Semi Quantitative Evaluation of Access and Coverage Investigation

Moheshkhali Upazila
Cox's Bazar District
Bangladesh

Final Report
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Glossary

BBQ	Boosters, Barriers and Questions
CC	Community clinic
CHCP	Community Health Care Practitioner
CMAM	Community-based Management of Acute Malnutrition
CNC	Community Nutrition Clinic
CNR	Child Non-respondent
CNV	Community Nutrition Volunteer
CNW	Community Nutrition Worker
EPI	Expanded Programme on Immunisations
FGD	Focus Group Discussion
FWC	Family Welfare Clinic
GAM	Global Acute Malnutrition
AHI	Assistant Health Inspector
LQAS	Lot Quality Assurance Sampling
MAM	Moderate Acute Malnutrition
MNP	Micronutrient Powder
MUAC	Mid-upper Arm Circumference
OTP	Out-patient Therapeutic Programme
PHC	Primary Health Care
PLW	Pregnant or Lactating Woman
PSU	Primary Sampling Unit
RUTF	Ready-to-Use Therapeutic Food
SACMO	Sub-Assistant Community Medical Officer
SAM	Severe Acute Malnutrition
SARPV	Social Assistance and Rehabilitation for the Physically Vulnerable
SFP	Supplementary Feeding Programme
SHED	Social Health and Education Development
SSI	Semi structured Interview
SMART	Standardised Monitoring and Assessment of Relief and Transitions
SQUEAC	Semi-quantitative Evaluation of Access and Coverage
UHC	Union Health Centre
WFP	World Food Programme
WHO	World Health Organisation
WHZ	Weight for Height z-score
WSB	Wheat Soya Blend

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Executive summary

In **March 2017**, a coverage assessment (using the SQUEAC[1] methodology) was implemented in Moheshkhali upazila in Cox's Bazar Dsitrict in southern Bangladesh to measure the coverage and community perception of the Community Management Acute Malnutrition (CMAM) programme in the upazila. The CMAM programme includes Severe Acute Malnutrition (SAM)/ Outpatient Therapeutic Programme (OTP) and Moderate Acute Malnutrition (MAM)/ Supplementary Feeding Programme (SFP) treatment services for children aged 6-59 months as well as MAM treatment for Pregnant and Lactating Women (PLW). This assessment focused on the CMAM services for children aged 6-59 months.

The CMAM services are provided by the Bangladeshi NGO SARPV with technical and financial support from Action Against Hunger and the World Food Programme. SAM treatment has been available in Moheshkhali since April 2016 and in all Community Clinics since August 2016. MAM treatment was initiated in January 2015 has been available in all Community Clinics since April 2015.

The SQUEAC identified a coverage estimation of **65.4% (95% CI: 58.3-71.8%)** for the **SFP**. It was **not possible to estimate the coverage of the OTP** as an insufficient sample of SAM cases were identified during the wide area survey. However the collection and analysis of quantitative and qualitative data during the assessment enabled the survey team to calculate a "prior" estimate of SAM treatment coverage of **51%**.

For the periods analysed (previous 11 months for OTP and 12 months of 2016 for SFP) both programmes **exceeded the Sphere standards in terms of cure, defaulter and death rates**. In the first months of the programme, the OTP experienced high defaulter rates due to a misconception about Ready to Use Therapeutic Food (RUTF) causing diarrhoea; however defaulter rates reduced in early 2017. Case finding was found to be timely for the SFP with the median MUAC at admission falling close to the admission criteria (122mm). Meanwhile the median MUAC at admission in the OTP was a little further from admission criteria (110mm). However, as it is a relatively young programme this is to be expected and should improve over time. The median lengths of stay of both programmes were well under the maximum length of stay set out in the national CMAM guidelines indicating that cases are not staying in the CMAM programme for longer than needed which is likely to have a positive impact on coverage.

Following discussions with community members and health facility staff **the positive factors** influencing coverage identified included good health seeking behaviour by carers and good awareness of nutrition and acute malnutrition amongst women (including carers of SAM / MAM cases and other women). This demonstrates the positive impact of the courtyard sensitisation sessions led by the Community Nutrition Workers and Volunteers (CNW and CNV). The courtyard sessions, which take place on a rotating basis at cluster level in each CNC catchment area, also served as an opportunity to systematically screen all children for SAM or MAM. The effectiveness of these screenings (which are combined with screenings at EPI points) was clearly seen in the high coverage estimate found of the SFP– an impressive estimate for an SFP in a rural context.

The CMAM staffs in the clinics were found to be well supported and trained and motivated to continue their work. This was reflected in the high quality of the data recorded in registers and reported to the Action Against Hunger and WFP teams.

Negative factors influencing coverage were also identified during the qualitative data investigation. These included a lack of awareness of nutrition and acute malnutrition by male members of the community and by certain wealthier families. Coupled with this, some key male members of communities (including religious and community leaders) were unaware of the CMAM programme and the activities involved. This is most likely due to the format of the courtyard sessions which are currently implemented by female CNVs and which generally only target female members of poorer households.

Also, while Community Clinic workers stated that sharing of WSB++ rations was reducing, the wide area survey identified a significant number of non-covered MAM cases who had been discharged as non-responders or who had defaulted from the programme. This is most likely due to sharing of WSB++ and should be addressed by reviewing the messages passed to carers at the time of treatment. Another negative factor influencing coverage was that some CNVs were responsible for very large catchment areas and so struggled to regularly conduct courtyard sessions in all clusters in their area. This was proven to have an impact on coverage during a case finding test in specifically selected villages. In some areas of the upazilas, particularly in hilly areas and in remote areas which are affected by seasonal flooding, accessibility was also cited as a challenge by communities.

Finally the vast majority of admissions into the CMAM programme come from either cluster or EPI screenings and few cases enter the programme spontaneously. While this means that coverage is likely to remain high while screening activities continue, there is a risk of an over-reliance on screening – especially as some carers of non-covered cases thought that their children could only be admitted to the programme by being referred by a CNV.

[1] Semi-quantitative evaluation of access and coverage

Joined by key persons from the upazila and region, the survey team elaborated a set of recommendations and actions on the final day of the assessment. The table below includes the key recommendations. More detailed actions and responsible parties are included in the table in Section 7.

Area of focus	Recommendations
Community outreach, timely case finding and referral, varied and regular sensitization	Inform the community about the program activities
	Increase male involvement in sensitization activities
	Increase awareness of community about all misconceptions i.e. acute malnutrition isn't a disease, RUTF causes diarrhoea etc.
	Increase capacity of local leader, religious leader, school teachers and students about the program activities and its importance
	Increase awareness of local leaders, religious leaders, traditional Healers, village doctors and other elite persons regarding the importance of program and consequence of acute malnutrition
	Encourage other NGO's, Govt. staff to identify and referral of malnourished cases
	Improve timely case finding and referral in wide and remote areas
Effective coordination and collaboration among partners	Increasing coordination between NGO and Govt. staff
	Build a committee involving elite persons of the community
	Enhance the capacity of the CC management committee and support groups to increase their involvement in implementing the nutrition program
Quality of Care	Improve awareness of the community that nutrition service is not a relief service and that it is an essential treatment service
	Ensure adequate awareness for SAM and MAM caregivers about treatment and its importance
	Try to reduce relapse rate by scaling up sensitisations for caregivers
	Increase follow up visits in order to decrease defaulter rate
	Reduce high non-responder cases through increased and improved home visits
	Maintain regular supply of stock
Access	Involve health worker, family planning staff, and support group to identify and refer malnutrition
	Increase coverage of cases with treatment in remote and wide area and during monsoon

1. Introduction

With the support of Action Against Hunger and the World Food Programme (WFP), the Bangladeshi NGO SARPV out-patient services for the treatment of acute malnutrition while Action Against Hunger provides inpatient services for treatment of SAM with medical complications through government facilities in Moheshkhali upazila in Cox's Bazar district in southern Bangladesh.

The services are implemented using the Community-based Management of Acute Malnutrition (CMAM) model in all 9 of the unions in the upazila through 36 delivery points and the government hospital (more details on the structure of CMAM delivery in the upazila available in Section 4.2). Figure 1 shows a map of the upazila with the unions marked as red triangles and the delivery points marked as red crosses.

Figure 1: Map of Moheshkhali Upazila

From January 2015, WFP have provided technical and financial support to SARPV to enrol and treat children aged 6-59 months and pregnant and lactating women suffering from MAM. From April 2016, Action Against Hunger then initiated their support to SARPV to provide treatment for children aged 6-59 months suffering from SAM.

Coverage assessments aim to determine the extent to which CMAM programmes are reaching their target population. They also inform programme staff on the positive and negative factors influencing carers from bringing their children to the programme. The coverage assessment best suited to upazila-level assessments is the SQUEAC.

While a SQUEAC had previously been undertaken in the neighbouring upazilas of Teknaf and Ukhiya in October 2015, no assessment had taken place in Moheshkhali since the start of the CMAM programme. Therefore, to gain a better understanding of the extent to which the programme was reaching the target population, Action Against Hunger, WFP and SARPV implemented a SQUEAC in Moheshkhali in March 2017 with the support of a coverage expert from Action Against Hunger's UK office.

The objectives of the SQUEAC in Moheshkhali upazila were as follows:

- To estimate the treatment coverage of the SAM and MAM treatment programmes
- To identify positive and negative factors influencing service uptake of both programmes
- To develop, in collaboration with SARPV and the government, recommendations and an action plan to improve service uptake
- To improve the capacity of Action Against Hunger, WFP and SARPV staff and other partners on the SQUEAC methodology

2. Methodology

2.1. SQUEAC survey process

The SQUEAC assessment methodology was used in order to estimate the coverage of the SAM and MAM treatment programmes in the upazila and to provide recommendations to improve coverage and a rich body of evidence to underpin them. The SQUEAC took place in the following stages:

Stage 1: The review of available programme data from the OTP and SFP from the previous 12 months and the collection and analysis of supplementary data from a selection of 6 Community Nutrition Clinics. This was combined with the collection and analysis of qualitative information from community members and health facility staff and the identification of negative and positive factors affecting coverage.

Stage 2: Development and testing of hypotheses to confirm (or deny) assumptions related to areas of high or low coverage. The findings from these tests were then incorporated into the survey team's prior modes for the OTP and SFP which were then used to calculate the required sample size for Stage 3.

Stage 3: A wide-area survey to determine coverage estimates for the OTP and SFP using Bayesian techniques

The assessment took place over the course of 16 days between the 15th and 30th March and culminated in a planning and recommendations workshop with the survey team and external participants (see Section 7).

2.2. Survey team and training

The core survey team was composed of a SQUEAC expert from Action Against Hunger UK and 10 employees from Action Against Hunger Bangladesh, SARPV, SHED and the World Food Programme. The majority of these staff members work in Moheshkhali upazila or are based in neighbouring upazilas.

The SQUEAC expert delivered a three-day sensitisation in Cox's Bazar to the core team and to other national level nutrition experts including representatives from the Institute of Public Health Nutrition and UNICEF. The sensitisation aimed to introduce participants to the main benefits of measuring the coverage of CMAM programmes and the different methodologies available. The SQUEAC expert then provided an explanation of each of the key stages of a SQUEAC.

The core team then relocated to the headquarters of SARPV in Chakaria where they based themselves for the implementation of the SQUEAC in Moheshkhali. A full list of attendees and their job titles can be found in Annex 1.

3. Challenges and limitations

3.1. Composition of assessment team

A SQUEAC involves lots of interaction with caregivers of young children. This includes interviews and focus group discussions with male and female community members and programme staff and structured questionnaires with the caregivers of SAM and MAM cases. Often the questions asked include sensitive, personal family matters and it is essential that the caregivers feel that they are able to talk openly and honestly with the interviewers.

During the Moheshkhali SQUEAC, the survey team was comprised entirely of men. They were all programme staff or technical staff and so had excellent knowledge of the programme and of the community and were used to talking to all types of community members. However the team would have benefitted from some female members.

To overcome the lack of female surveyors, the survey team asked community clinic staff and volunteers (CNWs, CNVs or Community Mobilisers) to accompany them during data collection or case finding. However, while the clinic staff proved invaluable in arranging discussions, they were rarely the ones asking the questions and engaging in discussions with mothers – this responsibility remained with the all-male survey team. Also in the presence of clinic staff at discussions, male and female caregivers would be unlikely to provide honest and true information, particularly if it involved highlighting problems with service delivery or community engagement.

Therefore the survey team would have benefitted from some female surveyors (ideally at least one for each data collection team) to collect qualitative data. Ideally discussions with groups of women should have only included female interviewers.

4. Context

4.1. Overview of the area and population

Moheshkhali is an upazila in Cox's Bazar District in the Division of Chittagong in southern Bangladesh. It borders Chakaria upazila to the north and east, Cox's Bazar Sadar upazila to the south and the Bay of Bengal to the west. It is a peninsula of the Bangladeshi mainland and is cut off from the peninsula by the Moheshkhali channel.

It covers an area of 362km^2 and is highly vulnerable to flooding and climatic instability (cyclones and tidal surges). The population consists mainly of poor, rural families with the main livelihoods in the area consisting of fishing, rice cultivation and salt harvesting.

The total population of the upazila is approximately 375,000 the majority of whom are Bangladeshi nationals. There is a small population of Rohingya who are integrated with the local population.

The upazila is divided up into 8 unions and one municipality. These include approximately 330 villages.

4.3 Health and nutrition services

Primary health care services in Moheshkhali upazila are provided through 6 union family welfare centres, 1 union health centre and 27 community clinics. Delivery services are also available at the union family welfare centres and union health centre. CMAM services for the outpatient treatment of SAM and MAM for children aged 6-59 months and pregnant and lactating women (MAM only) are provided from each of these health facilities. An additional two community nutrition clinics have been established to provide CMAM services in catchment areas with especially large populations. There are therefore 36 health facilities in total that offer outpatient treatment for SAM and MAM. Inpatient treatment for complicated SAM cases is available a stabilisation centre in the 50 bed government hospital in Pouroshova.

All of the health facilities are run and maintained by the Bangladeshi government however the CMAM services are implemented by the Bangladeshi NGO, SARPV (Social Assistance and Rehabilitation for the Physically Vulnerable). They are supported by Action Against Hunger and the World Food Programme (WFP). The outpatient services are delivered by Community Nutrition Workers (CNW) and Community Nutrition Volunteers (CNV) who are recruited and paid by SARPV. They work within the team of the GoB Community Health Care Practitioners (CHCP). Action Against Hunger supports the SAM treatment component of CMAM services by transporting and providing RUTF and the essential drugs administered at admission (antibiotics, deworming tablet and vitamin A capsule). They also provide technical and financial support to the SAM treatment operation and employ a nurse in the hospital to oversee the stabilisation centre. WFP supports the MAM treatment component through the provision of supplementary food (WSB++ and super cereal) to health facilities and through technical and financial support.

Community outreach activities are managed by the CNWs with the support CNVs, both of whom are always female. The CNVs conduct regular screenings for SAM and MAM at cluster level (one cluster = approximately 23 households) and refer cases to the community clinics. The screenings are conducted using MUAC tapes and by checking for signs of oedema. Children 6-59 months with a MUAC < 125 mm and/or Oedema are referred to the CNC. The CNVs are expected to conduct approximately 15 cluster screenings per month and are responsible for between 20 and 65 clusters each (depending on the size of the catchment area). In some of the larger catchment areas, there are three or four CNVs supporting one CNW.

During the cluster screenings the CNWs and / or CNVs also lead "courtyard sessions" during which they educate caregivers about key messages relating to infant and young child feeding practices, hygiene and water and sanitation through flashcards (7 topics covered in total). The CNVs also undertake screenings at EPI points (Expanded Programme on Immunisations) when caregivers and children gather for immunisations on a monthly basis. There are 216 EPI points located throughout the upazila.

With the support of Action Against Hunger, SARPV has recruited Community Mobilisers to support the community outreach activities. Currently Community Mobilizers' are working in 16 Community Nutrition Centers (CNCs) of Boromoheshkhali, Chhotomoheshkhali, Pouroshova, Kutubjum and Dhalghata unions. Their main responsibilities include the establishment of male & female forums, the facilitation of meetings and discussions, EPI counselling, support of community support group meetings, school sessions and (Micronutrient Powder) MNP distributions, model mother review meetings and follow up, individual counselling and SAM case follow up and reporting.

Further to this, a total of 90 Model Mothers in 15 CNCs (6 in each CNC) in four unions (Boromoheshkhali, Chhotomoheshkhali, Kutubjum and Hoanok) have been selected and trained to screen and refer SAM and MAM cases in the community. All model mothers were selected and trained on basic health & nutrition and on CMAM. Their

main responsibilities include screening and referral of SAM and MAM cases, individual counselling of SAM & MAM caregivers, monthly meetings at CNCs and reporting.

4.4 Nutrition situation

A SMART survey was conducted in Moheshkhali upazila in January 2015. The survey estimated the prevalence of GAM, MAM and SAM by weight-for-height z-score (WHZ) and by MUAC and/or presence of oedema. The results are shown in Table 1.

Table 1: Results from Moheshkhali SMART survey, January / February 2015

	WHZ	MUAC and/or oedema
GAM	15.7% (CI 95% 12.9-18.9)	10.7% (CI 95% 8.7 - 13.1)
MAM	12.8% (CI 95% 10.5 - 15.4)	9.2% (CI 95% 7.4 - 11.5)
SAM	2.9% (CI 95% 1.9 - 4.5)	1.4% (CI 95% 0.7 - 2.9)

No nutrition survey has taken place in the upazila since 2015. At the time of the SQUEAC, the survey team estimated that the prevalence of both MAM and SAM had dropped slightly. Despite this, at the time of the SQUEAC, the GAM rate by WHZ was likely to fall between 10-15% and was therefore classified as “serious” by WHO Crisis Classification.

As cases were only admitted into the Moheshkhali CMAM programme using MUAC and / or presence of oedema, for the purpose of planning in-community sampling for the wide area survey, the survey team decided to use a SAM prevalence of 1% (halfway between the SAM prevalence estimate for MUAC and/or oedema of 1.4% and the lower confidence interval of 0.7%).

5. The SQUEAC survey

5.1 Quantitative data collection and analysis

5.1.1. Introduction

Before the start of the assessment and during the first days, the survey leader and team compiled and analysed programme data from the OTP and SFP. This process aimed to review the performance of both programmes over the preceding 12 months and to identify areas of low and high coverage in the upazila. Once these areas were identified, the survey team then set out to investigate why these areas had high and low coverage during the qualitative investigation.

OTP and SFP data was collected and reviewed. This included overall admissions over time and admissions by distribution point, programme exit data over time and by distribution point, MUAC measurements at admission, cure and defaulting, length of stay at cure and default, source of referral (for OTP only) and village locations of admissions and defaulters. The Action Against Hunger- Bangladesh team were able to provide all data for the analysis in advance with the exception of the home village of admissions and defaulters which are not recorded on the database. Admissions and programme exit data was available for the SFP for 2015 and 2016, however MUAC and length of stay data was not. This was collected from registers in six Community Nutrition Clinics.

5.1.2 Register analysis and observations of clinics

Six Community Nutrition Clinics were selected in which to collect SFP and OTP data. The CNCs were chosen based on particularly high or low admissions of SAM and MAM cases and to get a geographically representative sample of CNCs from across the upazila.

Teams of two visited each clinic, asked the CHCP for the OTP and SFP registers and then used tally sheets to record MUAC at admission, cure and default and the lengths of stay for cured and defaulted cases for all cases admitted between March 2016 and February 2017. They also observed the state of the clinic, the storage of the registers and, where possible, the conduct of staff when they were treating children.

The data was already available in the OTP database, however the team collected the data from the OTP register in order to cross check the quality of the data in the database. They also collected village of origin information for admitted and defaulted SAM cases. The analysis of the findings is shown in subsequent sections.

There was no variation between the OTP data in the registers (MUAC at admission, cured and default and length of stay before cure and default) and the data in the database.

In terms of the observation of care, two teams were able to observe care while they were in the clinic. In both reception of patients and the behaviour and attitude of health staff was good. They communicated well with patients and where observed, the quality of anthropometric measurements was also good.

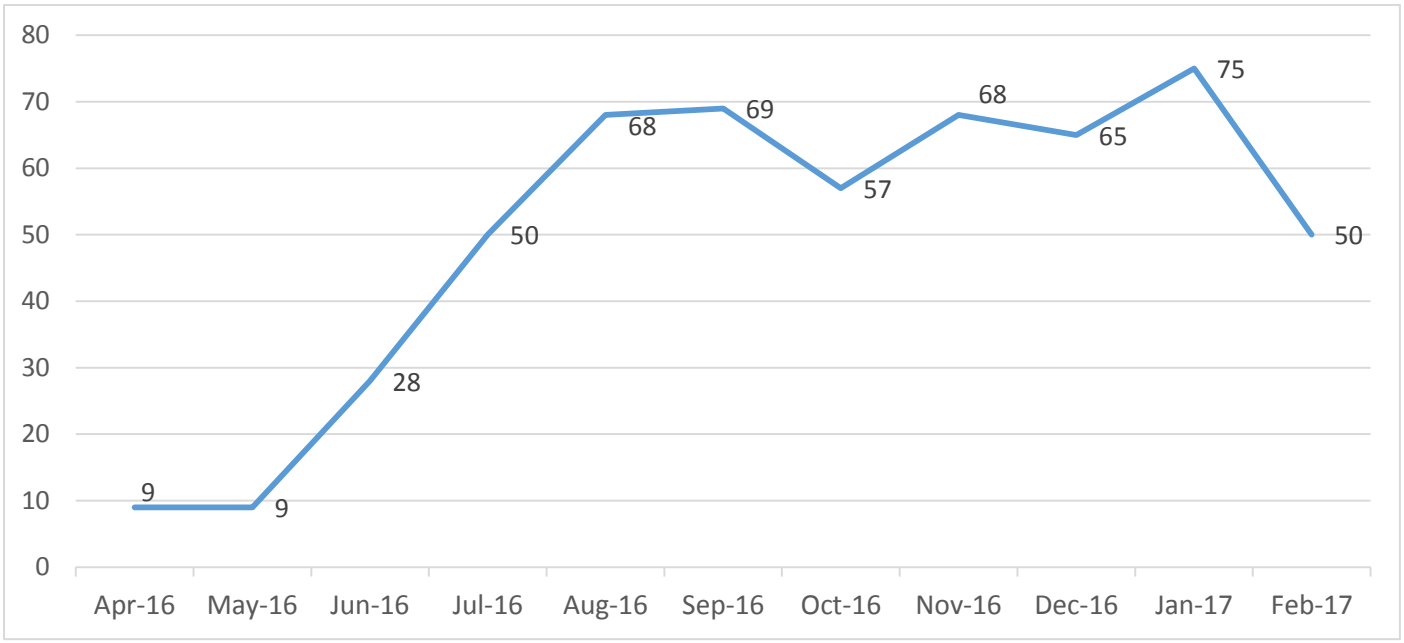
However one team noted that the storage and maintenance of registers was not so good. And on two occasions it was noted that the reason for default was not being recorded.

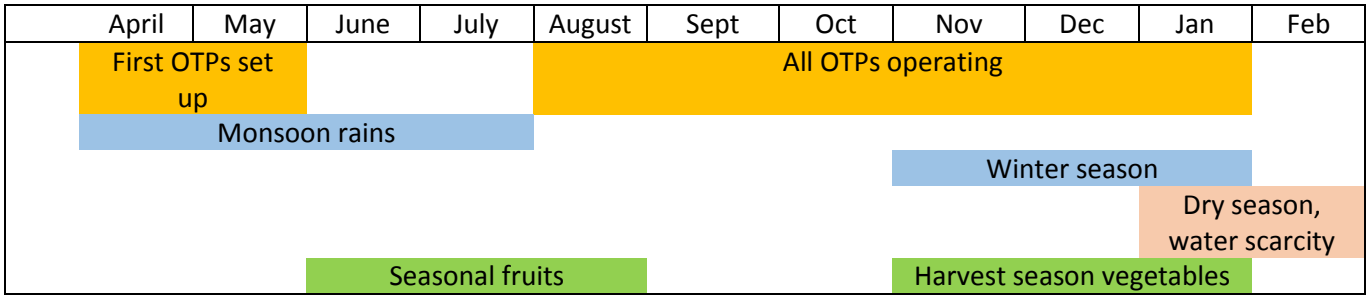
5.1.3 Admissions over time

OTP

Since April 2016 when the OTP programme started in Moheshkhali, 548 new cases have been admitted to the programme. The pattern of these admissions over time can be seen in Figure 2.

Figure 2: Admissions over time for OTP programme, April 2016-February 2017, Moheshkhali Upazila





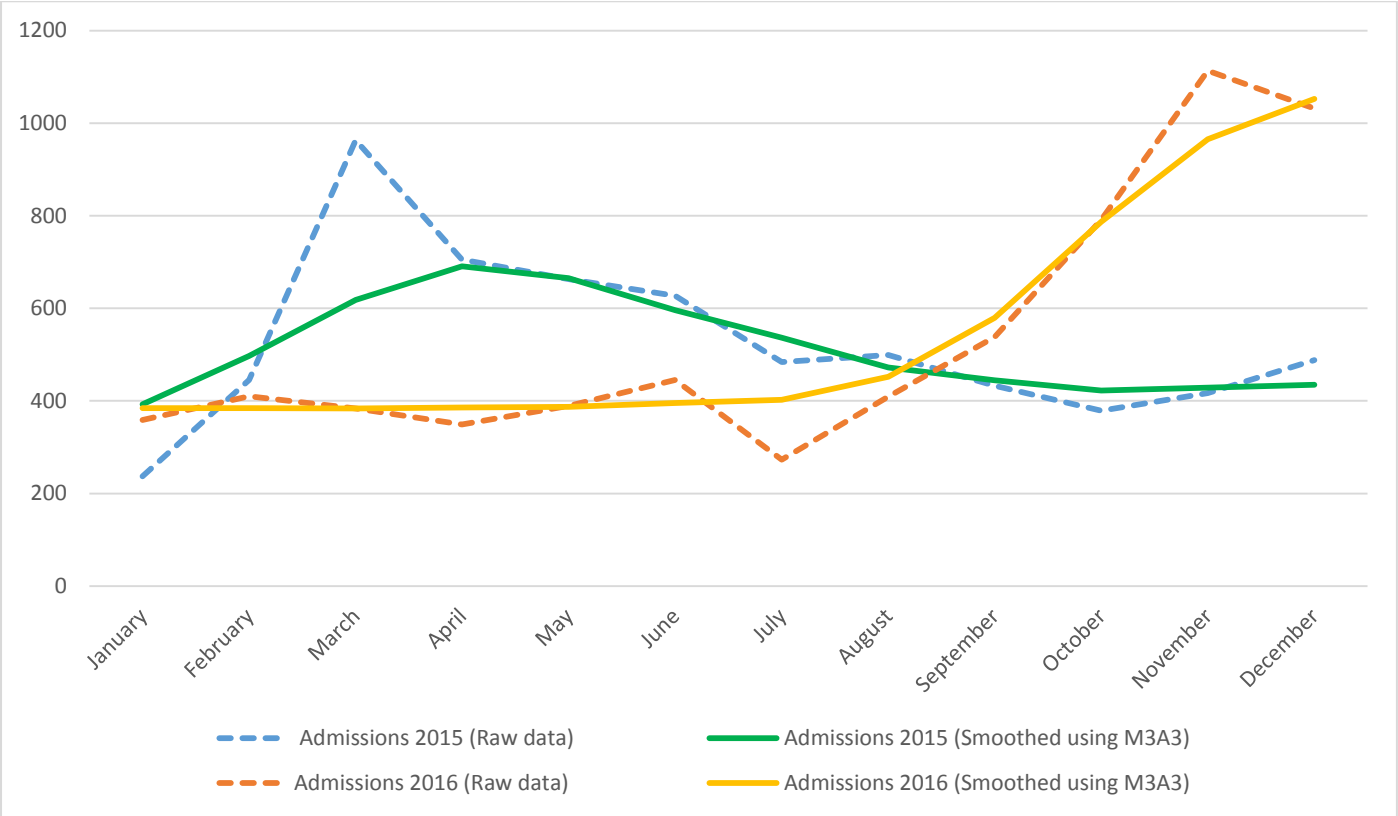
The steady increase in admissions between May and August reflects the increase in the number of CNC's offering SAM treatment along with the increased screening activities of CNVs and CNWs.

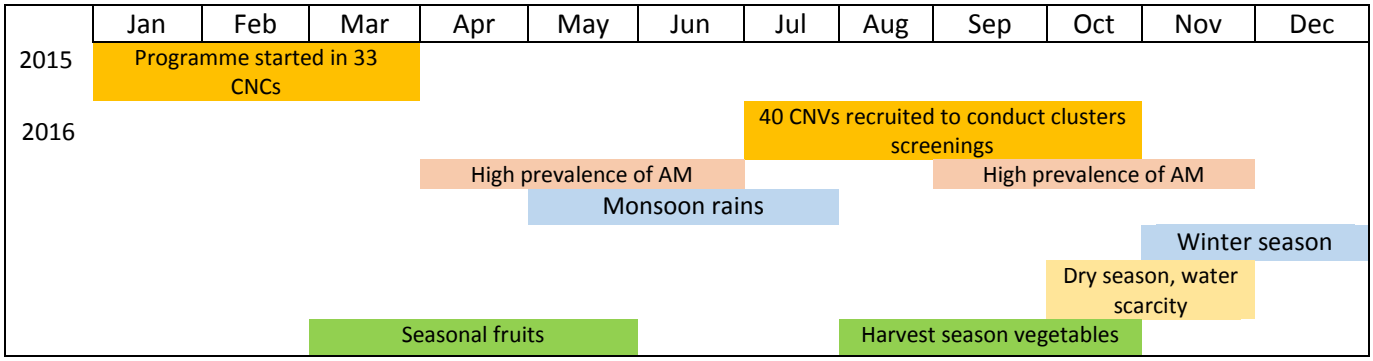
With only 11 months' data, it is hard to determine seasonal variations in the Moheshkhali OTP. The drop in admissions in February perhaps reflects a slight improvement in the food security situation following the vegetable harvest that takes place in December and January.

SFP

The SFP has been operating in Moheshkhali since January 2015. Admissions information was available for all of 2015 and 2016. In total 6340 cases were admitted in 2015 and 6492 cases were admitted in 2016. With approximately two years' worth of data, it is easier to perceive variations in admissions relating to programme changes in the SFP admissions as shown in Figure 3.

Figure 3: Admissions over time for SFP (raw and smoothed), January 2015 to December 2016, Moheshkhali





From January to February 2015 the SFP was offered in 33 CNCs before being scaled up to all CNCs from March 2015 onwards. This is reflected by the large number of admissions in March 2015. However admissions reduced over the remainder of 2015 and during half of 2016, plateauing at approximately 400 admissions per month. A steady increase is then seen from September 2016 onwards rising to a peak of 1113 admissions in December 2016. This increase was attributed to both the recruitment of additional CNVs to conduct regular cluster screenings in their catchment areas and to the start of EPI (Expanded Programme on Immunisations) screenings. The primary purpose of EPI screenings is to ensure 100% coverage of appropriate immunisations. However the CMAM teams use them as an opportunity to screen children for SAM or MAM and if necessary to refer them to the community clinic to be admitted into the CMAM programme.

6.1.4. Admissions by Community clinic

Figure 4 shows admissions by clinic across all 36 of the distribution points that offer CMAM services in Moheshkhali. The variation in admissions is largely due to the differences in population size in each CNC catchment area (see Figure 5) and to the length of time that the clinic had been offering CMAM services at the time of the assessment. Some (e.g. Mohiraghona) had started to admit SAM cases a number of months after the first CNC's first offered treatment. Sonadia is a hard-to-reach area of the upazila and has a small population hence the very low number of admissions.

Figure 4: Admissions into OTP and SFP by community clinic between April 2016 and March 2017

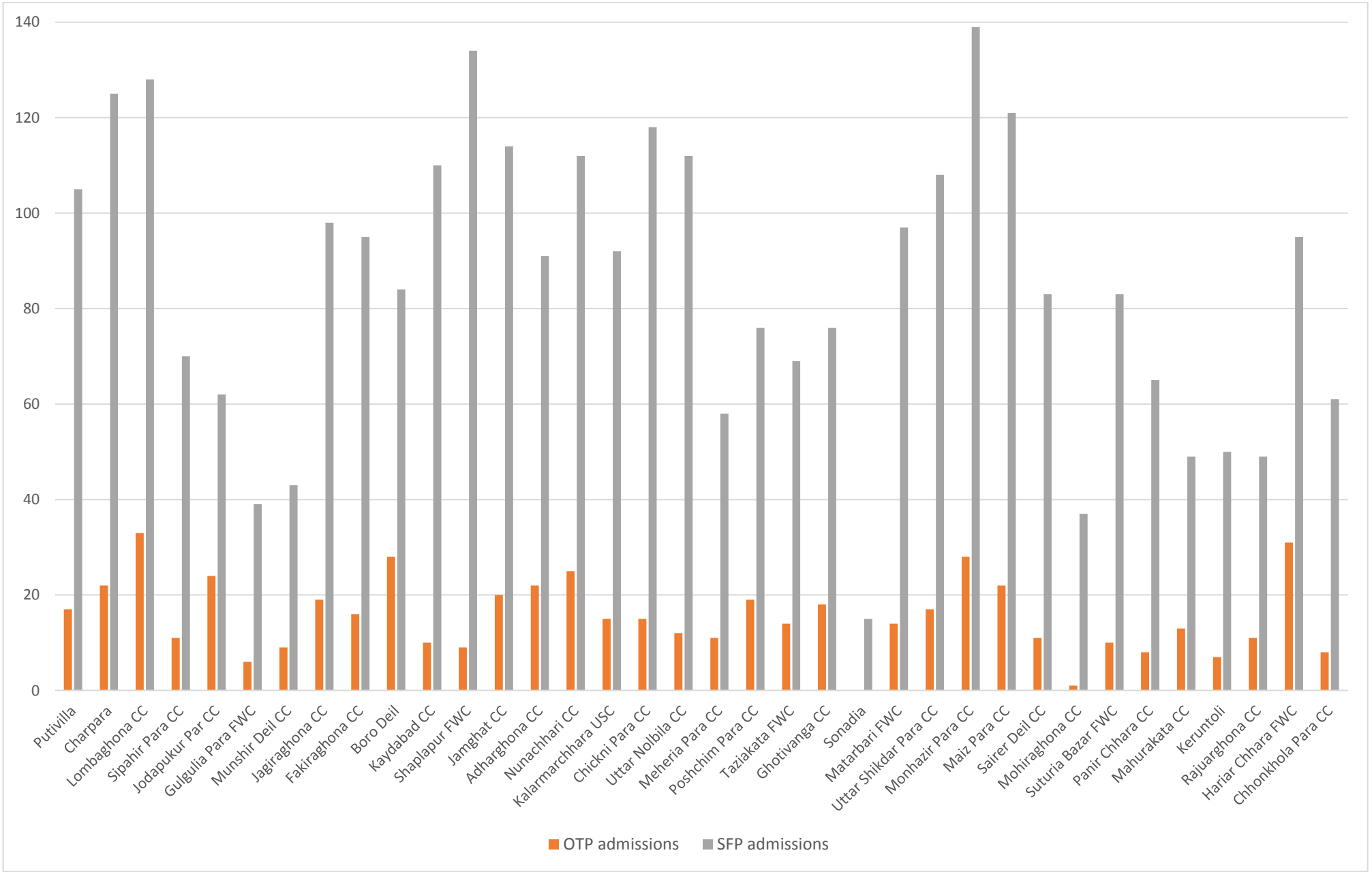


Figure 5: Percentage of OTP and SFP admissions and clusters by Community clinic

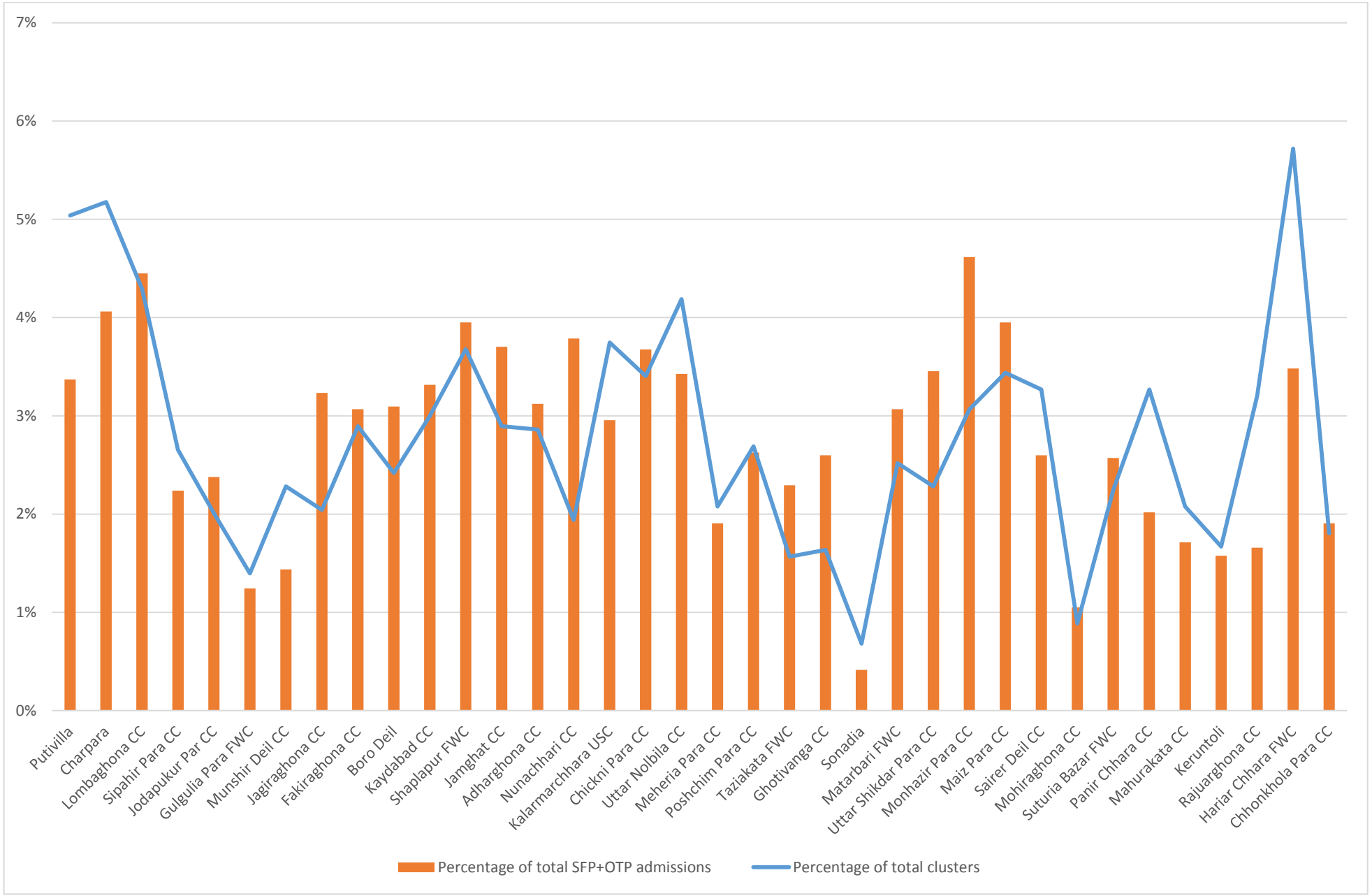


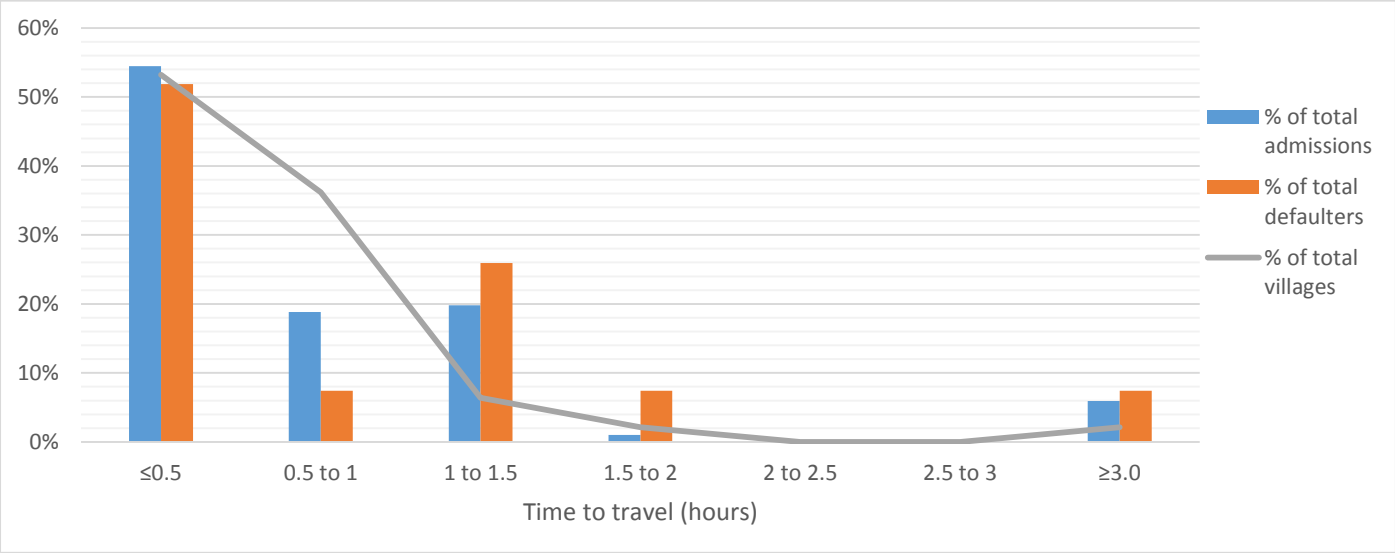
Figure 5 shows the percentage of total admissions (from SFP and OTP) compared with the percentage of the total number of clusters by community clinic catchment area (which illustrates the distribution of total population across the upazila; 1 cluster = approximately 23 households). This shows that some community clinics (eg Mohazir Para and Nunachhari) are admitting a higher proportion of admissions than would be expected than others while others are admitting significantly less than would be expected (eg Putivilla and Hariarchhara). As the population of children aged 6-59 months is consistent across the upazila, these differences could be due to a variation in prevalence across the upazila – this is unlikely as the livelihood activities and food security situation is largely similar throughout the upazila. A more likely explanation could be the result of the community outreach activities that are taking place in the catchment areas. The clusters in all catchment areas are divided between the two CNVs, or three or four if the area is particularly large. However in some catchment areas, the CNVs have been allocated a large number of clusters to cover. The impact that this has on coverage is further tested in Stage 2 (Section 5.3).

5.1.6. Home location of admissions and defaulters

The home location of cases admitted to the OTP and SFP is not recorded in the centralised databases. Therefore when the teams visited the 6 community clinics to collect quantitative data, they also collected information about the home locations of all admitted and defaulted cases along with information from the CNW about the time to travel between each village and the community clinic.

Figure 6 compares the percentage of the total number of villages located at different distances from the CC along with admissions and defaults. It indicates that in the 6 CCs that were visited by teams, approximately 90% villages are located less than one hour's walk from the CC.

Figure 6: Time-to-travel from villages to community clinics in six CC catchment areas and combined admissions and defaults



The impact that distance has on admissions is questionable. There were a greater number of admissions from further villages. However there is an indication that distance affects service compliance as a greater percentage of defaulters originate from villages located more than one hour's walk from the CC. The impact that distance has on coverage was investigated further during Stage 2 (Section 5.3).

5.1.7. MUAC at admission and cure

MUAC at admission provides an indication of the timeliness of treatment – a key principle affecting the coverage of a CMAM programme. The earlier into the onset of the condition that a child is identified and admitted, the less time they will need to remain in the programme. This has a positive impact on service uptake (carers are likely to be satisfied with a quicker treatment and so will promote the programme to others) and a positive impact on service retention (carers in the programme are less likely to default if they only need to make a small number of visits to community clinics).

Meanwhile, MUAC at cure identifies whether any cases may have been discharged early and can indicate whether cases are remaining in the programme for longer than necessary. MUAC at default indicates at what stage in treatment defaulter cases left the programme.

OTP

Figure 7 shows MUAC at admission for the 450 SAM cases that were admitted to the OTP between April 2016 and January 2017. This data was taken from the central database kept by Action Against Hunger.

Figure 7: MUAC at admission, Moheshkhali OTP, April 2016-January 2017 (n=450 cases)

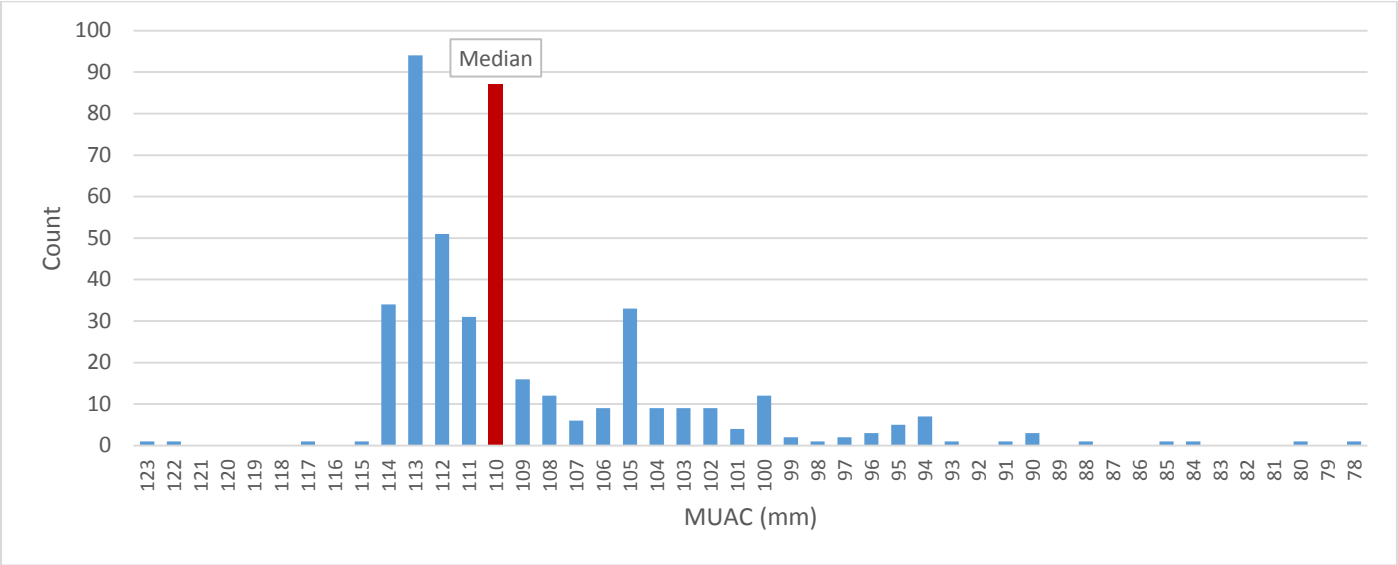
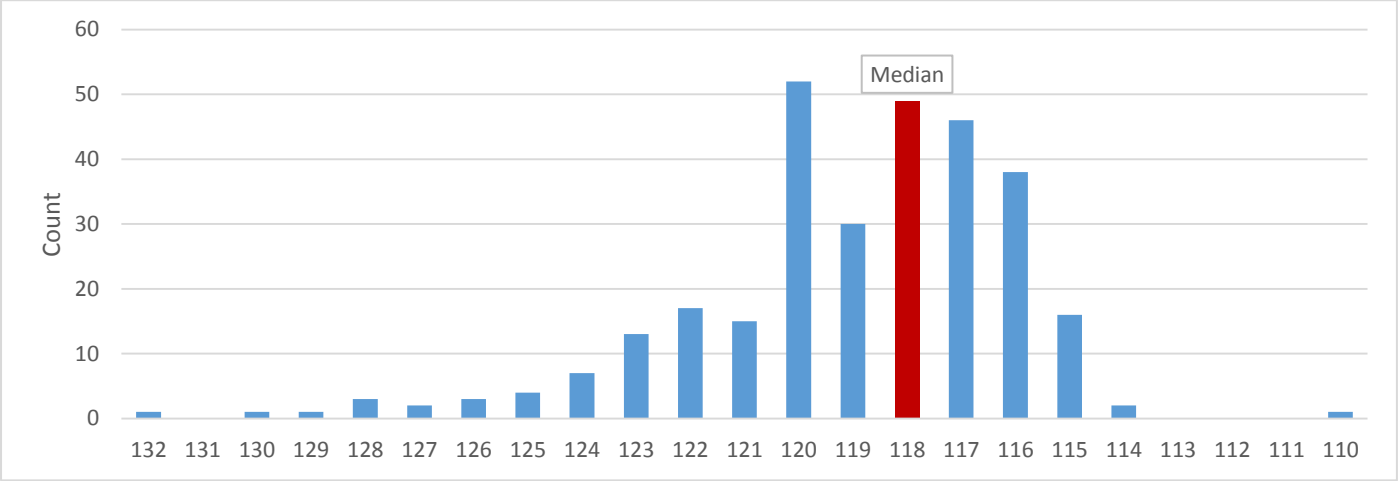


Figure 7 indicates that MUAC at admission has been relatively high for the OTP since it started in April 2016 however it could be higher. Considering the programme started in April 2016 and the data above includes the first 10 months of admissions, a median MUAC at admission of 110mm indicates that a large number of children with low MUACs were identified when case finding for SAM cases first started in the upazila but that as case finding increased, cases were identified earlier into the onset of the disease. This is proven by looking at the data in more detail: for the first six months of the programme, the median MUAC at admission was 110mm while for the subsequent 4 months, it increased slightly to 111mm.

There were 30 extremely low admissions at below 100mm. Of these cases, 18 were 12 months or less and 10 were older than 12 months (the remaining 2 did not have an age at admission recorded). There is also strong evidence of “heaping” of admission MUACs; peaks of measurements at 100mm, 105mm and 110mm which is a quality issue and should be addressed through close supervision and additional training of CNWs.

MUAC at cure for OTP cases from the same database is presented in Figure 8.

Figure 8: MUAC at cure, Moheshkhali OTP, April 2016-February 2017 (n=301)



This indicates that all but three cases have been discharged appropriately with the majority discharged at between 115mm and 120mm. Three cases were shown to have been discharged at less than 115mm. On further investigation, it was concluded that these were data entry mistakes and that these cases were in fact discharged to the stabilisation centre as child non-respondent (CNR) cases.

Owing to the fact that there is an SFP which cured SAM cases can move into, the discharge criteria is ≥115mm for 2 consecutive visits. Therefore it is surprising to see a relatively high number (67 cases) discharged at higher than 120mm and could be an indication of cases remaining in the programme for longer than necessary. This could also be due to data entry mistakes. The OTP is a relatively young programme and so this is a possibility owing to the fact that there may be inexperienced programme staff in the team.

SFP

MUAC data for the SFP was collected during the data collection exercise in six selected community clinics. Teams reviewed the SFP registers and recorded on tally sheets the MUAC at admission of 1467 cases admitted for the preceding 12 months (March 2016 to February 2017). Of these cases, 951 had been discharged as cured – the MUACs of these cases were also recorded on tally sheets.

Figures 9 and 10 show the findings of MUAC at admission and cure of the MAM cases reviewed.

Figure 9: MUAC at admission, Moheshkhali SFP, March 2016-February 2017 (n=1467)

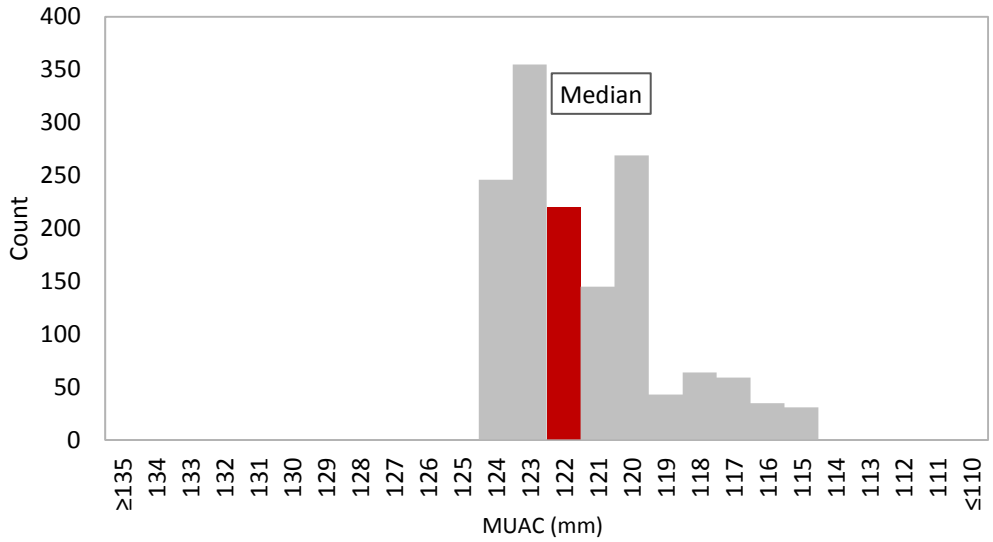
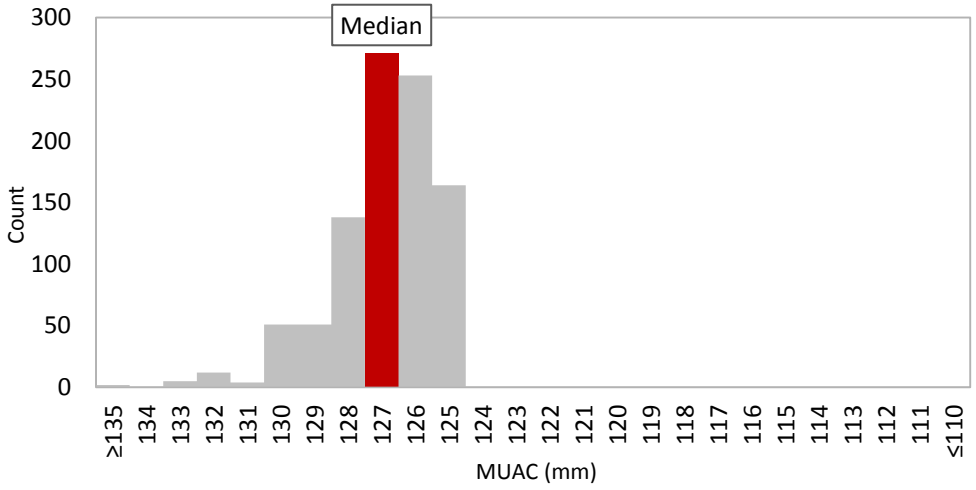


Figure 10: MUAC at cure, Moheshkhali SFP, March 2016-February 2017 (n=951)



With a median of 122mm, Figure 9 indicates that MAM cases are identified, referred and admitted in a timely manner. There are few cases admitted at less than 120mm – those that are admitted at below 120mm are likely to be cases transferred from the OTP.

The MUAC at cure data also reflects well on the performance of the SFP with all cases being discharged as cured correctly and the majority with a MUAC of 127mm.

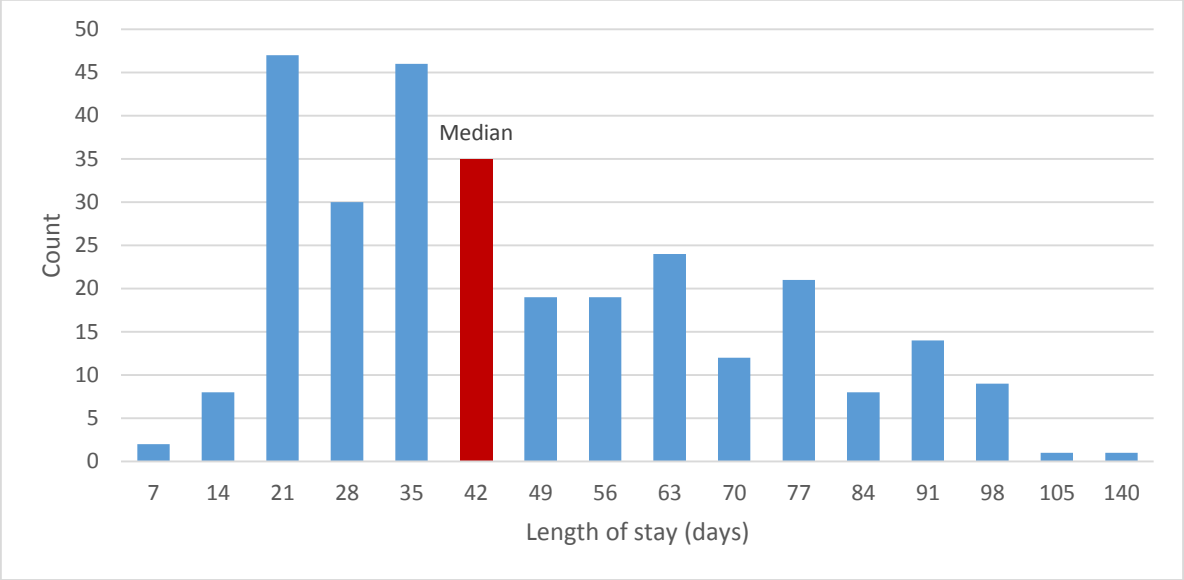
5.1.9. Length of stay before cure

Analysis of "Length of stay" data provides key information about another of the CMAM core principles: Care for as long as needed. If an admitted case receives treatment over a relatively short period, then the burden on the caregiver will be less leading to positive perceptions of the programme and a higher likelihood of service uptake for other cases.

OTP

Data was analysed from 296 cases discharged as cured in the OTP database. The results are shown in Figure 11.

Figure 11: Length of stay for cured cases, Moheshkhali OTP, April 2016-March 2017 (n=296)



The chart above indicates that for the OTP, the median length of stay is 42 days (6 weeks), reflecting good performance. However 33 cases remained in the programme for longer than 3 months (84 days), which is the standard for the maximum length of stay in SAM treatment in the Bangladesh CMAM guidelines. This may be a reflection of the fact that the programme was only 10 months old at the time of the assessment and so it was taking time for teams to reach and successfully treat the most serious cases. However it is important that this data continues to be closely monitored.

SFP

The SARPV programme team has collected the length of stay for every case discharged from the MAM treatment programme since May 2015. The average length of stay in days for cured cases (smoothed using M3A3) is shown by union and for all unions in Figure 12.

Figure 12: Average lengths of stay for MAM cured cases, May 2015 to January 2017 (Smoothed using M3A3)

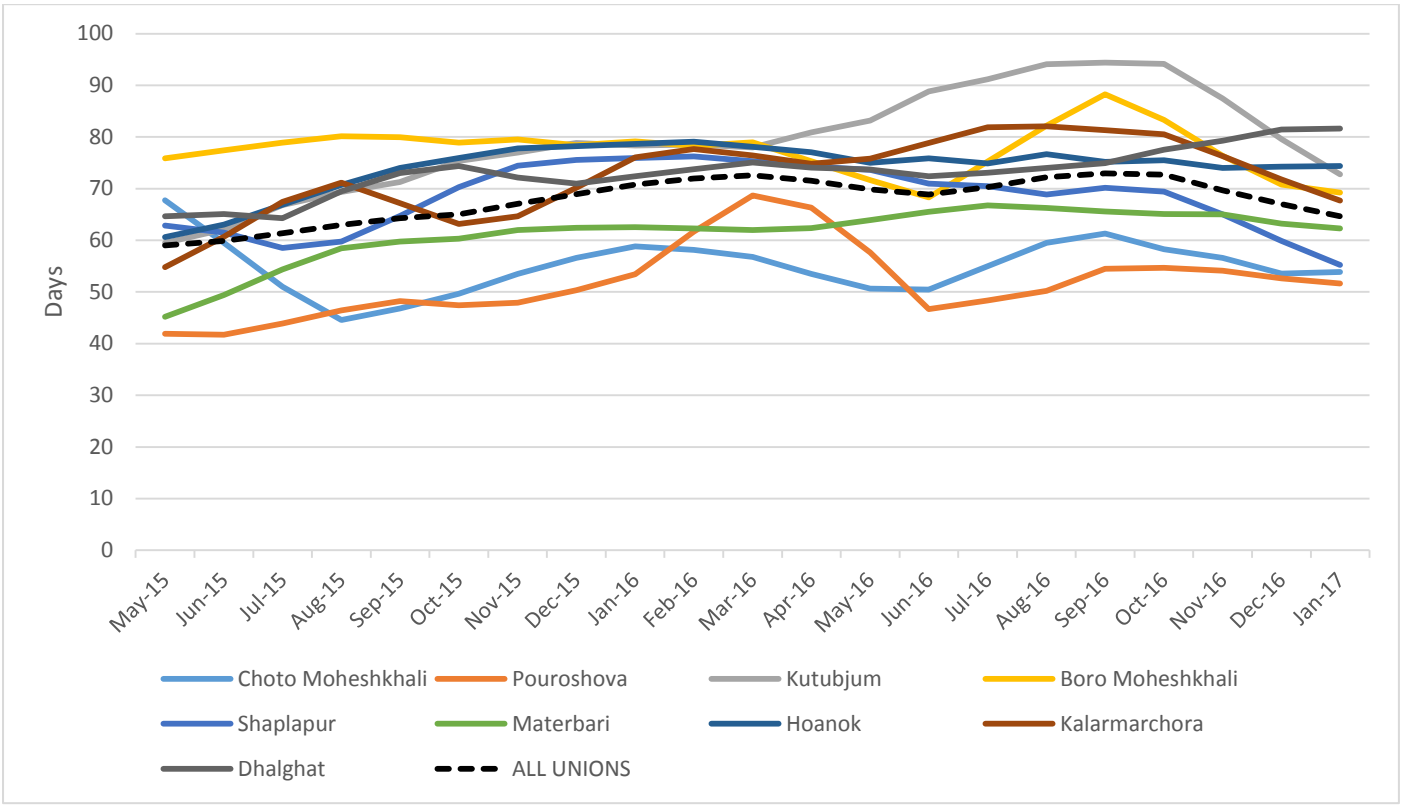


Figure 12 shows that the average lengths of stay for cured cases in all unions are well below the upper limit for length of stay in the MAM programme as stipulated in the Bangladesh national CMAM guidelines (120 days). Over time, the average length of stay for all unions has increased slightly from below 60 days to just over 70 days – this could indicate that as more cases are successfully treated and discharged as cured, confidence increases in the general population of the upazila. As more carers see cured cases being discharged, they are more inclined to remain in the programme until their children are discharged as cured. The chart also shows quite a significant variation between the lengths of stay in different unions. Pouroshova and Choto Moheshkhali have consistently shortly lengths of stay while others such as Dhalghat and Kutubjum have longer lengths of stay. This indicates the context of the different unions and the impact that this has on the length of stay. Pouroshova and Choto Moheshkhali unions have good transport links and are densely populated, making it easier for carers to reach the CNCs and for CNWs to conduct follow up visits therefore reducing the length of stay for children in the SFP. Meanwhile Dhalgat and Kutubjum are remote, sparsely populated unions making it difficult for CNWs to conduct follow up visits and more likely for carers to miss distribution days and therefore to extend the length of stay of their child in the SFP.

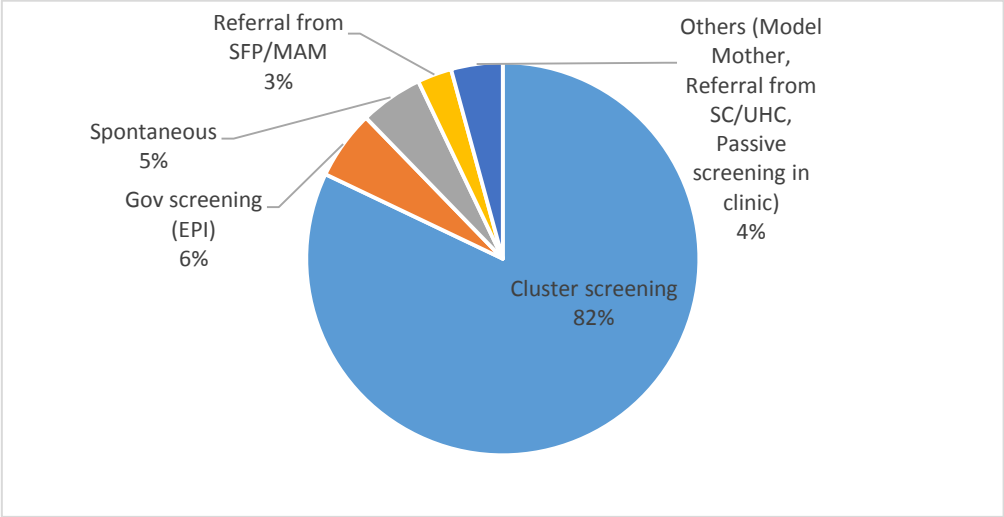
5.1.10. Source of referral

Analysing source of referral information during a SQUEAC can provide useful information about the effectiveness of case finding and screening. However it can also indicate the extent to which the community participates in the identification and referrals of cases without the need for intervention from health facility staff.

During the SQUEAC in Moheshkhali, it was only possible to analyse source of referral information for cases admitted to the OTP. Health facility staff are not currently required to collect source of referral information from caregivers at admission for the SFP programme.

Figure 13 shows the sources of referral for cases admitted to the OTP between April 2016 and January 2016 (taken from the OTP database).

Figure 13: Sources of referral for cases admitted into OTP, April 2016-January 2017 (n=424)



As Figure 13 shows, the vast majority of admissions to the OTP originate from cluster screenings. This is a good indicator of the effectiveness of cluster screenings which take place in clusters on a regular basis (approximately every 6 weeks).

Following cluster screenings, EPI screenings follow as the next most common source of referral followed by spontaneous screenings and referrals from the SFP. There were three reported cases of SAM cases being referred by Model Mothers.

Overtime, the programme should hope to increase the percentage of screenings referred from the community and spontaneous referrals. As confidence grows in the programme and more and more mothers and other community members are sensitised about the main messages of acute malnutrition, this should hopefully be seen. However as the OTP in Moheshkhali is a relatively young programme still, it is normal that the majority of cases will be referred by community mobilisation efforts.

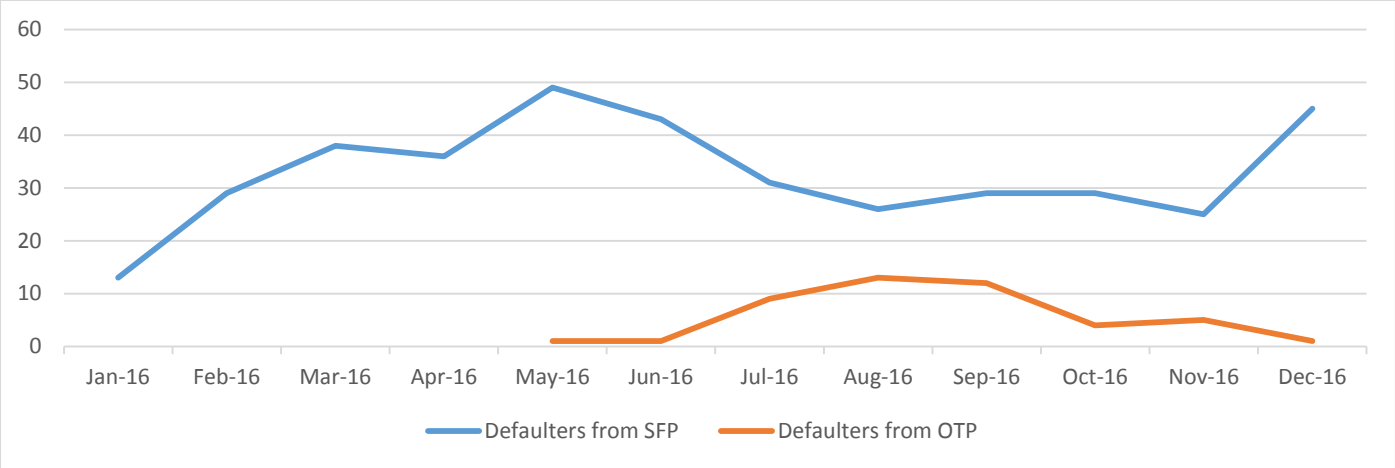
Considering there are a higher number of MAM cases, it would be interesting to know the sources of admission for MAM cases. Therefore if the programme has the resources, it should start to record this data on admission.

5.1.11. Defaulter analysis

Defaulters are an indication of coverage failure. By analysing the number of defaulting cases over time, a programme team can get an indication of its ability to retain cases. If cases are defaulting at a particular time of year, then it may indicate the impact of seasonal work burdens or access on coverage.

Defaulting data over time is quite limited for the OTP owing to the fact that there was only 10 months of data available. However SFP data was available for a longer period. The numbers of defaulters over time are shown for both programmes in Figure 14.

Figure 14: Number of defaulters during 2016, OTP and SFP programme in Moheshkhali

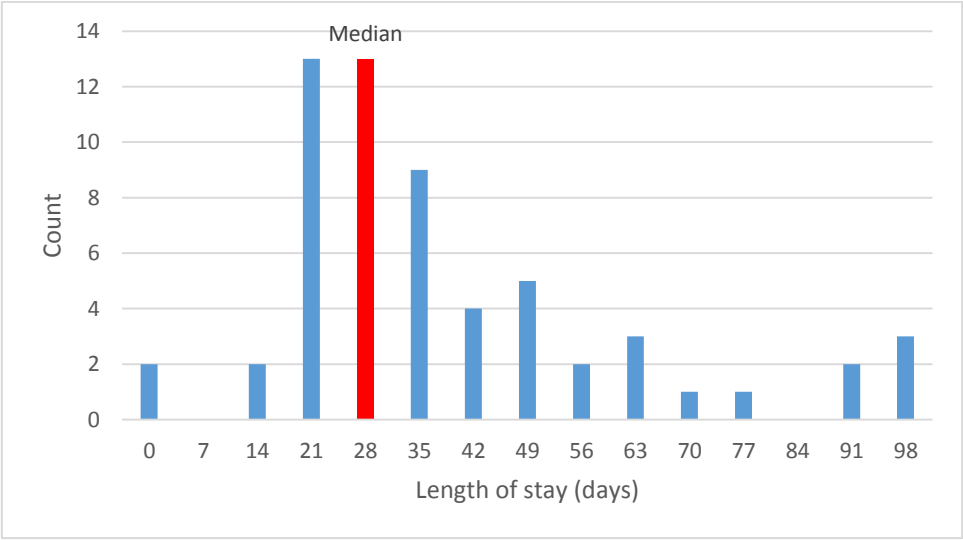


The OTP data shows that there was an initial spike of defaulters in August 2016. This may have been attributed to the fact that some carers reported that their children were getting diarrhoea after consuming RUTF; a rumour circulating in communities in August 2016 which CMAM staff worked hard to dispel.

Defaulters from the MAM treatment programme averaged 33 cases per month over the course of 2016 (approximately 8% of total exits). The spike in defaulters in May and June 2016 is likely to be linked to access issues facing carers during the monsoon season.

Figure 15 shows the length of stay for cases discharged as defaulters from the OTP based on the data in the OTP database. This shows that the majority of defaulters are “early defaulters” as they leave the programme within 35 days (5 weeks) of initiating treatment. This indicates that the reason for default is more likely to have been due to distrust of the programme by caregivers (rather than defaulting due to a long length of stay). This therefore supports the suspicion that those that defaulted from the OTP defaulted due to the suspicion that RUTF causes diarrhoea (as above).

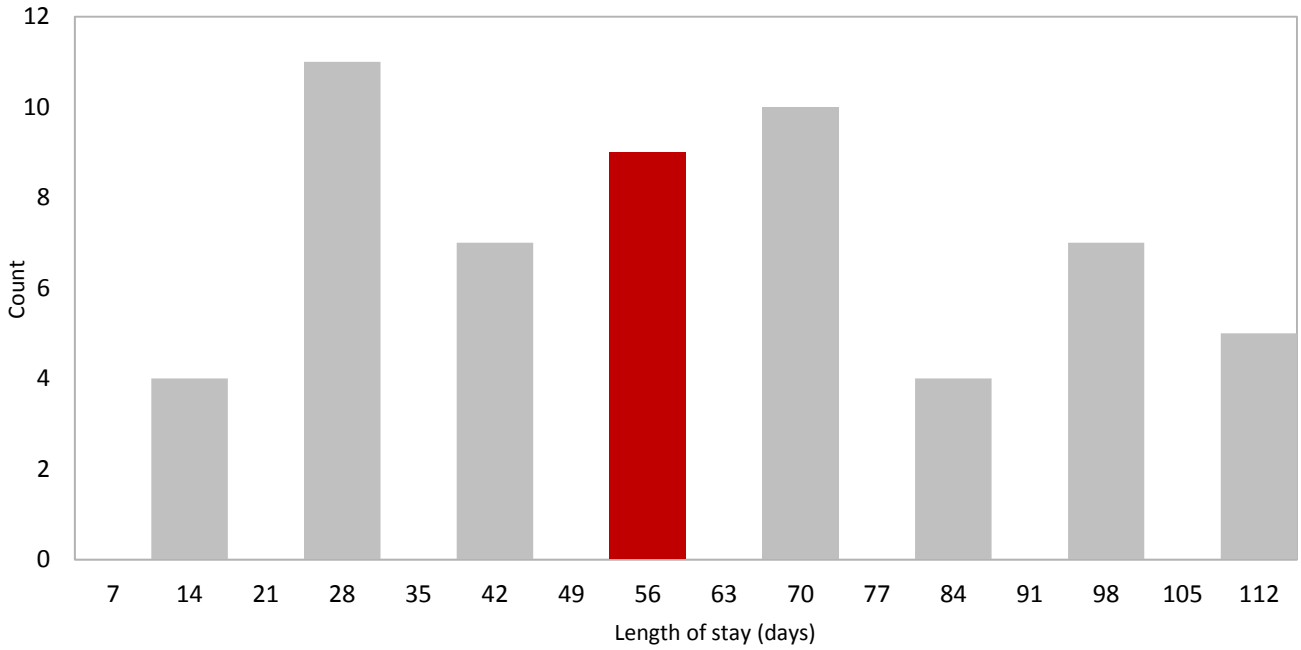
Figure 15: Length of stay before default, OTP in Moheshkhali, April 2016-March 2017 (n=60)



SFP

Length of stay before default in the SFP is not compiled by the programme team. The survey team therefore collected a sample of data during the register analysis. During their analysis they found 57 MAM cases which had defaulted from the programme and recorded the length of stay for each of these cases. This is shown in Figure 16.

Figure 16: Length of stay before default, SFP in Moheshkhali, March 2016-March 2017 (n=57)



The median length of stay for cases defaulting from the SFP is 56 days (8 weeks). This indicates that approximately half of the defaulter cases defaulted relatively early in the course of treatment (in the first 8 weeks) while the other half defaulted later in treatment (from 10 to 16 weeks). It is hard to draw any particular conclusions from this graph. The early defaulters could be due to the child refusing to eat the WSB++ or to carers having to travel far to the CC for the distribution day. The later defaulters could be defaulting as they do not see an improvement in their child's health and so abandon the programme or because they are sharing the WSB++ with other family members. Whatever the conclusion, it is important for the programme staff to start to record the reasons for default in the SFP register so that they can start to understand better the reasons for default.

5.1.12. Performance outcomes

Programme exits over time and by health facility provide a useful indicator of programme performance and of quality. Programme quality has a direct link with coverage: high quality programmes with a high cure rate are likely to be high coverage programmes and high coverage programmes are more likely to have high cure rates and low defaulter and death rates.

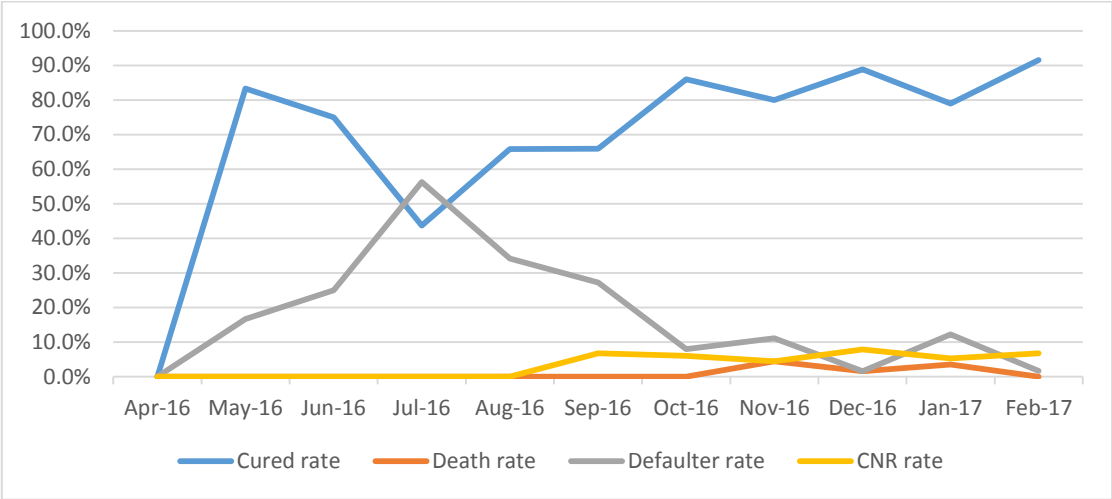
Table 2 provides a summary of programme performance for the OTP and SFP. While the defaulter rate for the OTP may initially seem very high, it should be remembered that this is based on total exits of 382 and so 14.1% represents just 54 defaulters over the period.

Table 2: Summary of programme performance for assessment period, Moheshkhali OTP and SFP

OTP		**SFP**	
April 2016-February 2017		**January-December 2016**	
Cured	79.3%	**Cured**	81.6%
Death	1.3%	**Death**	0.1%
Default	14.1%	**Default**	7.1%
CNR	5.2%	**CNR**	11%

Figure 17 shows the OTP performance rates over time since the start of the programme.

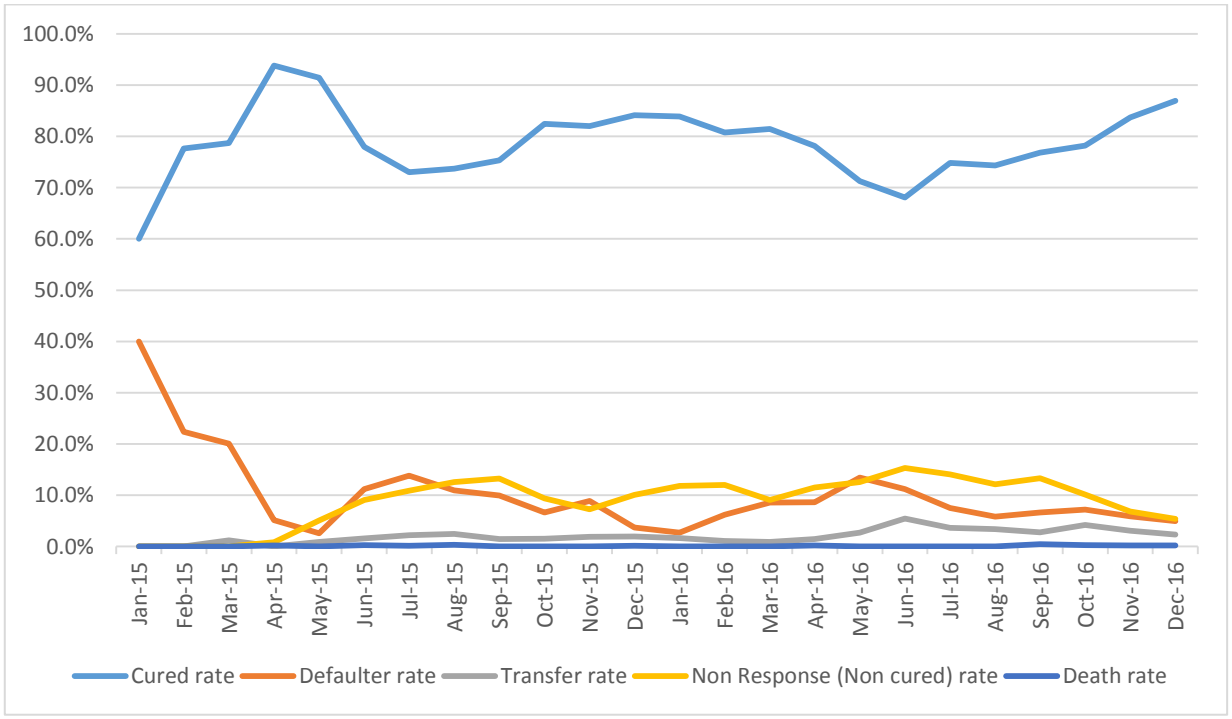
Figure 17: OTP performance rates, April 2016-February 2017



In the first 6 months of the programme, apart from May and June, the cure rate remained below 75% (the national OTP cure rate standard) owing to the initial spike in defaults. However from October onwards it climbed above 75% and has remained there since. There have been a total of 5 deaths in the programme since it started: 2 in Monhazir Para CC (Materberi), 1 in Fakiraghona CC (Boro Moheshkhali Union) and 2 in Lambaghona CC (Choto Moheshkhali Union). All deaths were associated with complications.

Figure 18 shows the performance rates over time for the SFP in 2015 and 2016.

Figure 18: SFP performance rates, 2015 and 2016



Cure rates in the SFP remained above 75% for most of 2015 and 2016 with brief dips between May and September in both years. The dips in cure rate coincide with subsequent rises in default rates due to the monsoon rains (see Defaulter section) but also with rises in the number of cases discharged as CNR.

Child non-respondent (CNR) can be caused by sharing of the ration with other family members (which may be common during the monsoon season when access to clinics and food availability are poor) but it can also be caused by rises in other seasonal disease burdens such as diarrhoea. Cases discharged as CNR are referred to the Union Health Centre (UHC) if the CMAM team identify complications or they are readmitted into the programme at the next distribution cycle two weeks after being discharged.

Of the 36 community clinics offering CMAM services in Moheshkhali, 13 discharged as cured less than 75% of the MAM cases admitted into the SFP during 2016 and 12 discharged as cured less than 75% of the SAM cases between

April 2016 and February 2017. Six community clinics (**Jagiraghona** and **Jodapukur** in Bara Moheshkhali; **Charpara** and **Putivila** in Pouroshova; **Meheria Para** in Kutubjum; and **Kydabad** in Shaplapur) achieved lower than 75% cure rate for both programmes and so should be closely monitored by SARPV and its technical partners in months to come.

Performance rates for all Community clinics are available in Annex for SFP (Annex 2) and OTP (Annex 3).

5.2. Qualitative data collection and analysis

5.2.1 Introduction

Having analysed and discussed the quantitative programme data, the assessment team then set out to conduct qualitative data collection and analysis in order to try to gather more information about the positive and negative factors influencing coverage.

The assessment team were provided with an overview of the key principles and steps of qualitative data collection and analysis during the 3 day sensitisation. The assessment leader then gave a recap session during the assessment as well as providing a hand-out to guide the assessment teams during the data collection.

One of the core principles of a SQUEAC assessment is Triangulation meaning that information collected should be triangulated from multiple sources using multiple methods in order for it to be considered a valid piece of information. Sources can include quantitative data findings, however the most important sources of information are key informants; stakeholders directly or indirectly involved in the health and nutrition of children in the target age range. Key informants in Moheshkhali were identified as being caregivers of malnourished children (men and women), other community members (other men and women, community leaders, religious leaders, teachers, traditional birth attendants, traditional healers and Model Mothers), health facility staff and volunteers (CNWs, CNVs, CHCPs, SACMOs, IHAs) and union level government staff.

While they were in the selected 6 community clinics to collect quantitative data and observe treatment, the teams also conducted semi-structured interviews with CNWs and CHCPs. Then, over the following two days, they conducted semi-structured interviews (SSI) and Focus Group Discussions (FGD) with different key informants at community level. On the first day they conducted SSIs and FGDs in villages close to the 6 community clinics selected for quantitative data collection and on the second day they conducted further interviews in villages located in catchment areas of 6 additional community clinics in other unions in the upazila.

The types of key informants to interview were selected by the assessment leader in order to ensure adequate representation of key informants. The community clinics were also carefully selected in order to obtain a spatially representative sample within the upazila. By the end of the second day, qualitative data collection had been conducted in villages of all nine unions of the upazila.

The teams were composed of a pair of surveyors, with one of the team asking questions and the other taking notes. The teams used SSI or FGD interview guides which had been developed and used in a previous SQUEAC in Teknaf Upazila in 2015.

In total, the assessment team conducted a total of 32 SSIs and/or FGDs during the qualitative data investigation.

At the end of days 2 and 3 of the qualitative data collection, the teams came back to the assessment base in Chakaria to feedback their findings to the rest of the team. All factors (positive and negative) were recorded by key informant.

When all findings had been captured, a list of barriers and boosters was then compiled and triangulated by key informant and by data collection method.

5.2.2. Data compilation and analysis

The triangulated findings of the qualitative investigation were arranged in an overall list of barriers and boosters and organised by theme. The key observations are summarised below.

Health seeking behaviour

In general health seeking behaviour was found to be good based on discussions with women and men in the community and with carers of malnourished children. It was cited by a number of sources that pregnant mothers receive good support from their husbands, other family member and community mothers during pregnancy and that appropriate knowledge exists relating to care during pregnancy. Community members are aware of the family welfare clinics and of the services are available in them.

However, despite the affirmation by some health service personnel (CHCP and SACMO) that primary health care services are trusted by the community, some different key informants from the community stated that births still take place at home with the support of unskilled birth attendants. Some also mentioned that some community members also prefer to visit the village doctor to seek treatment.

Basic nutrition knowledge and awareness and perception of SAM and MAM

Knowledge about basic nutrition and about acute malnutrition was found to be poor in some groups, including religious leaders, teachers and men in the community, some of whom stated that they believed that acute malnutrition was only a temporary state for a child to be in and that their condition would improve over time. This is likely to be due to the fact that these groups are not invited to or able to attend courtyard sessions, which take place at the same time as cluster screenings and generally only include women. In some cases women also demonstrated a lack of knowledge about acute malnutrition and, along with many other key informants (including some carers of malnourished children) did not perceive it as a disease. This therefore meant that they also felt that it did not need to treated by visiting a health facility.

That said, the majority of female carers of malnourished children did perceive acute malnutrition as a disease. And mothers and fathers of malnourished children and community members in different villages have knowledge of the consequences of acute malnutrition. Also both of the community leaders who were interviewed had a good understanding of basic nutrition.

This indicates therefore the impact of the courtyard sessions that have been taking place at the same time as cluster screenings and of the fact that in some cases, CMAM programme staffs are engaging community leaders. However there is an evident gap in the attendance at courtyard sessions of community members who play a key role in communicating messages in the community but who would not normally participate.

It was also cited by mothers and by some CHCPs that wealthier families in communities are ashamed of any malnourished children they may have and so do not attend cluster screenings and courtyard sessions. However in general, the majority of community members and health facility staff interviewed said that SAM and MAM children are treated normally, with no stigma.

Awareness and perception of CMAM programme

Nearly all key informant groups interviewed said that there was a positive perception about the CMAM programme in the community. And those that appreciated the service but who did not necessarily know a lot about malnutrition or about how the service worked were keen to participate in courtyard sessions and even host them (in the case of teachers and religious leaders).

Caregivers of malnourished children and some groups of men and women demonstrated a good knowledge of the programme which is leading to a decreasing tendency to consider WSB++ as a food ration (which might be shared between all family members).

However again, due to the fact that they had not participated in sensitisations by the time the assessment started, some religious leaders and teachers demonstrated no knowledge of the CMAM activities.

One misperception stated about the programme was that PLWs should not consume WSB+ before birth as their unborn babies would grow too big making childbirth extremely difficult.

Another misperception is that the consumption of RUTF by children was causing diarrhoea in SAM children. This was mentioned by the AHI, a number of CNWs and a group of mothers and was confirmed by programme staff to have been a challenge in the initial six months of the OTP. However it was not stated by any carers of SAM cases during the qualitative data investigation, which indicates that it is a rumour which is becoming less common among carers.

Outreach activities

Most key informants confirmed that sensitisations are taking place in their community. However, as mentioned above, the challenge relating to sensitisations is that they are primarily targeted at women (and in some cases men too) and that other community members are not invited (religious leaders, wealthy families and teachers) or cannot attend due to lack of time (men). Data collected by the SARPV programme team showed that during 2016, 9.5% of the participants of courtyard sessions were male. A positive impact of sensitisations is that there has been a gradual increase in self-referrals (which was confirmed by CNWs and Model mothers and can partly be seen in the OTP quantitative data).

However it was also said by some CNWs that while the trend is decreasing, there is still a tendency by some carers to share their malnourished child's WSB++ with other children which indicates that more sensitisation (or reformulated sensitisation) is needed.

Cluster screenings were also confirmed to be taking place by most key informants. Other health staff who were not part of the CMAM programme (eg SACMO), also confirmed that they promote the screenings to their patients. However based on the responses of a number of key informants interviewed, the screenings are not including all eligible children for various reasons. As mentioned before, some key informants mentioned that wealthier families feel

that they do not need to attend. This is also the case for some religious families who are also reluctant to bring their children as they believe their children's health is safe due to their strong faith.

Others mentioned that screenings that take place during the afternoon have poor attendance as carers are often too busy or unwilling to attend. And finally some carers are reluctant to attend as they believe that all children screened will be admitted to the programme. Therefore when they are screened and not admitted, the next time the screenings take place, they do not want to attend.

Finally, there was perception recognised by some (CNWs and AHI) that some mothers believe that their children cannot be admitted to the programme unless they are referred by a CNV during a cluster or EPI screening. A number of carers of non-covered cases also mentioned this during the small area survey as the reason for which they had not taken their child to the clinic.

Quality of care

Quality of care in community clinics was found to be good. The groups of carers of malnourished children who were interviewed said that waiting time at the clinic was short and that they were happy with the service. Some carers of malnourished cases (men and women) also stated that they do not share WSB++ or RUTF.

All CNWs, CHCPs and the SACMO interviewed were found to have good knowledge of CMAM and were clear about their responsibilities. The Model Mothers also demonstrated a good knowledge of CMAM and, along with CNWs, was motivated to serve the beneficiaries. Both Model Mothers interviewed and four of the CNWs stated that they received good supervision and support from SARPV coordination and technical staff and ACF and WFP project officers.

However there were indications of demotivation from some CNWs during interviews, particularly in relation to pay and the large size of their responsible catchment area.

Finally one CNW mentioned that there had been stock breaks in medicines distributed to SAM cases in recent months which may lead to a negative perception on the programme. Related to this, the SACMO mentioned that frequent stock breaks in other medicines which are also distributed from clinics may lead to negative perceptions of the CMAM programme in the community.

Coordination

Some CNWs confirmed that there was good coordination at clinic level between root level government health and family planning staff.

However it was also mentioned by the SACMO that there are irregular support group and management group meetings and that there is a lack of support from the local government chairman for the programme. Coordination challenges may well have an impact on the quality of the care provided and on the willingness of carers to visit the community clinics in the first place.

Access

As indicated by the analysis of registers in six clinics, the majority of villages are located within one hour's walk of the community clinic. Most villages are relatively close to clinics – which was confirmed by groups of carers of malnourished children.

However it is impossible for community clinics to be easily accessible to all that need them. And some mentioned geographical access to be a challenge, particularly in hard too reach hilly areas in the unions of Hoanak and Chota Moheshkhali. It was also mentioned by a number of groups of carers and by the SACMO that seasonal flooding during the monsoon season can also be a barrier facing carers in attending clinics.

Hygiene

A final negative factor affecting coverage identified by a group of mothers and a community leader was the poor hygiene conditions in which families lived. Owing to poor hygiene, many children suffer from frequent bouts of diarrhoea. This stops them from recovering from acute malnutrition as quickly as they should leading to long lengths of stay in the programme and, in some cases, being discharged as CNR. While this is outside the control of the CMAM programme staff, it leads to poor perception of the programme as carers believe that the malnutrition treatment is not working thus leading to a negative perception of the programme in the community.

5.3. Stage 2

5.3.1. Introduction

The purpose of Stage 2 during a SQUEAC assessment is to test one or more of the factors identified during the quantitative and qualitative data collection and analysis in order to determine if our beliefs about coverage are

accurate. The process involves setting measurable hypotheses relating to one factor which influences coverage, purposively selecting locations or a location in which to test it and then conducting the test.

5.3.2. Hypothesis 1: Number of clusters per CNV

During the qualitative investigation the assessment team heard from a number of key informants that some of the CNVs has been complaining due to the fact that they had to cover a very large catchment area with only two or three CNVs. The CNVs are required to complete at least 2 cluster screenings a day for a minimum of 15 days in a month. Therefore it is expected that they screen 30 clusters over the course of a month or four working weeks.

The assessment team believed that coverage in community clinic (CC) catchment areas where CNVs had to cover more clusters may be lower. To test this hypothesis they first compared the cluster plan (which summarises how many clusters each CNV covers) with the actual and expected admissions by CC (based on the number of clusters and therefore population in each CC). This is shown in Figure 5.

The analysis indicated that in CC catchment areas where admissions were lower than expected (for example Putivila, Charpara and Uttar Nolbila) the CNVs had to cover a higher than average number of clusters (average number is 40 clusters per CNV)[2].

With this confirmed, the assessment team decided to test their belief that the number of clusters covered by a CNV has an impact on coverage by formulating a hypothesis and testing it on the ground.

As both MAM and SAM cases can be referred during cluster screenings, the team decided to set the same hypothesis for both OTP and SFP.

The hypothesis stated:

Part A: In community clinic catchment areas where CNVs are required to cover 60 or more clusters, coverage of the OTP and the SFP will be less than 50%

Part B: In community clinic catchment areas where CNVs are required to cover 59 or less clusters, coverage of the OTP and the SFP will be more than 50%

Methodology:

To test this, the assessment team first selected from the Cluster plan two CC catchment areas which had more than 60 clusters per CNV and two with less than 60 clusters per CNV.

Four teams then went to the four selected CCs, met with the CNWs and asked them to identify one village located approximately 2 km away from the clinic. Once selected, the teams each set out to conduct door to door case finding in those villages (in a minimum of 6 clusters in each) in order to locate all SAM and MAM children. This was done by following a case finding procedure prepared by the assessment leader (Annex 5) and identifying MAM and SAM children as one of six possible cases: “SAM Covered”, “SAM non-covered”, “SAM recovering”, “MAM covered”, “MAM non-covered” and “MAM recovering”. As and when a case was identified, the team would complete the appropriate form and then complete a village summary sheet with the total number of each case.

The results were then compiled for all villages. The totals per case for villages where high coverage was expected were combined and the totals per case for villages where low coverage was expected were combined. The combined results were then analysed using the LQAS classification method in order to determine if the villages tested had confirmed or denied the hypotheses set.

Results:

During this test only active SAM or MAM cases were included. Therefore recovering cases were excluded from the results (shown in Table 3).

Table 3: Results of test for Hypothesis 1

				SAM cases		MAM cases		TOTAL	
	Union	CC	Village/s	Covered	Non-covered	Covered	Non-covered	Covered	Non-covered
High coverage villages	Boro Moheshkali	Gulgulia Para FWC	Gulgulia Para	0	0	1	3	1	3
	Kutubjum	Maheria Para	Kondakar and Kamiter Para	1	1	5	0	6	1
			Total	**1**	**1**	**6**	**3**	**7**	**4**

[2] This is calculated from the “Cluster plan”

Low coverage villages	Hoanok	Hariarchora	Baniarkata	0	0	5	6	5	6
	Pouroshova	Putivila	Dashimajir para	2	1	2	2	4	3
			Total	**2**	**1**	**7**	**8**	**9**	**9**

The results were analysed using LQAS (Lot Quality Assurance Sampling). This tool enables users to classify coverage as satisfactory or unsatisfactory based on a very small sample. In each type of village tested (high coverage villages and low coverage villages) a decision rule (*d*) is calculated based on the total number of cases found (n) and the coverage standard appropriate to the context using the following formula:

$$d = \left\lfloor n \times \frac{p}{100} \right\rfloor$$

d = Decision rule; *n* = Sample size; *p* = Coverage standard

The total number of covered cases found is then compared to *d.* In the suspected high coverage villages, if the number of covered cases exceeds *d*, Part A of the hypothesis is proven or, if it equals or is below *d,* the hypothesis is disproven. In the suspected low coverage villages, the opposite is true.

For this test, 50% was selected as the appropriate coverage standard to use.

Table 4 shows an analysis of the results.

Table 4: Analysis of results from Hypothesis 1

	High coverage villages due to fewer clusters to cover per CNV	**Low coverage villages due to greater number of clusters to cover per CNV**
Total cases (*n*)	11	18
Decision rule (*d*)	5	9
Covered cases found	7	9
Conclusion of test	Covered cases is greater than *d*. **Hypothesis proven**	Covered cases is equal to *d.* **Hypothesis proven**

The analysis of the results from the first hypothesis test indicates that the survey team's suspicion that coverage is linked to the number of clusters which CNVs are responsible for. However, as the test in the lower coverage villages was only just proven (if one more covered case had been found then the hypothesis would have been disproven), then the test is not proven convincingly.

The survey team considered the results of this hypothesis when conducting their barrier and booster weighing during the prior building sessions.

5.3.3. Hypothesis 2: Time-to-travel from villages to community clinics as a factor influencing coverage

During their second hypothesis test, the survey team decided to test time-to-travel to community clinics as a factor influencing the decision of carers to bring their children for treatment in hilly / hard-to-reach areas. Like Hypothesis 1, this was based on the analysis of quantitative data. Furthermore some key informants cited that the CMAM programme was far from their village location and therefore that time-to-travel was a factor influencing coverage.

As shown in Figure 6 and in Section 5.1.6, an increased percentage of defaulting cases (in comparison to admitted cases) originated from villages located more than one hour's walk from the community clinic indicating that those carers located further from CCs may decide not to make the journey with the child. Meanwhile the majority of admitted cases and a lower percentage of defaulters came from villages located near community clinics. This point was also mentioned by a group of men during a focus group discussion during the qualitative investigation.

As such the survey team decided to test this hypothesis.

Like Hypothesis 1, this test set out to test the coverage of a combination of OTP and SFP. This is because both programmes rely on the same CNVs to refer cases during cluster screenings and the survey team presumed that most carers in far villages would be reluctant to travel to community clinics located far from their villages regardless of the fact that their child is SAM or MAM.

Therefore Hypothesis 2 stated:

Part A: In villages located more than 60 minutes' walk from community clinics in hilly areas, coverage would be less than 50%

Part B: In villages located less than 60 minutes' walk from community clinics in hilly areas, coverage would be more than 50%

Methodology:

To test this, the teams first selected two community clinic catchment areas which included hilly areas (Keruntoli in Hoanok Union and Lambaghona in Choto Moheshkhali Union) and then identified in each union one village which was located close to the community clinic (less than 60 minutes' walk) and one that was located far from the community clinic (more than 60 minutes' walk). Four teams then went to each of the four villages and conducted door to door case finding in at least 6 clusters using the same process outlined above for Hypothesis 1.

Results:

The results from Hypothesis 2 are summarised in Table 5.

Table 5: Results of test from Hypothesis 2

				SAM cases		MAM cases		TOTAL	
	Union	**CC**	**Village/s**	**Covered**	**Non-covered**	**Covered**	**Non-covered**	**Covered**	**Non-covered**
High coverage villages	Hoanok	Keruntoli	Noya Para	0	0	5	0	5	0
	Choto Moheshkhali	Lambaghona	Ashrafali ghona	0	1	0	3	0	4
			Total	**0**	**1**	**5**	**0**	**5**	**4**
Low coverage villages	Hoanok	Keruntoli	Kalalikata	0	0	2	1	2	1
	Choto Moheshkhali	Lambaghona	Mudircchora	0	0	3	5	3	5
			Total	**0**	**0**	**5**	**6**	**5**	**6**

Again the results from each part of Hypothesis were analysed using LQAS.

The analysis is shown in Table 6.

Table 6: Analysis of results from Hypothesis 2

	High coverage villages due to lower time to travel from village to CC	**Low coverage villages due higher time to travel from village to CC**
Total cases (*n*)	9	11
Decision rule (*d*)	4	5
Covered cases found	5	5
Conclusion of test	Covered cases is greater than *d*. **Hypothesis proven**	Covered cases is equal to *d.* **Hypothesis proven**

The analysis of the results from the second hypothesis test again prove that the survey team's belief about coverage was correct. In villages located more than 60 minutes' walk, the number of covered cases did not exceed the decision threshold (using a coverage standard of 50%). However again, the hypothesis is only *just* proven, indicating that while distance is likely to be a factor affecting coverage, it is not likely to be a very significant factor.

Therefore again, the survey team considered the results of this test when they were deciding on the final weights of the barriers and boosters during the prior building exercise.

5.4. Prior building

5.4.1. Introduction

The next stage of the SQUEAC in Moheshkhali upazila was to use the combined evidence and findings from Stages 1 and 2 to construct a "Prior belief" of coverage in the area being assessed for the SAM treatment programme and MAM treatment programme.

This process involves the survey team using various tools known as "prior contributing elements" to construct different prior estimations and then to take the average of the scores to calculate one "prior mode". This prior mode is then used to calculate the required sample size for the wide area survey during Stage 3.

To initiate the prior building process, the survey leader consolidated and triangulated the barriers and boosters into a finalised list of barriers and boosters. The findings from the Stage 2 hypothesis tests were also included as additional sources of information in the final lists. One barrier identified only related to the SAM treatment programme. And one barrier and one booster only related to the MAM treatment programme. All other barriers and boosters impacted both programmes.

Once completed, the survey leader asked the survey team to review the list of barriers and boosters one final time. He then divided the group into four teams and asked each team to score each barrier and booster on a scale of 1 to 5 depending on the impact that it had on coverage. He reminded them that when weighing, they should consider the impact that each factor has across the entire upazila based on the evidence that they had seen and heard during Stages 1 and 2. Each team then wrote down their chosen weight for each barrier and booster and the average of the four weights was then taken as the final weight.

The final list of barriers and boosters with the average weights is shown in Table 7.

Table 7: Table of weighted barriers and boosters, Moheshkhali SQUEAC, Bangladesh

Positive Factors (Boosters)	**Scores**		**Sources and methods**	***Negative Factors (Barriers)***	**Scores**		**Sources and methods**
	Simple	**Weighted**			**Simple**	**Weighted**	
PHC services appreciated by the community leading to the likelihood that CMAM will be trusted	5	3	I1, J1	Village doctors and TBAs still used across upazila	5	2	A2, B2, E1, G1, F1
Family and community supportive to carers during treatment of SAM / MAM	5	4	A2, B2, E1	Perception that RUTF causes diarrhoea **(SAM only)**	5	3	B2, E1, G1, H1, L1
Effective sensitisations are leading to good basic knowledge of nutrition and acute malnutrition increasing likelihood of self-referrals	5	4	A2, B2, C2, D2, F1, G1, H1, L1, M1, 4	Acute malnutrition is not perceived as a disease which requires treatment in clinics	5	4	A2, B2, C2, E1, G1, L1
Acutely malnourished children are treated normally with no stigma	5	4	E1, F1, G1, J1, L1	Not all groups in community are involved in sensitisations leading to a lack of awareness of malnutrition and service (including wealthy families, men, community and religious leaders)	5	4	B2, D2, E1, G1, H1, M1, I2
Positive perception of CMAM in community	5	4	A2, B2, C2, D2, E1, F1, G1, H1, I1, J1, M1	CNVs and CNWs in some catchment areas have very large catchment areas to cover and so are unable to screen villages regularly	5	5	F1, H1, 4, 6
Active screening is taking place across all clusters leading to early admissions and good service retention	5	5	C2, D2, H1, I1, M1, 3, 4, 6	Carers believe that they need to be referred to the programme in order for their child to be admitted	5	3	H1, L1, 6
Staff are motivated and well trained and are clear about their responsibilities	5	4	H1, I1, J1, M1	Stock breaks of government medicines and CMAM medicines affect trust and reputation of CMAM programme	5	1	H1, J1
Regular supervision provided to staff by UNS, PO, SPO, TCN + NO	5	4	H1, J1	Long waiting time in clinics and poor behaviour of staff	5	2	C2, 6
Good coordination between CHCP and FWA in clinics	5	2	H1	Sharing of rations leads to high rates of CNR and loss in confidence of programme **(MAM only)**	5	3	D2, H1, L1, 4
CNCs are easily accessible by most carers	5	3	C2, D2	Coordination challenges between government and service providers and lack of government support affects service	5	2	J1
Good knowledge in community and in family about a mother's care needs during pregnancy leading to increased likelihood of support for malnourished children	5	2	A2, B2, E1	Carers in distant, hard to reach areas unwilling to make journey to clinic	5	4	B2, 3, 6
Length of stay for SAM and MAM is relatively short increasing likelihood of service uptake	5	3	3, 4	Lack of awareness about the signs of SAM and MAM	5	4	6

Good understanding of programme leading to reduction in sharing of SFP rations **(MAM only)**	5	2	A2, B2, C2, D2, F1	Seasonal flooding prevents carers from coming to clinic	5	3	A2, B2, J1
				Challenges encountered with screening all children including: misperception that MUAC screening will mean that all carers receive rations; Carers too busy to attend (especially in afternoons); Rich families reluctant to come to screenings; some religious families refuse to allow their children to be screened	5	5	B2, E1, G1, I1, L1, 5, 6

Table 8: Key for barriers and boosters table

	Source		**Method**
A	Community member (Female)	1	Semi structured interview
B	Community member (Male)	2	Focus Group discussion
C	SAM/MAM carer (Female)	3	CNC register analysis
D	SAM/MAM carer (Male)	4	Routine data analysis
E	Religious leader	5	Observation
F	Community leader	6	Small area survey
G	Teacher		
H	CNW		
I	CHCP		
J	SACMO		
K	Union Chairman		
L	Assistant Health Inspector		
M	Model mother		

5.4.2. Calculation of prior estimations from barrier and booster list

Based on the finalised list of barriers and boosters, it was possible to calculate two prior estimations by using the **simple method** and the **weighted method**.

For the simple method each barrier and booster was given the same score (5). While for the weighted method, each factor was accorded an average score using the method described in Section 5.4.1.

For each, the barriers and boosters were then summed. The totals are shown in Table 9.

Table 9: Sum of simple and weighted barriers and boosters for OTP and SFP

	OTP		SFP	
	Boosters	**Barriers**	**Boosters**	**Barriers**
Simple	60	65	65	65
Weighted	42	42	42	44

For both the simple and weighted scores, the following calculation was then used to calculate the simple and weighted prior estimations:

$$Prior\ estimation = \frac{(Sum\ of\ boosters + 0) + (100 - Sum\ of\ barriers)}{2}$$

Therefore, the simple and weighted prior estimations were as follows for the OTP:

$$Simple\ prior\ estimation\ OTP = \frac{(60 + 0) + (100 - 65)}{2} = 47.5$$

$$Weighted\ prior\ estimation\ OTP = \frac{(42 + 0) + (100 - 42)}{2} = 50$$

And for the SFP:

$$Simple\ prior\ estimation\ SFP = \frac{(65 + 0) + (100 - 65)}{2} = 50$$

$$Weighted\ prior\ estimation\ SFP = \frac{(42 + 0) + (100 - 44)}{2} = 49$$

5.4.3. Concept map prior calculation

Following the finalisation of the barrier and booster table, the teams worked together to draw concept maps for barriers and boosters to illustrate the links between factors and how they link to coverage. The two concept maps are shown in Figures 19 and 20.

Figure 19: Concept map of boosters

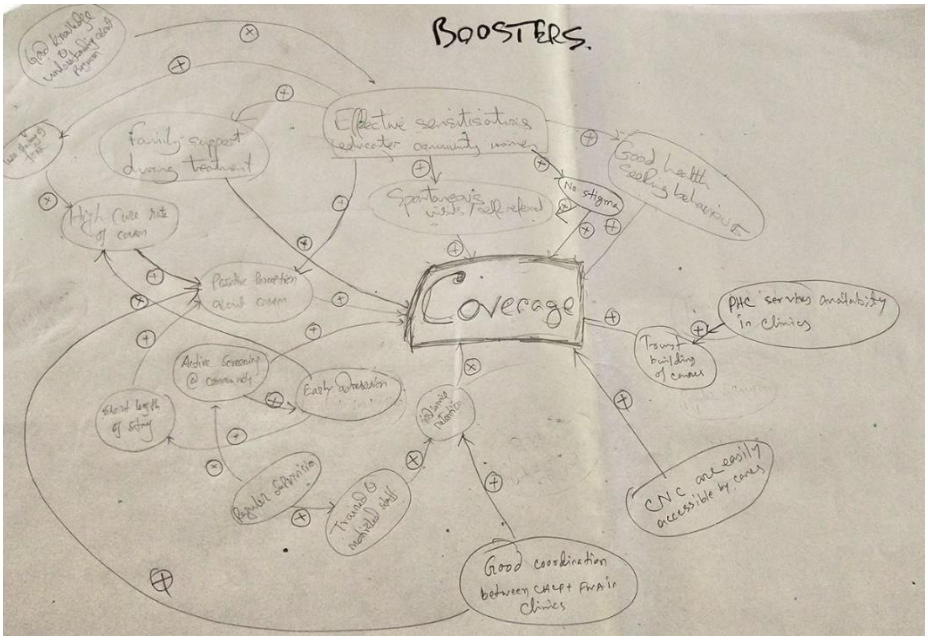
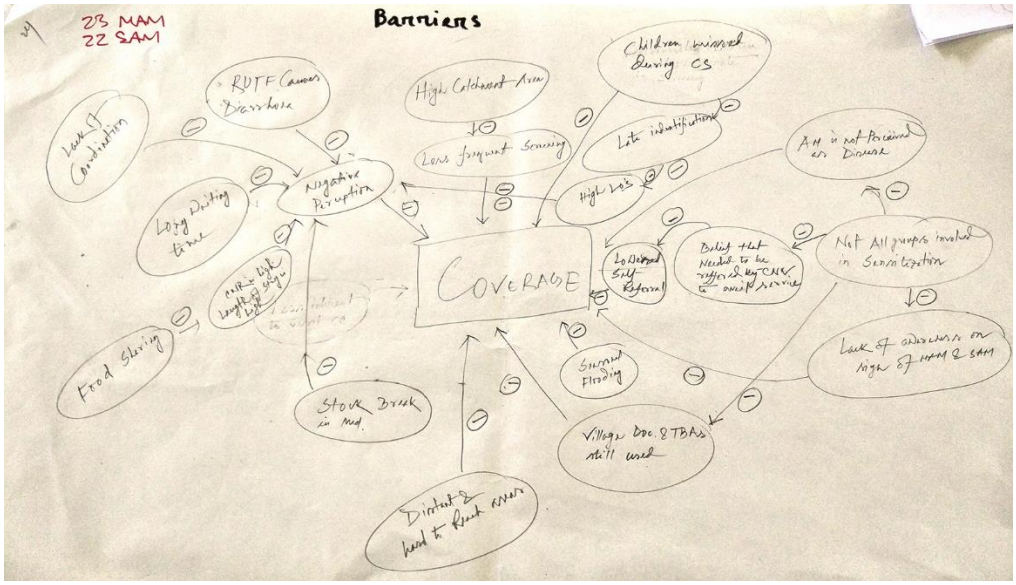


Figure 20: Concept map of barriers



By counting the links between boosters and barriers, it was then possible to calculate another prior estimation for OTP and SFP by using the sample calculation in Section 5.4.2.

For OTP it was possible to identify a total of 29 positive links and 22 negative links.

Therefore the concept map prior was calculated as follows:

$$Concept\ map\ prior\ estimation\ OTP = \frac{(29+0)+(100-22)}{2} = 53.5$$

For SFP it was possible to identify a total of 29 positive links and 23 negative links.

$$Concept\ map\ prior\ estimation\ SFP = \frac{(29+0)+(100-23)}{2} = 53$$

5.4.4. Mind map prior calculation

Another method which can be used to estimate a prior is to count the total number of positive and negative factors on the mind map constructed during Stage 1 of the SQUEAC. This includes observations made during the quantitative data analysis and all of the positive and negative factors identified during the qualitative data investigation.

The same calculation used in Section 5.4.2 was then used to calculate another prior.

For OTP, 52 positive factors were identified and 59 negative factors:

$$Mind\ map\ prior\ estimation\ OTP = \frac{(52+0)+(100-59)}{2} = 46.5$$

For SFP, 53 positive factors were identified and 57 negative factors:

$$Mind\ map\ prior\ estimation\ SFP = \frac{(53+0)+(100-57)}{2} = 48$$

5.4.5. Histogram prior estimation

Finally, the survey team estimated coverage using a variation of the histogram method of prior estimation. The survey leader asked each team member to write on cards what they believed the coverage estimates to be for OTP and SFP without consulting their colleagues. The survey leader emphasised again that their estimates should be based on what they had seen and heard during Stages 1 and 2 of the survey up until that point.

The cards were then arranged by OTP and SFP ranging from the lowest estimate to the highest estimate. The middle value of each list was then taken as the fifth and final prior estimate. Table 10 shows the final list of estimates.

The median value for the **OTP was 57%** and for the **SFP was 60%.**

5.4.6. Calculation of prior mode and sample size for Stage 3

The average of the prior estimates for OTP and SFP were then calculated in order to arrive at the Prior mode for each (see Table 10).

Table 10: Prior estimations and prior mode for OTP and SFP

Prior contributing element	OTP	SFP
Simple barrier and booster prior	47.5	50
Weighted barrier and booster prior	50	49
Concept map prior	53.5	53
Mind map prior	46.5	48
Histogram prior	57	60
Average / Prior mode	**51%**	**52%**

Once the Prior modes has been calculated, it was then possible to calculate the required sample size for the wide area survey during Stage 3.

To do this the team first needed to apply a range of uncertainty to the prior modes. As this was the first time that a SQUEAC had taken place in Moheshkhali, the team judged that they had **little certainty** about the prior modes – therefore they applied a wider range of uncertainty to each prior mode. In cases where there is little certainty, the standard range to apply is + and – 25%.

Therefore for OTP, with a prior mode of 51%, the minimum probable value was 26% and the maximum probable value 76%. And for SFP, with a prior mode of 52%, the minimum probable value was 27% and the maximum probable value 77%.

With these values calculated it was possible to calculate the prior "shape parameters" for the OTP and SFP and to plot these on the Bayes calculator (this was done using the excel-based "Stage 3 Quick calc tool").

The shape parameters for each programme were calculated as follows:

Table 11: Shape parameters for OTP and SFP

	OTP	SFP
α Prior	17.8	18.2
β Prior	17.1	16.8

With the Alpha and Beta shape parameters, it was possible to plot the prior distributions on the Bayes calculator and to calculate the required sample size for Stage 3 (Figures 21 and 22).

Figure 21: Bayes plot of OTP prior mode (51%)

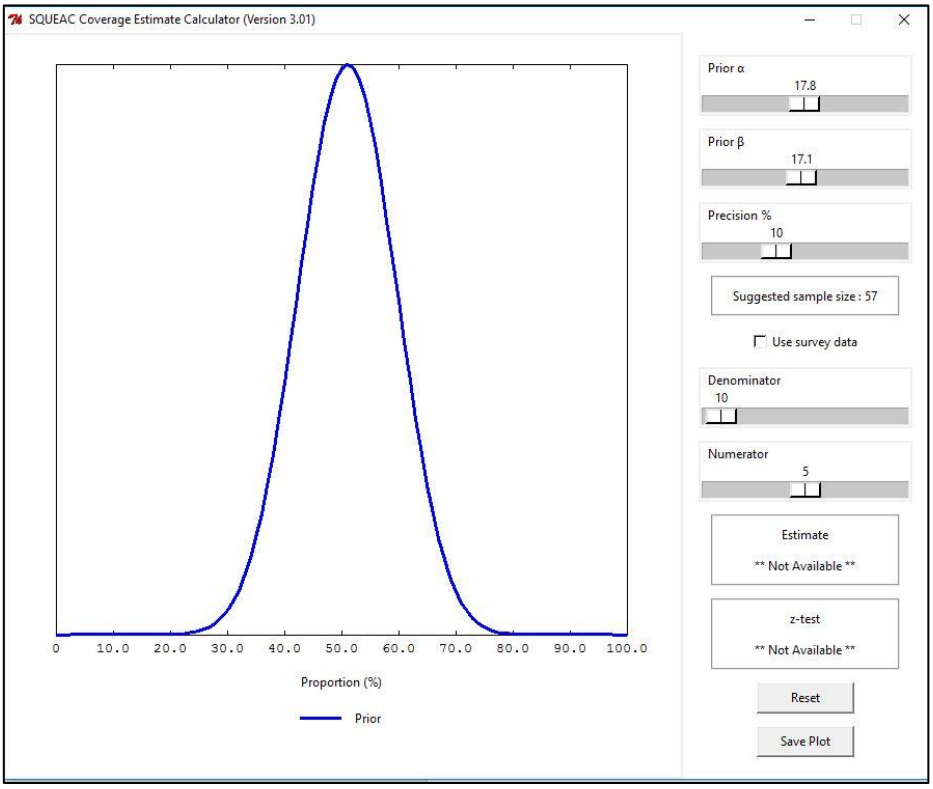
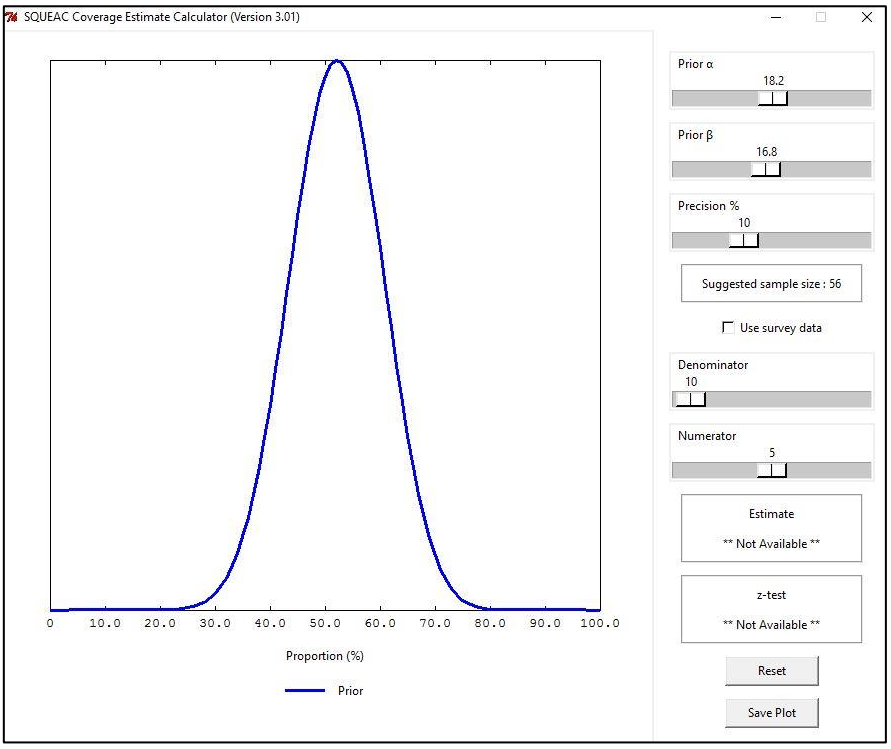


Figure 22: Bayes plot of SFP prior mode (52%)



The sample sizes required to complete the conjugate analysis were therefore calculated to be 57 SAM cases and 56 MAM cases.

5.5. Stage 3

5.5.1. Calculation of villages to sample

Once the required sample size was calculated, the next step was to calculate the number of villages to visit in order to find the required sample size.

When conducting a SQUEAC in SAM and MAM treatment programmes, as SAM is a rarer condition than MAM and teams need to travel to more villages to reach the required SAM sample, the calculation of the number of villages to visit (*N villages)* is based on SAM prevalence data. In this way, if the SAM prevalence data is correct, the teams will visit a sufficient number of villages to meet their SAM sample size and will exceed their MAM sample (which strengthens the accuracy of the MAM treatment coverage estimate).

Therefore during the Moheshkhali SQUEAC, the number of villages to visit to locate the SAM and MAM samples was calculated based on the SAM prevalence data.

N villages is calculated as follows (*n* = sample size):

$$n\ villages = \left\lceil \frac{n}{average\ village\ population \times \frac{\%\ population\ 6-59\ months}{100} \times \frac{prevalence\ of\ SAM}{100}} \right\rceil$$

With 331 villages in Moheshkhali and a total population of approximately 376,000, the average village population was 1,136. And the percentage of under-fives for the upazila was estimated to be 10.46%

The most recent SMART survey in the region had been completed in January 2015. As no SMART survey had been collected since then, the assessment team judged that this was the most accurate prevalence estimate to use. However they suspected that the prevalence had decreased slightly since then.

Based on the 2015 SMART results, the SAM prevalence by MUAC and/or oedema was **1.4% (95%CI 0.7-2.9).** However owing to the suspected reduction in prevalence, the prevalence used in the calculation of *n villages* was 1% (halfway between the mode of the estimate and the lower interval).

The calculation for the number of villages to visit was therefore:

$$n\ villages = \left\lceil \frac{57}{1136 \times \frac{10.46}{100} \times \frac{1}{100}} \right\rceil = 47.97 = 48$$

The teams would therefore have to visit **48 villages**. Owing to the limited time available and the small number of teams and vehicles, this would not have been possible. Therefore the survey leader increased the precision of the estimate from 10% to 12% on the Bayes calculator (an increase in precision leads to a reduction in the accuracy of the final estimate) which then reduced the required sample size of SAM cases to **33 cases**.

With this reduced sample, *n villages* reduced to **28 villages** which was a manageable number of villages to visit in the time available.

5.5.2. Village selection and planning for likelihood survey

In the absence of a detailed map marked with all of the villages in the upazila, the survey team selected the 33 villages to visit using the Stratified Sampling Method from a full list of villages.

The villages were listed first by union and then by CC catchment area and were numbered from 1 to 331.

A sampling interval was then calculated by dividing the total number of villages (331) with *n villages* (28).

$$Sampling\ interval\ = \frac{331}{28} = 11.82$$

The first village in the list was selected by using MS Excel to calculate a random number between 1 and 12 – 3 was selected. Village 3 was therefore selected as the first village to visit. Subsequent village numbers were calculated by multiplying the sampling interval by 1, 2, etc all the way up to 27 to arrive at a total list of 28 villages to visit, evenly distributed by union and CC catchment areas.

With the villages selected, the survey team then planned team movements by day for the four days planned for the wide area survey.

5.5.3. In community sampling and wide area survey results

In-community sampling was then conducted by teams of two in each of the selected villages using the door-to-door case finding steps outlined in Section 5.3.2. The teams were tasked with surveying a minimum of 6 clusters (approximately 138 households) in each village that they visited. 6 clusters were selected as this is the approximate number of clusters that can be surveyed by two surveyors over the course of half a day. If the selected village had less than 6 clusters, the team would include additional clusters from the nearest neighbouring village. If the village had more than 6 clusters, they would divide the village up into sections and randomly select the clusters in which to sample.

The overall findings from the wide area survey are detailed in Table 12. The detailed findings by village are included in Annex 4.

5.5.4. Coverage estimations

The most reliable, and widely suited, coverage estimator currently available is the single coverage estimator[3] and should be used for estimating both OTP and SFP coverage. The estimator estimates coverage using active SAM/MAM cases as well as recovering cases in the programme and recovering cases **not** in the programme. The following formula is used where C_{in}= covered SAM/MAM cases, C_{out}= uncovered SAM/MAM cases, R_{in} = recovering cases in the programme and R_{out} = recovering cases not in the programme:

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

The C_{in}, C_{out} and R_{in} are all collected during the wide-area survey however R_{out} must be estimated. The number of recovering cases not in the programme (R_{out}) is calculated using the formula below.

$$Rout \cong \frac{1}{3} \times (Rin \times \frac{Cin + Cout + 1}{Cin + 1} - Rin)$$

The results of the wide area survey and the result of the calculations for R_{out} are presented in Table 12.

Table 12: Results from wide area survey

Type of case	***SAM cases***	***MAM cases***
Cases not in the programme (C_{out})	9	47
Cases in the programme (C_{in})	13	86

[3] For more information see Myatt, M et al, (2015) *A single coverage estimator for use in SQUEAC, SLEAC, and other CMAM coverage assessments*, p.81 Field Exchange 49.

Recovering cases in the programme (R_{in})	3	21
Recovering cases not in the programme (R_{out})	0	3
Total cases	**25**	**157**

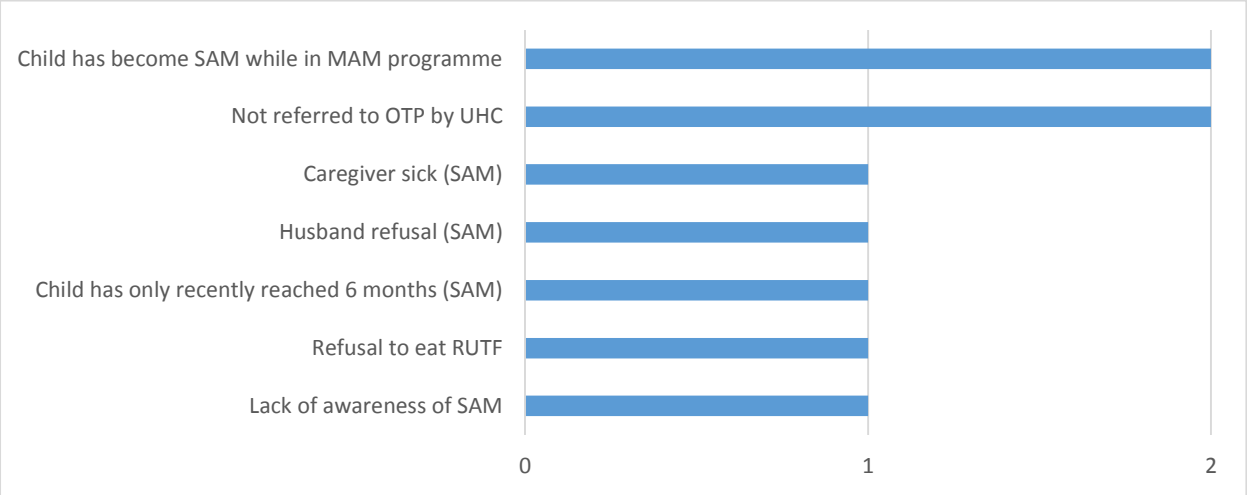
OTP:

The suggested sample size required of SAM cases was 33 cases. Owing to the low prevalence of SAM at the time of the SQUEAC in Moheshkhali, the team were only able to find 25 cases in total. Therefore in this case it was not possible to complete the conjugate analysis and to estimate coverage for the OTP.

The data collected during Stages 1 and 2 and from the structured interviews completed during the wide area survey is however useful for programme reform. Therefore the findings were used in the recommendations and action planning workshop which is presented in Section 8.

For the 9 SAM cases identified during the wide area survey, the main reasons for non-attendance are shown in Figure 23.

Figure 23: Reasons for non-attendance for non-covered SAM cases (n=9)



The two cases which had become SAM while in the MAM treatment programme indicate poor programme compliance by the caregiver, possibly due to sharing of CSB++ with other children or inhabitants of the household. Meanwhile the two cases which were discharged from in-patient care in the UHC and not transferred correctly to the relevant OTP reflect a serious programme failure which should be investigated further and addressed. One was in Ghotivanga CC in Kutubjum and one was in Sairedail CC in Matarbari. The other non-covered cases were non-covered due to a range of reasons, most of which can be addressed by improving the content and quality of community engagement regarding acute malnutrition.

SFP:

During the wide area survey a total of 133 MAM cases were identified in the 28 selected villages in Moheshkhali. A further 21 recovering MAM cases were found. With these totals Recovering Out cases were calculated to be 3. The denominator for the single coverage estimate was therefore 157 and the numerator was 107 (Cin + Rin).

Using the Bayes calculator, the conjugate analysis was completed with the Prior parameters calculated for the SFP prior estimate (52%):

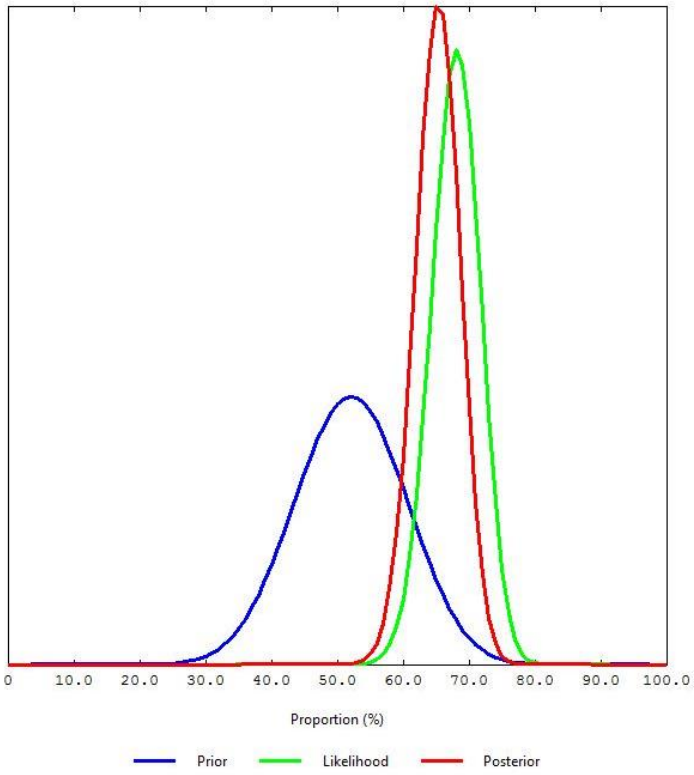
65.4% (95%CI: 58.3-71.8%)

As the final sample size was greater than the suggested sample size (56 cases), it was possible to reduce the precision of the estimate from 10% to 6% which therefore increases the accuracy of the result. The p-value for the final conjugate analysis is 0.0786 indicating that the final estimate is valid and can be reported as there is no conflict between the prior and the likelihood.

This coverage estimate is above the coverage standard for rural contexts (50%) and is especially impressive as it is a MAM treatment programme.

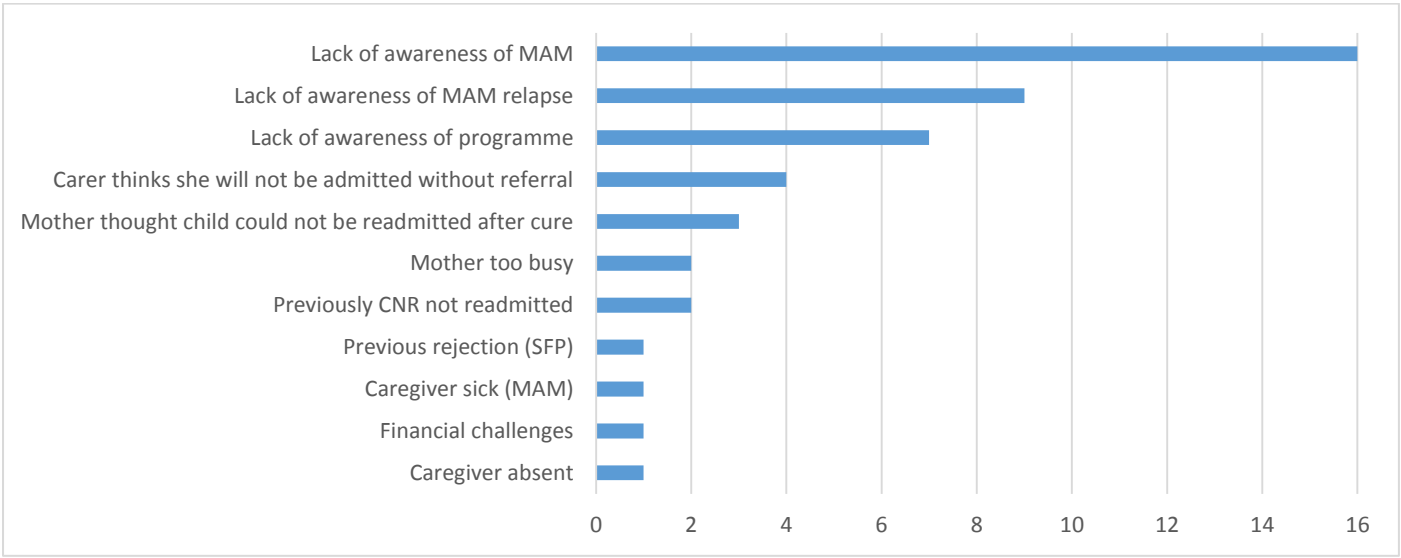
Figure 24 shows a graphical representation of the prior, likelihood and posterior distributions.

Figure 24: Graphic representation of the single coverage estimate for SFP including the prior, likelihood and posterior information



The reasons for non-attendance from interviews with the carers of non-covered cases are shown in Figure 25.

Figure 25: Reasons for non-attendance for non-covered MAM cases (n=47)



Based on the responses of the interviews with mothers, it's clear that there is still room for improvement in relation to **awareness about malnutrition** in Moheshkhali. This calls into question the extent to which CNV-led courtyard sessions are taking place in different areas and the effectiveness of these sensitisations which should be raising awareness of carers (male and female) of the signs of acute malnutrition. However compared with SAM, MAM is harder to recognise in a child and so it is likely that there will always be MAM cases in the community which are eligible for admission to the programme and do not attend as the mother is not aware that they are eligible for treatment. Regular cluster screenings in all clusters should ensure that these cases are identified and referred. Therefore the regularity and spatial coverage of screenings should be monitored closely in future.

The second reason is a **lack of awareness of MAM relapse.** This refers to carers of cured cases who were not aware that their child had become MAM again. These cases make up the majority of the 16 relapsed MAM cases found during the wide area survey and are further analysed below.

The third most common reason was a **lack of awareness of the programme**. This is could be due to the fact that the programme is relatively young still and is still very reliant on active case finding, rather than self-referrals.

The fourth and fifth reasons both relate to incorrect information being passed to carers when their children are treated in CCs and so should be addressed by reviewing the content of the messaging passed to caregivers during distribution days and at discharge.

Other reasons indicate some challenges with the quality of treatment including CNR cases not being followed up and readmitted as they should and the previous rejection of cases from the SFP.

Analysis of CNR cases (Child non-respondent): Five of the 47 non-covered MAM cases had previously been discharged as CNR (child non-respondent). The usual procedure in these cases is for the child to be discharged as CNR and then readmitted during the next distribution day (2 weeks after discharge). However these cases were not which indicates that closer follow up of CNR cases is needed after discharge. Four of the five had been discharged within the last 6 weeks however one case had been discharged 3 months previously.

Analysis of relapsed cases: The wide area survey found that 16 of the non-covered cases (34%) had relapsed into MAM having been discharged as cured. This is a high percentage and deserves further investigation and analysis. Of these 16, nine did not realise that their child had relapsed into MAM and five thought that they could not be readmitted after being discharged as cured. The remaining two could not attend due to financial challenges and carer sickness.

The first reason is likely to relate to the context of the area (characterised by persistent poor food security and poor sanitation facilities) leading to a deterioration in the child's health and to a lack of awareness about MAM (which is a risk with MAM as explained above).

The second reason indicates that some mothers believe that their child cannot be readmitted into the programme once they have been discharged as cured – a potentially serious issue which is linked to the design and content of the sensitisation at treatment in the CCs.

At the moment, admissions into the SFP in the upazila are recorded as one of:

1. New admission
2. Readmission after default (defaulted from programme and readmitted within 2 months)
3. Readmission after recovery (discharged cured and readmitted within 2 months)
4. Transfer from another SFP
5. Return from SAM treatment
6. Others

The SFP should start to monitor CNCs which have a high proportion of admissions admitted under categories 2 and 3 in order to try to understand why they may be defaulting and / relapsing.

Analysis of covered and recovering cases

Sources of referral: Of the 123 covered and recovering cases (including both MAM and SAM cases) identified during the wide-area survey, the vast majority of carers (86%) stated that they had been referred to the programme during cluster screenings and a further 7% from EPI screenings.

Just five cases (4% of covered cases) had entered into the programme spontaneously. This adds to the evidence shown in the Stage 1 data analysis that while screenings are proving to be very effective for admissions (and the coverage estimate indicates that at least for MAM, coverage of the population is good), the CMAM programme is still heavily dependent on active case finding.

Period since last screening: Caregivers of covered and recovering cases (for MAM and SAM cases) were asked when the last participated in a community screening.

79% said that they had been screened in the previous 4 weeks and a further 10% in the last 4 to 8 weeks. Only 10% said that it had been more than 8 weeks since the last screening. This is a good indication of the regularity of screenings however it should be noted that this only included the covered and recovering cases – the caregivers of non-covered cases were not asked this question. This is an oversight on the part of the survey leader – in future assessments, it would be beneficial to ask carers if they can recall if and when screenings had taken place in their communities.

Time to walk to health facility: Likewise, caregivers of covered and recovering cases were asked how long it takes for them to walk to the CC. 91% said that they were located within half an hour's walk of the CC. While this data was not collected for non-covered cases, there did not seem to be any correlation between distance and the proportion of non-covered cases in villages visited (i.e. the villages which were more than 30 minutes' walk did not have more non-

covered cases). This contributes to the evidence that most villages are accessible in Moheshkhali and that distance is therefore not a major factor impacting coverage of the CMAM programme.

However the findings from the second hypothesis test (see Section 5.3.3) prove that in certain parts of the upazila (in the unions which are slightly hillier) time-to-travel is a factor influencing the choice of carers to visits CNCs. Therefore while it can be said that accessibility is overall good in the upazila, there are areas where it is challenging for carers to make the journey to clinics.

6. Discussion

The SQUEAC of the CMAM programme in Moheshkhali Upazila that took place in March 2017 estimated that the coverage of MAM treatment in the upazila was **65.4% (95%CI: 58.3-71.8%)**. It was not possible to estimate the coverage of SAM treatment as an insufficient sample of SAM cases were identified during the wide area survey. However the collection and analysis of quantitative and qualitative data during the assessment enabled the survey team to calculate a "prior" estimate of SAM treatment coverage of **51%**. As this prior estimate has not been combined with a large enough sample of actual SAM cases, it is not possible to publish it as a final coverage estimate for the entire upazila.

The coverage estimate of the MAM programme (which had been operating for approximately 2 years at the time of the survey) is well above the SPHERE standard for the treatment coverage of selective feeding programmes in rural areas (50%). While it was not possible to estimate the coverage of the SAM treatment programme (which had been operational for 11 months at the time of the survey), the prior estimate of 51% and the results of the wide area survey (which found 25 cases – 16 of which were in the programme), indicated that, if a sufficient number of SAM cases been identified, the final coverage estimate would have exceeded the 50% threshold.

The SQUEAC also involved the team leading a rapid investigation into the main positive factors (Boosters) and negative factors (Barriers) affecting the treatment coverage of both programmes. SAM and MAM treatment are completely integrated in Moheshkhali, meaning that one organisation (SARPV) treats SAM and MAM in children aged 6-59 months using the same staff and facilities and the same method for case identification (cluster screenings at community level using MUAC tapes and identification of oedema). If they fall within the age range of the programme, all children with a MUAC of less than 125mm are referred to community clinics and are then admitted into either the SAM or MAM treatment programme. Therefore, in the community's eyes, one programme existed. The only differentiation for them was the product dispensed to children (RUTF for SAM treatment and WSB++ for MAM treatment). As such the majority of the barriers and boosters identified in the community were applicable to both programmes.

Health seeking behaviour was found to be good in the community – some references were made by community members to village doctors and traditional birth attendants, however on the whole, community members recognised and knew the existence of the community clinics and health facilities. Awareness of nutrition and of acute malnutrition was good amongst mothers and other female caregivers, demonstrating the impact of the courtyard sessions led by the CMAM programme since the start of the MAM treatment programme. However knowledge was poor in certain groups, including religious leaders, men, wealthy families and teachers. Courtyard sessions are generally only targeted at female carers of young children and other female community members.

The CMAM programme was found to be well perceived by different groups in the community. Over the last 12 months, both the SAM and MAM programmes have exceeded the cure rate SPHERE standard (75%) and so carers were, in general, willing to take their children to community clinics for admission to the programme. This was aided by the fact that the median length of stay was relatively low for the OTP (6 weeks) and for the SFP (average length of stay for all cured cases was 10 weeks during 2016). Those that did not know about the mechanics of the programme were keen to learn by participating or hosting courtyard sessions (e.g. religious leaders and teachers).

When both the MAM and SAM treatment programmes started, there were misunderstandings in the community about the supplementary and therapeutic foods used. WSB++ was believed to be a food ration and was therefore shared with other family members instead of being fed exclusively to the MAM child. Some instances of this were identified during the SQUEAC and a significant number of non-covered MAM cases were found during the wide area survey who had been discharged as CNR (9 out of 47), most probably because of sharing of WSB++. However CMAM programme staff felt that this was becoming less common as community outreach activities reached more carers. Meanwhile, soon after the launch of the SAM treatment programme, RUTF consumption was thought by some carers of SAM cases to be causing diarrhoea. Programme staff also stated that this was a less common rumour among carers during the qualitative investigation.

The well-organised and systematic cluster screenings which take place in villages around catchment areas of community clinics were found to be the source of referral for the majority of cases entering the OTP. While source of referral is not recorded at admission for MAM cases, of the 107 covered MAM cases identified during the wide area survey, 103 had been referred either during a cluster screening or during an EPI screening. This, along with the fact that coverage rates were found to be above 50% for both programmes, indicates that screenings are very effective at identifying cases. There is also evidence of effective case finding in the MUAC at admission data for SFP – the median MUAC at admission was recorded at 122mm indicating early case identification. The MUAC at admission for OTP was 110mm – not as close to the admission criteria as it could be, but this is likely to be due to the fact that the OTP is a relatively young programme and so it should improve over time. Programme data indicated that 88% of the admissions to the OTP had been due to cluster screenings or EPI screenings. The majority of community members

interviewed were also aware of community screenings taking place in their villages and recognised MUAC tapes and understood what they were used for.

Some challenges relating to the screenings were identified by CNWs and CNVs – for example in some communities, wealthy families and religious families were said to refuse to bring their children for cluster screenings. Also some carers of non-covered MAM cases believed that once their child had been discharged as cured, they would not be readmitted if they relapsed into MAM. Meanwhile other carers were aware that their child was malnourished, however they believed that they had to be referred to community clinics and could not be admitted spontaneously. This last factor is an indication of the impact of over-reliance on screening. A small percentage of admissions to both programmes enter into the programmes spontaneously – overtime, as the community becomes more and more familiar with the programme, this should increase.

In some areas CNVs were also found to be overstretched in some catchment areas with very large populations to cover. The survey team suspected that where CNVs had very large populations to cover with screenings, coverage would be lower. A comparison of admissions data with population size indicated that this might be the case. It was then tested and proven during Stage 2. Therefore where CNVs are unable to screen regularly, treatment coverage is likely to be lower.

In terms of the quality, there were few problems raised by the SQUEAC. Programme performance rates meet or exceed Sphere standards for both programmes. A notable exception is a high rate of CNR amongst MAM cases. The CNR rate during 2016 was 11%. This could be attributed to sharing (as discussed above) or other reasons including refusal to eat CSB++ by children. CNR cases that are discharged from the programme are then supposed to be readmitted at the next distribution cycle. More should be done to understand the reasons for non-response by programme staff.

Default rates were also relatively high for the OTP during the period assessed (14.1%). This is attributed to a high proportion of defaulters at the start of the programme in July and August 2016 which was primarily caused by the misperception about RUTF causing diarrhoea. Since then the defaulter rate dropped significantly and was averaging about 10% in the months leading up to the SQUEAC. CMAM programme staff stated that they felt well-trained and supported by their supervisors. On the whole, they were happy with their workload and motivated by the work that they were doing. Availability of RUTF and CSB++ was consistently good, even in the remote community clinics, however there were some instances of stock breaks of medicines distributed to SAM cases on admission.

Finally access to community clinics was found to be a factor affecting uptake of services in the hilly areas in the centre of Moheshkhali. Based on data found during the register analysis, the survey team conducted a small area survey in villages further from community clinics (more than 60 mins walk). They found a higher proportion of non-covered cases in these villages, therefore confirming their belief. However of the 123 covered and recovering SAM and MAM cases identified during the wide area survey, 112 of the carers (91%) said that they were within 30 minutes' walk of the clinic which indicates that accessibility of clinics is overall good in the upazila.

7. Recommendations and action plan

On the final day of the SQUEAC in Moheshkhali, the survey team invited a number of stakeholders from the Ministry of Health (UH, FPO and UNO), the upazila (including a CHCP, AHI, nurse and some community representatives) and from SHED, SARPV, WFP and Action Against Hunger to present the results of the survey and to devise recommendations and actions to increase the coverage of the upazila in the months and years to come. This is presented in Table 13.

Table 13: Action plan developed following SQUEAC in Moheshkhali Upazila, March 2017

Overall objective	**Expected coverage of the SAM and MAM programmes in Moheshkhali is 65% and 80% respectively by 2018**		
Objectives	**Recommendations**	**Action points**	**Responsibility**
Community outreach, timely case finding and referral, varied and regular sensitization	Inform the community about the program activities	✓ Organize regular meetings/seminars with community representatives **(S)** ✓ Dissemination by showing audio visuals **(S)**	SARPV/ACF/WFP
	Increase male involvement in sensitization activities	✓ Form male groups at village level and conduct regular sessions on nutrition, malnutrition and program activities **(M)** ✓ Develop video on importance of nutrition and consequence of acute malnutrition and show at markets, tea stalls and in different social events to reach out to men **(L)**	SARPV/ACF/WFP
	Increase awareness of community about all misconceptions i.e. acute malnutrition isn't a disease, RUTF causes diarrhoea etc.	✓ Campaign on acute malnutrition related issues **(L)** ✓ Develop a special communication package addressing these issues targeted to different audiences **(M)** ✓ Conduct awareness sessions/messaging in health contact points **(M)** ✓ Conduct awareness sessions/messaging using local media **(M)**	SARPV/ACF/WFP/GO
	Increase capacity of local leader, religious leader, school teachers and students about the program activities and its importance	✓ Training for local/religious leaders and school teacher **(S)** ✓ Arrange special classes in school on nutrition, acute malnutrition and consequence of acute malnutrition **(M)** ✓ Guardian seminar at school, college and Madrasha on nutrition and malnutrition **(M)** ✓ Include the topic in regular school curriculum **(L)**	SARPV/ACF/WFP/GO
	Increase awareness of local leaders, religious leaders, traditional Healers, village doctors and other elite persons regarding the importance of program and	✓ Regular community mobilization meeting with community elites **(M)** ✓ Celebrate 1000 days activities/day observations involving community elites **(M)**	SARPV/ACF/WFP

	consequence of acute malnutrition	✓ Seminar with community elites **(M)**	
	Encourage other NGO's, Govt. staff to identify and referral of malnourished cases	✓ Capacity building training of other NGO's, Govt. staff **(S)** ✓ Ensure essential logistics and allowance to them **(S)** ✓ Development of sensitization package targeting different audiences in the community **(M)**	ACF/WFP
	Improve timely case finding and referral in wide and remote areas	✓ Install new CNC to cover wide and remote area **(L)** ✓ Increase number of CNVs in wide areas **(M)** ✓ Increase incentive of CNV/CNW **(M)**	ACF/WFP
Effective coordination and collaboration among partners	Increasing coordination between NGO and Govt. staff	✓ Organize and conduct regular (monthly) coordination meetings with CC/FWC management committees, Union Parishad and Upazila level various stakeholders led by UH&FPO **(S)**	SARPV/ACF/WFP/GO
	Build a committee involving elite persons of the community	✓ Organizing and conduct quarterly meeting with that committee **(S)** ✓ Biannual/annual seminar at local school, college, madrasha, mosque and Union Parishad led by that committee **(M)**	SARPV/ACF/WFP
	Enhance the capacity of the CC management committee and support groups to increase their involvement in implementing the nutrition program	✓ Training for CC/FWC management committee on nutrition and CMAM and their role **(S)** ✓ Training for the member of community support groups on nutrition and CMAM and their role **(S)**	ACF/WFP
Quality of Care	Improve awareness of the community that nutrition service is not a relief service and that it is an essential treatment service	✓ Mass messaging by Go and NGO workers about this issue to the community **(S)** ✓ Messaging through all health contact points like EPI centre, CC, WFC, hospital, and during home visits etc. **(S)**	SARPV/ACF/WFP
	Ensure adequate awareness for SAM and MAM caregivers about treatment and its importance	✓ Explain during cooking demonstration for all MAM caregivers during first visit **(S)** ✓ Joint home visit by GO and NGO representatives regularly **(M)** ✓ Involve local elites, formal and informal/traditional media to disseminate messages about the importance **(M)**	SARPV/ACF/WFP
	Try to reduce relapse rate by scaling up sensitisations for caregivers	✓ Regular sensitization sessions for caregivers at EPI centers, CNC/CC/FWC/Cluster regarding food habits, feeding practices and hygiene etc. through GO-NGO collaboration **(M)**	SARPV/ACF/WFP
	Increase follow up visits in order to decrease defaulter rate	✓ Increase follow up visit by service holders through GO-NGO collaboration **(S)**	SARPV/ACF/WFP

	Reduce high non-responder cases through increased and improved home visits	✓ Frequent home visit **(S)** ✓ Counselling on personal, Family and food hygiene **(S)** ✓ Increased GO-NGO collaboration **(M)**	SARPV/ACF/WFP
	Maintain regular supply of stock	✓ Regular monitoring of supply chain, cause analysis of supply breaks and act accordingly **(S)**	ACF/WFP
Access	Involve health worker, family planning staff, and support group to identify and refer malnutrition	✓ Train community support group on identification of malnutrition in the community and referral mechanism **(S)**	SARPV/ACF/WFP /GO
	Increase coverage of cases with treatment in remote and wide area and during monsoon	✓ Install satellite/sub-nutrition centers in school / madrasah of remoter areas **(L)** ✓ Increase nutrition worker **(M)** ✓ Install satellite nutrition centers during monsoon **(L)**	ACF/WFP /GO

NB. S= Short term (within 6 months); M= Medium term (within 1 year); L= Long term (after 1 year)

8. Annexes

Annex 1: Participants of SQUEAC sensitisation and SQUEAC in Moheshkhali Upazila

Name	Organization	Training	Email address
Mohammad Ashikulla	WFP	Sensitisation and on the job SQUEAC training (12-30 March)	mohammad.ashikulla@wfp.org
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Md. Sohrab Ali	ACF Bangladesh		sumoninfs12@gmail.com
Md. Amir Hossain	ACF Bangladesh		nutdhod@bd.missions-acf.org
Hugh Lort-Phillips	ACF UK		h.lortphillips@actionagainsthunger.org.uk
Dr. Rajed Al Hasan	Moheshkhali Upazilla health complex	Sensitisation only in Cox's Bazar (12-14 March)	rajedcox@gmail.com
Dr. S M Zamsadul Hoq	Civil surgeon office		
Dr. Ranjon Barua	Civil surgeon office		dr.ranjan1983@gmail.com
Naresh Chandra	Unicef		
Md. Lalon Miah	ACF Bangladesh		lalonnfs@gmail.com
Rayhan Mostak	ACF Bangladesh		nutpmoptidiag-cox@bd.missions-acf.org
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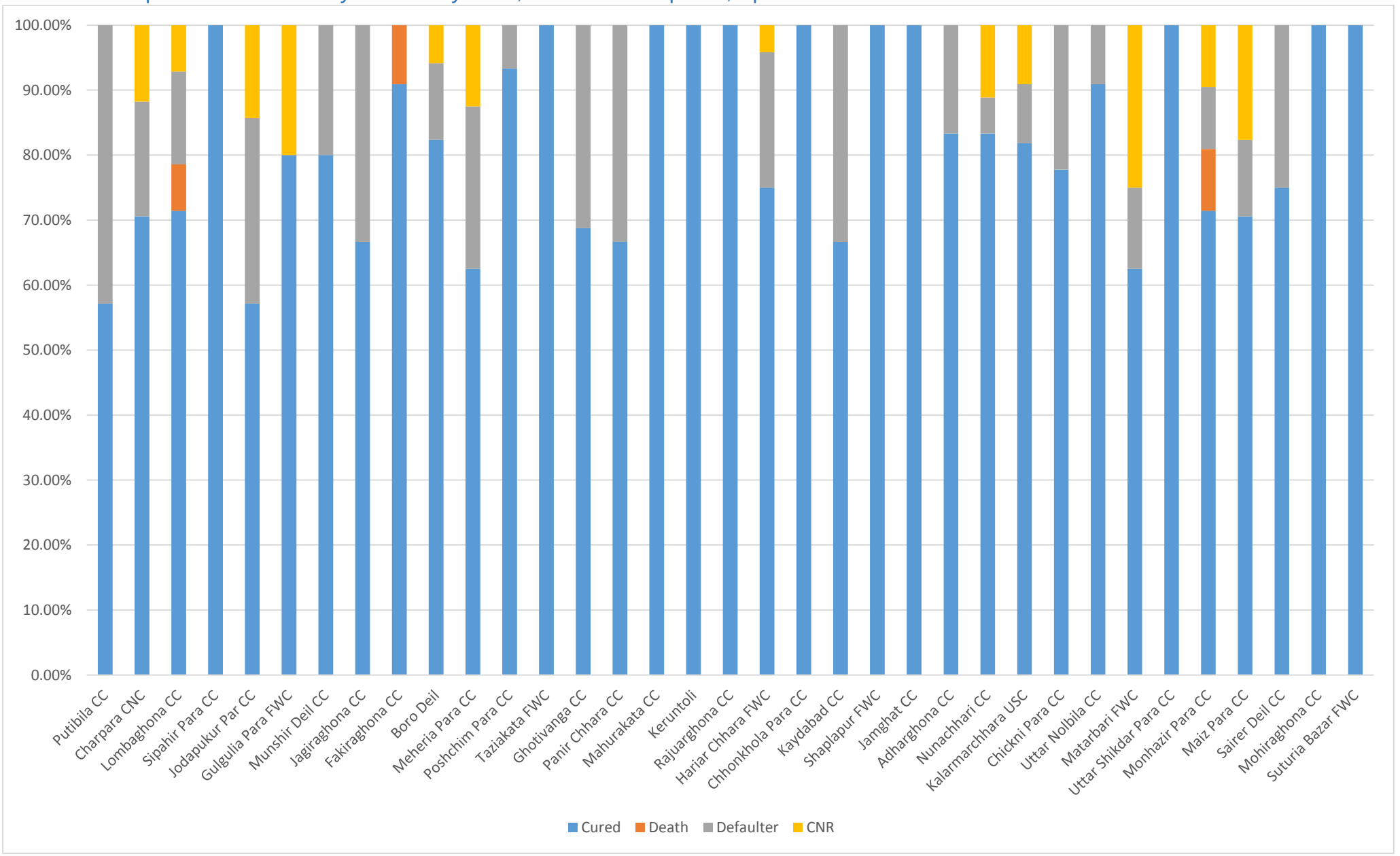
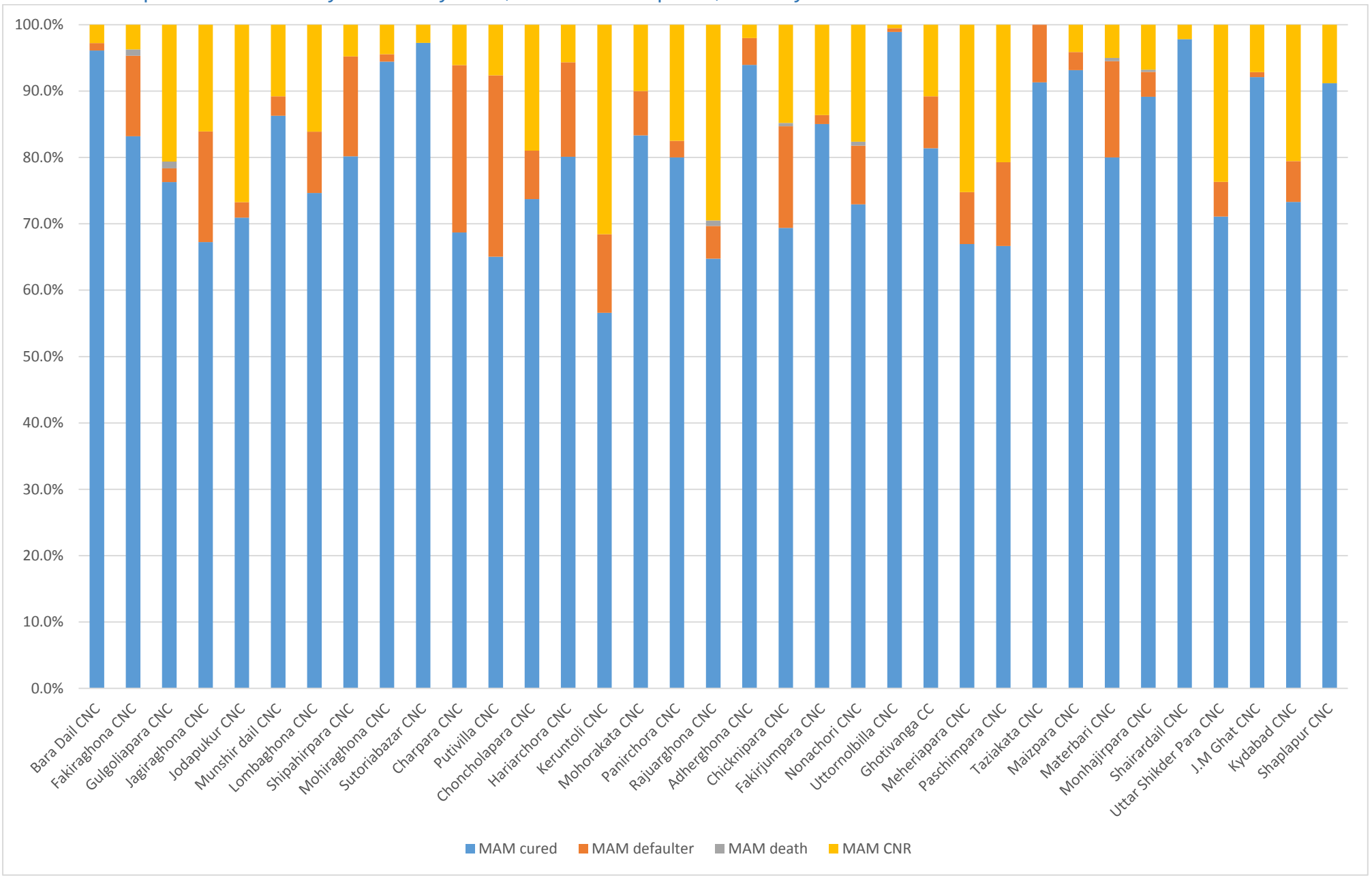
Dr. Md. Abdul Alim	Institute of Public Health Nutrition		
Dr. Tapan Kumar Biswas	Institute of Public Health Nutrition		

Annex 2: OTP performance rates by community clinic, Moheshkhali upazila, Apr 2016-Feb 2017



Annex 3: SFP performance rate by community clinic, Moheshkhali upazila, January-December 2016



Annex 4: Village results from wide area survey

					SAM			MAM		
Union	CNC	Village/s	Number of HH visited	Number of children screened	Covered	Non-covered	Recovering	Covered	Non-covered	Recovering
Kutubjum	Ghotivanga	Moddom Para	116	94	0	1	0	2	1	1
Boro moheshkhali	Jodapukurpar	Debengapara	150	103	0	1	0	1	4	0
Boro moheshkhali	Munsirdail	Munsirdail Moddhom majerdail	175	119	2	1	0	3	6	1
Boro moheshkhali	Jagiragona	Dakkhin Jagiragona	82	44	0	0	1	1	2	0
Boro moheshkhali	Borodail	Purbo Borodail	181	125	1	0	0	4	0	0
Kutubjum	Poschimpara	Doilar Para	165	97	0	1	0	5	1	1
Pouroshova	Putibilla CNC	Thana Para	162	74	0	0	0	2	0	0
Kalmarchora	Adharghona	Pahartoli Habibpara	141	95	0	0	0	6	4	0
Kalmarchora	Chiknipara	Purbo Chiknipara	168	112	1	1	0	3	3	2
Kalmarchora	Chiknipara	Sunarpara + Chadbari +Unuskhali	153	89	1	1	1	7	0	1
Kalmarchora	Uttornolbila	Iunuskhali	128	51	0	0	0	1	3	0
Choto Moheskhali	Sipahirpara	Doxmin Nolbila kalaliapara	129	61	1	0	0	0	1	2
Choto Moheskhali	Lombaghona	Ahmodia kata	174	101	0	0	0	1	1	1
Matarbari	Matarbari FWC	Sikderpara + Laillagona	133	59	1	0	0	8	0	0
Matarbari	Uttar Shikderpara	Bandi sikder para	133	70	0	1	0	3	1	3
Matarbari	Monhazir para	Bolir para (paschim)	131	75	0	0	0	7	0	1
Matarbari	Maizpara	Dhakkin maizpara	141	69	1	0	0	5	2	0
Matarbari	Sairerdail	Honshomiaji para	142	81	0	1	0	1	1	1
Dhalgata	Muhurighona	Uttar muhuri ghona	150	67	0	0	0	3	0	1
Shaplapur	J.M. Ghat	Jm ghat noya para	131	65	1	0	0	3	0	0
Shaplapur	Kydabad	Dineshpur eitkhola para	130	87	0	0	0	3	2	2
Shaplapur	Shaplapur FWC	Napit para	136	70	0	0	0	1	2	1
Shaplapur	Shaplapur FWC	Borokhola para	120	76	0	1	0	4	1	1
Hoanok	Panirchara	Matobbor para+panirchara	122	71	1	0	0	2	0	0
Hoanok	Panirchara	Poschimjoiyerkata	156	57	2	0	0	4	2	0
Hoanok	keruntoli	Balujhiri para	117	71	1	0	0	3	1	0
Hoanok	Rajoarghona	purborajuarghona	150	92	0	0	1	3	5	1
Hoanok	Horiarcchora	Purbo Jamal+Purbo puichora+paschim jamalpara	133	81	0	0	0	0	4	1
				TOTAL	**13**	**9**	**3**	**86**	**47**	**21**

Annex 5: Check List and guidance for case finding

Equipment needed **per team of 2-5**:

- 20 x Non covered cases questionnaires (Sheet 3)
- 5 x Sheet 1 – data collection form for covered cases
- 2 X Sheet 4 – village summary sheet
- MUAC tapes
- Referral slips

Objective: to find every single **SAM and MAM case and recovering case** in the selected village and establish if they are in the programme or not

Expected Outputs:

- Covered cases and recovering cases details (**Sheet 2)**
- Completed Questionnaires for non-covered cases (**Sheet 3)**
- A completed summary sheet **(Sheet 4)** with totals of Non-covered (Cout) and Covered (Cin) and Cases which are not SAM but which have not yet reached discharge criteria (Rin) for SAM and MAM.

Step by Step:

1. Go to village
2. Locate Key informant. Explain objective and ask them to establish village boundaries
3. Allocate areas and coordinate teams to ensure no part of the village is missed out
4. Conduct house to house case finding
5. In each household:
    i. Ask how many children between 6-59 months there are in the household
    ii. Be aware of sleeping or hidden children (they must be screened)
    iii. Take MUAC measurement of child or measure for presence of oedema

OPTION 1	OPTION 2	OPTION 3	OPTION 4	OPTION 5	OPTION 6
MUAC <115mm and / or presence of oedema and child is NOT in programme	MUAC <115mm and / or presence of oedema and child is in programme	MUAC 115-124 and no presence of oedema and child is in the SAM programme	MUAC 115-124 and no presence of oedema and child is NOT in the MAM programme	MUAC 115-124 and no presence of oedema and child is in the MAM programme	MUAC ≥125mm and no presence of oedema and child is in the MAM programme
Child is **SAM non-covered** case	Child is a **SAM covered** case	Child is a **SAM recovering** case	Child is a **MAM non-covered** case	Child is a **MAM covered** case	Child is a **MAM recovering** case
Complete **Sheet 3** for non-covered case and prepare referral slip	Complete details in **Sheet 2** for covered cases	Complete details in **Sheet 2** for covered cases	Complete **Sheet 3** for non-covered case and prepare referral slip	Complete details in **Sheet 2** for covered cases	Complete details in **Sheet 2** for covered cases