SNS CONSORTIUM

«Strenghtening Nutrition Security in South Central Somalia»

SMART SURVEY REPORT

Mogadishu, Banadir Region of Somalia
IDP and Urban Communities

October - November 2016

Save the Children

CONCERN worldwide

ACTION AGAINST HUNGER

List of Acronyms

ACF	-Action Contre la Fame
ALS	-Average Length of Stay
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
EPHS	- Essential Package of Health Services
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
IDD	-Iodine Deficiency Disorders
IDP	-Internally Displaced Person
JHNP	-Joint Health and Nutrition Programme
KII	-Key Informant Interviews
LNGO	- Local Non-Governmental Organization
MCH	-Maternal Child Health
MUAC	- Mid Upper Arm circumference
ODK	-Open Data Kit
RC	-Reserve cluster
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
WCBA	- Women of Child Bearing Age
WHO	-World Health Organization
WHZ	-Weight for Height Z-score

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Executive Summary

The SMART (Standardized Monitoring and Assessment for Relief and Transition) survey was conducted in October and November 2016 in Mogadishu, Somalia. Mogadishu is the capital city of Somalia and has 16 districts. The survey was conducted in the five districts that the SNS consortium is engaged in implementing nutrition programmes, focused on the treatment of Severe Acute Malnutrition (SAM), prevention, surveillance and capacity building. October and November fall in the short rains *Deyr* Season. At the time, Somalia elections were underway, the security situation was fast changing and unpredictable in Mogadishu with increased roadblocks complicating access and the environment was notably politically charged.

Methodology

SMART methodology was used to conduct the survey. The SMART recommended training package was used to train enumerators and team supervisors on data collection, data quality assurance checks and report writing templates, based on the ENA (Emergency Nutrition Assessment) software 2011. The survey was conducted in two different groups of persons; Internally Displaced Persons (IDPs) and Mogadishu urban populations.

Sample Size

	IDP	Urban
Total Children (under 5 years)	540	414
Total households (HHs)	526	404

Objectives

- Estimate the prevalence of acute malnutrition among children 6-59 months old, in Mogadishu IDP and urban populations.
- Estimate retrospective Child Mortality Rate (CMR) and U5MR (Under 5 Mortality Rate)
- Estimate coverage of vitamin A and deworming.
- Estimate selected Water, Sanitation and Hygiene (WASH) indicator levels.
- Make practical recommendations on the utilization of key findings.

Key Results

Based on WHO classification, Mogadishu urban population Global Acute Malnutrition (GAM) rates present a serious phase, while Mogadishu IDPs are Critical. The difference in higher GAM rates within IDPs could be explained by increased population movements observed around Mogadishu due to conflict happening in Lower Shebelle alongside

frequent property owner evictions, which are together fuelling significant displacement along and from the Afgoye Corridor into Mogadishu.

Summary Results are shown below

Indicator	Mogadishu IDP Population	Mogadishu Urban Population
GAM (Global Acute Malnutrition)	(106) 16.8 % (12.5 - 22.1 95% C.I.)	(78) 13.3 % (10.0 - 17.6 95% C.I.)
MAM (Moderate Acute Malnutrition)	(74) 11.7 % (8.9 - 15.2 95% C.I.)	(62) 10.6 % (7.8 - 14.2 95% C.I.)
SAM (Severe Acute Malnutrition)	(32) 5.1 % (2.7 - 9.2 95% C.I.)	(16) 2.7 % (1.7 - 4.4 95% C.I.)
U5MR	0.69 (0.26-1.85) (95% CI)	0.76 (0.31-1.87) (95% CI)
CMR	0.48 (0.28-0.81) (95% CI)	0.70 (0.42-1.16) (95% CI)
Measles	43.90%	40.90%
Vitamin A(Last 6 months)	49.20%	38.70%
Deworming	61%	35.20%
Morbidity	21.30%	19.70%
BCG Scar	58.60%	46.10%
Polio	45.70%	35.80%
Handwashing (Water and Soap)	33.8%	59.2%

Interpretation

The malnutrition situation in Mogadishu, among both urban and IDP communities in 2016, was worse than in 2015. Compared to same period last year, there is no significant change in the GAM rates; however, SAM rates have increased in urban communities and increased significantly in the IDP population. The GAM rates estimated in the survey fall into Serious and Critical for urban (13.2) and IDP (16.8) communities respectively. The SAM rates fall into Serious and Critical situations for the urban poor and IDP communities respectively. Within the same period, FSNAU conducted a SMART survey in the same IDP settlement, the results of which are comparable to the current results from SNS. FSNAU estimated Mogadishu IDP GAM and SAM rates at 16.7% and 4.0% respectively.

Many aggravating factors continue to fuel and accompany these high rates of malnutrition. These include poor WASH conditions and practices, with few practising basics like handwashing with soap at critical moments (only 6.1%), high morbidity among children (with diarrhoea being one of the diseases affecting high numbers of children), low

immunization coverage and low vitamin A supplementation, that fails to meet the threshold of having a public health impact on the community. These factors are widespread in both urban and IDP populations and are worse than the findings observed at the same time last year.

The food security forecast in Somalia predicted a deteriorating situation late in 2016 and into the early months of 2017 (FEWSNET – Famine Early Warning System Network, DATE)). Food security inevitably has a direct impact on food intake, which is an immediate factor influencing nutrition status. The continued projected poor food security outlook (January 2017) is expected to worsen the nutrition status of communities concerned. Now into January 2017, calls to urgently scale up lifesaving interventions, including SAM treatment in particular, are growing as the situation worsens

Key Recommendations

Findings	Recommendations (Immediate/ Short term)
High GAM and SAM rates and increased admissions at nutrition sites	Rapidly map the adequacy of existing Nutrition treatment sites and seek support and resources to cover imminent (now current, January 2017) spikes in admissions. Monitor the status of IDPs arriving in Mogadishu and allocate specific resources to cover the needs of new arrivals.
Low (well below recommended) levels of Immunization and Vitamin A coverage	Immediately upscale outreach to IDP and urban populations to urgently provide Immunizations, Vitamin A supplementation and deworming. Implement Sphere standard recommendation of mass campaign for Vitamin A. Upscale existing EPI programmes, increase the coverage and frequency of service delivery, to cover communities currently not able to access essential and life-saving services.
Unpredictable, in-flux context	Monitor new population arrivals in Mogadishu, conduct mass screening and support referrals of malnourished children in identified locations.
Poor WASH practise	Step up nutrition, health and WASH promotion sessions at all health and nutrition facilities. Use all existing opportunities to incorporate and upgrade health, nutrition and WASH promotion initiatives into wider programmes and opportunities, including community meetings, outreach programmes and support groups across sectors.

	Increase community participation to help strengthen planning and local ownership of results relating to appropriate nutrition, health and WASH practice.
Findings	**Recommendations (Medium term)**
Projected worsening situation	Monitor closely food security related indicators of food prices and the local availability of essential supplies
	Mobilize resources for the worsening situation and preposition additional resources for projected needs increases.
	Strengthen the coordination of key activities and assessments, to share location specific information. Develop a more robust, more accessible information sharing platform while assuring quality in the process.

1. INTRODUCTION

1.1 Geographic description of survey area and population

Somalia is a country in the Horn of Africa that has experienced civil war since 1991. In 2012, an internationally recognized government was elected and since then efforts to build systems and institutions within the country has been underway. This process has seen a lot of significant, long-standing challenges, including internal conflict among different groups and Clans seeking to access power and increase their influence.

Somalia is divided into regions which are further divided into administrative districts, a process that continues to experience significant change as new regions form and become recognised. The SNS SMART survey was conducted in Banadir region which hosts Mogadishu, the capital city of Somalia. Mogadishu has a total of 16 districts and SNS operates in four of them, offering lifesaving nutrition services that include SAM treatment and diverse initiatives to help prevent malnutrition among children under 5 years old.

Mogadishu is a cosmopolitan city that hosts people from other regions of Somalia. The SNS Consortium covers Abdi Aziz, Hodan, Bondhere, and Wadajir districts in Banadir region. The total population in Banadir is estimated to be 1,650,227[1]. Out of the total, approximately 369,288 are IDPs and 1,280,939 urban community members. IDPs have settled in Mogadishu largely as a result of protracted conflict in their original home locations (mostly central and lower regions of Shabelle) and after the 2011 drought emergency when many fled their homes for survival. Most IDPs live in camps and are supported by Non-Government Organisations (NGOs) for basic health, food and shelter needs.

The SMART survey was conducted in the months of October and November 2016, which fall during the short rain *Deyr* Season. At the time, federal Government of Somalia (FSG) elections were underway, access was constrained with increased check points and road closures and the security situation was both volatile and highly unpredictable. Most study teams felt these tensions and uncertainty, thus the survey was conducted in a notably politically charged environment. As well, the months of October and November typically

[1] UNFPA population estimation survey 2014

see an increase in morbidity related to hygiene. This is due to the rains that cause water contamination and commonly fuel increases in AWD.

As Mogadishu is an urban setting, trade is a major livelihood activity. Livelihoods among IDPs include petty trade and casual labour. Levels of perceived safety and security and livelihood opportunities constitute the main motivations for IDPs wanting to stay in Mogadishu. As income generation opportunities remain scarce, most IDPs depend on humanitarian assistance for survival. Types of casual labour they are involved in include construction, market porters, running donkey carts, using wheelbarrows to ferry goods, running small businesses like selling snacks or vegetables, fetching and selling firewood. Some IDPs are forced to beg. Some young children are also engaged in shoe shining to earn a meagre income for their family.

1.2 Services and humanitarian assistance

Mogadishu as a city hosts a number of UN agencies, international and local NGOs. Humanitarian assistance in Mogadishu commonly covers health, nutrition, WASH, livelihood, shelter, education and protection needs among others. Respective clusters aim to coordinate these activities, to ensure that the impact of the services offered is felt by the targeted populations and to avoid the duplication of service provision. Most communities in Mogadishu have access to markets as a livelihood tool, with many goods being imported from Dubai and Kenya and a few manufactured in Somalia.

SNS Consortium partners have worked in Mogadishu for over 20 years[2] and have been involved in nutrition, health, WASH, and livelihood activities. They have also undertaken research and led significant capacity development initiatives.

1.3 Key Nutrition and contextual information

The donor funded and Somalia government led Joint Health and Nutrition Programme (JHNP), the operational framework of the country's Essential Package of Health Services (EPHS), ran from 2012-2016; this first phase ending at the end of December 2016. Thus it was about to end, in its initial iteration, when the SMART survey took place. In some parts

[2] Although the SNS Consortium itself has only been in existence since October 2013, before this time they worked in the area under their respective agencies (ACF, Concern Worldwide and SCI). Only ACF and Concern Worldwide work in Banadir under SNS.

of South Central, including Banadir, the JHNP has been offering basic health services to the population for the last four years of Somalia. With its first phase now officially ended, however, much uncertainty remains about future phases of JHNP (or something similar) and anxiety about how needs will be covered in the meantime is widespread. From a nutrition point of view, caseloads previously covered under the JHNP will for now have to be absorbed by other existing projects, including SNS. It is therefore an uncertain time of heightened anxiety, particularly in light of the current drought and rising treatment needs.

In recent months, IDP movements to Mogadishu from lower Shebelle have increased in numbers and frequency, due largely to fighting between Al Shabaab (AS) and the government. There has also been a significant increase in forced evictions of people and communities around Mogadishu from their homes, particularly in the Afgoye Corridor. AS has forced people to empty villages lying along the Shabelle River, forcing them to move to Mogadishu. Prolonged Clan conflict has also caused population movements.
Apart from the conflict affecting movement into Mogadishu, the current drought is also affecting movement from parts of Lower Shabelle; a section of whose population has been observed moving to Mogadishu. The most recent SNS programme data shows increased admissions to treatment programmes and deeper analysis shows the increase being children who have fled from Shabelle. This has inevitably affected programme performance and in SNS, some projects have shown increases in average lengths of stay, as children are forced to remain in the programme for longer, for several reasons.

1.4 Survey Objectives

Overall Survey Objective

To estimate the levels of acute malnutrition in children under 5 years old, among IDP and urban populations in five select districts of Mogadishu

Objectives include:

- Estimate the prevalence of acute malnutrition among children of 6-59 months in Mogadishu
- Estimate retrospective CMR and U5MR
- Estimate coverage of vitamin A and deworming.
- Make practical recommendations on the utilization of key findings.

2. METHODOLOGY

SMART (Standardized Monitoring and Assessment of Relief and Transitions) methodology was used to conduct the survey. The 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 Mogadishu Urban and IDP populations were treated separately and the samples were calculated separately. The survey covered a total of 5 districts in Mogadishu; ones where SNS partners operate nutrition programmes. Due to the size of the target districts, an inability to get a comprehensive list of households (HHs) and the geographical dispersion, cluster sampling was used in calculation of the sample size.

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 September to October 2015). These 2015 surveys were used as they followed the same process and methodology employed by the current survey and similarly focused on district levels. Thus the previous SNS surveys represented the closest picture of malnutrition levels, given the interest and focus of this 2016 survey.

Parameters used to calculate the sample size were as follows:

	Mogadishu IDP	**Mogadishu urban**
Estimated Prevalence%	16.5	12.0
+- Desire precision percent%	4	4
Design effect	1.5	1.5
Average HH size	6	6
Percentage of <5 children	20	20
% of non-respondent HH	5	5
Total Children	540	414
Total HH	526	404

ENA automatically estimated the number of HH that would have yielded adequate children to be included in the analysis.

Mortality sample size was calculated using ENA software, using the CMR and <5MR estimates from the 2015 SNS SMART survey. The parameters in the table below were fed into ENA planning page and the sample was calculated. Sample size was adjusted for non-

response by a factor of 5% with adjustments done as a result of previous experience in Mogadishu, where in previous surveys some households denied enumerator access. Many communities in Mogadishu are also subjected to a lot of surveys which fuel "research fatigue" in HHs, which makes some less cooperative.

	Mogadishu IDP	**Mogadishu urban**
Estimated Prevalence%	0.71	0.8
+- Desire precision percent%	0.5	0.5
Design effect	1.5	1.5
Average HH size	6	6
Recall period	109 Days	109 Days
% of non-respondent HH	5	5%
Total HH to be included	287	323
Total Population	1634	1842

As the survey measures both anthropometry and mortality, at some point the sample had to be reconciled. Looking at the HH estimations above, the number of HHs for anthropometry estimation was able to accommodate the number of HHs required to assess mortality. Consequently, the number of the HHs in the anthropometry sample was used as the final sample to survey both mortality and anthropometrics.

The total number of clusters for the survey was determined after calculation of sample size. In one day, the survey teams estimated they would have a total of 5hours and 45 minutes of work, after deducting time to travel to the cluster, introduction themselves to leaders, as well as time for short prayer breaks and for return travel. This was true of both urban and IDP populations, as the survey was carried out concurrently with teams from ACF and Concern Worldwide involved. One questionnaire was estimated to take 20 minutes per HH, plus introduction time. This meant that in one day, a total of 345/20 (or 17 HH) were covered in data collection. Including a total of 526 HHs meant that the survey needed to reach 30 (526/17) clusters in total. For the urban (404/17) 23 clusters, this was adjusted to 30 clusters.

2.2 Sampling procedure: Selecting clusters

All clusters within target districts were listed with their respective populations and the data entered into ENA Planning tab. Under the same software, 30 clusters were randomly selected using probability proportion to population. ENA selected three additional RC (Reserve clusters) clusters to be used, in case one of the 30 clusters proved challenging.

During the survey, all the selected 60 clusters were accessible and the teams did not have to replace any. This means that the reserve clusters were not visited and data was not collected from them. The list of clusters visited is in Annex 2.

2.3 Sampling procedure: Selecting households and children

On arrival at the cluster, it was a challenge to get the list of all HHs, both in the IDP and urban population. Although the elders were supportive, trying to get the list or to develop one proved to be hard as the lists were not conclusive. Consequently, the survey teams settled on modified EPI (Extended Programme of Immunization) for the selection of HH both for the IDP and urban surveys. The community guide supporting the team assisted in identification of the middle of the cluster, a pen was spun and the team walked in the direction of the pen to the end of the cluster (cluster boundaries were identified with the help pf the guide). A pen was again spun and HHs in the direction of the pen were all numbered, one HH was randomly picked as a starting HH, the house to the left was picked as the next HH and so on, until all 17 HHs were reached within the cluster.

All select HHs were visited and those with no eligible under five children for anthropometric data collection were included in the HH survey which collected data on mortality.
Using the cluster control form, HH details were filled, based on the experience during data collection. The cluster control formed assisted the teams to identify HHs with absent children and aided in planning follow-up visits. In the urban population, a number of HHs were revisited and data collected on the children who were not available at the time of the initial survey. Before leaving the HH, the team leaders ensured that all cluster control form comments had been addressed, as necessary.

Within each HH, all eligible children from 6-59 months were measured. Middle and Upper Arm Circumference (MUAC) measurement was also taken for Women of Child Bearing Age (WCBA). Weight, height, MUAC and Oedema were measured for children between 6-59 months old.

The survey did not encounter any empty HHs. A total of 10 HH were uncooperative, the survey however managed to realise the required number of <5 children within each cluster, as indicated in the HH selection methodology.

In each HH the main caretaker of children was the respondent. In most HHs, this was found to be the mother of the children. In HHs where the mother was away, the father was identified as the respondent. Unique situations included HHs where the respondent was the eldest child, who at the time had been left in charge.

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

2.5.1 Questionnaire development

Researcher developed questionnaire in English, from the standard questionnaire provided by SMART guidance. As the survey needed also to collect additional information, other sections were added to the questionnaire. The additional questions were based on each objective above.

After developing the questionnaire, Somalia speaking staff translated it into Somali as prior experience had shown that the enumerators were far more comfortable administering the question in the local language. This is important to data validity. Following translation, the questionnaire was uploaded into the ONA platform and shared with all partners participating in the training. Using their Smart phones and ODK collect applications, all teams were allowed to download the questionnaire and practice using the phones. Feedback received through this process was incorporated into the questionnaire. Some changes made were to do with local dialect.

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

2.5.2 Survey teams and supervision

Each survey (urban and IDP) had a total of 6 teams. Each team was composed of a team leader, two measurers and a community guide. The team leader was also the note taker and took the role of administering the questionnaire. Each team had to ensure they included one lady; to allow for the taking of MUAC of adult women, one of the objectives.
In total, 12 teams were trained. Everyone trained participated in the actual survey.

Most survey teams were pulled from existing SNS partner agencies' staff in Mogadishu, which made it easier as they had prior experience in SMART Survey data collection. The ability to complete the questionnaire was a prerequisite for attending the training; an ability to read and prior experience in conducting SMART surveys were among the qualifications considered during the selection of SMART team enumerators and team leaders.

Each team had a team leader (or supervisor) and each survey had an overall supervisor. The two surveys had a total of 12 team leaders and 2 supervisors, plus one manager who trained the teams. The team supervisors comprised of current nutrition managers from the different SNS agencies who had to have participated in a SMART survey before, including in its planning and execution. Logistics and movement planning was entirely done by the supervisors, who ensured that all resources were available for the teams.

2.5.3 Training

The SMART survey training was conducted in two stages. During the first training, conducted by the SNS Researcher, team leaders were trained and were taken through the survey process centrally in Mogadishu. This comprised teams that would later conduct the 3 separate surveys amongst Mogadishu urban, Mogadishu IDP and Wanlaweyn communities. A total of 18 participants attended the training; 6 team leaders from each survey location. The initial training included: Objectives of the survey, confirmation of populations, sample calculation, cluster selection, taking anthropometrics, field procedures, data quality assurance, sampling techniques, standardization tests and data entry, mortality and interviewing skills. The training utilized the standard SMART package for managers' training, which was customized to the context.

Some of the practical sessions that were real to these participants included the selection of clusters, calculation of both mortality and anthropometric samples, development of a calendar of events, logistics and movement planning. All these were done by the different groups under supervision.

The second stage training was conducted by two strong participants identified from the first round of training, i.e. SMART Survey Manager training. These trainings were conducted in the specific locations in which the surveys were conducted. 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. The enumerators went through the draft questionnaire and gave additional feedback, which informed the final version.

During the training a demonstration of conducting a standardization test was done in practice. In the second stage training (conducted in specific field offices), standardization

tests were conducted. The standardization test included a total of 12 children who were measured. See Appendix 3 for the anthropometric data for the standardization test.
In both urban and IDP communities, a pilot test was conducted to pre-test the tools and also allow the teams get a realistic sense of the actual survey process. In Mogadishu Urban, the pilot was done on the 18th of October, in Taleeka and Gaarisa –2 villages in Mogadishu. The IDP pilot was done in J. Daud Siliga-Tawakal. Plausibility was developed and detailed feedback given.

2.6 Data analysis

Mobile technology was used in the collection of data. Open Data Kit (ODK), an android application, was downloaded to all the smart phones used by the teams to collect data. A number of quality control measures were used, to ensure high quality data. The programming of questions in ODK ensured that there were guidelines in the questionnaire, as well as an in-built skip mechanism where necessary. 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 of the HH was taken before data collection begun, which assisted to map the daily data to see the locations where data was being collected, as compared to the planning. On a daily basis data was downloaded, plausibility run using ENA and feedback given to the teams. This allowed the teams to rectify any challenges they were facing in the field and the SNS Nutrition Researcher was available on the phone for support, until all teams had completed work for the day.

Data was exported into Comma Separated Values (CSV) files and cleaned in the same format; Anthropometric data was read into EPI ENA, plausibility run and anthropometry 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. SPSS was used to make all the comparisons.
Outliers for anthropometry data were analysed with boundaries of exclusion set at +/- 3SD of WHZ, HAZ and WAZ from the observed mean.

3. RESULTS

Results for the Mogadishu SMART survey are presented in this report for both the IDP and urban poor populations. The results have been merged, so comparisons can be made from a single table. The anthropometric data is based on WHO 2006 standards.

3.1 Anthropometric results (based on WHO standards 2006)

The anthropometric survey used the following definition for acute malnutrition:

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

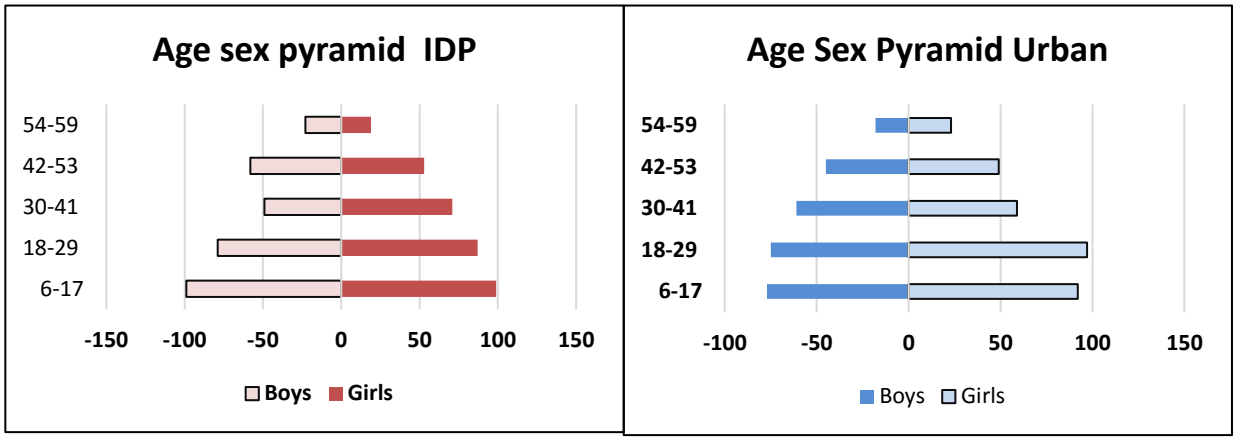
3.1.1 Distribution of age and sex of sample

The overall ratio of boys and girls within the sample indicated acceptable levels. There was no significant difference between the representation of boys and girls in the sample, indicating no sex bias in the selection. This is as expected. The table below shows the detail of the sample within age specific categories

Table 3.1: Distribution of age and sex of sample

	Mogadishu IDP							Urban Poor population						
	Boys		Girls		Total		Ratio	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy: girl	no.	%	no.	%	no.	%	Boy: girl
6-17	99	50.0	99	50.0	198	31.1	1.0	77	45.6	92	54.4	169	28.4	0.8
18-29	79	47.6	87	52.4	166	26.1	0.9	75	43.6	97	56.4	172	28.9	0.8
30-41	49	40.8	71	59.2	120	18.8	0.7	61	50.8	59	49.2	120	20.1	1.0
42-53	58	52.3	53	47.7	111	17.4	1.1	45	47.9	49	52.1	94	15.8	0.9
54-59	23	54.8	19	45.2	42	6.6	1.2	18	43.9	23	56.1	41	6.9	0.8
Total	308	48.4	329	51.6	637	100.0	0.9	276	46.3	320	53.7	596	100.0	0.9

Figure 3.1: Age sex Pyramid:



More children are represented from the ages of 6- 29 months, in both the IDP and Urban sample. This is the age bracket of children who generally stay around the home.
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3.1.2 Prevalence of acute malnutrition based on weight-for-height z-scores

Based on WHO classification, Mogadishu urban population GAM presents a serious phase, while Mogadishu IDP presents a Critical phase. The difference in higher GAM rates within IDPs could be explained by the movements that have been observed in Mogadishu, due mainly to the conflict and drought in Lower Shebelle, resulting in population movement from along the Afgoye Corridor into Mogadishu.

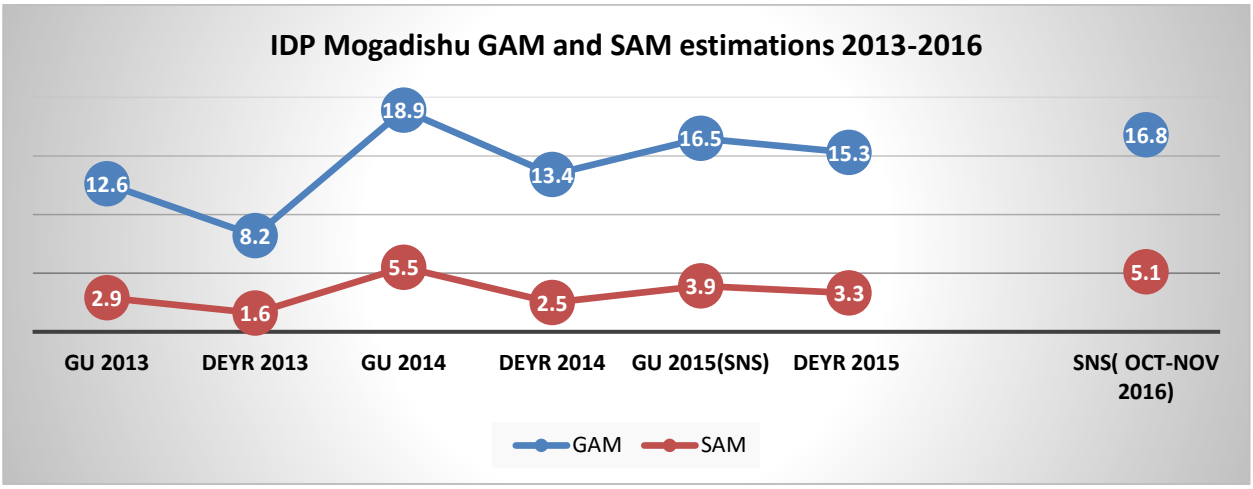
Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	Mogadishu IDP Population			Mogadishu urban Population		
	All n = 632	**Boys** n = 306	**Girls** n = 326	**All** n = 585	**Boys** n = 269	**Girls** n = 316
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(106) 16.8 % (12.5 - 22.1 95% C.I.)	(53) 17.3 % (12.7 - 23.1 95% C.I.)	(53) 16.3 % (11.5 - 22.6 95% C.I.)	(78) 13.3 % (10.0 - 17.6 95% C.I.)	(43) 16.0 % (10.6 - 23.4 95% C.I.)	(35) 11.1 % (7.4 - 16.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(74) 11.7 % (8.9 - 15.2 95% C.I.)	(35) 11.4 % (7.9 - 16.4 95% C.I.)	(39) 12.0 % (8.4 - 16.8 95% C.I.)	(62) 10.6 % (7.8 - 14.2 95% C.I.)	(34) 12.6 % (8.5 - 18.3 95% C.I.)	(28) 8.9 % (5.9 - 13.2 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(32) 5.1 % (2.7 - 9.2 95% C.I.)	(18) 5.9 % (3.0 - 11.3 95% C.I.)	(14) 4.3 % (2.3 - 7.9 95% C.I.)	(16) 2.7 % (1.7 - 4.4 95% C.I.)	(9) 3.3 % (1.7 - 6.5 95% C.I.)	(7) 2.2 % (1.1 - 4.5 95% C.I.)

IDP Trends

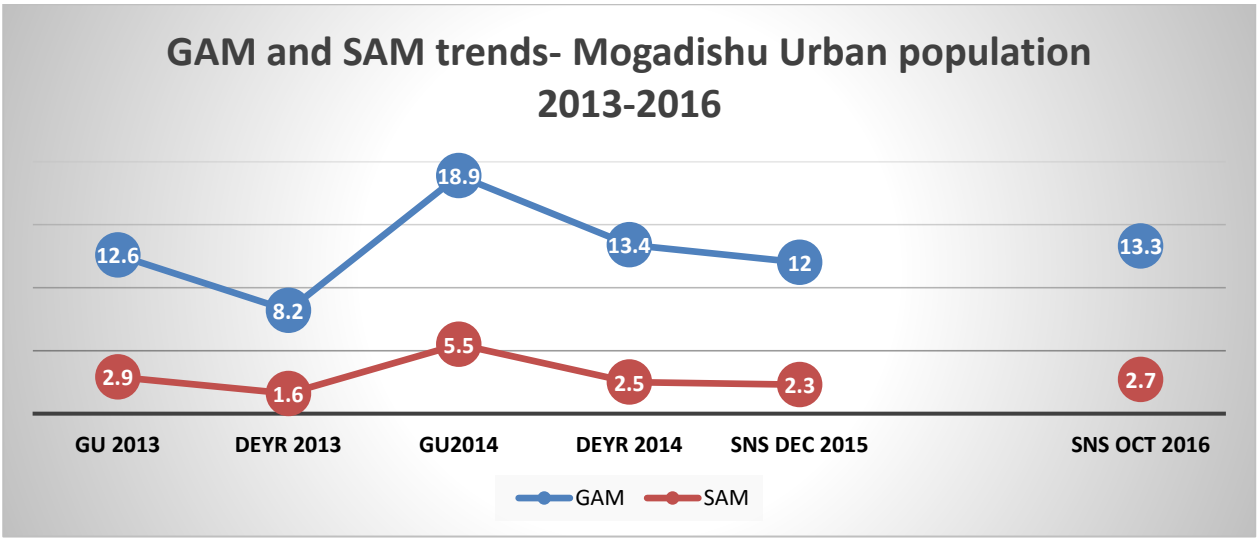
GAM and SAM rates indicate a deteriorating situation with an increase in SAM to Critical levels, observed only in 2014 by SNS. There is also an increase in GAM rates, although not statistically significant (confidence interval for 2015 Survey [12.9 - 20.9]).

Figure 3.2: GAM and SAM Trends in Mogadishu IDPs



Urban Trends

The last 3 surveys conducted in Mogadishu urban communities (by SNS and FSNAU), going back to post- *Deyr* 2014, shows malnutrition rates within the same categorization of Serious for GAM and Alert for SAM. Although the rates remain within the same classification, there is an observed increase in toth GAM and SAM rates when compared to the SMART survey conducted in 2015 by FSNAU (as in the graph below – where "SNS" is not indicated).



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

Wasting data indicated high levels within the IDP population. This was categorized as Critical. Compared to the urban where it was serious. Moderate wasting was estimated to be high - moderate wasting being children who may worsen to severe wasting. In the Urban poor community, severe wasting is seen to be lower but high rates of moderate wasting were visible. The details of wasting are shown in the table below.

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

	IDP Mogadishu									Urban poor								
		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		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.	%	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	197	12	6.1	31	15.7	154	78.2	0	0	168	7	4.2	23	13.7	138	82.1	0	0
18-29	163	13	8	15	9.2	135	82.8	0	0	168	5	3	20	11.9	143	85.1	0	0
30-41	119	2	1.7	9	7.6	108	90.8	0	0	117	3	2.6	9	7.7	105	89.7	0	0
42-53	111	5	4.5	10	9	96	86.5	0	0	92	1	1.1	7	7.6	84	91.3	0	0
54-59	42	0	0	9	21.4	33	78.6	0	0	40	0	0	3	7.5	37	92.5	0	0
Total	632	32	5.1	74	11.7	526	83.2	0	0	585	16	2.7	62	10.6	507	86.7	0	0

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

No cases of Oedema were identified during the survey, among both IDP and urban poor populations. Nutrition oedema indicates a more serious undernutrition situation and arises as a result of bodily systems failing to function properly. This result therefore indicates that active case identification in the area is effective and the children concerned are already receiving the necessary treatment.

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

	IDP population		Urban poor	
	<-3 z-score	**>=-3 z-score**	**<-3 z-score**	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 32 (5.1 %)	Not severely malnourished No. 600 (94.9 %)	Marasmic No. 16 (2.7 %)	Not severely malnourished No. 569 (97.3 %)

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

MUAC is used for screening at community level by CHWs and used as criteria for admission to nutrition treatment programmes. MUAC is also used as a predictor of risk for mortality. MUAC showed averages of 22.1% in IDP areas and 18.6% in urban poor populations. Boys appear to be more at risk, as indicated in the table below.

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

	IDP			Urban Poor		
	All n = 637	**Boys** n = 308	**Girls** n = 329	**All** n = 596	**Boys** n = 276	**Girls** n = 320
Prevalence of global malnutrition (< 125 mm and/or oedema)	(141) 22.1 % (16.0 - 29.7 95% C.I.)	(72) 23.4 % (15.5 - 33.7 95% C.I.)	(69) 21.0 % (15.3 - 28.1 95% C.I.)	(111) 18.6 % (14.5 - 23.7 95% C.I.)	(54) 19.6 % (14.2 - 26.3 95% C.I.)	(57) 17.8 % (13.2 - 23.6 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(122) 19.2 % (14.5 - 24.9 95% C.I.)	(63) 20.5 % (14.2 - 28.6 95% C.I.)	(59) 17.9 % (13.2 - 24.0 95% C.I.)	(94) 15.8 % (11.8 - 20.8 95% C.I.)	(47) 17.0 % (11.8 - 24.0 95% C.I.)	(47) 14.7 % (10.1 - 20.8 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(19) 3.0 % (1.1 - 7.8 95% C.I.)	(9) 2.9 % (1.1 - 7.7 95% C.I.)	(10) 3.0 % (1.0 - 8.9 95% C.I.)	(17) 2.9 % (1.5 - 5.5 95% C.I.)	(7) 2.5 % (1.0 - 6.1 95% C.I.)	(10) 3.1 % (1.4 - 6.8 95% C.I.)

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

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

	IDP									Urban Population								
		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema			Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo.)	Total no.	No.	%	No.	%	No.	%	No.	%	Total no.	No.	%	No.	%	No.	%	No.	%
6--17	198	17	8.6	77	38.9	104	52.5	0	0	169	11	6.5	69	40.8	89	52.7	0	0
18-29	166	2	1.2	35	21.1	129	77.7	0	0	172	4	2.3	20	11.6	148	86	0	0
30-41	120	0	0	7	5.8	113	94.2	0	0	120	2	1.7	2	1.7	116	96.7	0	0
42-53	111	0	0	2	1.8	109	98.2	0	0	94	0	0	3	3.2	91	96.8	0	0
54-59	42	0	0	1	2.4	41	97.6	0	0	41	0	0	0	0	41	100	0	0
Total	637	19	3	122	19.2	496	77.9	0	0	596	17	2.9	94	15.8	485	81.4	0	0

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

Prevalence of underweight stood at 25.9% for IDP and 25.7% for the urban poor. Underweight is calculated using age and in Somalia, challenges in accessing the correct ages of children are widespread and have long existed. It is therefore important to note that the findings are based on age, mostly estimated through a calendar of events. It is generally observed that boys are more often underweight than girls are, for both the IDP and urban populations. Table 3.7 below gives additional information on the details of underweight. The same challenge of determining correct age still applies, with age in Somalia often determined by the calendar of events developed by the survey teams. Age determination was done at 70% and 88 % by the calendar of events, for the urban and IDP populations respectively.

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

	IDP			Urban Poor		
	All n = 637	**Boys** n = 308	**Girls** n = 329	**All** n = 596	**Boys** n = 276	**Girls** n = 320
Prevalence of underweight (<-2 z-score)	(165) 25.9 % (20.3 - 32.4 95% C.I.)	(91) 29.5 % (23.6 - 36.3 95% C.I.)	(74) 22.5 % (16.3 - 30.1 95% C.I.)	(153) 25.7 % (21.3 - 30.6 95% C.I.)	(87) 31.5 % (26.1 - 37.5 95% C.I.)	(66) 20.6 % (15.8 - 26.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(111) 17.4 % (14.1 - 21.3 95% C.I.)	(65) 21.1 % (16.8 - 26.2 95% C.I.)	(46) 14.0 % (10.1 - 19.0 95% C.I.)	(117) 19.6 % (16.0 - 23.9 95% C.I.)	(66) 23.9 % (19.4 - 29.1 95% C.I.)	(51) 15.9 % (12.1 - 20.6 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(54) 8.5 % (5.5 - 12.9 95% C.I.)	(26) 8.4 % (5.4 - 13.1 95% C.I.)	(28) 8.5 % (5.0 - 14.1 95% C.I.)	(36) 6.0 % (4.2 - 8.6 95% C.I.)	(21) 7.6 % (4.6 - 12.2 95% C.I.)	(15) 4.7 % (2.8 - 7.8 95% C.I.)

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

Underweight measures the weight of a child and compares it to their age. As with any other anthropometric indices that depend on age, careful interpretation is required in Somalia due to limitations in the accuracy of age determination. The survey shows most underweight children to be between the age of 6-29 months, the critical "window of opportunity" period where failure to achieve optimal infant and young child nutrition may have irreversible negative consequences.

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

	IDP population									Urban Poor								
		Severe underweight (<-3 z-score)		Moderate underweight (>=-3 and <-2 z-score)		Normal (> = -2 z score)		Oedema			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.	%	Total no.	No.	%	No.	%	No.	%	No.	%
6--17	198	16	8.1	45	22.7	137	69.2	0	0	169	12	7.1	37	21.9	120	71	0	0
18-29	166	21	12.7	40	24.1	105	63.3	0	0	172	11	6.4	42	24.4	119	69.2	0	0

30-41	120	5	4.2	19	15.8	96	80	0	0	120	7	5.8	22	18.3	91	75.8	0	0
42-53	111	12	10.8	4	3.6	95	85.6	0	0	94	5	5.3	13	13.8	76	80.9	0	0
54-59	42	0	0	3	7.1	39	92.9	0	0	41	1	2.4	3	7.3	37	90.2	0	0
Total	637	54	8.5	111	17.4	472	74.1	0	0	596	36	6	117	19.6	443	74.3	0	0

Table 3.11: Mean z-scores, Design Effects and excluded subjects

	IDP					**Urban Poor**				
Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	632	-0.90±1.15	2.44	0	5	585	-0.77±1.13	1.76	0	11
Weight-for-Age	637	-1.36±1.07	2.89	0	0	596	-1.35±1.01	1.66	0	0
Height-for-Age	622	-1.32±1.23	1.61	0	15	583	-1.46±1.16	1.85	0	13

* contains for WHZ and WAZ the children with Oedema.

3.2 Mortality results (retrospective, over 107 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]

The survey estimated CMR at 0.48 and U5MR at 0.69 for IDPs and CMR of 0.70 and U5MR of 0.76 for urban population. Based on sphere standards, the rates have not doubled from the sub-Saharan reference baseline and therefore not of a significant public health emergency.

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

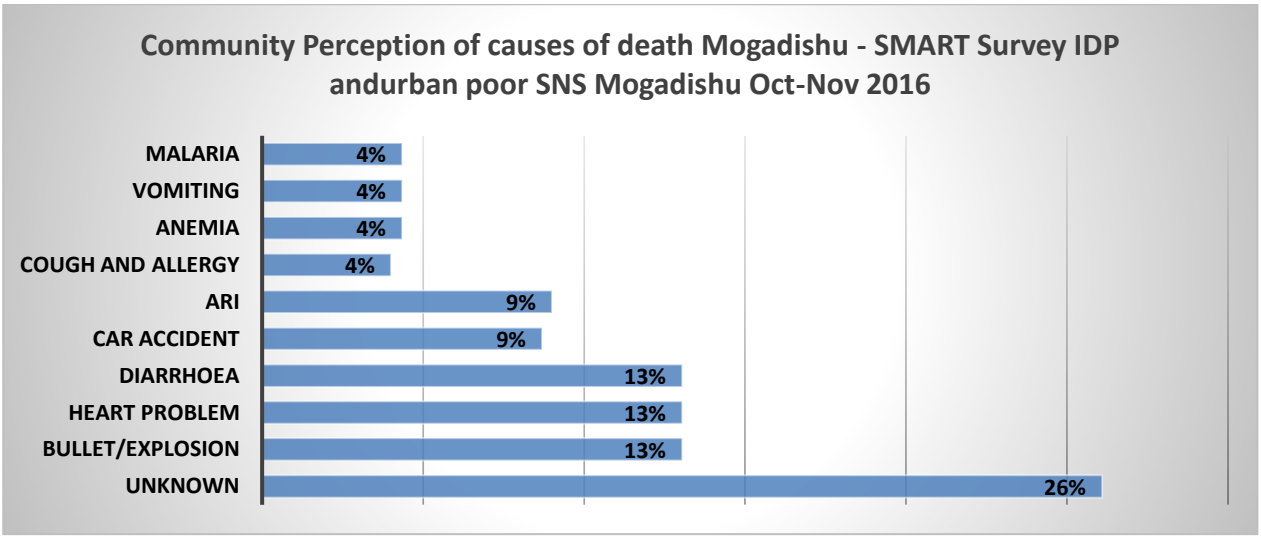
Table 3.2: Mortality rates (table)

IDP	Urban
CMR (total deaths/10,000 people / day): 0.48 (0.28-0.81) (95% CI)	CMR (total deaths/10,000 people / day): 0.70 (0.42-1.16) (95% CI)
U5MR (deaths in children under five/10,000 children under five / day): 0.69 (0.26-1.85) (95% CI)	U5MR (deaths in children under five/10,000 children under five / day): 0.76 (0.31-1.87) (95% CI)

3.2.1 Community perception of causes of death.

26% of all deaths could not be attributed to any specific cause, when patients are taken to hospital, information on the illness is usually given, the fact that the deaths could not be linked to any cause could point to the fact that these sick person were not able to access medical services before their death. Diarrhoea and ARI were the two main reported causes for children under five years. The insecurity situation in Mogadishu also contributed to 13% of total deaths. Diarrhoea and ARI can be prevented through basic HH hygiene practise, so this is a proxy indicator of insufficient basic hygiene and WASH facilities in some households.

Figure 3:3: Main causes of death in Mogadishu



3.3 Children's morbidity

3.3.1 Prevalence of reported illness in children in the two weeks prior to interview (n=503(IDP), n=614-Urban)

High levels of disease incidence were observed in 21.3 % and 18.7% of all children reported to be sick 2 weeks prior to survey, in IDP and Urban communities respectively.

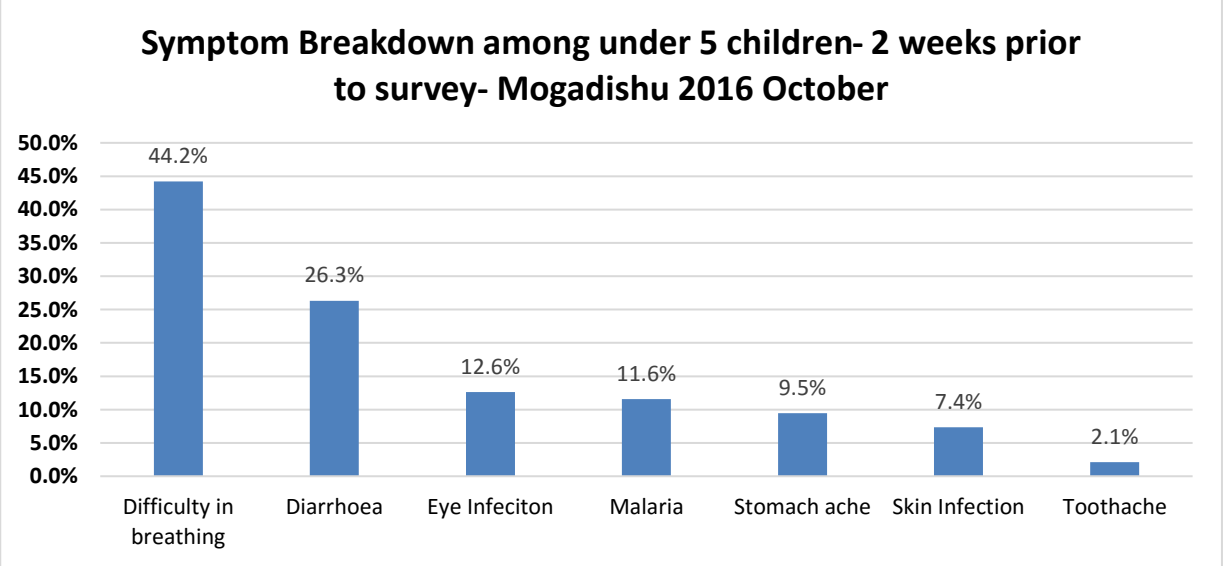
Disease is a key contributing factor to malnutrition and with approximately two children sick out of every ten; this suggests that disease is a main contributing factor to high malnutrition rates.

Table 3.13: Prevalence of reported illness in children in the two weeks prior to interview (n=679(IDP), n=614-Urban)

	IDP				Urban			
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
No	528	77.8	77.8	77.8	461	75.1	75.1	75.1
Yes	134	19.7	19.7	97.5	131	21.3	21.3	96.4
Don't know	17	2.5	2.5	100.0	22	3.6	3.6	100.0
Total	679	100.0	100.0		614	100.0	100.0	

3.3.2 Symptom breakdown in children, in the two weeks prior to interview

Figure 3.4: Symptoms

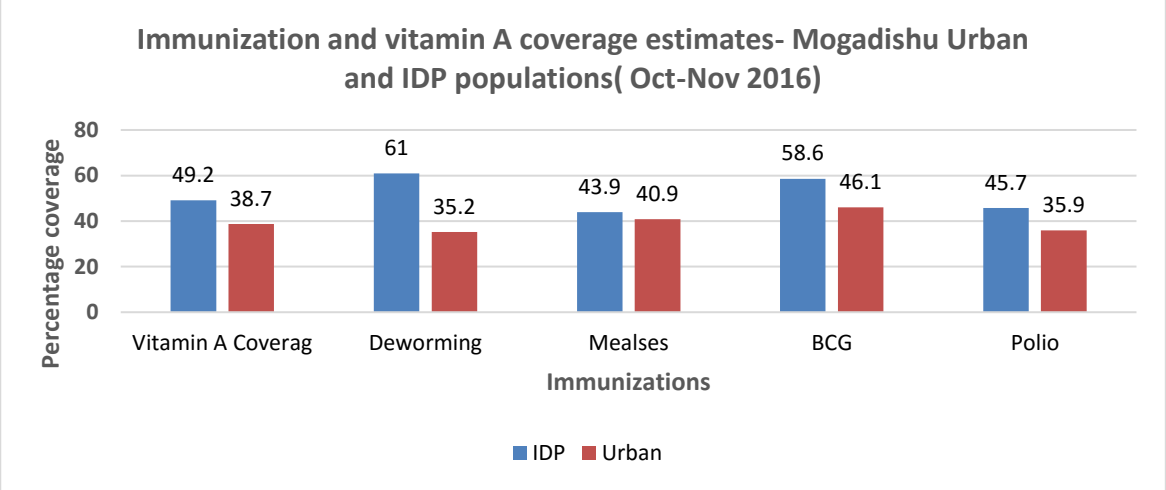


3.4 Vaccination Results and vitamin A supplementation.

Vaccination coverage: BCG for 6-59 month olds and measles for 9-59 month olds

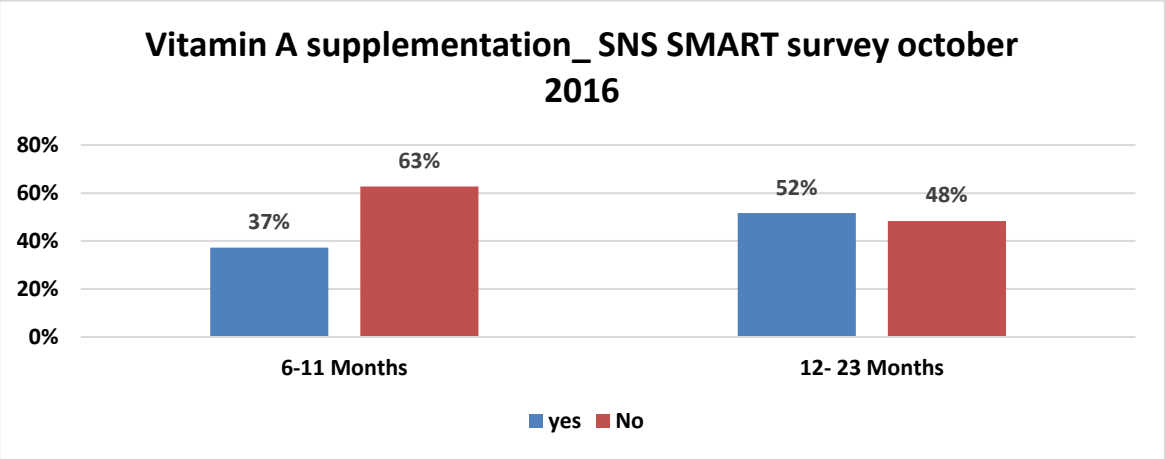
Immunization among IDPs is higher than in the urban poor population. This result stems from the setup of IDPs, where it is easier to reach out as many HH are densely concentrated in one place. Although the IDP levels are relatively high, they still fall below levels required to ensure public health significance. Compared to last year, immunization rates for measles and Polio have reduced significantly, from rates of over 80% (for measles, both IPD and urban). Cluster selection process over the years has shown changes in IDP camps as some are closed down and others moved to new locations. These dynamics could have contributed to the apparent differences in results in 2016.

Table 3.15: Vaccination coverage: BCG for 6-59 month olds and measles for 9-59 month olds



Vitamin A deficiency is a major contributor to the mortality of children under five.5 improving the vitamin A status of deficient children through supplementation enhances their resistance to disease and can reduce mortality from all causes by approximately 23 per cent. Minimum threshold for Vitamin A double dose (Two annual dose) coverage to have visible impact is 70%.

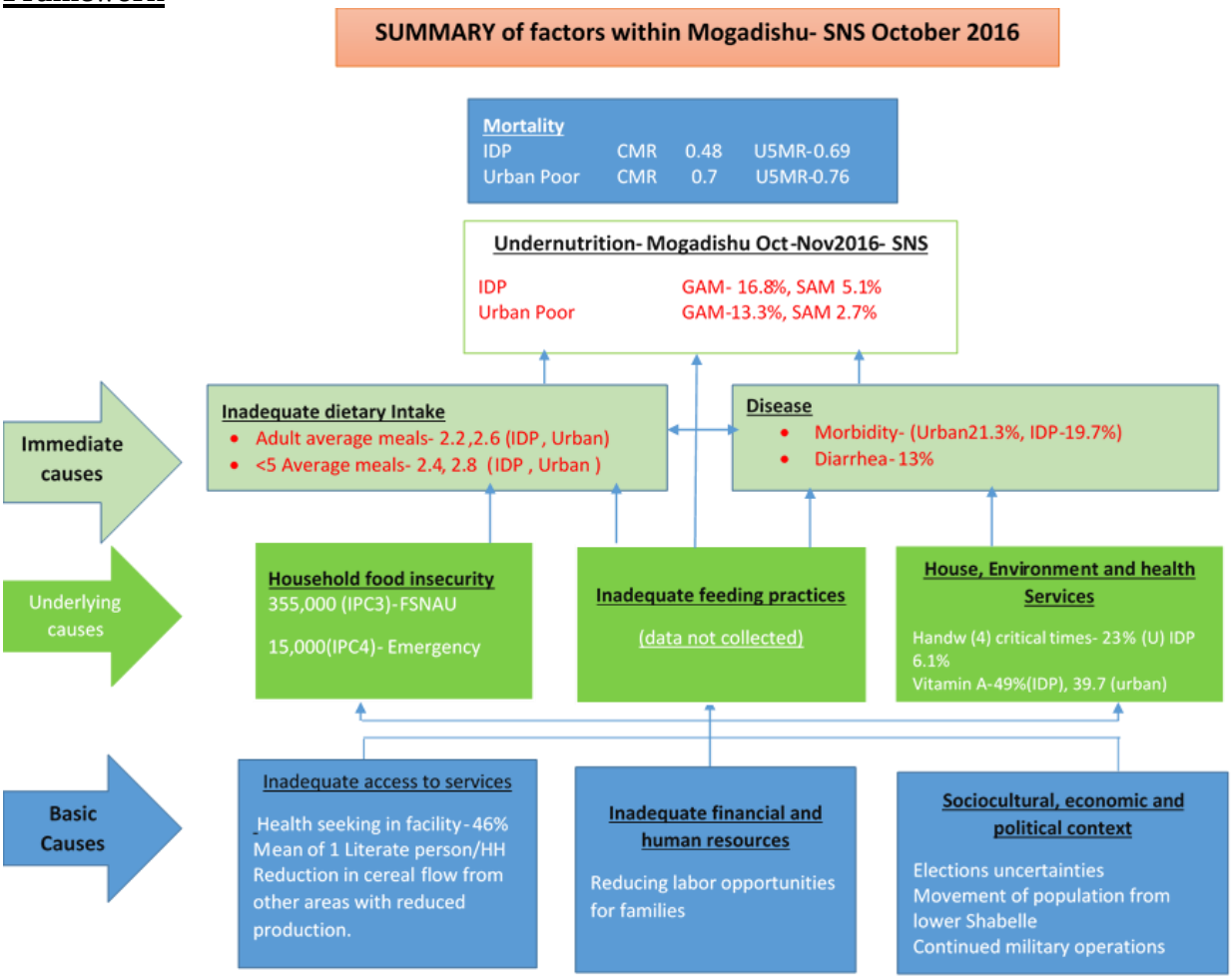
Age cohort results:



Children between 12-23 months hace ahigehr coverage of Vitamin A supplementaion compared to children 6-11 months as in the graph above.

3.5 Summary Causal Framework

Figure 3.5: Survey findings represented in the UNICEF Nutrition Causal Framework

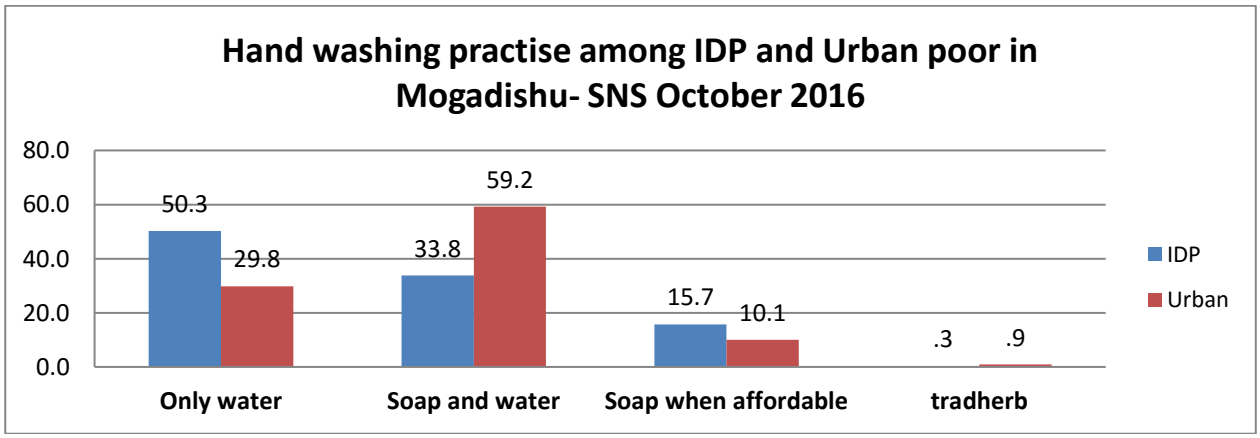


3.6 Water, Sanitation and Hygiene (WASH)

3.6.1 Handwashing

In the urban population, the majority wash hands using soap and water; this is not the case among IDPs, the majority of whom use only water. In the IDP areas, only 2.1% of the population wash hands during four of the five critical moments of handwashing.

Figure 3.6: Handwashing Practice



3.6.2 Latrine utilization in IDP camps

88.6% of IDPs defecate either in their HH latrine or another latrine in the camp setting. Diarrhoea is one of the diseases fuelling high morbidity rates in the survey. These could be explained by the two factors of minimal adherence to critical hand washing moments among the IDP population in general, and the likely (low) percentage of IDP persons who defecate in the bush rather than in settlement latrines.

4. DISCUSSION

4.1 Nutritional status

Acute malnutrition in children from 6-59 months old is a direct outcome indicator of recent changes in nutritional status, which could be attributed to changes in food security, WASH and health situations among others. Anthropometric data from the survey indicate a boy: girl sex ratio of 0.9. This is within the acceptable range of 0.8-1.0. In general, there were more girls than boys covered in the survey and the difference was not significant. Other surveys in the past have shown a similar trend. In 2015, SNS conducted a SMART survey that had a boy: girl ratio of 0.8.

The two surveys conducted late in 2016 estimate the prevalence of GAM at 16.8% and 13.3% for the IDP and urban populations respectively. SAM rates were estimated at 5.1% and 2.7% for IDP and urban communities respectively. Based on the WHO, these GAM rates present Critical levels for IDPs and a serious situation for the urban population. The SAM rates fall under Critical classification for IDPs and Serious for Urban communities. These high rates of SAM witnessed among IDPs likely related to recent population movements from Lower Shebelle, due to the prolonged and ongoing military operations.

The most recent FSNAU survey conducted in IDP locations (DATE) estimated GAM to be 16.6%, comparable with the SNS rate of 16.8%. There is an overlap in the confidence interval at 95% between the two surveys. In 2015, SNS conducted similar surveys. Comparing these results indicates a deteriorating situation regarding SAM and largely sustained GAM rates. SAM in the 2015 survey stood at 2.2% for IDPs, whereas current results indicate a far higher double figure. A major increase in malnutrition rates is observed mostly in the camps, where upward change in SAM rates is significant. It has shifted from Alert levels in 2015, to critical levels at present.

Typically, malnutrition rates in Somalia during the SMART survey months, fall into a Serious phase[4]. The end 2016 results, therefore, indicate rates above the expected classification level. Internal SNS data, from rising admission numbers, have also shown an

[4] http://www.fsnau.org/in-focus/fsnau-fewsnet-technical-release-september-2016

increasing trend, validating further the heightened SAM rates observed in the survey. This situation is cause for concern and calls for immediate action to prevent further deterioration.

4.2 Mortality

The survey mortality rates for both IDP and urban populations 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. A key observation on the causes of mortality is the fact that some conditions like diarrhoea contribute to approximately 13% of the deaths, yet with proper basic hygiene and sanitation practices at HH levels, diarrhoea could be eradicated. This highlights how much work remains to be done and how urgent it is.

Comparing the SMART result with previous results[5], there has been a reduction in Mortality rates to below 1/10,000/day. The reduction is also attributed to decreases in the overall incidence of sickness, when compared to 2015.

4.3 Possible factors contributing to malnutrition

4.3.1 Diseases

In both the IDP and urban poor populations, one key observation is the high morbidity rates. Diseases are an immediate cause of malnutrition, as they increase the body's demand for nutrients, as well as reduce the body's uptake of nutrients through decreased appetite. In both IDP and Urban communities studied, morbidity rates are higher than the same season in 2015. High among the diseases found affecting children are ARI and diarrhoea. These remain common across most of the SNS SMART surveys conducted and are opportunistic, fed by poor WASH conditions and practice. With ARI at 44% (i.e. some 4 out of every 10 children) and Diarrhoea at 26%, this factor contributes a huge likelihood to high malnutrition levels. In the urban population, the rates are also high at 22% for diarrhoea and 47% for ARI.

[5] SNS Mogadishu Urban and IDP SMART survey 2015

4.3.2 Food intake

Inadequate food intake is another immediate cause of malnutrition. Results from the SMART survey indicate an average of XX meals for adults and XX for children. Based on ideal complementary feeding requirements, the frequency is significantly less than the idea; The Mogadishu population depends on the purchase of food in the market. In Banadir region, the availability and prices of basic food commodities had largely remained stable before October, showing little difference from 2015 conditions[6]. At the same time, the current drought means that this situation will be worsening early in 2017 (i.er. at present), with cereal flow to Mogadishu likely to be affected for the worse, especially from areas that have received low rainfall and consequently had low yields. All this suggests that early in 2017, food intake among the Mogadishu IDP and Urban communities is set to lessen, which will increase vulnerability to malnutrition.

4.3.3 Poor Water, Sanitation and Hygiene (WASH)

Additional data collected during the survey included a minimal WASH component. From the WASH data, 88.6% of the IDP population could access a latrine, either communal or HH, but incidences of handwashing during critical times was very low, with only 6.1% washing hands at four of the 5 critical handwashing moments. Within the urban population, some 23% of the population wash hands during 4 of the 5 critical moments for handwashing. The difference between urban and IDP communities in relation to these could explain the lower rates of morbidity among urban communities, especially cases of diarrhoea.

The urban poor also have access to better facilities for hand washing, with a higher number of them washing with soap and water. The IDPs, in addition to sub-optimal handwashing practice, typically only wash their hands with water (without soap or ash). This needs serious attention.

4.3.4 Prospects of the coming months:

The two main rainy seasons in Somalia in 2016 have not followed the expected, normal pattern and seen far lower rainfall than usual. The low *Deyr* rainfall, that was 50-70%

[6] FSNAU Market update –October 2016

below expectation in most parts of Somalia, is inevitably having a negative impact on the nutrition status of many children across Somalia. The reduced rains are projected to worsen the food security situation well into 2017 and until a good rainy season is experienced[7]. Unless activities to accommodate the additional malnutrition caseloads are urgently scaled-up, the current situation, with aggravating factors of high morbidity, poor WASH and low vitamin supplementation and immunization levels, will only worsen. As typical malnutrition situations for the period assessed already fuel serious concern in many areas, as seen in the SMART survey results, this trend will likely worsen over the coming months, based on widespread projections of worsening food security, which has a direct effect on daily nutrient intake.

[7] FEWSNET-food security Outlook-November 2016ttp://www.fews.net/east-africa/somalia

5. CONCLUSION

The malnutrition situation in Mogadishu among both urban and IDP communities in 2016 is worse than in 2015. Compared to same time last year there is no significant change in the GAM rates, however SAM rates have increased in the urban and increased significantly in the IDP population. The GAM and SAM rates estimated in the survey fall into Serious and Critical for urban (13.2%) and IDPs (16.8%) respectively. While the SAM rates fall into Serious and Critical, for the urban poor and IDPs respectively.

There are many aggravating factors that accompany the high rates of malnutrition. This includes poor WASH conditions and practices with few applying the basics like handwashing with soap at critical moments, high morbidity among children (with diarrhoea being a main disease affecting high numbers of children), low immunization coverage and low vitamin A supplementation that fails to meet the threshold of a public health impact on the community. These factors are common in both urban and IDP populations and are worse than the estimations observed at the same time in 2015.

The food security forecast in Somalia predicted a deteriorating situation late in 2016 and into the early months of 2017 (FEWSNET – Famine Early Warning System Network, DATE)). Food security inevitably has a direct impact on food intake, which is an immediate factor influencing nutrition status. The continued projected poor food security outlook (January 2017) is expected to worsen the nutrition status of communities concerned. Now into January 2017, calls to urgently scale up lifesaving interventions, including SAM treatment in particular, are growing as the situation worsens

There is an observable increase in SAM, with sustained GAM rates. The increase in SAM could be explained by the movement of IDPs in and out of Mogadishu. In the months preceding the survey (June to September 2016), Mogadishu faced flooding which affected 23 settlements (SWDC)[8], the Post-*Gu* assessment projected a gloomy food security outlook for Somalia and the humanitarian snapshot by OCHA in August 2016 projected Mogadishu to have 1.4M people in need[9]. The heath situation update in June 2016 by WHO indicated

[8] Somali Women Development Center-Effect of rainfall in Mogadishu- June2016

[9] Humanitarian snapshot Somalia-https://www.humanitarianresponse.info/en/system/files/documents/files/somalia_humanitarian_snapshot_-_august_2016.pdf

a 5 fold increase in cases of diarrhoea in 2016, compared to 2015[10]. All these factors acting together likely influenced the increase in SAM cases, which eventually came to show during the survey period.

[10] WHO-Cholera situation in Somalia- http://www.emro.who.int/som/somalia-news/whos-response-to-cholera-outbreak-in-somalia.html

6. RECCOMENDATION AND PRIORITIES

6. 1 immediate recommendations

The low rates of vitamin A coverage could be addressed through immediate outreach in both IDP and urban populations, targeting all children. Vitamin A coverage should be targeted to reach 80% of all eligible children, to have an impact. Immediate mass campaign should be organized immediately. Increased mobilization for children and a possibility of mobile health teams, to reach out to communities in their settlements and villages, should be considered to increase coverage. The possibility of using existing community programmes like schools should be considered.

The increase in SAM cases needs to be addressed, there is a need to monitor new population groups arriving in Mogadishu and to conduct mass screening and referrals in the identified locations. Existing SNS and other treatment sites need to be prepared for the surge in numbers starting to be witnessed (January 2017). This can be done by pre-positioning additional resources for the expected caseload increase. Appeal for additional support to cater for surging numbers should be initiated.

As well as ensuring basic service provision, health, WASH and nutrition promotion and education campaigns at household levels should be initiated, with the aim of improving basic HH hygiene. Low levels of handwashing need to be improved, so deaths caused by diarrhoea and other hygiene related factors can be brought to halt. All these could be achieved through mass education on the basics of sanitation and hygiene in the community, if basic resources like soap are widely accessible.

6.2 Mid-term Recommendations

There is need to mobilize funds to cover anticipated increases in SAM cases, both those already being seen based on admissions and the forecasted surge in 2017.

6.3 Longer term

The fluctuations seen in coverage rates of immunization and micronutrient supplementation need to be addressed through the establishment of systems that will allow more stable coverage levels. An approach using Community Health Workers (CHWs) to cover for Vitamin A and deworming should be considered, to ensure sustained high levels of coverage in communities.

Greater integration between nutrition, health, WASH and other programmes and sectors has been recommended in many surveys and assessments[11], this need to be actualized. The first step to consider is designing projects that include the full Emergency Nutrition Assessment (ENA) package.

6.4 Future nutrition monitoring

There is need for nutrition actors to take the movement of populations around Mogadishu as a context constant and to factor this in to the calculation of caseloads. The possibility of having IDP movements regularly tracked and mapped in Mogadishu should be considered, to allow for in-depth analysis of the effect to SAM caseloads.

It is proposed that the next SMART survey should include FSL, WASH and IYCF indicators (in detail), to support deeper analysis and more rigorous interpretation.

[11] Particularly in the SNS Consortium Nutrition Causal Analysis (NCA) Study (SNS, 2015)

7. References

[1] http://www.fsnau.org/in-focus/fsnau-fewsnet-technical-release-september-2016

[2]SNS Mogadishu Urban and IDP SMART Survey 2015

[3] FSNAU Market Update –October 2016

[4] FEWSNET-Food SecurityOutlook-November2016ttp://www.fews.net/east-africa/somalia

[5] Somali Women Development Center - Effect of rainfall in Mogadishu- June2016

[6] Humanitarian snapshot Somalia- https://www.humanitarianresponse.info/en/system/files/documents/files/somalia_humanitarian_snapshot_-_august_2016.pdf

[7] WHO-Cholera situation in Somalia- http://www.emro.who.int/som/somalia-news/whos-response-to-cholera-outbreak-in-somalia.html

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9. Appendices

9.1 Appendix 1: *Plausibility Report*

IDP_Plausibility.docx

9.2 Appendix 2: *Assignment of Clusters*

IDP

IDP_Clusters_Mogadishu.xlsx

Urban Poor

Urbban Cluster Sample2016.xlsx

9.3 Appendix 3: (standardization test results)

Evaluation of Enumerators

standardization test_Moga Urban_fee

9.4 Appendix 6: Questionnaires

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