SNS CONSORTIUM

«Strenghtening Nutrition Security in South Central Somalia»

SMART SURVEY REPORT

Baidoa District, Bay Region of Somalia

October- November 2016

Save the Children

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ACTION AGAINST HUNGER

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Executive summary

Background

Baidoa is the capital of the Bay region; a strategic town in south-central Somalia situated approximately 250 kilometers west of Mogadishu, and 240 km southeast of the Ethiopian border. It is traditionally inhabited by the Digil and Mirifle clans. The city is one of the most important economic centers in southern Somalia, conducting significant trade in local and imported cereals, livestock and non-food items.

The SMART survey was conducted in accessible locations in Baidoa between October and November 2016. The purpose of the survey was to monitor outcomes under the four year DFID-funded SNS nutrition program.

Objectives

- Estimate the prevalence of acute malnutrition among children 6-59 months in Baidoa District.
- Estimate retrospective CMR (Crude Mortality Rate) and U5MR (Under five Mortality Rate)
- Estimate coverage of vitamin A and deworming.
- Estimate selected WASH indicator levels.
- Make practical recommendations on the utilization of the key findings.

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, data collection, data quality checks and report writing templates based on ENA(Emergency Nutrition Asssment) software.

Sample Size

A total of 613 under five children were included in anthropometric analysis of GAM (Global Acute Malnutrition) and SAM (Severe Acute Malnutrition).

Results

Based on WHO crisis classification, Baidoa population results represent a critical situation with a critical GAM and very critical SAM at 20.07 and 6.0% respectively. This is higher compared to the 2015 survey in the same district where SNS found the GAM and SAM to be 16.3% and 2.5% respectively.

Results Summary are as shown below:

Indicator	
GAM (Global Acute malnutrition)	(127) 20.7 % (16.9 - 25.2 95% C.I.)
MAM (Moderate Acute Malnutrition)	(90) 14.7 % (11.8 - 18.1 95% C.I.)
SAM (Severe Acute Malnutrition)	(37) 6.0 % (3.8 - 9.4 95% C.I.)
U5MR	0.80 (0.36-1.81) (95% CI)
CMR	0.78 (0.45-1.32) (95% CI)
Measles	6.0%
Vitamin A(Last 6 months)	20.8%
Deworming	19.6%
Morbidity	23%
BCG Scar	13.7%
Polio	7.0%

Conclusions

Baidoa remains a hotspot for malnutrition. A GAM of 20.7% and SAM of 6.0% recorded in this survey represent critical nutrition situation. The situation is underpinned by a challenging context, which includes factors related to the climate, violence and insecurity, large-scale displacement, and limited access to affected populations. There are many aggravating factors in addition to the poor nutritional situation. High morbidity at 23% in the population, immunization levels below the recommended levels, low micro nutrient supplementation coverage, experience reduction in food commodities in the market and observed reduction in specific food commodities.

In aggregate, 61.7% of all children malnourished and qualified for treatment are not able to access treatment. Poor and fragmented access can be explained by limited availability of services, insecurity and lack of awareness among families.

Recommendations and priorities

Immediate

Survey Findings (Baidoa)	Action recommended
High GAM and SAM(Critical level with aggravating factors)	Scale up nutrition SAM treatment and specifically focus on bridging gaps in coverage. Depending on the availability of funds there is need run blanket SFP (Supplementary Feeding Program)) for a number of months to support all children under 5 who are at highest risk of malnutrition. Increase Coordination and Consider Multi-sectoral approach – Nutrition, Health, WASH, FSL, Education
High morbidity rates (23%) with diarrhoea and ARI as major illnesses.	Reinforce prevention messages currently being passed through existing Nutrition treatment programs; extend the education to other

	programs.
Low immunization rates and vitamin A supplementation	Conduct a thorough community mobilization and follow that with mass campaigns for supplementation. Strengthening routine immunization and integrating immunization efforts into all feasible platforms available. It should not be entirely seen as a separate entity.

Medium Term

Survey Finding (Baidoa)	Action recommended
Food insecurity at HH (Household) with an average of 2.1 and 2.3 meals per day for adults and children, respectively.	Fundraise for FSL (Food Security and Livelihoods) programs that will improve HH food access. This may include food distribution and cash distribution.
Poor WASH(Water, Sanitation and Hygiene) practises at HH level	Continue with current health and hygiene education sessions; have a strategy that will allow key nutrition, health and WASH messages to be part of every project/program.

1. Introduction

Baidoa is the capital of the Bay region, a strategic town in south-central Somalia situated approximately 250 kilometers west of Mogadishu and 240 km southeast of the Ethiopian border. It is traditionally inhabited by the Digil and Mirifle clans.

The city is one of the most important economic centers in southern Somalia, conducting significant trade in local and imported cereals, livestock and non-food items. In 2006 it became Somalia's provisional capital before Al-Shabaab took control of the city from 2009 to 2012, before the group was driven out by Transitional federal Government forces heavily backed by the Ethiopian army. However, the combined effects of the recent drought and pervasice insecurity have had a harmful impact on economic stability and livelihoods, leading to a chronic humanitarian situation and large scale population displacement. The district hosts an estimated 3,300 IDPs and also experienced a significant influx from other areas and returnees from Kenya in June/July 2016.[1]

Humanitarian access in Baidoa remains a challenge, which has necessitated the formation of a civil-military working group to support humanitarian operations. Baidoa remains one of the areas where access has been constrained due to illegal checkpoints, road blockages, violent clashes, and direct attacks on humanitarian and commercial goods during transit.[2]

1.1 Survey Objectives

SNS (Strengthening Nutrition Security) program in Somalia has been implemented from 2013.One of the key output in the program design was strengthening surveillance in Somalia by playing a complementary role in conducting nutrition related assessments and availing the information for use to all stakeholders. Apart from the wider objective of continuous surveillance. The survey aimed at meeting the following specific objectives.

- Estimate the prevalence of acute malnutrition among children 6-59 months in Baidoa.
- 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.

[1] Baidoa IDP rapid needs assessment June 2016- Sustainable Development and Peacebuilding Initiatives (SYPD)

[2] Somalia Humanitarian response plan Jan-Dec 2016

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 for the survey. SMART recommended training package was used for training, data collection, data quality checks and report writing templates based on ENA software.

2.1 Sample size

The survey covered accessible subdistrics (villages) in Baidoa. Cluster sampling was used based on the villages within Baidoa district.

The sample size for anthropometry was calculated using ENA software . Parameters for calculation of the sample were taken from the previous survey conducted by SNS in 2015. The SNS 2015 surveys were used as they followed the same process and methodology as the current survey, and the focus was on district level that corresponded to the geographical interest and focus of this survey.

Table 2.1: The parameters for calculation of Athropometry sample size:

	Baidoa
Estimated Prevalence%	16.3
+- Desire precision percent%	5
Design effect	1.5
Average HH size	6
Percentage of <5 children	20
% of non-respondent HH	10
Total Children	342
Total HH	352

ENA automatically estimated the number of HH that would have yielded the adequate number of children for representative analysis.

Mortality sample

The mortality sample size was also calculated using the ENA software. Using CMR and U5MR estimation from the 2015 SNS SMART survey, the parameters below were fed into the ENA planning page and the requiste sample calculated. The sample size was adjusted for non-response by a factor of 10%; the adjustments were as a result of experience in previous surveys in Baidoa where some households were not accessible.

Table 2.2: Parameters for calaculating Mortality Sample size:

	Baidoa
Estimated Prevalence%	0.78
+- Desire precision percent%	0.5
Design effect	1.5
Recall period	116
Average HH size	5
% of non-respondent HH	10
Total HH to be included	375
Total Population	1687

2.2 Sampling procedure: selecting clusters

Due to the insecurity situation in Baidoa, most of the villages within the district were not accessible to the survey team. Therefore, all the villages within Baidoa were listed and only accessible villages were included in the sampling frame. Availability of accurate demographic data is a challenge in Somalia, and the most recent UNFPA Population Estimation Survey (2014) report online did not provide data to the village level. Village level population figures used in 2015 survey was presented to the field teams for verification, this was done through consultations with the village leadership.

Each potential cluster was listed with its population. The data was then entered into the ENA Planning tab. Under the same software, 33 clusters were randomly selected using probability proportion to population size (PPS). ENA selected three additional reserve clusters.

All identified clusters were accessible during the survey and data was therefore collected without the need of having to utilize reserve clusters.

2.3 Sampling procedure: selecting households and children

A total of 30 clusters were visited in Baidoa. In 20 of these clusters, simple random sampling was used in selection of HH to be visited, while in 10 systematic sampling was used.

On arrival in all clusters in Baidoa, the teams met with the elders who were able to develop a list of all HH within the villages. Each HH in the list was assigned a number and a random draw was subsequently held to identify the HH to be surveyed based on the intended sample size.

Based on the knowledge of the guides, the survey teams managed to reach to all the HH.

All HH were visited and those with no eligible U5 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 33 clusters.
Using the cluster control form, the process of data collection at each HH was noted. The cluster control formed assisted the teams to identified HH with absent children and aided in planning or re-visits. The Baidoa survey teams revisited a number of HH in some clusters as the members were absent during the initial visits.

Within each HH, anthropometric measurement was taken for all eligible children between 6 to 59 months of age. Accordingly, weight, height, MUAC and oedema were measured for children between 6-59 months. MUAC was also taken for WCBA (Women of Child Bearing Age).

In each HH, a caretaker of the child (ren) was the respondent. This in most HH, was found to be the mother of the child(ren). In HH where the mother was away, the father was identified as the respondent. A unique was where a respondent was the eldest child who had been left in charge of the HH.

2.4 Case definitions and inclusion criteria

In all selected households, all children from 6-59 months old were included in the anthropometric survey. The age of the children was first determined through available health record documents and secondly by a calendar of events developed and agreed on by the teams during their training.

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

The following case definitions were used in this assessment, in common with previous SNS SMART assessments:

- **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 (GAM MUAC**): 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.

Both urban and IDP surveys took place at the same time and the recall period for the Mortality survey was 107 days. The IDD celebration date (i.e. 7th of June 2016) was used as the start of recall period, since it is an important event celebrated across Somalia, which every Somali HH would be able to recall.

Retrospective morbidity was measured for the preceding two weeks before the survey. Morbidity was specifically inquired about in children from birth to 59 months old.

EPI (Measles, BCG and Polio) coverage was estimated using immunization cards. Although the option of recall was available, these were analysed differently to indicate the different source of information.

Mortality data was collected in all households. This included HHs that had no eligible children for the anthropometric survey.

2.5 Questionnaire development, training and supervision

The questionnaire for the survey was developed in English from the standard questionnaire provided by SMART. Since the survey had additional information requirements, additional sections were added to the questionnaire. The additional questions were based on the objectives of the survey presented above.

After development, the questionnaire was translated to Somali to facilitate comprehension among enumerators and respondents.

Translation was completed and the survey questionnaire was uploaded to the ONA platform, and thereby shared to all partners participating in the training. Using their smart phones and ODK (Open Data Kit) collect applications, all the teams were allowed to download and practice using

the questionnaire. Feedback was provided by the training participants and was incorporated into the questionnaire. The feedback largely related to the dialect of the translation.

Interviews in the field were conducted in Somalia as this was the language that most respondents were conversant with.

2.6 Survey teams and supervision

The Baidoa Survey had a total of 6 teams. Each team comprised of a Team Leader, two Measurement Assistants and a Community Guide. The Team Leader was responsible for administering the questionnaire and taking notes.

In total 6 teams were trained and every person trained participated in the survey. Most of the team members were existing SNS staff in Baidoa, which improved overall data quality due to prior experience in data collection. Ability to read and fill the questionnaire was a prerequisite for attending the training; prior experience in conducting SMART was a desirable attribute that was considered during selection of enumerators and team leaders.

In addition to the Team Leader, a Supervisor was assigned for the district to ensure overall data quality. The survey team supervisor comprised of the current nutrition manager, who had prior knowledge of SMART survey management. Logistics and movement planning was done during the training and the supervisors were given a mandate to ensure that all resources were available for the teams.

2.7 Training standardization and pilot study

Training for the survey was conducted in two stages. The first training was conducted by the SNS Researcher in Mogadishu. The second training was conducted by the Survey Managers and Team Leaders at the specific districts where the surveys took place.
The first stage involved the training of Survey Managers and Team Leaders training where they were taken through the survey process in Mogadishu. This comprised teams that would later conduct three surveys in Baidoa, Beletweyn and Mataban districts. Seven staff from Baidoa participated in the Mogadishu training, and were later the Team Leaders for the survey teams

with one being the overall Manager supervised by the Researcher. The content of the first training was a blend of managers training and enumerator training packages of the SMART survey. This included objectives of the survey, confirmation of populations, sample calculation, cluster selection, sampling techniques, taking anthropometrics, field procedures, quality data assurance, standardization tests and data entry, mortality and interview skills.

The first training included actual planning of the survey. This included participatory approach in cleaning and updating the 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.

The second stage was conducted by two participants demonstrating strong performance during the first training. Multiple training sessions were conducted in the specific districts of the survey, in this case Baidoa. The second training targeted enumerators and focused on proper collection of anthropometric data and standardization. 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 incorporated into the final version.

The training also featured a practical demonstration for conducting a standardization test. The test was carried out on ten children in Baidoa; the results were subsequently shared, which showed good precision and accuracy.

A pilot survey was conducted to test the instruments in two villages, which were randomly picked from the accessible villages not included in the actual survey sample. A total of 30HH were visited. The pilot data was used to refine specific aspects of the questionnaire, for instance in Baidoa, areas where smart phones were not allowed meant that a questionnaire with no GPS as a requirement was developed.

2.8 Data collection and analysis

Mobile technology was used in the collection of data. Open Data Kit (ODK), an android application, was downloaded to all the smart phones and the phones were used by the teams for data collection. A number of quality control measures were used to ensure that the data was of high quality. The programming of the questions in ODK ensured that there were guidelines in the questionnaire. Error feedback was also built into the system where variables like age for children were capped at 59 months for anthropometry.

The smart phones also ensured that the location (GPS) of the HH was taken before data collection began. This assisted mapping of the daily data to confirm the location where data was being collected as compared to the planning. Collected data was downloaded on daily basis, following which plausibility was run using ENA and feedback provided to the teams. This allowed the teams to rectify any challenges they were facing in the field. The SNS Researcher was also available on the phone for support until all the teams had completed work for the day.

Data was exported into CSV files and cleaned in the same format. Anthropometric data was fed into EPI ENA, and plausibility and anthropometry were run in the same software. Analysis was done using ENA for the anthropometric data and mortality data. Data on EPI, HH demographics and morbidity were analysed using SPSS v20, which was used to make all the comparisons.

After cleaning, coding and an initial overview of the data collected, descriptive analysis was done where frequencies for each question were calculated within the different response options. Inferential statistics was done for anthropometric data with confidence intervals developed for key indicators of interest, including GAM, SAM and mortality.

The results were compared to findings from earlier similar surveys, and the survey results were explained within the context of factors that have direct effect on nutrition based on Nutritional Causal Framework. Outliers for anthropometry data were analysed with boundaries of exclusion set at +/- 3SD of WHZ, HAZ and WAZ from the observed mean.

3. Results

The survey results are presented in 3 key areas: Anthropometric, EPI and WASH. The anthropometric results are based on WHO 2006 standards.

3.1 Anthropometric results:

The anthropometric survey used the following definition for acute malnutrition:

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

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

3.1.1 Distribution of age and sex of sample

The ratio of boys and girls in the sample was exactly 1. This presents a 50/50 representation in the collected sample which is as expected. The age distribution indicated more children between the age brackets of 1-29 months in the sample, as compared to 42-59 months.

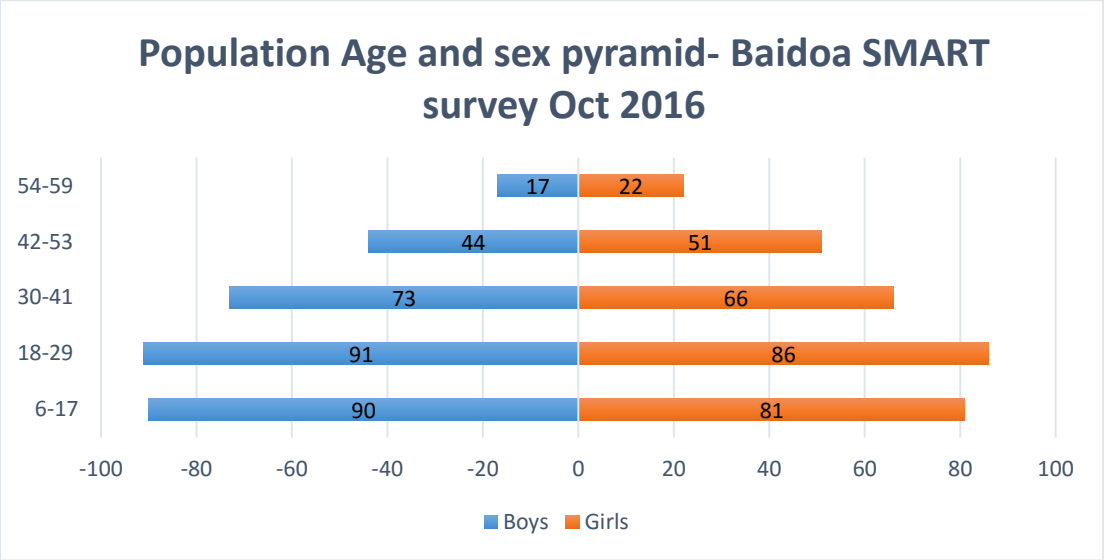
Table 3.1: Distribution of age and sex of sample

	No Boys	Percent Boys	No Girls	Percent Girls	Total no boys plus girls	Total percent Boys and Girls	Ratio Boy:Girl
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	90	52.6	81	47.4	171	27.5	1.1
18-29	91	51.4	86	48.6	177	28.5	1.1
30-41	73	52.5	66	47.5	139	22.4	1.1
42-53	44	46.3	51	53.7	95	15.3	0.9
54-59	17	43.6	22	56.4	39	6.3	0.8
Total	315	50.7	306	49.3	621	100.0	1.0

3.1 Population age and sex pyramid

Age distribution is graphically presented in the pyramid below which looks symmetrical for both boys and girls. Children 54-59 months were underrepresented in the sample.

Figure 3.1: Population age and sex pyramid



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

High rates of GAM and SAM were observed in Baidoa. GAM rate is 20.7%, which represents a "critical" situation. Compared to the last survey conducted by SNS in 2015, which put the GAM rate at 16.2%, comparing the 2 surveys using CD calculator a p-value of 0.1039 was established showing no statistical significance in the GAM rate of 2015 and 2016. However looking at the rates from a programmatic perspective, the increase in GAM rates has already started affection admissions and supplies. This therefore point to a significant increase for a programming angle. SAM prevalence was similarly high at 6.0%, which also indicates a 'very critical' situation. Compared to the 2015 results, SAM prevalence more than doubled from an estimated 2.5%.

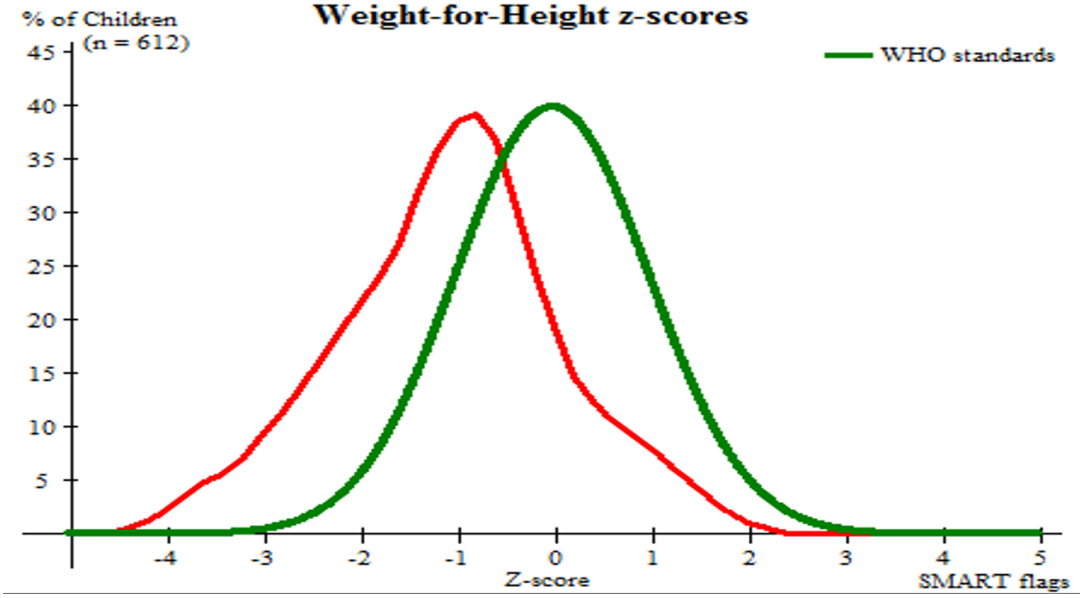
Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 613	**Boys** n = 310	**Girls** n = 303
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(127) 20.7 % (16.9 - 25.2 95% C.I.)	(77) 24.8 % (18.8 - 32.1 95% C.I.)	(50) 16.5 % (12.0 - 22.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(90) 14.7 % (11.8 - 18.1 95% C.I.)	(59) 19.0 % (13.8 - 25.7 95% C.I.)	(31) 10.2 % (7.4 - 14.0 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(37) 6.0 % (3.8 - 9.4 95% C.I.)	(18) 5.8 % (3.6 - 9.2 95% C.I.)	(19) 6.3 % (3.5 - 10.9 95% C.I.)

The prevalence of oedema is 0.2 %

Graphical representation of acute malnutrition indicates an overlap of the curves and a shift to the negative. This indicates a considerable increase in the number of malnourished children found during the survey. However, we cannot interpret if this is significant from the reference population.

Figure 3.2: Weight for Height Z-Scores



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

A large number of wasted children are between the ages 6 to 29 months. This age group represents children with special complementary feeding requirements to obtain optimum

nutrition.

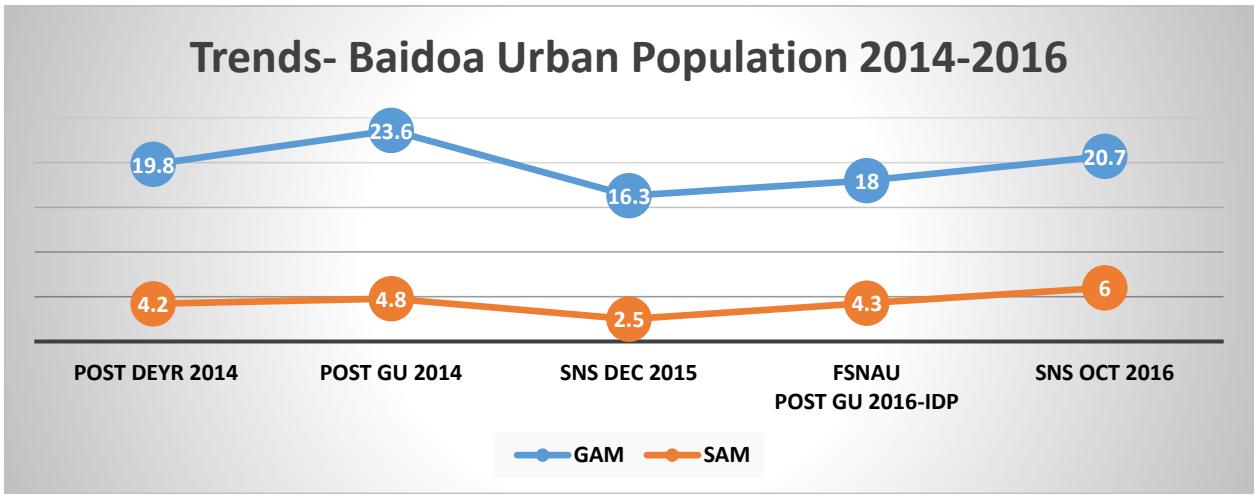
Table 3.3: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 SD z-score)		Moderate wasting (>= -3 SD and <-2 SD z-score)		Normal (> = -2 SD z score)		Oedema	
Age (months)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	169	10	5.9	27	16.0	132	78.1	0	0.0
18-29	176	11	6.3	29	16.5	136	77.3	0	0.0
30-41	138	8	5.8	13	9.4	116	84.1	1	0.7
42-53	92	4	4.3	15	16.3	73	79.3	0	0.0
54-59	38	3	7.9	6	15.8	29	76.3	0	0.0
Total	613	36	5.9	90	14.7	486	79.3	1	0.2

Trends:

Trends witin Baidoa indicate a worsened sitaution from survey condiuctd the same time in 2015. Both GAM and SAM levels presents significant increase from 2015. The GAM levels over time seems to be within a range observed before but the SAM rates have increased to levels not observed since 2014.

Figure 3.3: Trends in Baidoa Urban Population



3.1.4 Distribution of acute malnutrition and oedema based on weight-for-height z-scores

One case of oedema was found during the survey and it was confirmed by the Manager to be bilateral pitting oedema. This represents 0.2% of the sample population.

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

	<-3 SD z-score	**>=-3 SD z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.2 %)
Oedema absent	Marasmic No. 36 (5.9 %)	Not severely malnourished No. 576 (94.0 %)

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

MUAC is regarded as a more accurate predictor of mortality compared to WFH. Using MUAC, GAM was estimated at 25.8%. SAM was estimated at 6.0%.

Table 3.5: Prevalence of acute malnutrition based on MUAC cut-offs (and/or oedema) and by sex

	All n = 621	**Boys** n = 315	**Girls** n = 306
Prevalence of global malnutrition (< 125 mm and/or oedema)	(160) 25.8 % (19.6 - 33.1 95% C.I.)	(78) 24.8 % (18.2 - 32.7 95% C.I.)	(82) 26.8 % (19.5 - 35.7 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(123) 19.8 % (15.2 - 25.4 95% C.I.)	(60) 19.0 % (14.3 - 24.9 95% C.I.)	(63) 20.6 % (14.8 - 28.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(37) 6.0 % (3.3 - 10.5 95% C.I.)	(18) 5.7 % (2.9 - 10.8 95% C.I.)	(19) 6.2 % (3.1 - 11.9 95% C.I.)

Table 3.6: Prevalence of acute malnutrition by age, based on MUAC cut-offs 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	171	23	13.5	63	36.8	85	49.7	0	0.0
18-29	177	8	4.5	36	20.3	133	75.1	0	0.0
30-41	139	4	2.9	14	10.1	121	87.1	1	0.7
42-53	95	1	1.1	5	5.3	89	93.7	0	0.0
54-59	39	0	0.0	5	12.8	34	87.2	0	0.0
Total	621	36	5.8	123	19.8	462	74.4	1	0.2

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

The survey estimated that 40.5% of children were underweight. Of these, 25.7% were moderately underweight, while 14.9% were severely underweight. Calculation of underweight children requires accurate age, which is challenging in the Somalia context. Age in most studies and surveys is determined by a calendar of events, and this needs to be noted as a potential limitation.

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

	All n = 619	**Boys** n = 314	**Girls** n = 305
Prevalence of underweight (<-2 z-score)	(251) 40.5 % (33.7 - 47.8 95% C.I.)	(142) 45.2 % (37.7 - 53.0 95% C.I.)	(109) 35.7 % (28.2 - 44.1 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(159) 25.7 % (21.6 - 30.3 95% C.I.)	(83) 26.4 % (21.4 - 32.2 95% C.I.)	(76) 24.9 % (19.1 - 31.8 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(92) 14.9 % (10.9 - 19.9 95% C.I.)	(59) 18.8 % (12.4 - 27.5 95% C.I.)	(33) 10.8 % (7.2 - 16.0 95% C.I.)

3.1.7 Prevalence of underweight by age, based on weight-for-age z-scores

A greater number of underweight children was observed in the 6 to 29 months age bracket. This is a crucial phase when it comes to complementary feeding, which plays a big role in sustaining the gains achieved during breastfeeding from 0 to 6 months.

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 (months)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	170	20	11.8	47	27.6	103	60.6	0	0.0
18-29	177	39	22.0	45	25.4	93	52.5	0	0.0
30-41	138	17	12.3	32	23.2	89	64.5	1	0.7
42-53	95	10	10.5	26	27.4	59	62.1	0	0.0
54-59	39	6	15.4	9	23.1	24	61.5	0	0.0
Total	619	92	14.9	159	25.7	368	59.5	1	0.2

Table 3.11: 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	612	-1.08±1.15	1.58	1	8
Weight-for-Age	619	-1.67±1.16	3.07	1	1
Height-for-Age	602	-1.66±1.41	3.65	0	19

* contains for WHZ and WAZ the children with oedema.

3.2 Mortality results (retrospective over 116 days prior to interview)

Sphere standards states that CMR is the most important indicator for monitoring and evaluating severity of an emergency. The U5MR is a more sensitive indicator than CMR. Doubling or more of CMR from the baseline indicates a significant public health emergency. The sphere handbook puts the baseline for sub-Saharan Africa at 0.4 for CMR and 1.07 for U5MR.[3]

[3] The sphere project handbook- Humanitarian charter and minimum standards in humanitarian response.

The survey estimated CMR at .078 and U5MR at 0.80. Based on sphere standards, the rates have not doubled from the sub-Saharan reference baseline and therefore not of a significant public health emergency.

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. Comparing the rates with last year survey, the rates for CMR remained the same while U5MR shows a reduction from 2.4% to 0.80. The recall period of 116 was calculated from the day of Idul Fitr of 2016 in Somalia.

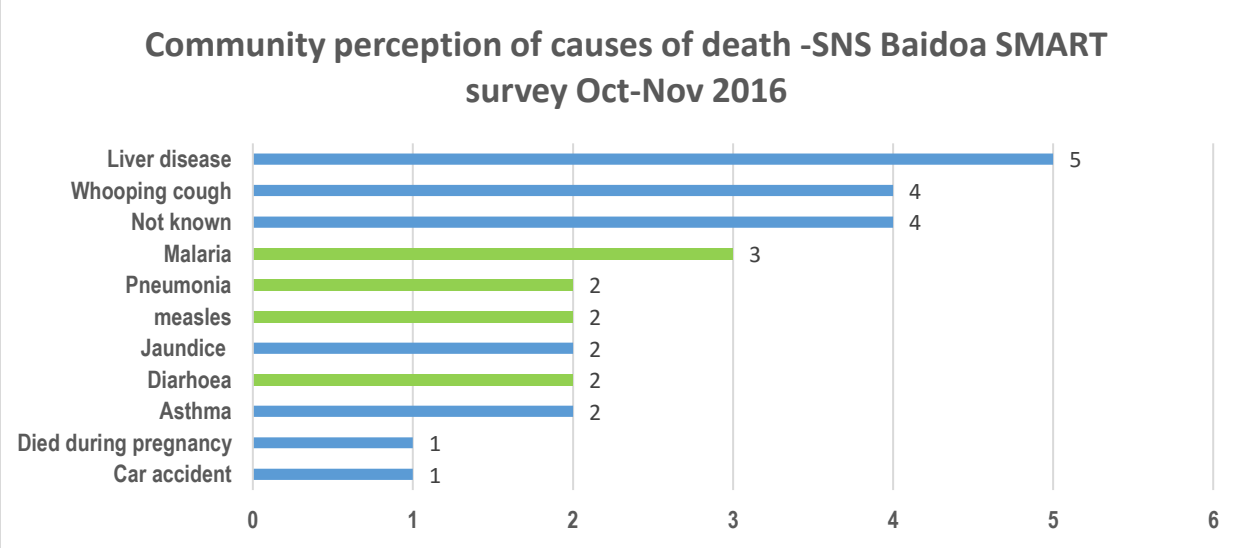
Table 3.12: Mortality rates results

CMR (total deaths/10,000 people / day): 0.78 (0.45-1.32) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.80 (0.36-1.81) (95% CI)

3.2.1 Community perception of causes of death:

Liver disease was perceived to be the major cause of deaths in the population . Related. Main causes of death among under five were as indicate din green bars in the graph below.

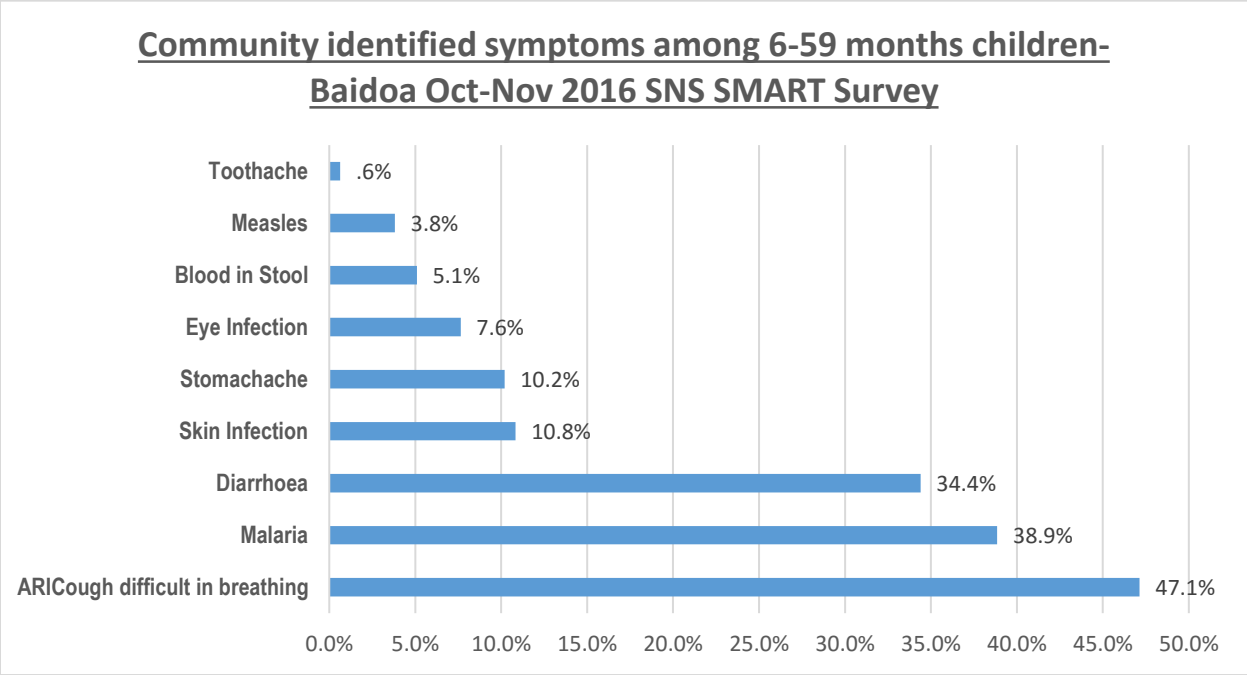
Figure 3.4: main causes of Death in Baidoa



3.3 Symptom breakdown in the children in the two weeks prior to interview (n=684)

The most prevalent diseases among children were ARI, malaria and diarrhoea. This is consistent with the findings of the 2015 SMART Survey, where the same diseases demonstrated the greatest prevalence among children.

Table 3.14: Symptom breakdown in the children in the two weeks prior to interview (n=684)



3.4 Vaccination Results

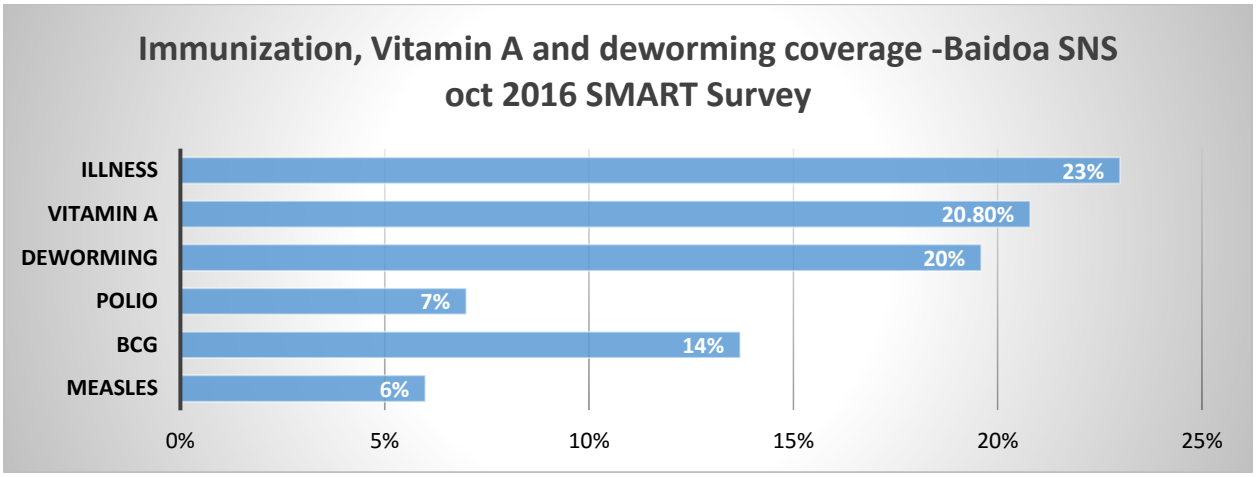
3.4.1 Vaccination, Vitamin A and Deworming coverage

Data on immunization indicates low coverage based on the key immunization schedule. Literature shows high rate of vitamin A deficiency in Somali with most parts recording over 20 per cent deficiency a threshold that the WHO considers Severe[4].The survey shows Vvitamin A supplementation is 20.8%, which is well below the recommended level of more than 80% to have a public health importance effect. Compared to 2015 the rates were at 34.6% indicating a reduction in the coverage. KII information from Baidoa indicates a number of organizations that had challenges with funding and had to conclude their activities in Baidoa, this is a possible contribution to the reduced coverage. Measles immunization by card is 6%. This was noted at

[4] Unicef Situation Analysis of Children 2016

3.5% in the last SNS survey (2015). The results paint a dismal picture as measles vaccination globally stands at 85%.[5] The coverage also indicates reduced coverage compared to 2015.

Table 3.15: Vaccination coverage: BCG for 6-59 months and measles for 9-59 months (confidence interval)



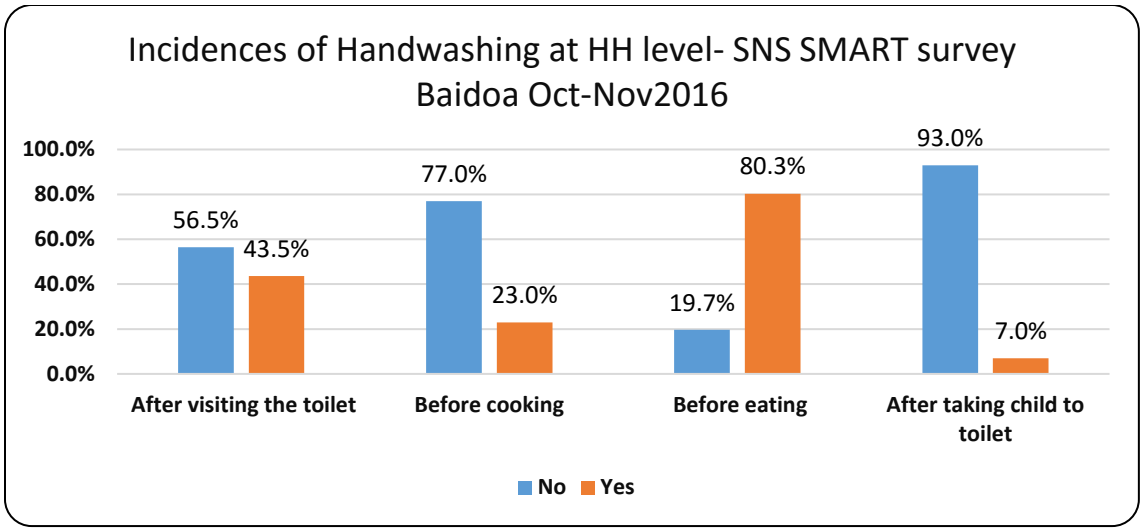
3.5 Water sanitation and Hygiene

3.5.1 Hand washing practise:

Handwashing among the population although practised, a very small percent of the population observes all recommended times of critical hand washing. This partial uptake of handwashing recommended practise could explain the high rates of diarrhoea. There are handwashing opportunities that are yet to be taken advantage of including before cooking which is a routine activity in the HH. 56.5% do not wash hands after visiting the toilet and 19.7 do not wash before eating. These are obvious exposure to disease causing microorganisms.

Figure 3.5: Incidences of Handwashing at HH Level.

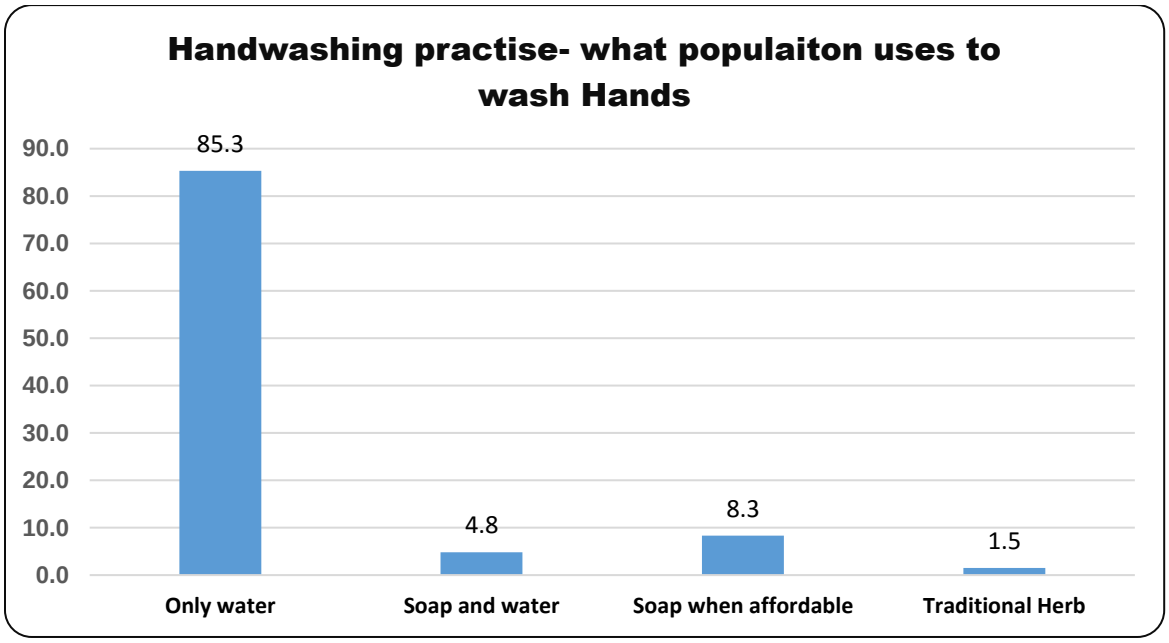
[5] http://www.who.int/mediacentre/factsheets/fs378/en/



3.5.2 What HH use to wash hands

Majority of individuals who wash hands reported using only water (85.3%). Proper hand washing using soap and water is practised only by 4.8%.

Figure 3.6: What HH use to Wash Hands



4. Discussion

4.1 Nutritional status

The GAM rates estimated by the survey show a 'critical' situation in Baidoa district (20.7% GAM and 6.0% SAM). The recorded levels of both GAM and SAM warrant immediate response to avert possible deaths due to malnutrition.

Compared to 2015 SMART Survey conducted by SNS in Baidoa district, the nutrition situation has worsened. In particular, the SAM rate is alarming as such; children are at a very high risk of morbidity and mortality.

4.2 Mortality

Mortality estimation was within the acceptable rate of less than one 1 per 10,000/day populations <1/10,000/day U5DR and <0.5/10,000/day U5DR.

In 2015, the mortality rate recorded under the SNS SMART Survey in Baidoa in was 2.4 for under-five children, and 0.78 for CMR. The 2015 rates were of public health emergency significance .The estimated rates fall within acceptable rates form both sphere standards and WHO reference.

4.3 Causes of malnutrition

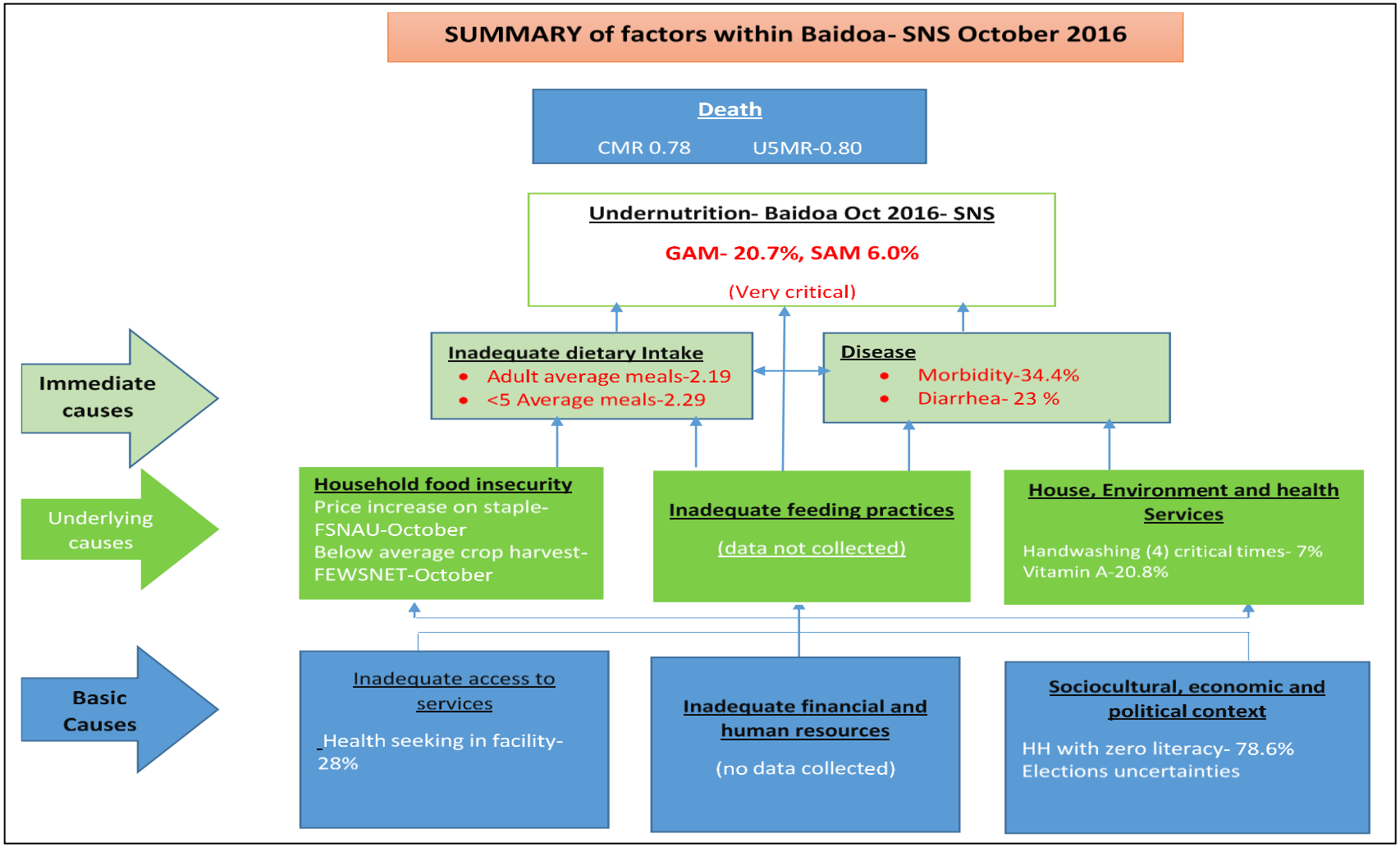
In Baidoa, a number of factors could be coming into effect when it comes to malnutrition. The specifics within the months of August, September and October from KII indicated the effects of the current drought worsening observed by the water shortage challenges, reduction in the availability of food and the increase in prices of the reduced available food. Baidoa faced disruptions in the flow of goods and services. Within SNS, this cased delay in the arrival of critical nutrition treatment commodities (RUTF). At some point in September, the supplies run out and this meant that treatment was halted for weeks.

The low immunization rates together with morbidity at 23% is a potential contributor to the high SAM rates. Diseases have an adverse effect on the human body, where the body needs additional nutrients while in most cases the appetite is reduced. Diarrhoea is one of the major diseases observed affecting many children, diarrhoea is quick in causing dehydration and in effect rapid

reduction in muscle mass among children. According to WHO[6] diarrhoea contributes to 10% of all death in children under 5 years globally.

[6] WHO Essential Nutrition Actions: improving maternal, new-born, infant and young child health and nutrition-2015

Figure 4.1: Diagrammatic representation of survey findings is as below.



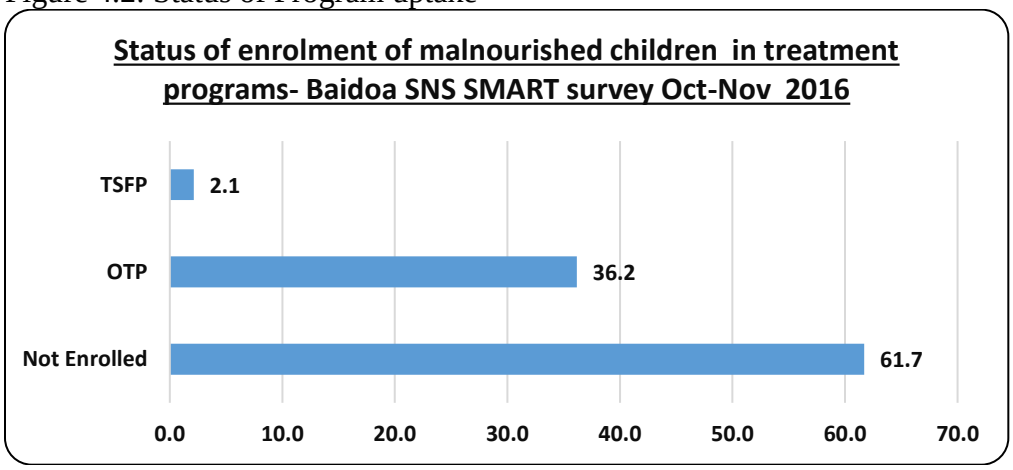
4.4 Programme Uptake/ Access

Coverage survey was not done. A question to inquire whether a malnourished child was in a program or not was asked, the results are as shown below.

Program enrolled in	Percentage Enrolled
Not in program	61.7%
OTP	36.2%
TSFP	2.1%

Access to services for both OTP and SFP patients remain a challenge. The huge difference between Provision of OTP and SFP points out to gaps in program linkages and provision. 36% of access is below the recommended sphere standards of >70% for urban. A comprehensive SQUEAC survey should be prioritized to investigate the barriers to access.

Figure 4.2: Status of Program uptake



The data is indicative of a situation where the coverage could be low for nutrition programs and also where the whole cycle treatment package (OTP_SFP) is incomplete. Given the high number of MAM cases, the available data points to only 2.1% being admitted to TSFP. The GAP in the services provided along the different treatment modalities (OTP and SFP) in Baidoa, in addition to the low food availability means that many children are discharged from OTP into environments with no adequate support for full recovery.

5. Conclusions

Baidoa remains a hotspot for malnutrition. A GAM of 20.7% and SAM of 6.0% (one of the highest observed across SNS districts), the situation is classified as ‘very critical’. The challenges in the context including both natural, Insecurity, restricted movement that affect access to needy population complicates it further.

There are many aggravating factors to the already bad situation. A high morbidity featuring diarrhoea and ARI infection is something that need attention and action. Two (2) out of every 10 children had fallen ill during the past two weeks and the leading symptoms were ARI, Malaria and diarrhoea. The three diseases also feature in the analysis of causes of death.

61.7% of all children malnourished and qualified for treatment are not able to access treatment. This is an indicative result obtained by looking at all the children whose MUAC fits criteria for admission and out of this get eh percentage enrolled. With the limited and patched access, this is a possibility as treatment is achieved to the extent that the program can access malnourished children safely.

6. Recommendations and priorities

6.1 Immediate:

Survey Finding (Baidoa)	Action recommended
High GAM and SAM rates	1) Scale up nutrition SAM and MAM treatment and specifically focus on bridging the gap in the coverage from the current to reach minimum standards for both OTP and TSFP. 2) Increase Coordination at the district level to cover for the raise in Malnutrition rates and Consider Multi-sectoral approach in addressing the effects observed – Nutrition, Health, WASH, FSL, Education
High morbidity rates (23%) with diarrhoea and ARI main symptoms for illness.	Reinforce prevention messages currently being passed through existing Nutrition treatment programs, extend the education to other programs and if possible to the community level. Organize localized talks on key hygiene messages and ensure that current nutrition platforms for health and nutrition education (MTMSG, health education sessions, counselling sessions) address matters hygiene with urgency.
Low immunization rates and vitamin A supplementation	Conduct a thorough community mobilization and follow that with mass campaigns for supplementation and immunization. Map areas with low immunization and engage Local leadership in mobilization to reach the required levels of coverage

6.2 Medium

Survey Finding (Baidoa)	Action recommended
Food insecurity at HH average meals 2.1 and 2.3 for adult and children respectively.	Fundraise for FSL programs that will improve HH food access. This might include food distributions and cash distributions.
Poor WASH practise at HH level	Continue with current health and hygiene education sessions. Have a strategy that will allow key nutrition, health and WASH messages to be part of every possible information-sharing platform.

6.3 Long term

Survey Finding (Baidoa)	Action recommended
Low access to services for beneficiaries who qualify for enrolment to OTP and TSFP	Adopt complete nutrition programming where funding is raised for a complete treatment cycle (comprehensive package). Plan for a proper SQUEAC survey. This will expose real program challenges to access and coverage
Huge IDP population with limited services	IDP in Baidoa need to be assisted to be self-reliant. Tis can be done through targeting them with livelihood programs to build their capacity to trade and work.

6.4 Future nutrition monitoring

The existing situation in Baidoa needs close monitoring. It is important that the programs continue to monitor admissions and proactively report on any increase in SAM cases. If the above recommendations are implemented, there would be a need to conduct another SMART survey to evaluate the effectiveness of implementing the recommendations, especially in relation to reduction of SAM prevalence.

7. References

- Unicef situation analysis of children 2016
- http://www.who.int/mediacentre/factsheets/fs378/en/
- SMART survey- Baidoa SNS 2016
- WHO Essential Nutrition Actions: improving maternal, new-born, infant and young child health and nutrition- 2015

8. Acknowledgements

1. Appreciation to the Somalia Government and the ministry of health for supporting SNS program
2. DFID funds SNS program and the survey is part of the monitoring within the program.
3. SNS partner organizations (ACF, concern worldwide and Save the children international) supported the survey through provision of supervisors and logistical support during data collection.
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6. All survey teams for the hard work in data collection and for relaying of information.
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8. TWG and CMU for technical support and great organization of the teams.

9. Appendices

Appendix 1

Plausibility Report

Plausibility_Report.docx

Appendix 2

Assignment of Clusters

List of clusters and methods of HH sele

Appendix 3

Evaluation of Enumerators- standardization test Data.

Report_1.txt

Appendix 4

Table 3.11: 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	618	-1.19±0.98	1.57	1	2
Weight-for-Age	619	-1.85±1.07	3.08	1	1
Height-for-Age	606	-1.46±1.38	3.70	0	15

* contains for WHZ and WAZ the children with edema.

Appendix 5

Questionnaires

SMARTSurveyONA_2016_formfinal.xlsx