World Vision

Integrated Anthropometric, Retrospective Mortality, IYCF, FSL & WASH Survey Using SMART Methodology

Preliminary Report, July 2015

World Vision South Sudan

Gogrial East County, Warrap State, South Sudan

1. Survey Background Information

World Vision South Sudan (WVSS) acknowledges Malnutrition as a multi - sectorial challenge. The Nutrition sector within the organization therefore partners with other sectors, such as Health, Water, Sanitation and Hygiene (WASH) as well as Food security to enhance the coping mechanism of households vulnerable to malnutrition and childhood illness. The integrated approach helps to address the causes of malnutrition, both direct and underlying. A comprehensive Community management of acute malnutrition is being implemented in Gogrial East County of Warrap State.

The situation in Gogrial East County is in Critical emergency according to WHO classification for severity of nutrition situation, with high prevalence of severe acute malnutrition including oedema. However, crude and under five mortality rates are low and below the WHO's alert levels. The nutrition status of the community is associated with many factors that range from poor socio-economic and civil security, food insecurity, poor child care practices and poor access to healthcare, water, sanitation and hygienic infrastructure which lead to a cycle of malnutrition that only reduces slightly in the post-harvest period.

The last pre-Harvest SMART Survey conducted in Gogrial East in July 2014 revealed a prevalence of Global Acute Malnutrition (GAM) for the County as 15.4% (95%CI: 12.0-19.6), and the severe acute malnutrition (SAM) rate (WHZ<-3 or oedema) was 2.2% (95%CI: 1.1-4.2), including two (0.3%) oedema cases. More than half of the assessed households reported borderline (26%) or poor (27%) food consumption scores proxy indication for poor dietary diversity and food insecurity. A high prevalence of morbidity was also reported in the assessment.

In addressing malnutrition in the County, World Vision South Sudan (WVSS) operates a community management of acute malnutrition (CMAM) nutrition project with four components: 1) outpatient therapeutic care, 2) targeted supplementary feeding, 3) stabilization care, and 4) community mobilization). Therefore, there is a need to determine the current pre-harvest nutrition situation of the population and to collate the latest information on the food security and health related aggravating factors to evaluate and guide continued response in the county.

A pre-harvest SMART will indicate the extent of vulnerability anticipated and recommend appropriate actions to mitigate the effects of malnutrition. The data and other information collected will be used to monitor the malnutrition trends and to inform programming both at county, state and national levels.

2. Survey Justification

2.1. Rationale

Since nutritional status frequently deteriorates due to several factors including poor food access, availability and utilization, poor IYCF practices and poor water and sanitation as well as high morbidity among the affected populations. There is need for constant monitoring of the nutrition situation in Gogrial East to further inform the government and partners to better serve the community.

A Pre-harvest SMART nutrition survey was therefore critical to assess the current health and Nutrition status for the community. This survey assessed impact of ongoing interventions and will

indicate the extent of vulnerability and recommend appropriate actions to mitigate the effects of malnutrition. The findings of the standard nutrition survey will also be used to understand the overall nutrition, food security and health status across the county and give recommendations for planning and decision making from county to national level.

2.2. Survey Purpose and Objectives

The overall objective

The overall objective is to estimate the level of acute malnutrition among children aged 06 to 59 months in Gogrial East County in order to:

- Generate information for informed programming and policy interventions
- Ensure availability of timely and appropriate high quality nutrition data from Warrap state
- Strengthen project design and facilitate appropriate decisions and timely actions.
- Provide information for monitoring project implementation and impact
- Propose appropriate nutrition interventions according to revealed trends of malnutrition in the two counties.
- Build capacity among World Vision and government staff and enable them to conduct SMART surveys and generate reports.

Specific Objectives

- Assess the prevalence of acute and chronic malnutrition (wasting, underweight and stunting) among children aged 6-59 months and among pregnant and lactating mothers;
- Determine the retrospective crude and under five mortality rate as well as common causes of morbidity;
- Assess the morbidity status among children aged 6-59 months;
- Determine the hygiene practices in the household (presence of latrines and sources of drinking water);
- Assess the food security situation.
- Assess the Infant and Young Child Feeding practices in the community
- Make recommendations on appropriate interventions to address malnutrition in the three counties.

3. Survey Methodology

The Standardized Monitoring and Assessment of Relief and Transition (SMART) methodology was used for this survey. This methodology provides a basic integrated method for assessing nutritional status and mortality rate hence providing the basis for understanding the magnitude and severity of humanitarian crisis in Gogrial East County.

3.1 Survey design, sampling technique and sample size

Sampling Design

- Survey Design: A two-stage cluster random sampling method using SMART methodology was used.
- Survey Area: Gogrial East County, Warrap State with exception of Toch West Payam affected by local conflicts between Gogrial East and Gogrial West. Massive displacements and active

conflict in the area at the time of the survey. The 5 payams out of 6 are representative of all the 6 and thus require no adjustments in the reporting of anthropometric results.

- Survey Population: The whole population of the 5 of 6 payams of Gogrial East County was used as the survey sampling frame. Sample sizes were calculated based on prevalence of acute malnutrition and crude mortality rates of the July 2014 survey by World Vision with support from CHF and the South Sudan Nutrition cluster. In particular the upper confidence interval rate was used as a conservative value.

Sampling procedure

The sampling frame was drawn from the population of all the villages in the 5 of 6 payams of Gogrial East County. A two stage sampling technique was applied. The first stage was the assignment of smallest sampling unit called clusters which in this case is administrative villages. Cluster sampling was used because of sparse and unstructured distribution of households in the survey area. Random selection of clusters from the total number of villages in the county was done using the planning screen of ENA for SMART software, April 21st 2015 version based on probability proportion to population size (PPS). Clusters are defined as villages within the Payams in the County. A total of **36** clusters was selected from the sampling frame generated from the list of all villages in the County. At the second stage, the selection of sample households was done by systematic random sampling (using household listing approach to generate list of households) in the selected clusters. All the households are listed to form sampling frame (this was done by the survey team and local leaders) and a sample of households to be included in the survey were randomly selected.

Sample size

Calculation of sample size is based on ENA for SMART software April, 21 2015 version for anthropometric and mortality sample sizes. Parameters entered into ENA/SMART software were drawn from the latest SMART survey (July 2014 survey by World Vision) conducted in the County. The GAM for previous survey was 15.4% (95%CI: 12.0-19.6) the prevalence considered in this survey is 19.6% which basically is the upper interval. The rationale is based on the fact that the prevalence lies between 12.0-19.6% and a higher prevalence yields a higher sample size, so to be statistically conservative the higher interval suffices to be used in this case. The precision used in this case is 5% as the prevalence is almost 20% whose precision as per the SMART guidance is 5%. Design effect from the July 2014 data set was 1.52 and 1.2 in 2013 survey; in this case also the higher design effect would suffice. The table below summarizes the sample size calculations.

	Anthropometry sample	Retrospective Mortality sample
Estimated prevalence	19.6%	0.40
Desired Precision	5%	0.4 per 10,000/day
Design effect	1.52	2.09
Average household size	6.0	6.0
% under five children	18%	N/A
% non-response	5%	5%
Recall period	N/A	93 days
Children to be included	401	N/A
Households to be included	434	412
Population to be included	N/A	2350

Considering the sample size for both anthropometrics and mortality yielding similar number of households, the anthropometric sample size of 434 households was used. To ease data collection

and considering logistical operations, 36 clusters were used with each cluster having 13 households. This yields a sample of 468 households.

In all selected households, all children under 6-59 months were included in the anthropometric. This survey was based on number of households and so the unit of measurement was household and not children. The computed sample size was expected to yield sufficient sample in terms of children required for the anthropometry. If there were no children in the household, the house remained as part of the sample that contributed zero children to the anthropometric survey but mortality, IYCF, WASH and FSL data was collected.

The age of the children was determined mainly using a local calendar of events and in some cases birth record when available. Anthropometry, mortality, Food security and WASH questionnaires were administered to the selected households in the sampling frame. In total, the data of 549 children and 468 households were collected for household level indicators. Considering SMART flags, 3 children were excluded from the analysis.

4. Results

The main anthropometric (prevalence of global and severe acute malnutrition in W/H z-scores and/or oedema at 95% confidence intervals) and selected WASH and FSL results are presented in this report. The results are computed from the total number of 546 children according to SMART cut off (Total data without any exclusion criteria was 549 children) and 454 households. The detailed results including the data structure and distribution based on age and gender will be presented in the main report.

Table 2: Table of Anthropometric Results

INDEX	INDICATOR		RESULTS[1]
WHO (2006) (n=546)	Z-scores	Global Acute Malnutrition *W/H< -2 z and/or oedema*	18.3 % (14.4 – 23.0 95% C.I.)
		Severe Acute Malnutrition *W/H < -3 z and/or oedema*	4.0 % (2.5 – 6.5 95% C.I.)
NCHS (1977) (n=548)	Z-scores	Global Acute Malnutrition *W/H< -2 z and/or oedema*	17.9 % (13.7 – 23.1 95% C.I.)
		Severe Acute Malnutrition *W/H < -3 z and/or oedema*	1.3 % (0.6 – 2.6 95% C.I.)
Total crude retrospective mortality /10,000/day			0.15 (0.06-0.71)
Under five crude retrospective mortality /10,000/day			0.46 (0.11-1.88)

In thius survey, oedema was at 0%. No child was found with pitting oedema.

The GAM clearly shows a high prevalence above the WHO cut-off of 15% severity classified as critical. The rate for both GAM and SAM are relatively high an indication of severe nutrition situation in the County.

Mortality rates in this survey were very low as the deaths recorded in this survey were considerably low. Additionally there is limited associated link of mortality and high level of malnutrition and this normally varies by cause of death either as illness from common childhood illness or other natural

[1]Results in brackets are expressed at 95% Confidence Interval.

causes. There was little data in this survey to argue this point out if the high GAM has an effect in the number of deaths in the survey population.

The GAM according to MUAC is as shown in the table below. The mean MUAC for the measured children was 141.7mm for the sample n=549 children 6-59 months. The rate of oedema was 0% in the sampled children.

Table 3: Table of GAM Results based on MUAC measurements

	All n = 594	Boys n = 295	Girls n = 299
Prevalence of global malnutrition (< 125 mm and/or oedema)	(60) 10.9 % (7.2 - 16.2 95% C.I.)	(31) 11.0 % (6.8 - 17.4 95% C.I.)	(29) 10.8 % (6.8 - 16.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(43) 7.8 % (5.0 - 12.0 95% C.I.)	(23) 8.2 % (5.1 - 12.9 95% C.I.)	(20) 7.5 % (4.3 - 12.7 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(17) 3.1 % (1.8 - 5.4 95% C.I.)	(8) 2.8 % (1.2 - 6.4 95% C.I.)	(9) 3.4 % (1.5 - 7.5 95% C.I.)

WFH and MUAC are anthropometric indicators that are used independently to identify acute malnutrition. On average, only 40% of children will be identified with SAM and or GAM by both WFH and MUAC and with the fact that there is less developed evidence based on MUAC both approaches still apply (WHO and Unicef 2009; Myatt et al., 2009)

Vitamin A coverage was at 39.4%, this is very low supplementation rates and most of the responses based on recall. Additionally, measles coverage was way too low with 21.9% vaccinated against measles and proof of card, another 10.0% mentioned being vaccinated but without proof of any document.

Morbidity levels were high with 60.8% reporting sickness in the last 2 weeks prior to the survey date. The common illnesses mentioned were fever, cough and diarrhea. The treatment sought was mainly from village health care worker and thereafter to PHCU/PHCC and drug purchase from the shops. The health seeking behavior is clearly based on access and level of sickness as per the community perceptions. This survey was only looking at the quantitative aspect however; observably the community health seeking behavior is not ideal as they go for health services when the sickness gets more severe. Among the sampled households, 26.8% reported ownership of the long lasting insecticide treated nets (LLITN). Despite the high coverage of LLITN, we cannot report on the use and specifically does it serve children.

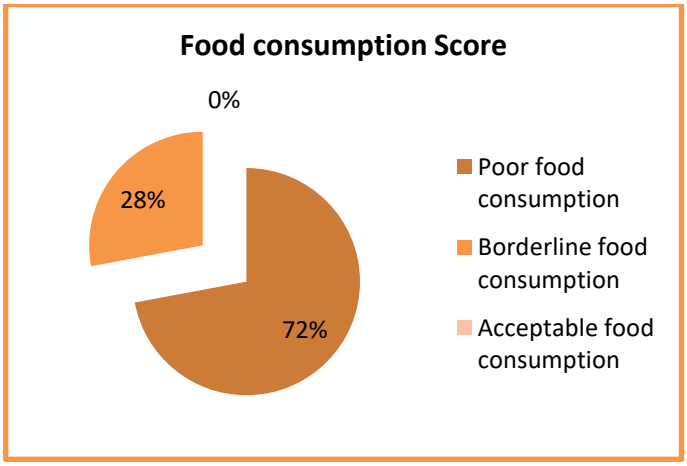
Food security and livelihood component of this survey clearly shows strained households in regards to access, availability and purchasing power of basic household food stuff. This likely explains the high levels of GAM and SAM in the community. Considering the season, most households have exhausted reserves from previous harvests and additionally the market prices are really high for the most of the households as reported in the shocks experienced. The results are as iteratively presented below.

Infant and young child feeding practices in the surveyed community are below par. Initiation of breast feeding is good, 90.4% of mothers introduced the child to breast within one hour of birth. Despite early initiation, exclusive breastfeeding is still at 25.3% in the first 6 months of life. Some of the foods introduced early include animal milk, powder milk and cereal based diets. Observably a large population sampled, 71.0% introduces pre-lacteal feeds so early.

A close look at the dietary diversity and frequency of meals reveals an under nutrition in children 6–23 months. A child in this growing stage requires more energy, however in the community surveyed most children are fed mostly 2 meals a day, this shows they are likely following an adult schedule of meals. The diet is commonly cereals, grains and tubers, all of which are in the same food group, and sometimes limited dairy products.

The main household income was from brewing at 25.3%, casual labour (Mostly cultivation during the season) at 16.3%, sale of livestock at 16.1% and sale of natural resources, i.e. grass, firewood and charcoal; this was reported by 12.6% of the sample households. This is evident from the activities of cultivation observed in the field and absensce of some family members during the survey and reported to be cultivating and items seen in the markets, grass harvesting observed in the field and sometimes caretakers reportedly out in the field collecting grass and firewood for the household.

The food consumption score (FCS) which is a composite score based on dietary diversity, food frequency, and relative nutritional importance of different food groups. It is the recommended core indicator of consumption and has thresholds based on the country consumption profiles. The results according to this survey are as shown in the chart below.



Profiles	Thresholds with oil and sugar eaten on a daily basis
Poor food consumption	0 - 28
Borderline food consumption	28.5 - 42
Acceptable food consumption	>42

The FCS for most households is below the acceptable threshold with 0% having acceptable consumption score, a clear picture of constrained households. This is further explained by other food security variables, the major sources of food for the households is purchase from the markets and shops and looking at the source of income, you would clearly tell the purchasing power of the households which is quite low. This coupled with high market prices for the common commodities makes the situation quite grim. A look at individual food groups and observation and discussion with community members, some community members take some wild vegetable (leaves) as the main food and fruits commonly reported are wild fruits.

The poor food consumption score is further corroborated by the fact that 92.3% of households reported a day in the past 30 days when they did not have enough food or money to buy food. The food shortage at the households is managed by employing a number of coping strategies which

include: reducing daily meals, restricting adults' consumption for children and reliance on cheaper or less preferred foods. The shock mainly faced is expensive food in the markets, this was reported by 61.2% of the sampled households and this was followed by delay of rains (38.5%) and human sickness (30.2%) as the next shock faced by the community.

The main water sources in the County are boreholes 75.1%, open shallow well at 13.2% and river and streams at 3.8%. Comparatively, access to safe drinking water (Piped water into dwelling, plot or yard Public tap/standpipe, Tube well/borehole, protected dug well, protected spring) is high in the County compared to the sub-saharan Africa coverage of 64% in 2012 (African Minister's Council on Water report, 2012; Data from WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation).

The time taken to fetch water is as shown in the table below

Table 4: Water collection time

Time taken to Collect Water	Frequency	Percent
1 = <30 min	245	54.00%
2 = >30min to <1hr	133	29.30%
3 = >1hr to < 2hr	52	11.50%
4 = >2hr to < 4hr	23	5.10%
5 = >4hr	1	0.20%

The sphere recommended queueing time at a water source is no more than 30 minutes and considering the indicator measured here is queueing and travel time, we could say the population is relatively OK with 83.3% taking less than 1 hour to travel, queue and fetch water.

Water treatment in the community is not practiced as 83.3% takes water as collected from the water points. In scenarios where it is practiced, the treatment is filtering by cloth which basically has minimal impact in regards to treating water to be safe for consumption a part from filtering solids. This was mentioned by 12.1% and is common in the areas along River Jur though we could not confirm this practice as such and was majorly mentioned by communities accessing water from the river and streams and finally 2.6% allowing water to settle.

Hand washing practice is expected to be in at least 3 or more incidences, this practice was only reported in 42.1% of the population. Hand washing is mostly by use of water only 57.8% and water and soap 31.7%

A significant proportion of the community (99.0%) use unimproved sanitary facilities (designated and undesignated bush area). It is above the average for sub Saharan African countries, which is 63%. Use of improved latrine was only reported in 0% of the sampled households.

5. Recommendations

The following is recommended based on the preliminary findings; the report will have more detailed evidence based recommendations geared at improving WVSS activities in the County.

- Nutrition situation in the County is critical and needs heightened measures especially during the lean period till the first harvest. In addition the areas of Toch North Payam need

increased surveillance and Nutrition services and since WV works in Gogrial west, this Payam can be served from that side to overcome access issues.

- Scaling up nutrition treatment program in the most affected areas during the hunger gap season. This can be reached by intentionally creating mobile OTPs to reach the far flunk areas. This also calls for constant supply of the therapeutic food and buffer stocks to deter shortages that may be occasioned by increased admissions. This is very key especially for Toch North and Toch West Payams.
- Since WV is implementing a health project in the County, Nutrition integration with health pool fund project is important to holistically address health, WASH and Nutrition interventions in the area.
- Increased community screening of children for malnutrition and referral for early treatment especially in the lean period. Community mobilization activities to be increased and continued creation of community awareness of malnutrition prevention and treatment and OTP sites.
- Sanitation and hygiene is mainly affected by cultural beliefs and wrong ideologies, there is need for a mindset change and increased Sanitation and Hygiene messages communication and use of Social and behavior change communication such as IEC materials, agents of change