaders

SSI, KII

7 Floods

A substantial number of mobile sites are along the Shabelle river and at times the river floods and the access by beneficiaries is hampered. This happens once in a while though

Beneficiaries, CNVs

KII, FGD

8 RUTF supply gap in the month of

The TSFP program was affected by consistent RUTF stock-outs

OTP staff, CNVs and beneficiaries

KII, FGD

9 Poor remuneration of CNVs and disgruntled nutrition staff

lack of transport, little incentives, no access to airtime allowance has significantly hampered the ability of enumerators to recruit cases. Nutrition staff also claimed remuneration under their previous arrangement was better as compared to current situation.

CNVs, OTP staff

KII, FGD

### 3.3.2 Boosters

<table>
<thead>
<tr>
<th>No.</th>
<th>BOOSTERS</th>
<th>Description</th>
<th>Method</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Good understanding of the CMAM programme. MUAC uses</td>
<td>The community in Beledweyne district is generally aware of the CMAM programme. Interviews with community laymen and women, IMAMs, Local leaders indicated that they understand how the programme admission with specific reference to the red and yellow colors of the MUAC tape</td>
<td>Community laymen/women, TBAs, Imams, traditional healers</td>
<td>SSI, KII, FGD</td>
</tr>
<tr>
<td>2</td>
<td>No stigma associated with malnutrition</td>
<td>Interviews from the qualitative assessment indicated that the community understands malnutrition as disease just like any other and that there don’t discriminate against malnourished children.</td>
<td>Community laymen/women, Beneficiaries, local leaders</td>
<td>KII, FGD</td>
</tr>
<tr>
<td>3</td>
<td>Early treatment seeking behavior of beneficiaries as indicated by the number of early admissions</td>
<td>Data from the OTP registers show that most admissions are by self-referrals. This information is further corroborated by qualitative interviews to the effect that beneficiaries’ first point of seeking help for their sick children is the nearest OTP site.</td>
<td>Beneficiaries</td>
<td>KII, FGD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Active and dedicated CNVs.</td>
<td>CNVs recognized for their roles in the community. Some even mentioned by name by the beneficiaries as well as the community members when asked who regularly screens children in their village</td>
<td>CNVs, OTP staff, beneficiaries, community laymen/women, KII, SSI and FGD</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Local leaders such as village aware and instrumental in SCI CMAM Programme.</td>
<td>Local village leaders very receptive as well as participative in the CMAM programme. Sometimes taking part in sensitizing members of the community about CMAM</td>
<td>Local leaders, OTP staff, KII</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Peer to peer as beneficiary influence to others on the benefits of CMAM</td>
<td>Caregivers have indicated that they share information when they find the sickly children of their neighbours and help them come to the OTP site.</td>
<td>Beneficiaries, OTP staff, KII and FGD</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Beneficiary speaking highly about the programme after their malnourished children are successfully cured</td>
<td>Beneficiaries praised the CMAM programme's ability to treat their malnourished children.</td>
<td>Beneficiaries, KII and FGD</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Conducive environment at the OTP site.</td>
<td>Presence of waiting area as well as access to clean drinking water at the site for the beneficiaries</td>
<td>Observation by consultant, OTP staff, KII</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Dedicated mobile nutrition staff</td>
<td>The 8 mobile team members have been found to be very dedicated and responsive to the beneficiaries' changing situations. Providing reliable and prompt information in advance to beneficiaries as and when the need arose</td>
<td>Beneficiaries, community leaders, KII and FGD</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Cordial relationship between outreach staff and the CNVs</td>
<td>Regular communication between the Outreach team and the CNVs found to be key in the effectiveness of the programme. The mobile nutrition team with their 30 USD airtime incentive communicate any changes in activity plans when need be.</td>
<td>CNVs, OTP staff, KII</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Complementary Nutrition projects and services such as IYCF program teaching mothers/caregivers of malnourished how to prepare locally available nutritious foods</td>
<td>Beneficiaries, community lay women, SSI, KII and FGD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Strong linkage between OTP/SFP to minimize relapse</td>
<td>SCI also TSFP programme where OTP children are transferred in order for them to gain more weight. This ultimately reduces the number of relapse cases</td>
<td>OTP staff, beneficiaries, KII, FGD</td>
<td></td>
</tr>
</tbody>
</table>
3.3.3 Mind Mapping
This is a summarized graphical illustration of the SQUEAC coverage findings. It particularly indicates the positive factors (Boosters) as well as the negative factors affecting coverage access and uptake in Beledweyne District.
3.4 STAGE TWO: HYPOTHESIS TESTING

Based on the analysis made from the routine data as well as the qualitative information collected in stage 1, areas where coverage was either high or low were identified. Equally, the data also highlighted key barriers to service access and uptake. This data was used to formulate hypothesis, which was then tested during the small area survey.

3.4.1 Hypothesis

From the routine data as well as other anecdotal data collected, the program appears to have early admissions and this can be attributed to an early health seeking behavior from the program beneficiaries as well as an active case finding on the part of the CNVs and the nutrition team. This SQUEAC team proposed to test the hypothesis of health seeking behavior among beneficiaries from both near and far catchment villages.

Hypothesis statements:
- Health seeking behavior is high in villages near the mobile sites for OTP cases and low in villages far from the mobile sites
- Coverage is above 50% in nearby villages and below 50% in distant villages

3.4.2 Small Area Survey

A small area survey was conducted in 8 catchment villages\(^1\) strategically sampled from the 10 Mobile sites. This comprised of six villages, which were perceived to have high admissions and another six villages, which were hypothesized to have lower admissions.

3.4.3 Case finding

Both active and adaptive case finding methods were used to find SAM and MAM cases in all the villages selected. The case definition criteria included the following:
- A child between the age of 6 and 59 months
- A child with a MUAC level below 11.4 cm for SAM cases
- A child with a MUAC level below 12.5 cm for MAM cases
- A child with bilateral pitting oedema

Besides these standard criteria, survey teams used local malnutrition terminologies to increase sensitivity of the case finding method.

The steps for testing a hypothesis/making a classification using SQUEAC small area survey data were:
(a) Set the standard \((p)\): The standard \((p)\) was set according to SPHERE minimum standards for therapeutic programs in camps (minimum 50% for rural areas)
(b) Carry out the small area survey
(c) Use the total number of cases found \((n)\) and the standard \((p)\) to calculate the decision rule. For example, if \(n = 9\) and \(p = 50\%\) then: \(d = \frac{n \times p}{100} = \frac{9}{2} = 4.5 = 4\)
(d) Apply decision rule: if the number of cases in the program is > \(d\) then the coverage is classified as HIGH (otherwise it is classified as LOW).

\(^1\) It is noteworthy that at the time of this survey, a number of mobile sites were marooned by floods.
Further, for the hypothesis on health-seeking behavior to be tested, beneficiary children in OTP program were required to have their ration cards which normally indicates the first admission details.

### 3.4.4 Findings from the Small Area Survey

**Table 3: Small Area Survey results in Early Health seeking behavior Villages**

<table>
<thead>
<tr>
<th>Villages near mobile site</th>
<th>Sphere coverage target</th>
<th>Sample size</th>
<th>Decision rule</th>
<th>Health seeking behavior</th>
<th>conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50%</td>
<td>14</td>
<td>(d = n/2 = 14/2 = 7)</td>
<td>10 cases</td>
<td>7 cases need to be in the program for hypothesis to be confirmed; 10 cases were found hence health seeking behavior is high in villages near mobile sites</td>
</tr>
</tbody>
</table>

**Table 4: Small Area Survey results in Late Health seeking behavior Villages**

<table>
<thead>
<tr>
<th>Villages far from mobile sites</th>
<th>Sphere coverage target</th>
<th>Sample size</th>
<th>Decision rule</th>
<th>Health seeking behavior</th>
<th>conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50%</td>
<td>14</td>
<td>(d = n/2 = 14/2 = 7)</td>
<td>5 cases</td>
<td>7 cases need to be in the program for hypothesis to be confirmed; only 5 cases were found hence health seeking behavior is lower in villages near mobile sites</td>
</tr>
</tbody>
</table>

### 3.4.5 Hypothesis on Program Coverage

In the same token, a hypothesis on coverage was formulated and tested in the same villages where the hypothesis on program coverage was tested i.e. Coverage is above 50% in nearby villages and below 50% in distant villages

<table>
<thead>
<tr>
<th>Near Villages</th>
<th>SAM Case in Program</th>
<th>SAM Cases not in Program</th>
<th>MAM Case in Program</th>
<th>MAM Cases not in Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omad</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Takarale</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Siigalow</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Malindiid</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>2</td>
<td>11</td>
<td>7</td>
</tr>
</tbody>
</table>

Total SAM cases = 10+2=12
\(d=n/2=12/2=6\) = 6 cases need to be in the program

More than 6 cases need to be in the program for coverage to be greater than 50%. 10 cases were found to be in program and since 10>6 this part of the hypothesis was confirmed for the OTP program.

Total MAM cases = 11+7=18
\(d=n/2=18/2=9\) = 9 cases need to be in the program
More than 9 cases need to be in the program for coverage to be greater than 50%. 11 cases were found to be in program and since 11>9 this part of the hypothesis was also confirmed for TSFP.

Therefore;

Coverage is higher in nearby villages

<table>
<thead>
<tr>
<th>Near Villages</th>
<th>SAM Case in Program</th>
<th>SAM Cases not in Program</th>
<th>MAM Case in Program</th>
<th>MAM Cases not in Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shiirkaneeco</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Salaxsalid</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Waraxunshe</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Jiracle</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
<td><strong>7</strong></td>
<td><strong>9</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

Total SAM Cases= 12
\[d = n/2 = 12/2 = 6\]

More than 6 cases needed to be in the program for coverage to be less than 50%. Only 5 cases were found to be in the program and since 3 this part of the hypothesis was confirmed;

Total MAM Cases= 9+12=21
\[d = n/2 = 21/2 = 10.5 = 10\]

More than 10 cases needed to be in the program for coverage to be less than 50%. Just 9 MAM case was found to be in the program and since 9<10 this part of the hypothesis was confirmed for TSFP Program.

Therefore,

Coverage is Lower in Distant Villages
3.5 STAGE 3: WIDE AREA SURVEY

The wide area survey was carried out to estimate the overall program coverage. This stage involved the following three main steps.

3.5.1 Building the Prior

The “prior” or “Mode” for the wide area survey is generally estimated on the available information from the stage one and two of the survey. This helps to assume possible coverage of the program and then it is expressed as a probability density. Using a Bayesian technique known as a conjugate analysis, the prior is combined with new survey data collected during Stage 3 known as the likelihood to come up with the posterior, the final coverage estimate as shown in the figure below.

![Conjugate analysis diagram](image)

Figure 8: Conjugate analysis showing the relationship between the prior, likelihood and posterior

In this survey, the prior was calculated from the average of four coverage estimates based on the following three SQUEAC tools:

Simple BBQ tool- this is the simplest approach to deciding the mode of the prior from the list of the barriers and boosters since it involves allocating equal scores to each and every barrier. In this survey, a score of 5 was assigned to each barrier and booster. Total score of barriers were deducted from 100% while total score of the boosters were added to 0%.

Weighted BBQ tool- in this approach, scores or weights are attributed to each element that reflect the relative the likely effect on coverage. Scores range on a scale from 1 to 5 and denotes the importance of each finding.

Histogram of belief-The average of beliefs on programme coverage was calculated by the programme team and enumerators and the histogram prior was estimated to be 55% and 50.5% for OTP and TSFP respectively.

Mind Map- this was used to highlight the barriers and boosters and how they influence programme coverage. Each booster was indicated with a green tick while barriers were indicated with a red wrong mark. The Total boosters captured in the mind map were 12 while the total number of barriers were also 6. Boosters were added to minimum programme coverage (0%) while barriers were substracted from maximum programme coverage (100%). The mean of the total sum was thereafter calculated giving a prior of 50%.
<table>
<thead>
<tr>
<th>No</th>
<th>Barriers</th>
<th>Simple OTP</th>
<th>Weighted OTP</th>
<th>Simple TSFP</th>
<th>Weight TSFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Care givers/mothers competing priorities.</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Long waiting hours at the OTP site.</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Limited program awareness especially in distant villages</td>
<td>5</td>
<td>3.5</td>
<td>5</td>
<td>3.5</td>
</tr>
<tr>
<td>4</td>
<td>Beliefs/Perceptions about RUTF</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Absence complementary primary health care</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Refusal to bring children to OTP site owing to weird religious beliefs (Takfir).</td>
<td>5</td>
<td>2.5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Floods</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>RUTF stock outs</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>3.5</td>
</tr>
<tr>
<td>9</td>
<td>Poor remuneration of CNVs as well as disgruntled nutrition staff</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>45</td>
<td>28</td>
<td>45</td>
<td>32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No</th>
<th>BOOSTERS</th>
<th>Simple OTP</th>
<th>Weighted OTP</th>
<th>Simple TSFP</th>
<th>Weight TSFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Good understanding of the CMAM programme. MUAC uses</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>No stigma associated with malnutrition</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Early treatment seeking behavior of beneficiaries as indicated by the number of early admissions</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Active and dedicated CNVS.</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Local leaders such as village aware and instrumental in SCI CMAM Programme.</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Peer to peer as beneficiary influence to others on the benefits of CMAM</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Beneficiary speaking highly about the programme after their malnourished children are successfully cured</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
8  Conducive environment at the OTP site.  5 3.5  5 3
9  Dedicated mobile nutrition staff  5 3.5  5 3
10 Cordial relationship between outreach staff and the CNVs  5 4  5 4
11 Complementary IYCF program teaching mothers/caregivers of malnourished how to prepare locally available nutritious foods  5 4  5 4
12 Strong linkage between OTP/SFP to minimize relapse  5 3  5 3

Total  60 47  60 44

**Simple prior OTP**
0+60%+100-45%/2 = 57.5%
OTP 57.5%

**Simple prior TSFP**
0+60%+100-45%/2 = 57.5%
TSFP 57.5%

**Weighted OTP**
0+47%+100-28%/2 = 59.5%

**TSFP**
0+44%+100-32%/2 = 56%

**Histogram of belief = 4 teams**
OTP = 66%
TSFP = 58%

**OTP**
0+12%+100-5%/2 = 54%

**TSFP**
0+12%+100-6%/2 = 53%

**Average Prior OTP** = 57.5% + 59.5% + 62+55% = 59
**Average Prior TSFP** = 57.5% + 56% + 58+53.5% = 56.25%

There is always uncertainty in the value of the prior. The amount of uncertainty about the prior is same as the probable range of the values (minimum and maximum) of the coverage and that is constant with the prior information. The following are the minimum and maximum probable values through considering ±25 uncertainty value in assumed 50.2% coverage:
The minimum probable value of the coverage for OTP is = 59%-25% = 34%
The maximum probable value of the coverage for OTP is =59%+25% = 84%.

On the other hand, the minimum and maximum probable for TSFP coverage were calculated as 31.25% and 81.25% respectively.
The alpha and beta priors were calculated using the following formulae:

\[
\frac{\text{minimum} + 4 \times \text{Mode} + \text{maximum}}{6}
\]

\[
\sigma = \frac{\text{maximum} - \text{minimum}}{6}
\]

\[
\alpha \text{ prior} = \mu \times \left[ \frac{\mu \times (1 - \mu) - 1}{\sigma^2} \right]
\]

\[
\beta \text{ prior} = (1 - \mu) \times \left[ \frac{\mu \times (1 - \mu) - 1}{\sigma^2} \right]
\]

Thereafter, the values were expressed as proportions for using them in the formulae mentioned above.

Proportion = \frac{\text{Percentage}}{100}

1-0.59=0.4375

By using above formulae, the α prior and β prior for both OTP and TSFP were calculated as

ALPHA OTP=21.7. 21.1. 16.4

B 15.1

OTP: α prior=21.7 and the β prior to be 15.1

TSFP: α prior=21.1 and the β prior to be 16.4

These values α prior, β prior and ±10 precision was used in Bayesian Software; the sample size was calculated as 52 for SAM and 53 MAM cases. Minimum 52 SAM cases as well as 53 MAM cases (in program and not in program) was required to be identified in the wide area survey for the estimation of coverage. The prior mode value of 59% for OTP and 56.25% for TSFP was plotted using the Bayes SQUEAC Coverage Estimate Calculator as shown below.
Figure 9: Prior representation OTP
The sample of minimum 52 SAM children aged between 6-59 months was generated by using Bayesian software and the probability sampling method was used to select the villages for active case finding. Through the Probability proportional to size Sampling (PPS) each village had an opportunity to be selected.

The investigation sample size of 52 was then used to calculate the number of villages for the wide area survey using the formula:

\[
\text{n}_{\text{villages}} = \frac{\text{Average village pop.} \times \frac{\text{II}}{100} \times \frac{\% \text{ of the populations 6-59 months}}{100} \times \frac{\text{SAM prevalence}}{100}}{52}
\]

Table 5: Parameters on number of required villages in the Likelihood Survey for OTP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Beledweyne district</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Sample size</td>
<td>52</td>
</tr>
<tr>
<td>Average village population</td>
<td>400</td>
</tr>
<tr>
<td>Prevalence of SAM</td>
<td>4.8%</td>
</tr>
<tr>
<td>% children 6-59 months old</td>
<td>20%</td>
</tr>
</tbody>
</table>
\[
\frac{52}{400 \times 0.2 \times 0.048} = 13.5 = 14 \text{ villages for OTP}
\]

<table>
<thead>
<tr>
<th>Target Sample size</th>
<th>53</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average village population</td>
<td>400</td>
</tr>
<tr>
<td>Prevalence of SAM</td>
<td>14.0%</td>
</tr>
<tr>
<td>% children 6-59 months old</td>
<td>20%</td>
</tr>
</tbody>
</table>

\[
\frac{53}{400 \times 0.2 \times 0.14} = 4.7 = 5 \text{ villages for TSFP programme}
\]

Door to door case finding method was used and all children between 6 and 59 months screened using both MUAC and oedema.

### 3.5.3 Findings of the wide area Survey and Coverage Estimation

A wide area survey was conducted in the 19 villages sampled by the team. A total of 19 SAM cases was found of which 14 were in the program and 5 were not in the program. Further, a total of 5 recovering cases in the program was also found.

<table>
<thead>
<tr>
<th>Type</th>
<th>Beledweyne</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAM cases in the program</td>
<td>14</td>
</tr>
<tr>
<td>SAM cases not in the program</td>
<td>5</td>
</tr>
<tr>
<td>Total Active SAM cases</td>
<td>19</td>
</tr>
<tr>
<td>Recovering cases in the program</td>
<td>5</td>
</tr>
<tr>
<td>Recovering cases not in program (calculated)</td>
<td>1</td>
</tr>
<tr>
<td>Total cases</td>
<td>25</td>
</tr>
</tbody>
</table>

Likelihood Survey Results for MAM cases

<table>
<thead>
<tr>
<th>Type</th>
<th>Beledweyne</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAM cases in the program</td>
<td>43</td>
</tr>
<tr>
<td>MAM cases not in the program</td>
<td>22</td>
</tr>
<tr>
<td>Total Active MAM cases</td>
<td>60</td>
</tr>
<tr>
<td>Recovering case in the program</td>
<td>6</td>
</tr>
<tr>
<td>Recovering cases not in program (calculated)</td>
<td>1</td>
</tr>
<tr>
<td>Total cases</td>
<td>72</td>
</tr>
</tbody>
</table>

### 3.5.4 Single Coverage Estimate for OTP Program

The single coverage estimator was used to estimate the overall OTP program coverage. Using the Bayes SQUEAC calculator, coverage of 66.4% (53.7% - 78.7%) was obtained. There is considerable overlap between the prior and the likelihood indicating no conflict (p=0.1824)
3.5.5 Single coverage estimate for TSFP program

Using the Bayes Calculator, a single coverage estimate of 64.3% (54.8%-72.6%) was obtained for the TSFP program. The OTP coverage is slightly higher than that of the TSFP program.

Figure 11: Single coverage estimate OTP program

Figure 12: Single coverage estimate TSFP program
4.0 DISCUSSION

The Beledweyne district OTP nutrition programme implemented by SCI has achieved single coverage of 66.4%(53.7%-78.7%) indicating that the programme coverage is above the SPHERE standards of above 50% for coverage in rural areas. Moreover, the single coverage for the TSFP program was found to be 64.3%. This satisfactory coverage standards means that program boosters far outweigh the barriers.

Analysis of routine data indicated that the program was having early admissions with a median MUAC of 11.1cm. This was attributed to early health seeking behavior on the part of the beneficiaries of which a hypothesis confirmed during the small area survey.

However, the program does have some challenges in as far as documentation and reporting of cases are concerned. For instance, crucial information such as number of defaulters, non-response cases as well as the information on MUAC were missing from the registers indicating that supervision and follow-up is not only minimal but also very wanting. Given that, defaulters are by and large program failures, the inability to keep track of these cases indicates a disregard for crucial coverage indicators.
## 5.0 RECOMMENDATIONS AND ACTION PLAN

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Findings</th>
<th>Actions</th>
<th>Responsibility</th>
<th>Level of priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Ensure that stock requirements are adequately forecasted in order to avoid stock outs</td>
<td>- Stock outs and gaps were a defining feature particularly in the TSFP program</td>
<td>- Given the high number of TSFP beneficiaries, it is important to strengthen existing relationship with WFP so that issues can be sorted on time.</td>
<td>SCI</td>
<td>High</td>
</tr>
</tbody>
</table>
| 2 Establish Fixed primary health care units | - With the introduction of iCCM component, there is need for fixed health facilities that would serve as a referral unit.  
- Static health care units critical to enhancing program recruitment | - Convert main OTP sites to MCHs to provide an integrated health and nutrition services. This would will in turn open up opportunities to open more OTP and iCCM sites. | SCI | High |
| 3 Conduct refresher trainings for nutrition staff | - There is an apparent record keeping problem of nutrition data. Key registers such as OTP/TSFP registers are not updated as required. This proved difficult to acquire crucial information relevant to stage 1 and the entire SQUEAC | - Conduct refresher training for nutrition staff at District level  
- Ensure all future SQUEAC is done by the nutrition team and not external enumerators. | SCI | High |
| 4 | Strengthen Community Mobilization and sensitization structures | • The programme was found to have limited active case finding given that CNVs lack the means to reach some of the catchment villages.  
• This could also be related with the low incentives given to the CNVs as they feel demoralized.  
• Local village elders generally aware and receptive of the CMAM programme. This is one area SCI can tap into increase mobilization and sensitization. | • Increase the incentives given to the CNVs from the current 70 USD to ensure they are well motivated.  
• Involve other community actors such as religious leaders, traditional healers and TBAs to enhance recruitment of cases.  
• Involve the local community leaders in sensitization activities to help improve existing community appeal  
• Provide user friendly IEC and job materials (in Local Language) to the CNVS  
• If possible provide a means of transport to the CNVs in the form of motorcycles or bicycles. | SCI | High |