Nutrition and Mortality Survey Preliminary Report of Lopa Lafon Eastern Equatorial State, South Sudan

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List of Acronyms

CDR	Crude Death Rate
CMAM	Community Based Management of Acute Malnutrition
CSB	Corn Soya Blended
CTC	Community Therapeutic Treatment
ENA	Emergency Nutrition Assessment
FAO	Food and Agriculture Organization
GAM	Global acute malnutrition
INGO	International non-Governmental organization
IYCF	Infant and young child feeding
MAM	Moderate acute malnourishment
MDG	Millennium Development Goals
MUAC	Mid Upper Arm Circumference
NCHS	National Centre for Health Statistics (USA)
OTP	Out Therapeutic Program
PPS	Probability to population size
SAM	Sever acute malnutrition
SCI	Save the Children International
SMART	Standard Monitoring of Assessment in Relief and Transition
SRS	Simple random sampling
TSFP	Targeted Supplementary Feeding Program
UNICEF	United Nations Children Fund
WASH	Water , sanitation and Hygiene
WHO	World Health Organization
MOH	Minister of Health
MUAC	Mid Upper Arm Circumference
PHCC	Primary Health Care Centre
WFH or W/H	Weight for Height
WFP	World Food Program

1. Introduction and background

Eastern equatorial state lies on the South eastern part of South Sudan. It shares international border with three countries; Ethiopia in the east and Kenya and Uganda in the south. Within the country the state shares borders with central equatorial state to the west and Jonglei state to the north. It subdivided into eight counties named Kapoeta North, Kapoeta East, Kapoeta South-, Budi, Lopa Lafon, Torit, Ikotos and Magwi1. The total population of the state is 1,082,353 people according to the projection of Sudan census of 20082.

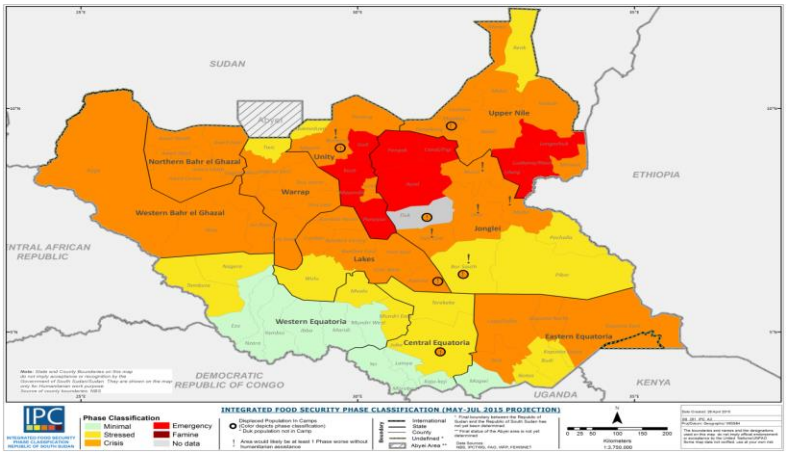
Lopa Lafon County is one of the eight Counties in Eastern Equatorial state, and it is located in the north western part of State. Lopa Lafon is bordered by the following: Jonglei State to the north, Kapoeta County to the east, Torit County to the west, and Ikotos County to the south. Lopa Lafon is a mixed terrain with hills; valley and flat plains. It is sub-divided into eight Payams namely; Arhilo, Burgilo, Imehejek, Kurumi, Lohutok, Longiro, Marguna & Pachidi Payams. The population of the county is estimated at **126,808**. There are two main ethnic groups; namely: Pari and Lopit. The majority of the populations in the county are pastoralists and agro-pastoralists. There are Roads from Torit County connect to the County; however, during the rainy season, these roads can be inaccessible.

The poor nutritional status of children and women has been a serious problem in South Sudan for many years. Various forms of under-nutrition have been prevalent: acute malnutrition, reflecting short-term nutritional deficiency; chronic malnutrition, reflecting the long-term effects of poor nutrition; and micronutrient deficiency, a symptom of longer term effects of malnutrition[3]. These nutritional conditions mainly affect children under 5 years, pregnant and lactating women, the elderly and other vulnerable groups. Multiple causes of under-nutrition exist in South Sudan, including seasonality, in which acute malnutrition peaks every year between April and June during the pre-harvest lean season. Other contributing factors include inadequate dietary intake due to food insecurity, inadequate use of available food resources, poor Infant feeding practices.

[1]South Sudan Annual Needs And Livelihood assessment, eastern equatorial State report2009/2010

[2] Sudan census 2008 report projection

Lopa Lafon is one of the counties in eastern equatorial state know for chronic food insecure, with high rates of acute malnutrition and recurrent disease outbreak. As per the information from county agriculture and livestock department, the last harvest in the county was very poor, due to flooding, distraction of cereals by wild animals and also erratic rain fall; as a result there was a report of hunger in the mass media in the county. According to the Latest IPC analysis report of April, indicated that Lopa Lafon and greater Kapoeta that they would be in crises situation from May to July showing deterioration from April.



The IPC report also indicated generally poor nutritional status in the state with GAM rate ranging from 10 to 15% across the state which is serious.

Lopa Lafon is also vulnerable to diseases outbreaks and with high childhood illness that further increases the level of acute malnutrition in the counties. According to the nutrition survey reports 2011 and 2013 in the county indicates GAM rates of 17.8% and 15.3% respectively, indicating high burden of acute malnutrition in the county

Save The Children South Sudan has been supporting Lopa Lafon County by implementing nutrition and health interventions through primary health care facilities. The situation in the county as per the last assessment of FSNMS reports, and also information related with hunger in the county in multiple media outlets indicates the deterioration of the food security situation in the county. This survey will provide most updated and valid information regarding the current nutritional status and the underlying causes in the counties. The information generated by this survey will provide to Save the Children and other stakeholders up dated of the scale of the health and nutrition need of the county to make informed decision in determine the scale of health and nutrition response in the county.

2. Survey objectives

2.1 General Objective

The general objective of the survey will assess the nutrition, mortality, health and food security situations, and other contextual factors in Lopa Lafon County, to enable to monitor the current nutritional status of the county

2.2 Specific Objectives:

- To assess the prevalence of malnutrition in children aged 6-59 months as a proxy for the wider population.
- To estimate the mortality rates through a retrospective survey in the County.
- To determine the morbidity and health seeking behaviours in the County.
- Estimate measles vaccination and Vitamin A supplementation rates
- To determine initiation of breast feeding, EBF, dietary diversity and frequency of children between the age of 0-23 months.
- Analyze and identify some of other potential factors contributing to malnutrition such as water and sanitation and the broader food security and livelihoods situation.

3. Methodology

3.1 Study area

The survey was conducted in all villages of Lopa Lafon County, Eastern Equatorial State, South Sudan

3.2 Study period

The study was conducted from June 18 to 26, 2015.

3.3 Study design

This survey was conducted with two-stage cluster sampling using SMART methodology. The sample sizes were calculated using ENA for SMART software. Villages were considered as the smallest geographical unit (clusters).

3.4 Study population

1. Children 6 – 59 months old: Anthropometric measurements and edema was measured from children 6-59 months old in the sampled household in all selected villages.
2. Household members: To estimate the crude mortality rate relevant information was gathered related to all residents of the sampled households in all selected villages.

3. Households: Household food security information was collected from selected households in all selected villages.

3.5 Sample size

Emergency Nutrition Assessment (ENA) for SMART software was used for sample size calculation. Sample sizes for nutritional status and mortality have been calculated separately. The anthropometric and mortality data was collected from 560 households in 35 clusters whereby 15 households were included in each cluster (35*16).

3.5.1 Sample Size for anthropometry

Prevalence: In accordance to pre -harvest survey conducted by Save The Children in march 2013 in Lopa Lafon County, the result showed that a global acute malnutrition (GAM) of 15.3% with confidence interval of 12.5 - 18.7 percent . Considering the poor harvest in 2014 and the on-going health and nutrition intervention in the area, a 15.3 % was taking as estimate of the GAM prevalence for the calculation of sample size.

Precision: a precision level of 3.5 is sufficient for the purpose of decision making for intervention purpose.

Design effect: there is some heterogeneity among villages with regards to malnutrition and design effect of 1.5 was taken.

3.5.2 Sample Size for mortality

The minimum sample size required for the mortality survey is calculated by ENA for SMART software by assuming CDR to be 0.39 deaths per 10,000 per day based on the 2013 pre-harvest survey report of Same County .The desired precision level of 0.3, design effect of 1.5 considering slight difference between clusters, and recall period of 90 days are used. As a result, a total of 3020 populations need to be surveyed in Lopa Lafon. When the total sample size is calculated by the average household size, the total number of households needed to be surveyed found out to be 454 for Lopa Lafon including a 5% contingency for the non-respondent of the households. The sample size and clusters needed to be surveyed is presented in Table 2

Table 2 Estimated sample size for Mortality, anthropometric measurements) and clusters

Survey	Estimated sample size	Total households to be visited	Households to be visited/ day/cluster	Total cluster
Mortality	3020	**454**	16	**29**
Anthropometic	664	552	16	**35**

3.6 Sampling

3.6.1 Selection of Clusters:

Selection of the clusters to be surveyed was be based on Probability Proportional to Size (PPS) using the ENA (SMART) software Feb 4, 2015 (village-wise population of the County was listed,. The list of the villages and number of clusters visited for this survey was identified using ENA software

3.6.2 Sampling Technique:

A two-stage cluster sampling method will be used to select the required number of clusters in the County and required number of households in each cluster. In the first stage, clusters were assigned to villages using a probability proportionate to size (PPS) technique. In the second stage, households in each cluster were selected by simple random sampling using random table.

Clusters correspond to a large population was subdivided into segments. Segments of roughly the same number of people was numbered and one of these segments was chosen with a based on the proportion to their size if they are in equally segmented or PPS and simple random sampling using random number table if they were unequal. In the selected cluster the households were being listed using the enumeration method, and the required households were selected from the list by using random number table. Villagers were asked to close eyes and point in any one number on random number table. This pointed number was first house and remaining houses were identified by going down vertically on the random number table.

3.6.3 Children selection:

Within selected households, all children 6-59 months, or 65-110 cm when age is not known, were included in the survey.

3.7 Data to be collected

The survey collected information regarding:

- Nutrition status of children and mothers: sex, age (months), weight (0.1kg), height/length (0.1cm), MUAC (1mm), e0dema;
- Mortality status of the population and children: households size (total/under 5), births, out and immigrations into the household and deaths (total/under 5), during the recall period (95 days) and cause/s of death;
- Health status of children: two weeks child morbidity status (Illness, cause of illness, health service utilization), Immunization status (Measles and Vitamin-A);
- Household food security: source of food, source of income, harvest (past), and meal variety;
- Household water and sanitation status: water source, distance to the nearest safe water source, sanitary pit latrine;

3.8 Data collection methods

3.8.1 Anthropometric data

- Age- Children's ages was recorded in months using a local events calendar.
- Height/Length- Length was taken for children below two years of age. These were measured lying horizontally on the length measuring board. Height was taken for children two years and above. Their height was taken while standing. Height and length was measured using standard 130 cm long wooden height/length board.
- Before taking the height/length, subjects were requested to take off their shoes (if wearing them) and stand in a position against the height board, which has been placed on a flat level surface. Trained data collectors took height measurements, with acceptable accuracy and precision. Height was recorded to the nearest 0.1cm.
- Weight- Weight was measured by using Uni-scale (SECA)) and recorded to the nearest 0.1Kg. All subjects were weighed nude to ensure accuracy of weight measurements.
- Nutritional Oedema was diagnosed by applying a normal thumb pressure to the top of the foot for three seconds.
- MUAC (Mid Upper Arm Circumference) was measured using a three color coded (red, yellow, green) flexible, non-elastic 26.5cm long tape, graduated with 1 mm precision. MUAC was measured at the mid-point of the left upper arm of all children 6-59 months old. The reading of the measurement was recorded to the nearest 1mm.

3.8.2 Immunization status data

- Measles vaccination and Vitamin A supplementation status- each child's mother/caretaker was asked if the child has received a measles vaccine, and where possible this was checked against

written records on a vaccination card. Measles immunization and Vitamin A supplementation status was assessed for all children 9-59 months old.

3.6.2 Morbidity and mortality data

- Retrospective morbidity- Morbidity over the two weeks prior to the survey was recorded for each sampled child. For children reported as being sick during the recall period utilization of health service was collected from the caretaker.

- Retrospective mortality- Age and sex of current household members; and people who left the household, who joined the household, new born babies and household members who passed away during the recall period, was collected from sampled households.

3.6.3 Household food security, situation and child feeding practice data

Heads of sampled households were interviewed to understand about household's food security situation in the recent past (1 month). Information about source of staple food, status of most recent harvests and source of household income was gathered. Additionally data regarding food utilization, child feeding practice and household sanitation was collected from the selected households.

4. Results

4.6.1 Population Characteristics

Anthropometric data were collected from 688 children of 6-59 months old drawn from a total 560 sampled households from selected 35 clusters. Boys account around 49.1% (338/688) of the sample children with boys to girls' ratio of 1.0 indicating that both sexes were equally represented in the study population. The age ratio of younger children (6-29 months) to their older counter parts (30-59 months) is 1.02 which is close to the plausible value of 1.0 indicating there is no significant age bias in the overall distribution of the survey age groups.In general, the proportion of sampled children represented across the standard five age categories is close to the typical age distribution

Table 4.1: Distribution of age and sex of sample

AGE (mo)	Boys no.	%	Girls no.	%	Total no.	%	Ratio Boy: girl
6-17	85	51.2	81	48.8	166	24.1	1.0
18-29	90	49.5	92	50.5	182	26.5	1.0
30-41	72	48.3	77	51.7	149	21.7	0.9
42-53	60	46.9	68	53.1	128	18.6	0.9
54-59	31	49.2	32	50.8	63	9.2	1.0
Total	338	49.1	350	50.9	688	100.0	1.0

Figure 4.1: Population age and sex pyramid

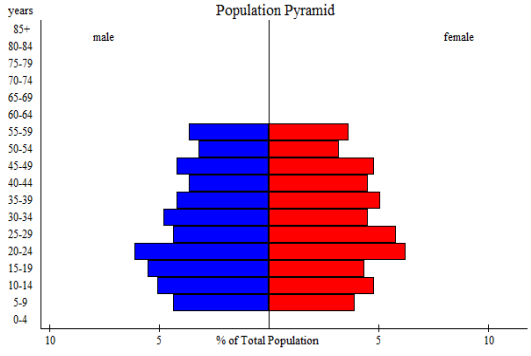
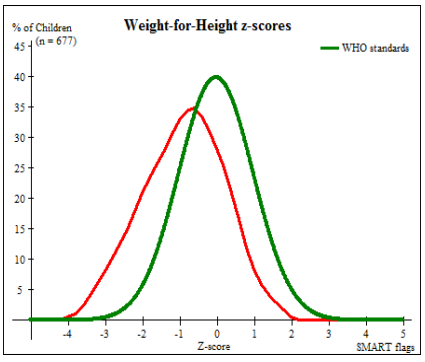


figure 4.2: WHO-W/H z-score distribution curve



4.6.2 Anthropometric results (based on WHO standards 2006)

Global acute malnutrition in the surveyed county was estimated using WHO weight-for-height Z-score in the sample population. Estimated prevalence based on NHC cut off reference is annexed. Applied cut-offs for Global Acute Malnutrition (GAM) is <-2 z scores weight-for-height and/or Oedema, and Severe Acute Malnutrition (SAM) is defined as <-3z scores weight-for-height and/or Oedema).Analysis of the prevalence of acute malnutrition in the surveyed County was made based on the results obtained from 688 sample children.

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

	All n = 686	**Boys** n = 337	**Girls** n = 349
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(126) 18.4 % (14.8 - 22.6 95% C.I.)	(63) 18.7 % (13.7 - 25.0 95% C.I.)	(63) 18.1 % (13.7 - 23.5 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(92) 13.4 % (10.9 - 16.5 95% C.I.)	(46) 13.6 % (10.3 - 17.9 95% C.I.)	(46) 13.2 % (9.9 - 17.3 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(34) 5.0 % (3.4 - 7.1 95% C.I.)	(17) 5.0 % (2.9 - 8.5 95% C.I.)	(17) 4.9 % (2.8 - 8.4 95% C.I.)

The prevalence of oedema is 1.3 %

Thus, the prevalence of global acute malnutrition (GAM) was estimated at 18.4 % (14.8 - 22.6 95% C.I.) as measured with WHZ <-2 and/or oedema. The level of sever acute malnutrition (SAM) was found to be 5.0 % (3.4 - 7.1 95% C.I.). Nine children were found to have nutritional pitting oedema (1.3 %). Such GAM and SAM is classified as Critical (according to the WHO classification of malnutrition).

Table 4.2 Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 688	**Boys** n = 338	**Girls** n = 350
Prevalence of global malnutrition (< 125 mm and/or oedema)	(103) 15.0 % (11.9 - 18.6 95% C.I.)	(43) 12.7 % (9.3 - 17.1 95% C.I.)	(60) 17.1 % (12.4 - 23.2 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(68) 9.9 % (7.8 - 12.5 95% C.I.)	(29) 8.6 % (6.1 - 12.0 95% C.I.)	(39) 11.1 % (7.9 - 15.5 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(35) 5.1 % (3.6 - 7.2 95% C.I.)	(14) 4.1 % (2.3 - 7.3 95% C.I.)	(21) 6.0 % (3.6 - 9.8 95% C.I.)

Based on MUAC cut-off GAM was 15.0%11.9 - 18.6 95% C.I) and SAM 5.1 %(3.6 - 7.2 95% C.I.). These GAM and SAM calculated by MUAC cut-off is also high. As it is indicated in table 4.2 and 4.3, the prevalence of acute malnutrition was high in young children than older counterpart and also unlike the z-score cut off points the GAM rate was high among girls than boys. Many studies revealed that MUAC identifies as malnourished more girls than boys, and also in young children than older counterparts[4][5], which is similar with finding of this surveys and previous surveys in the county and other counties in the state. MUAC is more predictive of morbidity and mortality than z-score, and the high GAM and SAM rate by MUAC in the county indicates critical nutritional situation in the county.

[4] *Indian Journal of Community Medicine, Vol. 35, No. 2, April-June, 2010, pp. 276-279*

[5] *European Journal of Clinical Nutrition* **66**, 998-1003 (September 2012) | doi:10.1038/ejcn.2012.95

Table 4.3: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	166	14	8.4	37	22.3	115	69.3	4	2.4
18-29	182	9	4.9	20	11.0	153	84.1	2	1.1
30-41	149	4	2.7	7	4.7	138	92.6	2	1.3
42-53	128	1	0.8	4	3.1	123	96.1	1	0.8
54-59	63	0	0.0	3	4.8	60	95.2	0	0.0
Total	688	28	4.1	71	10.3	589	85.6	9	1.3

As per depicted in table 4.4 below the number of children, using WHZ as admission criteria, who need admission to TFP and SFP are 1332 and 3568 respectively.

Table 4.5: Absolute number of children in need of TFP and SFP in Lopa Lafon County (u5 population 26630) using WHZ score and MUAC cut offs

Using WHZ score	6-59 months N (%)
Estimated number with SAM in need of TFP	**1332 (5%)**
Estimated number with MAM in need of SFP	**3568 (13.4%)**
Using MUAC cut off	**6-59 months N (%)**
Estimated number with SAM in need of TFP	**1358 (5.1%)**

4.6 *Mortality results (retrospective over 90 days prior to interview)*

A total of 3461 individuals were found in 560 sampled households for the mortality 90-days retrospective interview. There was 7 adult death and 3 U5 deaths reported during the mortality interview within the recall period. The perceived causes of U5 death were diarrhoea (1), difficulty of breathing (1), and fever/malaria (1). The Crude and Under-5 death rates were found to be 0.31 (0.16-0.61) (95% CI) and 0.44 (0.10-1.94) (95% CI) respectively. These Findings are well below the thresholds level for emergency based on Sphere standard.

Table 4.7.1.: Crude and under 5 Mortality rates, Lopa Lafon County, June2015

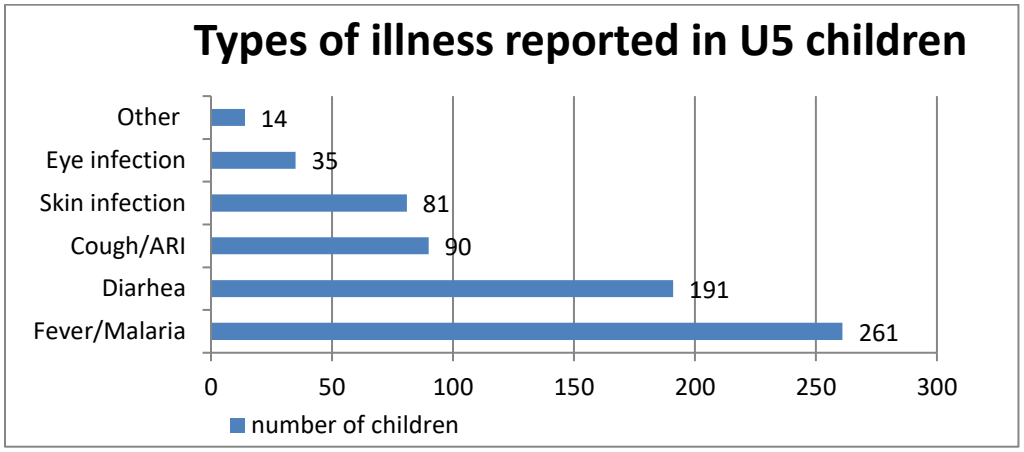
Indicator	Deaths/10,000/day	95% C.I

Crude Mortality Rate	0.31	**(0.16-0.61)**
Under five Mortality Rate	**0.44**	**(0.10-1.94)**

4.7 Children's morbidity (2 weeks prior to the survey)

Out of 685 of the total of 685 sampled children included in the survey, 63.9% (438) were reported to have been ill in the past two weeks prior to the survey date. The perceived cause of illness among the sick children were also assessed, fever/malaria diseases was the most reported illness with point prevalence of 37.9 %(261) and followed by diarrheal disease with prevalence of 27.8% (191). Malaria, diarrheal disease and ARI are among the leading cause of morbidity and mortality in sub-Saharan Africa that highly associated with acute malnutrition. The health seeking behavior of caretakers/mothers of sick children was assessed, and most of them (84%) reported they that look for one form of treatment for their sick children, and around 73.7% (323) reported that they had taken to the health facilities, while only 8.9% (39) reported seeking treatment from traditional doctors.

Fig .4. The five common illnesses of under five children in Lopa Lafon County



Mosquito net utilization at household level for the prevention of malaria among under five children was assessed by using the recalling of caretakers/mothers whether the child slept under the net the night before interviewing was conducted. Among the sampled children only 41% (282) reported sleeping under the net in the last night.

4.8 Vaccination and Vitamin A supplementation

Measles immunization coverage among under-five children in the past six month before the survey (using card and recall) was 53 % and while children supplemented with Vitamin A in the past six month was 50.5%

Table 4.8: Measles vaccination and Vitamin A supplementation coverage

Indicator	n	%	95% CI
Measles by card (9-59 months)	86	**13.01**	**10.2 - 15.3**
Measles by card and recall (9-59 months)	264	**39.9**	**34.8 - 42.2**
Vitamin A in last 6 months (6-59 months)	**347**	**50.5**	**46.7 - 54.3**

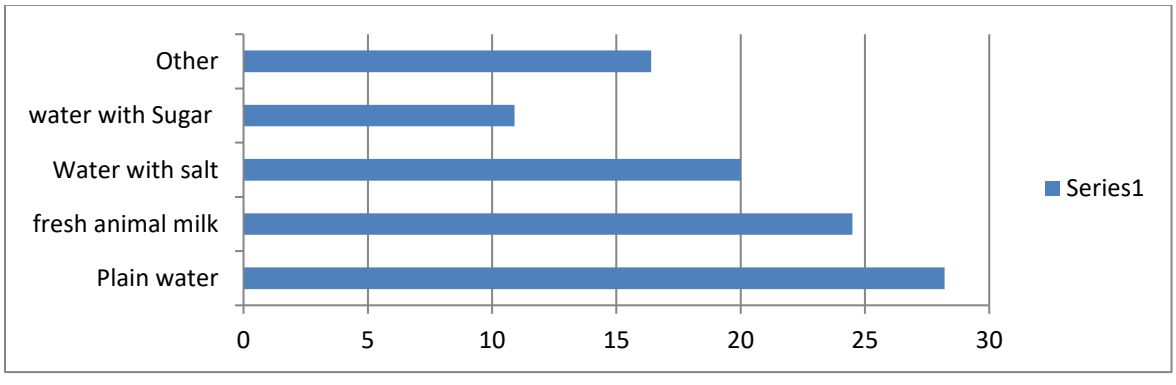
4.9 Infant and Young Child Feeding

4.9.1 Breast feeding practice

4 .9.1.1 Breast feeding initiation

Breast feeding is universal practice in Lopa Lafon County; nearly almost all children below 24 months were ever breastfed. The proportion of children that started breasting feeding within the recommended 1 hour of birth was 52%, while 22% of the children started breastfeeding after 24 hours and more. Majority of the children (75.8%) were given colostrum. According to the report from mothers 37.2% of the children were provided pre-lacteals food. The most common pre-lacteal foods that was given was plain water 33.7%, followed by animal milk (27.2%) and water with salt (23.9%).

Fig 5. pre-lacteal foods given to the children in the first days after birth in Lopa Lafon County -2015



4.9.1.2 Exclusive breast feeding

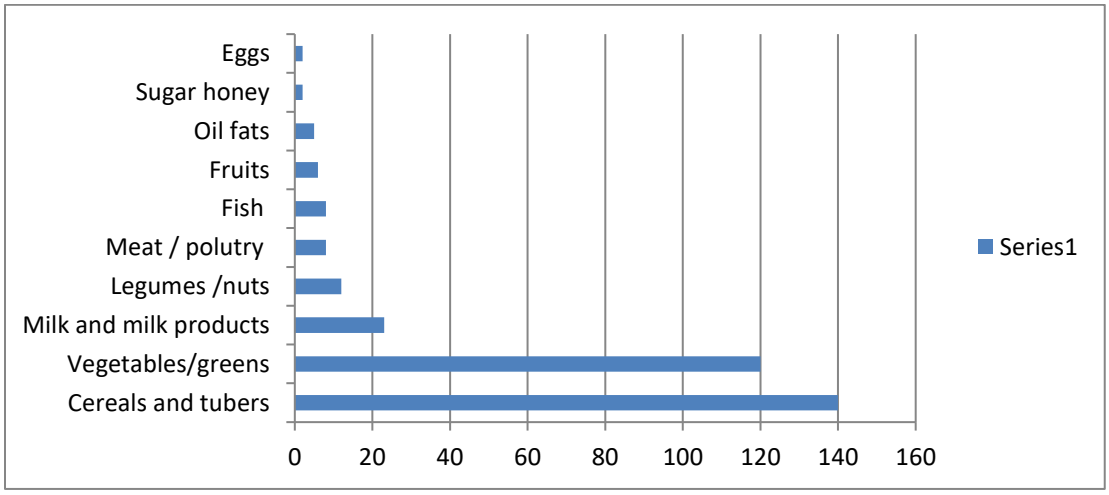
Exclusive breastfeeding is recommended in the first 6 month of age, however; it was revealed that only 36.2% of the children were exclusively breast fed in the first six month of age. The most common food that given to the children in the first six month of life is thin borage (63.1%) and animal milk (32.2%). Continuation of breastfeeding beyond 24 month of age is common practices in the surveyed community; from the total of the 293 sampled children of less than 24 months 270 (92.2%).

4.9.1.3 Complementary feeding practice

Beyond the age of six month breast milk only is not sufficient to meet the nutritional and energy requirement of infant, and they need start receiving food in addition to breast milk. As per this survey finding most of the children are introduced with food either while their age was below 6 months or late beyond six month, and only 31.1% of the children was reported starting food at age of six month, indicating timely initiation of complimentary feeding practices is poor among survey community.

Dietary diversity is good indicator of weather the children are getting adequate quantity and quality food that they need for their growth and developments. The more diversified their food is the lesser chance of becoming malnourished. As per indicated in the figure below, the most common food that they were fed using 24 hr recall period were cereal based foods and greens, while egg and meat based food are less frequently eaten, indicating that children are being fed commonly 2 types, and the food of the surveyed community is less diversified.

Fig. 6. Type of food given to the children in the past 24 hour

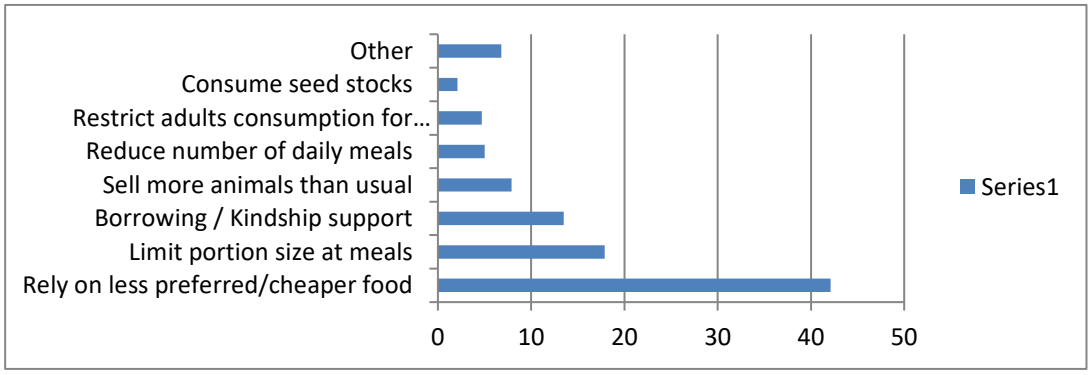


4.10 Food Security and Livelihood

Household level food security information was assessed in every sampled and visited, a total of 548 households were interviewed using structured household food security assessment questionnaire. From the total of the household included in the survey 22.3% was headed by female. The main source of income of household surveyed was own crop production (42.7 %) followed by sale of brewery which is about 18.8%. According to the finding of the survey about 95.8% of the household reported that they cultivated the last cultivation season, and about 38.9% households reported that they own livestock.

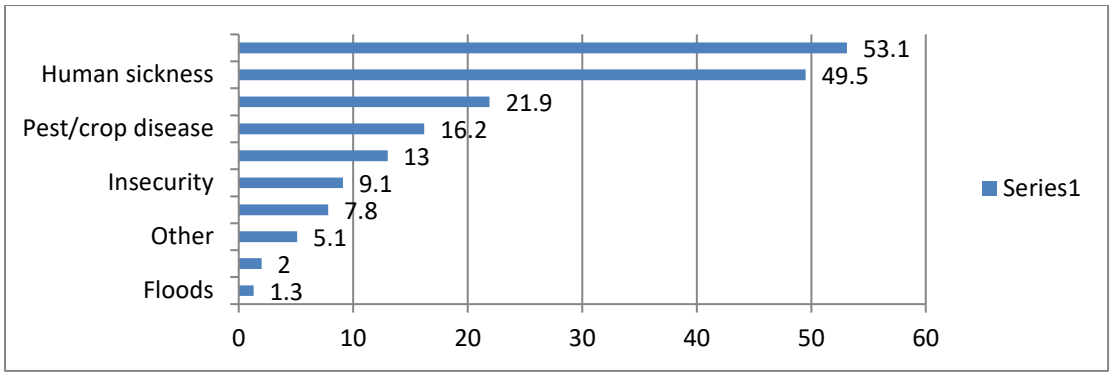
The main Households sources of food for the past 7 days the survey was own production (62.3%) followed by market 23.4%. more than half of the households (55%) reported that they had faced food shortage in the past one month prior to the survey. The main coping strategies of households faced shortage in the past one month were eating less preferred food (42.1%) and limiting daily food portion (17.9%).

Fig 7 Household coping strategy



The shock that household facing during the survey time was assessed in the study area and around 98.9% of households interviewed reported at least one shock that they were facing during the survey time. The most common stocks that were reported by most household were expensive food (53.1%) flowed by human sickness (49.5%) and delay of rain (21.9%).

Fig 8. The most common shocks reported by Households in Lopa Lafon



4.11 Water and Sanitation

Lack of access to adequately clean water and improved sanitation facilities leaves communities and individuals vulnerable to infections and disease which are closely linked to increased levels of undernutrition. Unsanitary water particularly has devastating effects on young children in the developing world each year, more than 2 million persons, mostly children less than 5 years of age, die of diarrheal disease. According to the finding of this survey, majority of the households are getting drinking water from borehole (69.8%), followed by stream/river (27.0%). All most all households reported that they drink water directly without chemically or physically treating the water (98.3%), only 1.7% reported using chlorination or boil the water before drinking.

According to the survey finding open excretal disposal was the most practice of the household visited, around 95.5 percent of the households reported using undesignated area as a toilet while only less than 1.3 percent of the sampled household use latrine as a toilet, this quit very low.

Hand washing is commonly practiced for different occasions in most households, but only 38.2% reported washing their hand after defecation, and 34.7 percent after cleaning the child faeces. Besides; the hand washing practices is not to the standard ,and most (67.7%) of them use only water during hand washing, and only 23.8% household use soap and water for hand washing.

5 Conclusion

The estimated prevalence of global acute malnutrition (<-2 z scores weight for height and/or oedema) was 18.4 %(14.8 - 22.6 95% C.I) and severe acute malnutrition (<-3 scores weight for height and/or oedema) was 5.0 % (3.4 - 7.1 95% C.I.) The current nutritional status of the county is classified as **'Critical'.** The current crop performance is very poor in most part of the county due to prolonged dry spell and erratic rain fall; the situation may farther deteriorate till September where the first harvest is expected.

The Crude mortality (CMR) and Under-5 death rates (U%MR) were found to be 0.31 (0.16-0.61) (95% CI) and 0.44 (0.10-1.94) (95% CI) respectively. These Findings are well below the thresholds level for emergency based on Sphere standard 1.0 and 2.0/10,000/day, and therefor rate is considered as normal.

The health condition of under five years children was very poor, and around 63.9% percent reportedly sick, fever/malaria is the leading cause of morbidity followed by diarrheal disease with prevalence rate of 37.9 %% and 27.8 % respectively. Access to primary health care services and health seeking behaviour of caretakers of sick children was good, indicating that 73.7% of sick children were taken to primary health care facilities.

As per the survey finding the preventive services coverage for U5 children was below the standard; measles vaccination and vitamin A supplementation coverages for U5 children were found 52.9% and 50.5% respectively; this is below recommended SPHER standard. The survey also revealed that only 41% of children slept under mosquito net, which may be the reason why fever/malaria is top perceived U5 morbidity reported in the area.

Breastfeeding practices and continuation breast feeding beyond 24 months is universal practices among the surveyed community, and majority of children were given colostrum. However; pre-lacteal feeding practices in the first days after the birth were given to 37.2% of the children and also exclusive breastfeeding and timely initiation of complimentary feeding practices in the area is sub-optimal compared to the recommended standard. More than half of the surveyed households (55%) reported that they had faced food shortage in the past one month prior to the survey.

The food security situation of Lopa Lafon County was precarious due to poor harvest of last harvest season and current erratic rainfall. More than half of the surveyed households (55%)

reported that they had faced food shortage in the past one month prior to the survey, and 53.1% reported expensive food as main shock they are currently facing. Though most of the household cultivated, considering the current crop performance due to erratic rain in the county, the food security situation may continue deteriorating without humanitarian intervention till September when the first harvest in the area is expected.

Sanitation and hygienic condition of the county is very poor. Open excretal disposal is the most common practices in the area, and only 1.3 % of the household use latrine. Hand washing after defecation was only practiced by 38.2% and only 23.8 percent of the households reported using soap for handwashing. Most of the households visited were physical or chemical treatment water before drinking it, and less than 2 percent of the study population were only treating water with chlorine. Poor sanitation and hygiene condition indicated vulnerability of surveyed community to water based and water washed diseases outbreaks like cholera which is one of the big treat with current outbreak within the country. be one main factor for the high prevalence of diarrheal disease, and contributing factor for high malnutrition rate observed in the county.

6 Annex:

6.1 Plausibility check for: SS_201506_Lopa Lafon County.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of in-range subjects)			0	5	10	20	**0** (0.3 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.647)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**2** (p=0.060)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (3)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Standard Dev WHZ	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	
.							
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	2	6	20	**0** (1.09)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (-0.16)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**3** (-0.45)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.013)
Timing	Excl	Not determined yet					
			0	1	3	5	
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**6** %

The overall score of this survey is 6 %, this is excellent.

6.2 **Selected clusters, Lopa Lafon , Jun 2015**

	Geographical unit	Population size	Cluster
Arihilo	Logonowati	3438	1
Arihilo	Lomirok	3041	2
Arihilo	Maitong	3493	3
Arihilo	Lodohori	4153	4
Burgilo	Ukwere	7616	5,6,7
Burgilo	Nyaada	1416	8
Burgilo	Taar	4031	RC
Burgilo	Burgilo	1532	9
Imehejek	Imahejek	1845	10
Imehejek	Imahejek	1834	11
Imehejek	Imahejek	4082	12
Imehejek	Imahejek	5941	13,14
Kurumi	kuji	2845	15
Kurumi	Adeba	3528	16
Kurumi	Ugwil	1970	17
Lohutok	Ofulugo	3602	18
Lohutok	Furolugo	6608	19,20
Lohutok	Ibahuro	3152	21
Lohutok	Muhuha	3423	22
Lohutok	Lohilang	2346	
Lohutok	Ibehe	3130	23
Lohutok	Ataranga	1747	24
Lohutok	Hidongi	3330	25
Lohutok	Hatalok	1487	26
Lohutok	Hiduai	2405	27
Longiro	Ihuju	5372	28
Longiro	Losaha	3899	29
Longiro	Mactong	1679	30
Marguna	Bwodo	4794	31
Marguna	Amiru	1890	32
Marguna	Pubuli	2631	33
Pachidi(Pacidi)	ungebe	5923	34,35