SNS CONSORTIUM

«Strenghtening Nutrition Security in South Central Somalia»

SMART SURVEY REPORT

Beletweyne, Hiraan Region of Somalia

October- November 2016

Save the Children

CONCERN worldwide

ACTION AGAINST HUNGER

List of acronyms

ARI	-Acute Respiratory Infection
BCG	-Bacillus Chalmette–Guerin
BSFP	-Blanket Supplementary Feeding Program
C.I	-Confidence Interval
CMR	-Crude Mortality Rate
CMU	-Consortium Management Unit
CSV	-Comma Separated Values
DFID	-Department for International Development
ENA	-Emergency Nutrition Assessment
EPI	-Expanded Program on Immunization
FAO	-Food and Agriculture Organization
FEWSNET	-Famine Early Warning System Network
FSL	-Food Security and Livelihoods
FSNAU	- Food Security and Nutrition Assessment Unit
GAM	-Global Acute Malnutrition
GPS	-Global Positioning System
HAZ	-Height for Age Z-score
HH	-Household
IDP	-Internally Displaced Person
KII	-Key Informant Interviews
LNGO	-Local Non-Governmental Organization
MCH	-Maternal Child Health
MUAC	-Mid Upper Arm circumference
ODK	-Open Data Kit
SAM	-Severe Acute Malnutrition
SCI	-Save the children international
SFP	-Supplementary Feeding Program
SMART	-Standardised Monitoring Assessment for Relief and Transition
SNS	-Strengthening Nutrition Security
SPSS	-Statistical Package for the Social Sciences
TFG	-The Federal Government
TSFP	-Therapeutic Supplementary Feeding Program
TWG	-Technical Working group
U5MR	-Under Five-Mortality Rate
UNDP	-United Nations Development Programme
UNFPA	-United Nations Fund for Population Activities
WASH	-Water, Sanitation and Hygiene
WAZ	-Weight for Age Z-score
WHZ	-Weight for Height Z-score
WHO	-World Health Organization

CONTENTS

EXECUTIVE SUMMARY 5
1. INTRODUCTION 8
1.1 Background Information 8
1.2 Survey Objectives 9
2. METHODOLOGY 10
2.1 Sample size 10
2.2 Sampling procedure: selecting clusters 11
2.3 Sampling procedure: Selecting households and children 12
2.4 Case definitions and inclusion criteria 13
2.5 Questionnaire, training and supervision 14
2.5.1 Questionnaire 14
2.5.2Survey teams and supervision 15
2.5.3Training 15
2.6 Data analysis 16
3. RESULTS 18
3.1 Anthropometric results 18
3.1.1 Distribution of age and sex of sample 18
3.1.2 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex 19
3.1.3 GAM and SAM trends 19
3.1.4 Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex 20
3.1.5 Prevalence of underweight based on weight-for-age z-scores by sex 21
3.2 Mortality results (retrospective over 109/days prior to interview) 22
3.3 Children's morbidity 22
3.4 Vaccination Results 23
3.5 WASH 23
3.6 Health-seeking behaviour 24
4. Discussion 27
4.1 Nutritional status 27
4.2 Mortality 28
4.4 Poor health and health seeking behaviour 28
4.5 Poor WASH practice 29
4.6 Other indirect factors 29

5. CONCLUSIONS 30
6. RECOMMENDATIONS AND PRIORITIES 31

EXECUTIVE SUMMARY

Background

Beletweyn is a district in south-central Somalia. The city of Beletweyn is the capital of the Hiran province, which is situated in the Shebelle Valley north of Mogadishu. Beletweyn is divided by the Shebelle River into eastern and western sections. By area, it is the fourth largest city in Somalia.

Since 2013, The SNS Consortium has implemented nutrition programming in Beletweyn district comprising of treatment, prevention focusing on IYCF, surveillance, and capacity building. The current SMART survey assessment is part of the surveillance system and a monitoring tool that aims at evaluating progress of the SNS programme. The programme is scheduled to conclude in 2017.

Methodology

SMART (Standardized Monitoring and Assessment of Relief and Transitions) methodology was used to conduct the survey. SMART recommended training package was used for training and data collection, while data quality checks and report writing templates were based on the ENA (Emergency Nutrition Assessment) software.

Results

Based on WHO classification, the population in Beletweyn faces critical GAM and SAM prevalence at 25.6% and 5.0%, respectively. This is an increase compared to 2015 Survey.

Indicator	Beletweyn_Summary results
GAM (Global Acute malnutrition)	25.6 % (21.2 - 30.6 95% C.I.)
MAM (Moderate Acute Malnutrition)	20.6 % (16.2 - 25.8 95% C.I.)
SAM (Severe Acute Malnutrition)	5.0 % (3.5 - 7.3 95% C.I.)
U5MR (Under five Miortality Rate)	0.70 (0.27-1.84) (95% CI)
CMR (Crude Mortality Rate)	0.25 (0.09-0.65) (95% CI)
Measles	9.5%
Vitamin A(Last 6 months)	11.1%
Deworming	9.8%
Morbidity	10%
BCG Scar	15.1%
Polio	14.1%

Conclusions

Undernutrition remains a serious challenge in Beletweyn. The current survey has noted an upward trend in both GAM and SAM prevalence, which is related to multiple immediate, basic and underlying cases. The survey has also noted key childhood diseases, including diarrhoea, malaria and ARI (acute respiratory infection), affecting the population in Beletweyn. Overall, mortality rates are within acceptable WHO standards and have shown improvement from the previous survey. This, however, does not guarantee stable or improved mortality rates given the increasing humanitarian pressures related to the ongoing drought.

At the household level, adults consume an average of 2.0 meals, while children consume an average of 2.4 meals per day. This indicates poor food security. At the same time, immunization rates remain lower than recommended for public health. Basic WASH practices are not adhered to, especially in terms of observance of critical hand washing moments.

The high levels of malnutrition documented in the current survey necessitate immediate action. In addition to nutrition and WASH, there is also a need to design and implement appropriate FSL (food security and livelihoods) interventions.

Recommendations

Immediate

Finding	Recommendation
High GAM and SAM rates with aggravating factors	All SAM cases need to be treated, which necessitates a more aggressive approach in reaching out to all cases. This can be done through increasing the number of treatment sites, increasing activity of identification at community level, and conducting mass screening. With the increase in malnutrition rates, current facilities may not be able to accommodate the surge in cases, therefore there is immediate need to mobilise additional resources especially in the area of treatment of SAM cases.
Low immunization levels and vitamin A supplementation	Increased outreach to all accessible areas to conduct immunization and micro-nutrient supplementation. Conducting an immunization campaign

	is an effective strategy to enhance vaccination rates. Routine immunization needs to be strengthened, and all possible platforms for integration of immunization, e.g. nutrition outreach programs, should be explored.

Medium-Term

Finding	Recommendation
Poor household food security	In the short run, to address food insecurity at the household level, cash transfer programs can be considered to increase the purchasing power of such families.
WASH	Programs aimed at extending WASH and health education to schools should be considered.

1. INTRODUCTION

1.1 Background Information

Beletweyn is a district in south-central Somalia. The city of Beletweyn is the capital of the Hiran province, which is situated in the Shebelle Valley north of Mogadishu. Beletweyn is divided by the Shebelle River into eastern and western sections. By area, it is the fourth largest city in Somalia.

Beletweyn district is within Hiran region, which consist of five districts: Beletweyn District, Buuloburde District, Jalalaqsi District, Matabaan District and Maxaas District. Hiran is bordered by the Somali Region of Ethiopia to the northwest, as well as the Somalia provinces of Galgudud to the northeast, Middle Shebelle (Shabeellaha Dhexe) to the south, Lower Shebelle (Shabellaha Hoose) to the southwest, and Bay andBakool to the west.The Shebelle River flows into Hiran from Ethiopia, coursing through the provincial capital of Beletweyn.

Since 2013, The SNS Consortium has implemented nutrition programming in Beletweyn district comprising of treatment, prevention focusing on IYCF, surveillance, and capacity building. The current SMART survey assessment is part of the surveillance system and a monitoring tool that aims at evaluating progress of the SNS programme. The programme is scheduled to conclude in 2017.

With an estimated population of 120,000 people, Beletweyn District is the main district of Hiran region. In Beletweyn, 27% are either pure pastoralists or agro-pastoralists, 20% are farmers while more than 53% live in Beletweyn town.

Happenings within Beletweyn prior to the survey included flooding that happened in may where there was a lot of displacements and washed acres of farmland and properties. November surveillance by WHO[1] (Cholera update) reported high numbers of diarrhoea from 108 new cases in October to 437 in November. Out of the 437 314 were reported from Beletweyn. This happened after Shabelle river broke its banks.[2]

As with other parts of Somalia, Beletweyn has had insecurity incidences and government backed forces has been present to reinforce security. Located in the fertile Hiraan region, Beletweyn has a significant

[1] http://www.emro.who.int/surveillance-forecasting-response/surveillance-news/cholera-update-somalia-septemberoctober-2016.html
[2] http://floodlist.com/africa/somalia-may-2016-shabelle-river-overflow-beledweyne

importance to the country's national economic income. The regional capital is strategically located on a major trade gateway and social crossroads that connect the country to the north and south as well as eastern Ethiopia. Besides being a transport hub for inter-regional trade, the region is also a breadbasket for agricultural and livestock production.[3]

Latest data on malnutrition from other sources indicates critical level of malnutrition a GAM of 15.6% and SAM of 4.5%.[4] In the same report, Beletweyn is among the areas where number of people in food crisis is projected to increase. SNS Conducted a survey in 2015 within the same season and a GAM of 14.6% and SAM of 4.2% were estimated.

1.2 Survey Objectives

- Estimate the prevalence of acute malnutrition among children 6-59 months in Beletweyn.
- Estimate retrospective CMR and U5MR
- Estimate coverage of vitamin A and deworming.
- Estimate levels of selected WASH indicators
- Make practical recommendations on the utilization of the key findings and utilize the information to update program log frame milestones.

[3] http://amisom-au.org/wp-content/uploads/2013/11/Sector-IV-Belet-Weyne.pdf
[4] FSNAU/FAO technical release 2016- October 19th

2. METHODOLOGY

SMART (Standardized Monitoring and Assessment of Relief and Transitions) methodology was used to conduct the survey. Two stage sampling was employed in the selection of clusters and Households that participated in the survey. The first stage involved selction of clusters and the second selction of HH. Selection for children to be included in the anthropometry was bsed on the age 6-59 months.

2.1 Sample size

A list of all villages were listed with their respective population. Based on access, the final list was settled on (villages where the staff were able to access) . Out of the 70 original lists 3 were not accessible due to security issues.. The list was then entered into ENA which selected clusters based on population.

The sample size for anthropometry was calculated using ENA software . SNS had conducted a SMART survey within the same period and place in 2015, estimations for the 2015 survey were used to calcualte the sample size. The survey also focused on the district level and this was the same target for the current survey, the survey by SNS therfore represented the closest picture of the malnutrition levels as per the geographical interest and focus of this survey.

The parameters used for calculation of the Antropometry Sample size were as follows:

Table 2.1: Parameters for calculation of anthropometry sample size

	Beletweyn (Anthropometry) sample size parameters[5]	Justification
Estimated Prevalence%	12.0	From SNS survey conducted 2015 same period
+- Desire precision percent%	4	Adopted from 2015 survey
Design effect	1.5	Standard usd in Somalia due to variability in population
Average HH size	6	Standard used for Somalia
Percentage of <5 children	20	Estimation used in 2015 survey
% of non-respondent HH	5	Agreed based on the previous survey experience
Total Children	414	
Total HH	404	

[5] SNS SMART survey – Beletweyn District 2015 –Post Gu

The information above was entered into ENA planning tab and the software calculated both the children to be included, and estimated number of HHs that would yield adequate number fo children for the survey.

Mortality sample

Mortality sample size was calculated using ENA software. Using CMR and <5MR estimation from the 2015 Beletweyn SNS SMART survey The parameters below were fed into ENA planning page and the sample was calculated. Sample size was adjusted for non-response by a factor of 10%, the adjustments were as a result of experience in previous surveys in Beledweyn where some Households were not accessible, discussion with the team also idnicated that baidoa has faced a lot of insecurity and caused HH movements within the district.

The parameters used for calculation of the MortalitySample size were as follows:

Table 2.2: Parameters for calculation of mortalilty sample size

	Beletweyn (Mortality) sample size parameters	**Justification**
Estimated Prevalence%	0.8	Based on SNS survey that used same metodolgoy targtin the district.
+- Desire precision percent%	0.5	Based on SMART recommendations for aprevalence of 0.8
Design effect	1.5	Sourced from previous surveys
Recall period	109	Based on the most notable event 3 months prior to the survey to the mid of survey
Average HH size	6	Adopted from 2015 SNS survey
% of non-respondent HH	5	Based on experience of 2015
Total HH to be included	1842	
Total Population	323	

2.2 Sampling procedure: selecting clusters

All (Villages) were listed from the list of population used in 2015 SMART survey in the same location. The list was then sent to the field team to update it based on the changes in context. A total of 67 villages were updated as accessible out of the 70 in the original list.

Clusters were selected from list of accessible villages which were treated as the sampling frame. Somalia has had challenges with population data and the most recent UNFPA population estimates report available online has no data broken down to sub-district level (Village). SNS sampling frame used in 2015 was discussed with the field teams and validated as the correct population for the targeted accessible villages.

Each potential cluster was listed with its population. The data was then entered into ENA Planning tab. Under the same software, 30 clusters were randomly selected using probability proportion to population. ENA additionally selected 3 reserve clusters. The survey team was able to visit all the clusters planned and therefore the need to go to reserve clusters.

2.3 Sampling procedure: Selecting households and children

To calculate the number of clusters, the maximum number of questionnaire that the team could do in one day was divided by the total HH to be visited during the entre survey. Simple Random sampling was used in the selection of HH in all the 30 clusters visited during the survey. Teams arrived in the clusters early in the morning and met key village elders in agreed point, the cluster leaders were able to develop a list of all the HH in the cluster and each was given number. 14 HH were to be visited in each cluster in Beletweyn. Based on the number of total HH, small pieces of papers were cut and exhaustive numbers written based on the list. These were put together and 14 pieces randomly picked. The houses represented by the numbers were then visited and data collected.

All HH were visited and those with no eligible under five children for anthropometric data collection were included in the HH survey which included collection of data on mortality. This process was followed for all the 30 clusters. Using cluster control form, experiences in each HH were noted. The cluster control formed assisted the teams to identified HH with absent children and aided in planning or re-visits. Each cluster had the summary of HH in the cluster control form.

Within each HH anthropometric measurement was taken for all eligible children 6-59 months. Weight, height/Length, MUAC and Oedema were measured for children between 6-59 months. The caretaker of the child was the respondent. This in most HH was found to be the mother of the children. In HH where the mother was away, the father was identified as the respondent. Unique situation included HH where no parent was available and thus the person currently in charge of the HH was interviewed. In such cases at times, some information was not readily available and this is where the use of control forms came into use to comment on the reasons for failure to get certain information

2.4 Case definitions and inclusion criteria

In all selected households, all children 6-59 months or 65-110 cm when age is not known were included in the anthropometric survey. The age of the children was first determined through available health record documents and second by calendar of events that was developed and agreed on by the teams during the training.

If there was no children 6-59 months in the household, the household was interviewed for mortality, this will be collected by recall. No substitution of houses wase done and if the team completes the cluster without getting enough children, the next village not included in the cluster selection was visited.

The following case definitions were used in this assessment:

- **Household:** People who live together and eat from the same pot at the time of assessment. If a polygamous family, each mother and her children will be treated as a separate HH.
- **Head of household:** One who controls and makes key decisions on household resources (livestock, assets, income, and food), health and social matters for and on behalf of the household members
- **Respondent:** caregiver of the child, in case not available, the person responsible for the HH at the time of survey will be the respondent.
- **Diarrhoea:** having three or more loose or watery stools per day
- **Malaria:** Presence of periodic chills/shivering, fever, sweating and convulsions
- **Measles:** having more than three of these signs– fever and, skin rash, runny nose or red eyes, and/or mouth infection, or chest infection
- **Measles immunization:** a shot (confirmed by card) in the upper arm given to children after 6 months of age at health clinics or by mobile health teams

For the purposes of analysis, the different types of malnutrition were defined based on WHO (2006) growth standards and WHO was used to report main results from the survey.

- **Oedema:** Swollen limbs leaving depression 3 seconds after pressing on both feet (bilateral)
- **Global Acute Malnutrition (GAM):** weight-for-height Z scores less than -2 and/or presence of oedema (WHZ<-2 and/oedema)
- **Severe Acute Malnutrition (SAM):** weight-for-height Z scores less than -3 and/or presence of oedema (WHZ<-3 and/oedema)

- **Global Acute Malnutrition based on MUAC (GAMMUAC**): Mid Upper Arm Circumference less than 125 and/or presence of oedema (MUAC<125 mm and/oedema); and severe acute malnutrition as MUAC<115 mm and/oedema
- **Wasting:** weight-for-height Z scores less than -2 (WHZ<-2); and severe wasting as WHZ<-3.
- **Underweight:** weight-for-age Z scores less than -2 (WAZ<-2); and severe underweight as WAZ<-3.

Recall period for mortality was 109 days.

Retrospective morbidity was measured for the preceding two weeks before the survey. Morbidity was specifically inquired on the children 0-59 months.
EPI (Measles, BCG and Polio) coverage was estimated using immunization cards. Although there was option of recall, this was analysed differently to indicate the difference of the source of information.
Mortality data was collected in all households. This included HH that had no eligible children for the anthropometric survey.

2.5 Questionnaire, training and supervision

2.5.1 Questionnaire

The questionnaire for the survey was developed in English from the standard questionnaire provided by SMART and translated to Somalia. Somalia is the language comfortably spoken by majority of people marked as enumerators for the survey. Since the survey had additional information to be collected, additional sections were added into the questionnaire. The additional questions were based on each of the objectives above.

Translations were completed and the survey questionnaire was uploaded into ONA platform and was shared to SCI Beletweyn team for evaluation and in order to get acquainted with it. Using their Smart phones and ODK collect applications, all the teams were allowed to download and practice using the forms before even the training started. Some feedback was given and incorporated into the questionnaire. Additional refining of the tool was done during the training including recoding compulsory GPS taking for areas where SMART phones were not allowed due to security reasons.

Interviews in the field were conducted in Somalia as this was the language that most respondents were conversant with. The uploaded information was set to give the equivalent in English during downloading.

2.5.2Survey teams and supervision

The survey was conducted by six teams. Each team composed of a team leader, two measurers and community guide. The team leader was also the note taker and took the role of administering the questionnaire.

Most of the survey teams were pulled from the existing staffs in Beletweyn program and this made it easier since they had prior experience in data collection. Ability to fill the questionnaire was a prerequisite for attending the training; ability to read and prior experience in conducting SMART were among the qualities that were considered during selection of enumerators and team leaders.

Each team had a team leader (Supervisor) and each survey had an overall supervisor. The team supervisors comprised on current nutrition manager who has had prior experience in conducting SMART surveys. Logistics and movement planning was entirely on the supervisors who ensured that all resources were available for the teams.

2.5.3Training

Due to the number of surveys that were to be conducted, the training was done in two stages.

Mogadishu- Team leaders and Supervisors training

Team leaders training where they were taken through the survey process centrally in Mogadishu. This comprised teams that would later conduct 3 surveys in Baidoa, Beletweyn and Mataban districts. A total of 6 team leaders participated in this training with 1 supervisor. The training content included; objectives of the survey, confirmation of populations, sample calculation, cluster selection, taking anthropometrics, field procedures, quality data assurance, sampling techniques, standardization tests and data entry, mortality and interview skills. The survey was also focused on specific of dealing with unique challenges in the field including proper segmentation.

Survey plan was also developed during the end of the training and this included 2 days for enumerator training on anthropometry collection, 1 day for standardization test and 1 day for pilot data collection. Other important survey activities conducted together included participatory approach in cleaning and updating sampling frame, entering the sample calculating parameters into ENA, entering the sampling frame, calculation of sample and selection of clusters. The team leaders were also involved in calculation of number of clusters to be visited based on the experience in the field and the estimated time at each HH.

Beletweyn- Enumerator training.

The second stage training was conducted by two identified strong participants from the first training. These trainings were conducted in Beletweyn. The second training targeted enumerators and focused on proper collection of anthropometric data and standardization, 3 days training was organized 2 for anthropometry training and one for conducting standardization test. This included training on taking MUAC, weight, height and checking oedema, field procedures and role allocation for each team member. The enumerators went through the questionnaire and gave additional feedback which was utilized to get the final version.
The first training included process of conducting standardization test, this was then done in the second training. A total of 10 children were involved in the standardization test. Data from the standardization test was analysed and showed good accuracy and precision from enumerators.
After the standardization test a pilot was conducted a total of 28HH were visited. The pilot data was used to refine specific aspects of the questionnaire and acted as experience to the teams. It was also used to expose the teams to the survey procedure. Nothing was adjusted after the pilot, feedback on age determination was given as pilling had started being observed around the age.

2.6 Data analysis

The survey data was collected using android phones. ODK (Open Data Kit) was used to enter the data and ONA platform used for downloading the data. Supervisors went through the questionnaire before uploading it into the system to check for completeness of the forms.

Quality control measures were put in place during the authorship of the forms. Additional notes were incorporated into the questionnaire to guide the enumerators in proper asking of the questions. Additional conditional entry was used in programming the questionnaire, for instance the age limit of 6-59 months for anthropometric was built into the system so that any entry below 6 or above 59 was rejected for anthropometry data. To allow for specific feedback each phone was coded to give unique numbers and

GPS was collected in most areas to monitor specific locations where teams were expected to be at a particular time.

Analysis of anthropometric data and mortality data was done in ENA software. Data was read into EPI-ENA and plausibility and anthropometry score analysis done. Additional HH data, WASH, EPI and morbidity data was analysed using SPSS V20.

3. RESULTS

3.1 Anthropometric results

The following definititions were used in the analaysis of GAM and SAM rates.

GAM	<-2 z scores weight-for-height and/or oedema
SAM	<-3z scores weight-for-height and/or oedema

Exclusion of z-scores from Observed mean SMART flags: WHZ -3 to 3; HAZ -3 to 3; WAZ -3 to 3

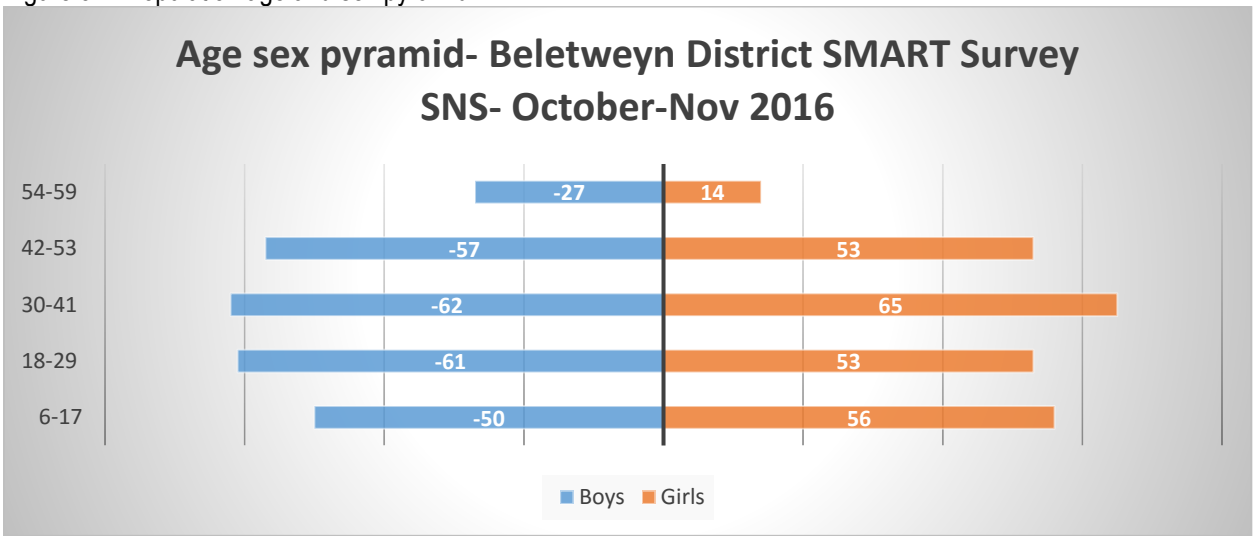
3.1.1 Distribution of age and sex of sample

Ratio of boys and girls was 1.1 meaning the survey had slightly more boys. The ratio is within acceptable standard of 0.9-1.1 that point to no sex bias in the selection.[6]. The age distribution indicated more children between the age bracket of 1-29 in the sample as compared to 42-59.

Table3.1: Distribution of age and Sex

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	50	47.2	56	52.8	106	21.3	0.9
18-29	61	53.5	53	46.5	114	22.9	1.2
30-41	62	48.8	65	51.2	127	25.5	1.0
42-53	57	51.8	53	48.2	110	22.1	1.1
54-59	27	65.9	14	34.1	41	8.2	1.9
Total	257	51.6	241	48.4	498	100.0	1.1

Figure 3.1: Population age and sex pyramid



[6] Emergecy Nutrition Assesment guidelines- Save the children

3.1.2 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

Prevalence of Malnutrition was estimated at 25.6% and 5.0% for GAM and SAM respectively.

Based on WHO standards the GAM and SAM are critical and points to a deteriorating situation compared with the survey conducted in 2015[7] that was 14.6% and 4.4% for GAM and SAM respectively.

Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

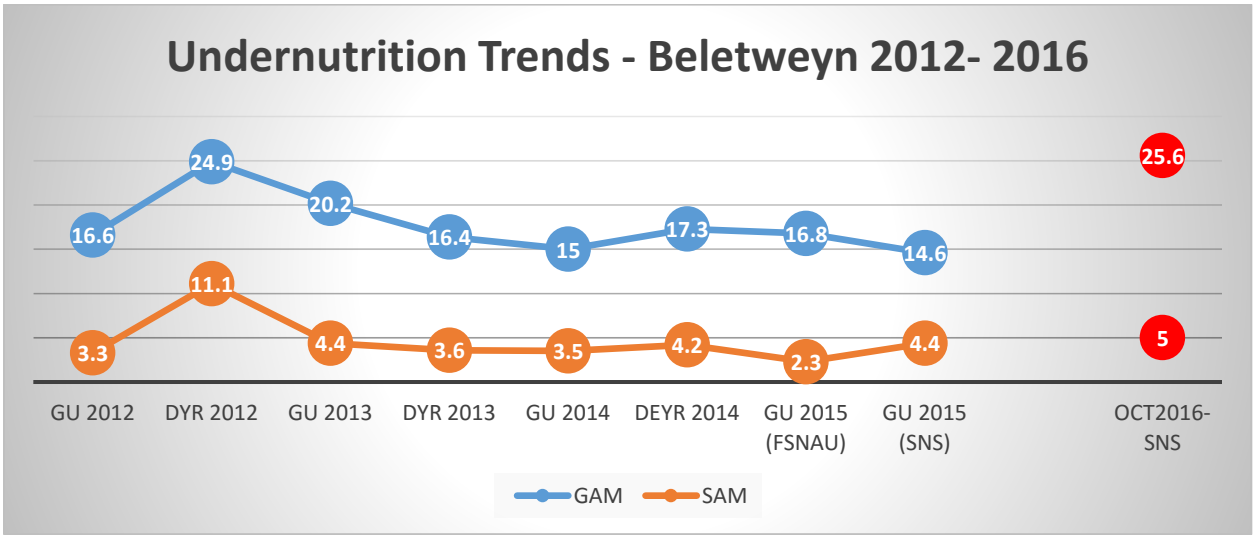
	All n = 496	**Boys** n = 256	**Girls** n = 240
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(127) 25.6 % (21.2 - 30.6 95% C.I.)	(70) 27.3 % (21.9 - 33.6 95% C.I.)	(57) 23.8 % (18.1 - 30.4 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(102) 20.6 % (16.2 - 25.8 95% C.I.)	(54) 21.1 % (16.3 - 26.8 95% C.I.)	(48) 20.0 % (14.4 - 27.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(25) 5.0 % (3.5 - 7.3 95% C.I.)	(16) 6.3 % (4.0 - 9.7 95% C.I.)	(9) 3.8 % (1.8 - 7.6 95% C.I.)

The prevalence of oedema is 0.0 %

3.1.3 GAM and SAM trends

Based on trends, the current survey indicates the highest rates since 2012 although there is overlap of the C.I (Confidence Interval) range. The increase compared to last year is significant and has moved the classifications from serious to critical.

Figure 3.2. Undernutrition Trends in Beletweyn



[7] Beletweyn SMART Survey- SNS 2015

Table 3.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	106	4	3.8	14	13.2	88	83.0	0	0.0
18-29	113	4	3.5	28	24.8	81	71.7	0	0.0
30-41	126	10	7.9	28	22.2	88	69.8	0	0.0
42-53	110	5	4.5	24	21.8	81	73.6	0	0.0
54-59	41	2	4.9	8	19.5	31	75.6	0	0.0
Total	496	25	5.0	102	20.6	369	74.4	0	0.0

Table 3.4: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 25 (5.0 %)	Not severely malnourished No. 471 (95.0 %)

3.1.4 Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex

As a more accurate predictor of mortality, MUAC estimated GAM at 12.9 and SAM at 1.0%. The difference with the WHZ score rates might point out to the fact that the community screening might be missing out many malnourished children in the active case finding. In the community, MUAC is used as the major referral criteria for admission into treatment program.

Table 3.5: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 498	**Boys** n = 257	**Girls** n = 241
Prevalence of global malnutrition (< 125 mm and/or oedema)	(64) 12.9 % (9.6 - 17.0 95% C.I.)	(27) 10.5 % (7.0 - 15.6 95% C.I.)	(37) 15.4 % (10.6 - 21.7 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(59) 11.8 % (8.8 - 15.7 95% C.I.)	(25) 9.7 % (6.3 - 14.7 95% C.I.)	(34) 14.1 % (9.8 - 19.8 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(5) 1.0 % (0.5 - 2.2 95% C.I.)	(2) 0.8 % (0.2 - 2.9 95% C.I.)	(3) 1.2 % (0.4 - 4.0 95% C.I.)

Table 3.6: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (months)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	106	4	3.8	21	19.8	81	76.4	0	0.0
18-29	114	1	0.9	18	15.8	95	83.3	0	0.0
30-41	127	0	0.0	14	11.0	113	89.0	0	0.0
42-53	110	0	0.0	5	4.5	105	95.5	0	0.0
54-59	41	0	0.0	1	2.4	40	97.6	0	0.0
Total	498	5	1.0	59	11.8	434	87.1	0	0.0

3.1.5 Prevalence of underweight based on weight-for-age z-scores by sex

Underweight is a complex index that could represent wasting , stunting or both.

Disribution by age indicates a higher number of malnourished children betwen ages 18-41 age bracket that also observed high wasting.

Table 3.7: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 498	**Boys** n = 257	**Girls** n = 241
Prevalence of underweight (<-2 z-score)	(116) 23.3 % (19.3 - 27.9 95% C.I.)	(63) 24.5 % (19.3 - 30.6 95% C.I.)	(53) 22.0 % (16.3 - 29.0 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(82) 16.5 % (12.9 - 20.8 95% C.I.)	(38) 14.8 % (11.1 - 19.4 95% C.I.)	(44) 18.3 % (12.6 - 25.7 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(34) 6.8 % (5.0 - 9.2 95% C.I.)	(25) 9.7 % (6.2 - 14.9 95% C.I.)	(9) 3.7 % (2.1 - 6.7 95% C.I.)

Table 3.8: Prevalence of underweight by age, based on weight-for-age z-scores

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	106	4	3.8	18	17.0	84	79.2	0	0.0
18-29	114	13	11.4	22	19.3	79	69.3	0	0.0
30-41	127	11	8.7	24	18.9	92	72.4	0	0.0
42-53	110	6	5.5	12	10.9	92	83.6	0	0.0
54-59	41	0	0.0	6	14.6	35	85.4	0	0.0
Total	498	34	6.8	82	16.5	382	76.7	0	0.0

Table 3.9: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	496	-1.29±1.07	1.37	0	2
Weight-for-Age	498	-1.35±0.96	1.25	0	0
Height-for-Age	485	-0.87±1.13	1.34	0	13

* contains for WHZ and WAZ the children with oedema.

3.2 Mortality results (retrospective over 109/days prior to interview)

Mortality rate was calculated for 109 days prior to the survey. The start date was Eid ul Fitr which is a well-known celebration day in Somalia after the month of Ramadhan.

The rates compared to SNS SMART survey in 2015 CMR 0.39 and U5MR 1.05 same time presents an improvement. Overall, the mortality rates are within normal range based on WHO classification.

Table 3.10: Mortality rates

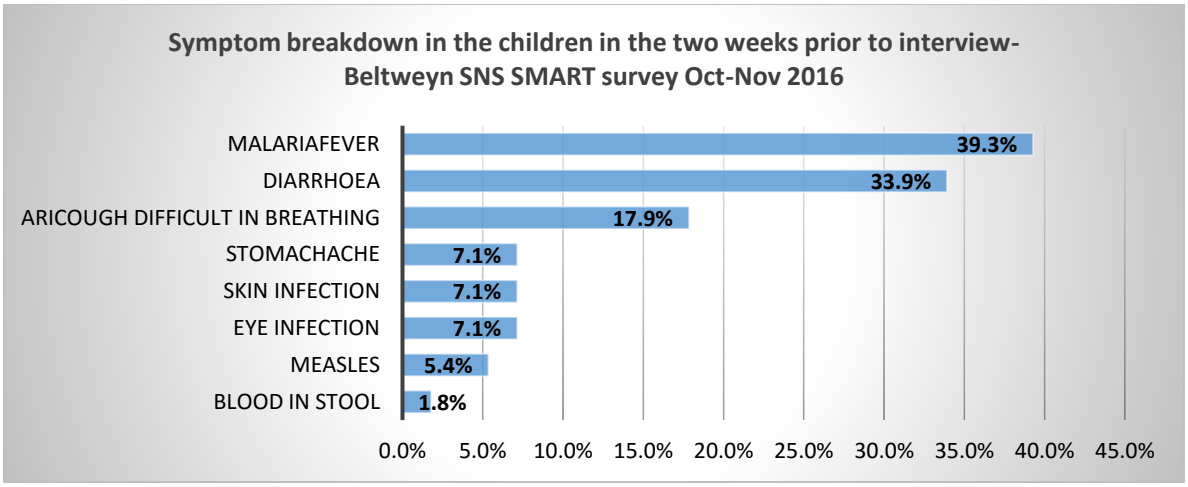
CMR (total deaths/10,000 people / day): 0.25 (0.09-0.65) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.70 (0.27-1.84) (95% CI)

The causes of death among the population was not known to the population and there was not known. There was mention of malaria among the under 5 children and kidney problem for the adults. Most of the other causes of death were not clear to the families.

3.3 Children's morbidity

9.9% of all children under the age of 5 had symptoms of illness as in the graph below. Malaria Diarrhoea and ARI were the most common symptoms. The same trend was observed in 2015 where malaria (26.2%), ARI (32.1%) and diarrhoea (32.5%) were the most common symptoms in magnitude respectively.

Figure 3.4: Symptom breakdown in the children in the two weeks prior to Interview



3.4 Vaccination Results

Immunization coverage within the district was found to be very low. Key micro nutrient supplementation including Vitamin A was very low to have any public health impact on the population. The details of coverage as compared to sphere recommendations for emergency are as shown.

Table 3.11: Immunization Coverage

	Measles	Polio	BCG Scar	Vitamin A	Deworming
Yes By Card	9.5	14.1			
Yes By recall	17.4	37.5			
No	71.7	47.9	84.9	88.9	90.2
Not Known	1.4	.5			
Yes			15.1	11.1	9.8

3.5 WASH

Incidence of Handwashing

80.1% of HH interviewed practice handwashing before eating and 77% practise after visiting the toilet. The critical handwashing moments are yet to be fully adopted. This leaves some loopholes into implementation of a compact hygiene regime that covers all bacteria vector control.

Figure 3.5: Handwashing incidences in Beletweyn

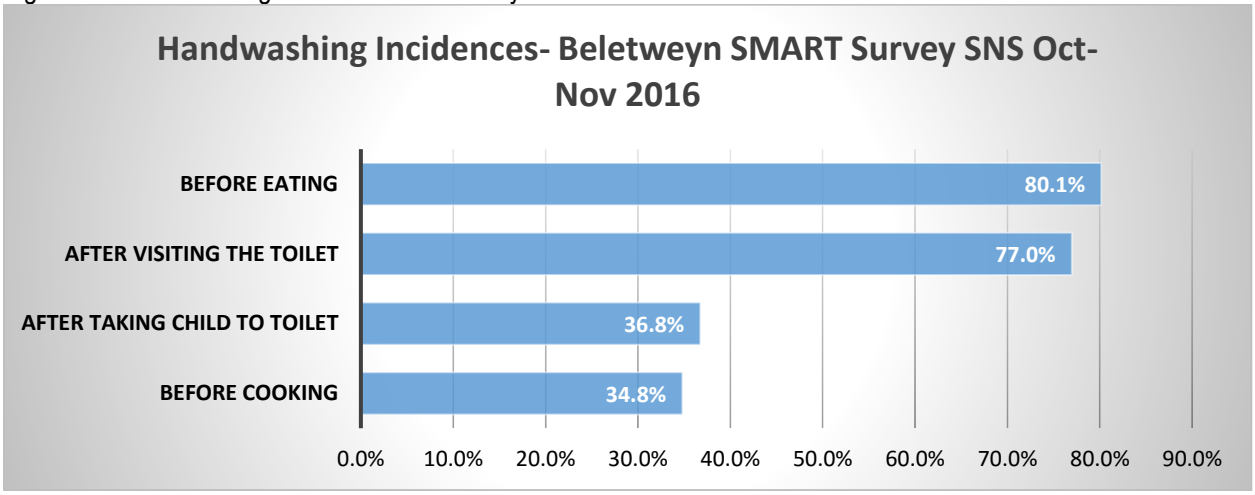
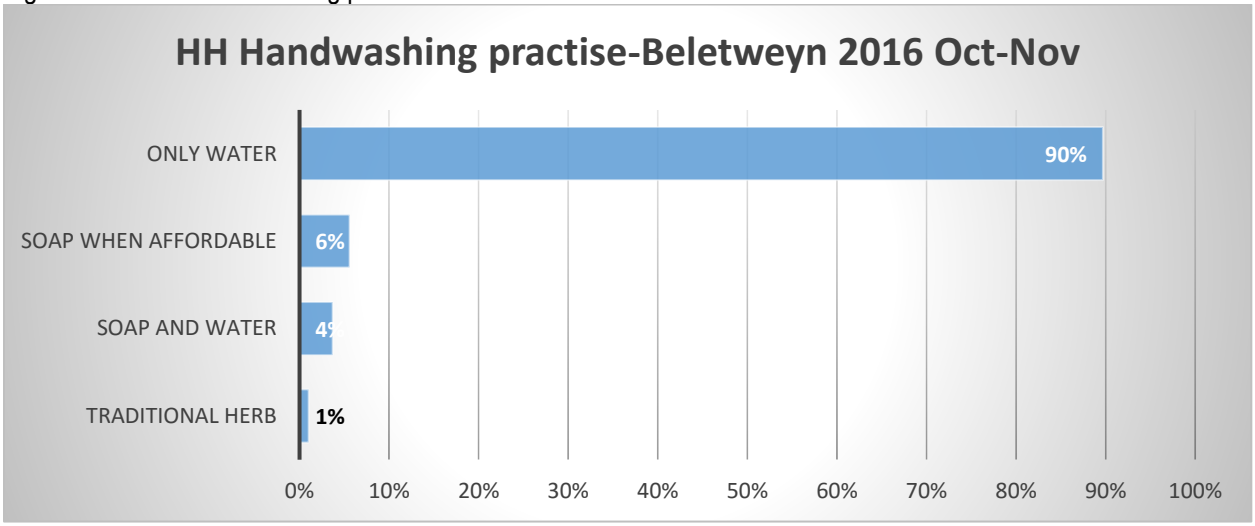


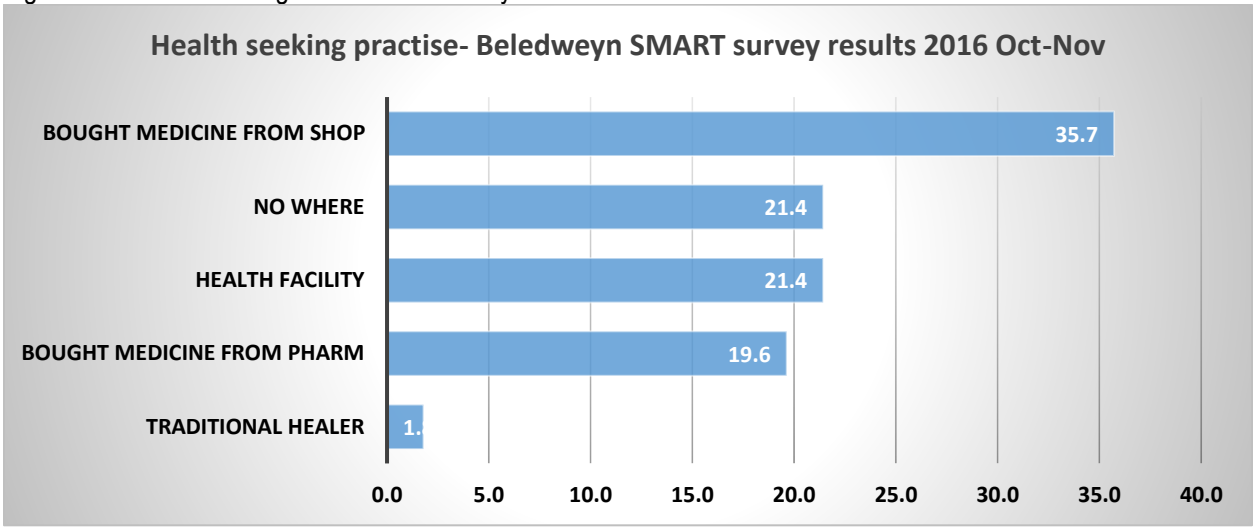
Figure 3.6: Actual handwashing practise- what HH uses to wash hands



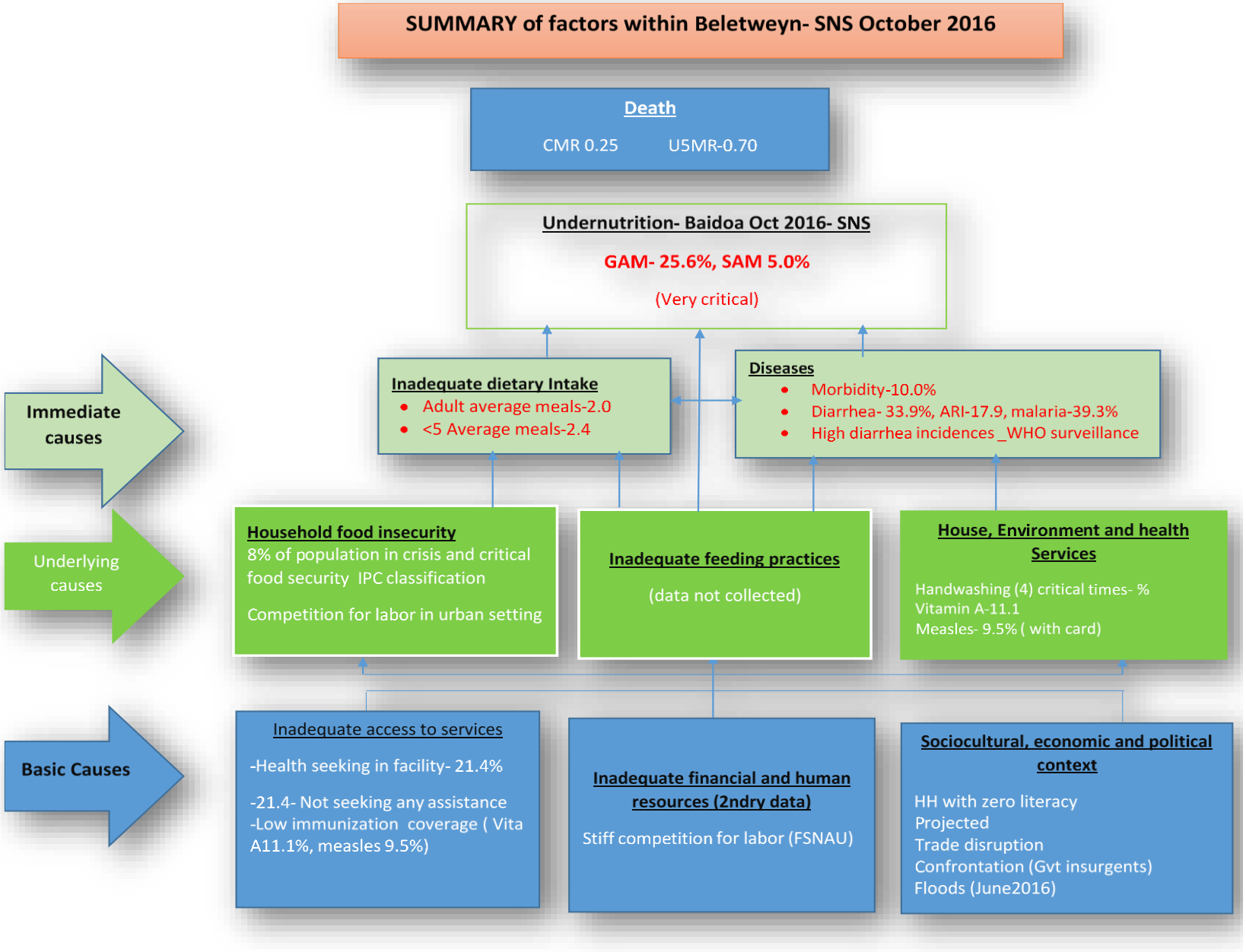
3.6 Health-seeking behaviour

As indicated below, 21.4% of all HH seek appropriate treatment at heath facilities when sick. The same percentage do not seek any treatment while the 35.7% buy medicine from pharmacy. In 2015 28% seek treatment in health facilities. This points to a reduction of people who seek proper medical care.

Figure 3.7: Health Seeking Practice in Beletweyn



Diagrammatic representation of the survey using UNICEF causal framework.



4. Discussion

Beletweyn currently faces one of the highest rates of Malnutrition c at 25.6% GAM and 5% SAM. Trends also show these are among the highest rates observed in Beletweyn over a long period of time. These rates are critical and call for immediate action to reduce them. They are neither typical for the season nor for the district as compared to data over few seasons ago.

4.1 Nutritional status

A GAM of 25.6% and a SAM of 5% has not been experienced in Beletweyn since 2012/2013. The rates therefore are not typical and depicts a critical nutrition situation. The data shows more boys wasted. The ration presentation in the ample is 1.1 depicting no ratio bias in selection of children for anthropometry survey. It is in 2012 that Beletweyn recorded a GAM of 24% and Sam of 11% according to the trends above.

Post Gu 2016 by FSNAU showed a GAM of 15.6 and SAM of 4.5 and linked the sustained high rates of malnutrition in Beletweyn to limited humanitarian assistance; poor hygiene and sanitation; low health services, repeated or recurrent floods, which have destroyed crops and food stores; recurrent communicable diseases outbreak, like acute watery diarrhoea, measles, malaria and pneumonia.[8]

Access to health facilities has reduced from 28% to 21.4% compared to 2015. The survey also has seen increase in diarrhoea and malaria cases which have effect on the nutritional status of children. Diarrhoea to be specific had a huge impact as WHO surveillance indicated out of the total 437 reported cases of acute watery diarrhoea, 314 came from Beletweyn. Report by WHO indicates that of the 7 stool samples collected from suspected cholera cases in Beletweyn Hospital 5 were confirmed to be cholera.

The May flooding that caused displacment of populaions in beletweyn is one unique happening that is different from 2015. This could have posibly contributed to the surge. The flood sas coupled with fighting and this made the situation even more complicated.

The drought in Somali has also had a toll to the population in Hiran . reports in march 2016 incdicated shortages of water tht threatened farming. FSNAU indicated that the effects of the drought could not be recovered within one season. The following seasosn also saw erratic rains affecting production.

[8] Post Gu Nutrition assessment FSNAU 2016.

In summary, beletweyn district has gradually been hit with a number of facotrs that have built into High Gam and SAM cases in the population. This can be seen in the trend of key factors within the year.

4.2 Mortality

The survey mortality rates were within acceptable WHO standards and acceptable SPHERE emergency standards. Based on World Health Organization Mortality interpretation, the rates fall within the acceptable range of (CDR <0.5/10,000/day and U5DR ≤1/10,000/day) <1/10000 deaths.

Compared to SMART survey results conducted in 2015 by SNS, the current findings show a decrease in Mortality. The community failed to identify the main cause of death but malaria was mentioned in some case for under 5 children.

4.3 Food Intake

Average HH intake of food is below recommended. Adults had an average of 2.0 meals /day while children reported an average of 2.4. These averages do not point to a food secure community. IYCF recommends additional meals from children and the averages above indicates the no of meals to be less than the 3 standard meals for most HH. With the reduction of meals also come compromise in quality and variety.

4.4 Poor health and health seeking behaviour

Only 21.4% of sick seek medical attention at health facility. This is a reduction compared to 28% in 2015. The majority seek health services by buying drug in shops and pharmacies while a huge percent do not seek services. 10% of children were ill during the 2 weeks preceding the survey. Diarrhoea, ARI and Malaria were the major illnesses reported. These are diseases marked by WHO as to p diseases causing deaths in children under the age of 5 years. Compared to 2015, malaria and diarrhoea recorded an increase. The information is also supported by WHO surveillance which put Beletweyn among the areas affected most by cholera and also the district reported highest number of diarrhoea cases.
Suboptimal vaccination status and micronutrient supplementation means that the expected effect is not felt in the community. The levels are far below the recommended targets.

4.5 Poor WASH practice

The high diarrhoea cases are an indication of compromised sanitation and hygiene. Data from the survey indicates non-compliance to the critical moments of handwashing compromising strategies for control of bacteria.

4.6 Other indirect factors

At HH level, over 60.5% of HH have no member that can read and write, 19.9% of the HH have one person. Education plays major role in information access and interpretation.

Conflict in Beletweyn district has caused disruptions in the economic channels of distribution and access to goods. Below average post Gu has affected the population, with fewer labour opportunities available as a result of reduction in farm work

Months prior to the survey saw Beletweyn suffer from flooding. The floods as a result of Beletweyn bursting its banks lead to displacements and loss of property.

5. CONCLUSIONS

Undernutrition

Undernutrition remains a serious challenge in Beletweyn. The current survey has noted an upward trend in both GAM and SAM prevalence, which is related to multiple immediate, basic and underlying cases. This is indicated in the causal diagrammatic representation of factors above. Such high levels of malnutrition call for immediate action to reduce the levels to acceptable levels. To address this there is need to coordinate with other sectors, including health, WASH and FSL.

Action to address the high levels of GAM and SAM need to be immediately thought through and implemented. With the projection in the coming months indicating a deteriorating situation for both Nutrition and FSL, worsening of the current situation might cause further increase in SAM case burden.

Mortality

Mortality rates are well within acceptable WHO standards. There are, however, projections of increasing humanitarian pressures in the wake of the ongoing drought. This will obviously have implications for food security and nutrition. According to WHO, undernutrition accounts for 35% of global under-five deaths. [9] If the situation is not addressed, the mortality rates recorded are likely to increase.

WASH

Basic handwashing is not optimally practised at the household level. Critical handwashing moments are key to reduction of infections at the household level. Poor handwashing is likely related to the high rates of diarrhoea recorded.

[9] Essential Nutrition Actions: improving maternal, newborn, infant and young child health and nutrition

6. RECOMMENDATIONS AND PRIORITIES

Immediate

Finding	Recommendation
High GAM and SAM rates with aggravating factors	All SAM cases need to be treated, which necessitates a more aggressive approach in reaching out to all cases. This can be done through increasing the number of treatment sites, increasing activity of identification at community level, and conducting mass screening. With the increase in malnutrition rates, current facilities may not be able to accommodate the surge in cases, therefore there is immediate need to mobilise additional resources especially in the area of treatment of SAM cases.
Low immunization levels and vitamin A supplementation	Increased outreach to all accessible areas to conduct immunization and micro-nutrient supplementation. Conducting an immunization campaign is an effective strategy to enhance vaccination rates. Routine immunization needs to be strengthened, and all possible platforms for integration of immunization, e.g. nutrition outreach programs, should be explored.

Medium-Term

Finding	Recommendation
Poor household food security	In the short run, to address food insecurity at the household level, cash transfer programs can be considered to increase the purchasing power of such families.
WASH	Programs aimed at extending WASH and health education to schools should be considered.

Future nutrition monitoring

The current situation with all the aggravating factors and projections for a worsening situation needs close follow up. It is recommended that the number of new SAM cases be monitored and any surge in numbers be addresses and followed up.

A follow up SMART survey needs to be planned in four months to evaluate the effect of interventions recommended to improve the current nutrition status.

7. REFERENCES

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- FSNAU/FAO technical release 2016- October 19th
- SNS SMART survey – Beletweyn District 2015 –Post Gu
- Emergecy Nutrition Assesment guidelines- Save the children
- Beletweyn SMART Survey- SNS 2015
- Post Gu Nutrition assessment FSNAU 2016.
- Essential Nutrition Actions: improving maternal, newborn, infant and young child health and nutrition

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9. APPENDICES

Appendix 1: *Plausibility Report*

Final
_Bletweyn_Plausibili

Appendix 2: *Assignment of Clusters*

Beletweyne_cluster
s.xlsx

Appendix 3: *Evaluation of Enumerators (Standardization test results)*

New report_Standardization_Beletwein.txt

Appendix 4: Questionnaires

SMARTSurveyONA_
2016_formfinal.xlsx