LAISAMIS SMART SURVEY

REPORT

SEPTEMBER 2015

ACKNOWLEDGEMENT

This survey has been carried out with the participation of many partners at different levels who are highly acknowledged. In particular, special thanks go to World Vision USA for funding the survey and WVK Kenya team for their active role in planning and implementing the exercise.

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The participation and contributions of various nutrition partners and stakeholders working in Marsabit County is highly appreciated.

Many thanks go to Laisamis community members especially the households which participated in the survey. The survey teams composed of the enumerators and team leaders are highly appreciated for their hard work of collecting quality data.

The local administrators are also acknowledged for their role in mobilizing the community and acting as guides to the enumerators during the exercise.

ACCRONYMS

BCG	*Bacillus Calmette–Guérin*
CNTF	County Nutrition Technical Forum
DHIS	District Health Information Systems
ENA	Emergency Nutrition Assessment
FECC	For Every Child Campaign
GAM	Global Acute Malnutrition
GS	Growth Standards
HDDS	Household Dietary Diversity Score
MOH	Ministry of Health
MUAC	Mid-Upper Arm Circumference
NGO	Non-Governmental Organization
NIWG	Nutrition Information Working Group
OPV	Oral Polio Vaccine
SAM	Severe Acute Malnutrition
SMART	Standardized Monitoring and Assessment of Relief and Transitions
SPSS	Statistical Package for Social Sciences
UNICEF	United Nations Children's Emergency Fund
WASH	Water Sanitation and Health
WHO	World Health organization
WVK	World Vision Kenya
SAM:	Severe Acute Malnutrition
UN:	United Nations
PPS:	Probability Proportional to Population Size
WAZ:	Weight-for-Age Z score
WASH:	Water, Sanitation and Hygiene
WFA:	Weight-for-Age
WHZ:	Weight-for-Height Z score

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EXCECUTIVE SUMMARY

Laisamis sub-county is one of the four sub-counties in Marsabit County (Saku, North Horr and Moyale). It has an area coverage of approximately 25,000 square km; 5,000 contributed by Lake Turkana. It borders Saku and North Horr sub-counties to the north, Samburu County to the south, Turkana to the North West and Wajir to the east. Its climate is generally arid characterized with low erratic rains, high temperature and desert adaptive vegetation.

Laisamis is sparsely populated with a total population of 39,558 of which 19.5% are children under five years of age while 6% are pregnant and lactating women (KNBS, 2009). Laisamis is a pastoral community relying on livestock for livelihood (DDP, 2008-2012).

The Sub - county experiences poor health and nutrition outcomes which are mainly attributed to chronic food insecurity at household level resulting from erratic rainfall and prolonged dry spells. According to the SMART Survey results for July 2014, Laisamis reported GAM rates of 18.2% which was an upward trend from SMART survey 2013 GAM rates of 16.9%. In order to assess the current malnutrition rates among children 6-59 months as well as among pregnant and lactating women, WVK Laisamis nutrition project supported in conducting the SMART survey. The survey was conducted as part of evaluation survey for WVK Laisamis nutrition project For Every Child Campaign Project (FECC) in addition to being part of on-going nutrition surveillance in Laisamis Sub - County. The timing of the survey was also to assess the impact of the long dry spell to health food and nutrition status in Laisamis community in order to inform programming and planning of interventions. The Survey was conducted from 1st to 10th September 2015.

The general objective of the survey was to determine the prevalence of malnutrition among the children aged 6- 59 months old, pregnant and lactating mothers in Laisamis Sub –County with the following specific objectives:

- To estimate the current prevalence of acute malnutrition in children aged 6 – 59 months
- To compare the overall nutritional changes with the previous GAM and SAM
- To determine the morbidity rates amongst children aged 0-59 months over a two week recall period
- To estimate the coverage of Measles, BCG vaccination and deworming for children 9-59 months, 6-59 months and 12-59 months respectively
- To determine the coverage for zinc supplementation, MNP's supplementation and vitamin A supplementation among the children 6-59 months.
- To estimate the nutritional status of female caregivers aged 15-49 years using MUAC measurements
- To assess household food security
- To assess water sanitation and hygiene practices

The survey applied a two stage stratified cluster sampling using the SMART methodology with the clusters being selected using the probability proportional to population size (PPS). Stage one sampling involved the sampling of the clusters which were included in the survey while the second stage sampling involved the selection of the households from the sampled clusters.

The total sample size was 437 children aged between 6 and 59 months from 619 households. Data was collected by 7 Teams. Data was collected using smart phones with ODK collect software. The data collected during the survey included: household demographic valuables, anthropometry, morbidity, vaccination and de-worming status, Zinc, Vitamin A and Iron Folate supplementation, hygiene and sanitation practices and household food security indicators. The standard data collection tool recommended by the National Nutrition Information Working Group was used.

All the 35 sampled clusters were visited. In total 595 households were reached out of which 449 children aged 6 to 59 months were assessed for anthropometry. Anthropometric data was analyzed using the ENA software version (Nov, 2013) while other indicators were analyzed using SPSS Version 20.0
The table below presents the summary of the key finding

Table 1: Summary of Survey Findings

Indicators	Coverage
Clusters	**35**
HHs covered	595
Children assessed	449
Nutritional Status (6 – 59 months) Weight- for-Height Z – scores (Wasting) WHO 2006 Standards	
Global Acute Malnutrition (<-2 Z-score)	23.7 % (95% C.I: 18.6 - 29.6)
Severe Acute malnutrition (<-3 Z-score)	6.5 % (95% C.I: 4.4 - 9.5)
Nutritional Status (6 – 59 months) Weight- for-Age Z – scores (Underweight) WHO 2006 Standards	
Prevalence of Global Underweight (<-2 Z-score)	32.7 % (95% C.I: 26.6 - 39.5)
Nutritional Status (6 – 59 months) Height- for-Age Z – scores (Stunting) WHO 2006 Standards	
Prevalence of Global Stunting (<-2 Z-score)	25.9 % (95% C.I: 21.1 - 31.3.)
Immunization Coverage (6-59 months)	
Measles Coverage at 9 Months	90.2%
BCG by scar	90.2%
OPV 1	97.4%
OPV 3	93.5%
Zinc Supplementation	42.9%,
Vitamin A (6 – 11 months- once)	61.1%
Vitamin A (12 – 59 months) –more than twice	45.3%
Vitamin A (12 – 59 months- once)	30.5%
Deworming (12-59 months)	45%
Child Morbidity (6 – 59 months)	
Sickness two weeks prior to survey	41.5%
Acute Respiratory Infection	67.6%
Fever	38.3%
Watery diarrhoea	10.6%
Others	9.0%
Maternal Health and Nutrition	
Maternal MUAC <21cm	19%

Maternal MUAC (21 < 23 cm)	36%
Iron Folate Supplementation < 90 days	75.4%
Iron Folate Supplementation > 90 days	24.6%
Household Food Consumption	
Food Consumption Score (FCS) Poor FCS Border FCS Good FCS	 8% 15% 77%
Dietary diversity < 3 food groups 4 food groups and above	 28.2% 71.8%
Water, Hygiene and Sanitation (WASH)	
Water sources Protected source(safe sources) Unprotected source(unsafe sources)	 53% 47%
Sanitation Open defecation Shared latrine Own latrine	 86.2% 8.2% 5.4%
Water treatment	5%
Hand washing at four critical times	2%

The results of the survey showed that the nutrition situation in Laisamis had deteriorated. Global acute malnutrition (GAM) levels were classified as very critical. The malnutrition levels although high were in harmony to the seasonal context since the survey was conducted at the peak of long dry spell.

The high malnutrition levels could be attributed to food insecurity as a result of drought. During field work, it was observed that there was inadequate food consumption at household level. The survey results showed that coping strategy index (CSI) was at 21.2 meaning the sampled population was engaging in different coping mechanisms. Further, the cost of food especially milk was reported to have increased as well as cost of cereals. Milk production was low because animals had migrated to far places in search for water and green pastures with many households producing less than a liter per day hence relying on purchased packet milk from the shops.[1] This is crucial in Laisamis since majority of children less than five years depend on milk as a staple food.

The high GAM rate would also be attributed to increased morbidity particularly the prevalence of diarrhea and diseases of respiratory infection which could also have been linked to the poor accessibility to nutrition programs and health services.

Based on the finding of the survey several recommendations were given. The immediate actions needed included conducting extensive mass screening of all children below five years using both weight-for-height and MUAC criteria to maximize on the opportunity and conducting targeted integrated outreach services in hotspots areas.

[1] Marsabit County NDMA Drought early warning bulletin for September 2015

The County Department of Health and implementing partners need to focus on behavior change programs to help promote the consumption of the least consumed food groups such as eggs, fish, fruits, and vegetables. The department should further strengthen health education on the importance deworming, vitamin A, Iron folate and zinc supplementation. Health education targeting WASH activities should be conducted as well as designing projects on Behavior change targeting proper human waste disposal and water treatment.

Finally there is need to invest in value addition technologies for livestock and livestock products and further design projects to help improve food security at household level

CHAPTER ONE

INTRODUCTION

1.1 Background information

Laisamis sub-county is one of the four sub-counties in Marsabit County (Saku, North horr and Moyale). It has an area coverage of approximately 25,000 square km; 5,000 contributed by Lake Turkana. It borders Saku and North horr sub-counties to the north, Samburu County to the south, Turkana to the North West and Wajir to the east. Its climate is generally arid characterized with low erratic rains, high temperature and desert adaptive vegetation.

Laisamis is sparsely populated with a total population of 39,558 of which 19.5% are children under five years of age while 6% are pregnant and lactating women (KNBS, 2009). Laisamis is a pastoral community relying on livestock for livelihood (DDP, 2008-2012).

The Sub - county experiences poor health and nutrition outcomes which are mainly attributed to chronic food insecurity at household level resulting from erratic rainfall and prolonged dry spells. Other contributing factors to high malnutrition levels are sub-optimal child care and feeding practices, poor practices related to hygiene and sanitation, negative cultural beliefs and low access to essential health services as result of poor infrastructure. In efforts to improve the health and nutrition status in the Sub- County various partners have been working with the Ministry of Health (MoH) in the implementation of High Impact Nutrition Interventions (HiNi). For instance World Vision Kenya Laisamis nutrition project has been supporting in implementation of HiNi services in Laisamis Ward, Korr/ Ngurnit Ward and Logologo ward while Food for the Hungry Kenya (FHK) has been supporting the same activities in Loiyangalani/ Gatab ward and Kargi/ South Horr wards. Other partners involved in implementation of various health food and nutrition activities in Laisamis include UNICEF, Kenya Red Cross, World Food Programme (WFP), GAIN, Aphia Plus Imarisha and Concern worldwide.

Figure 1 Map of Marsabit County

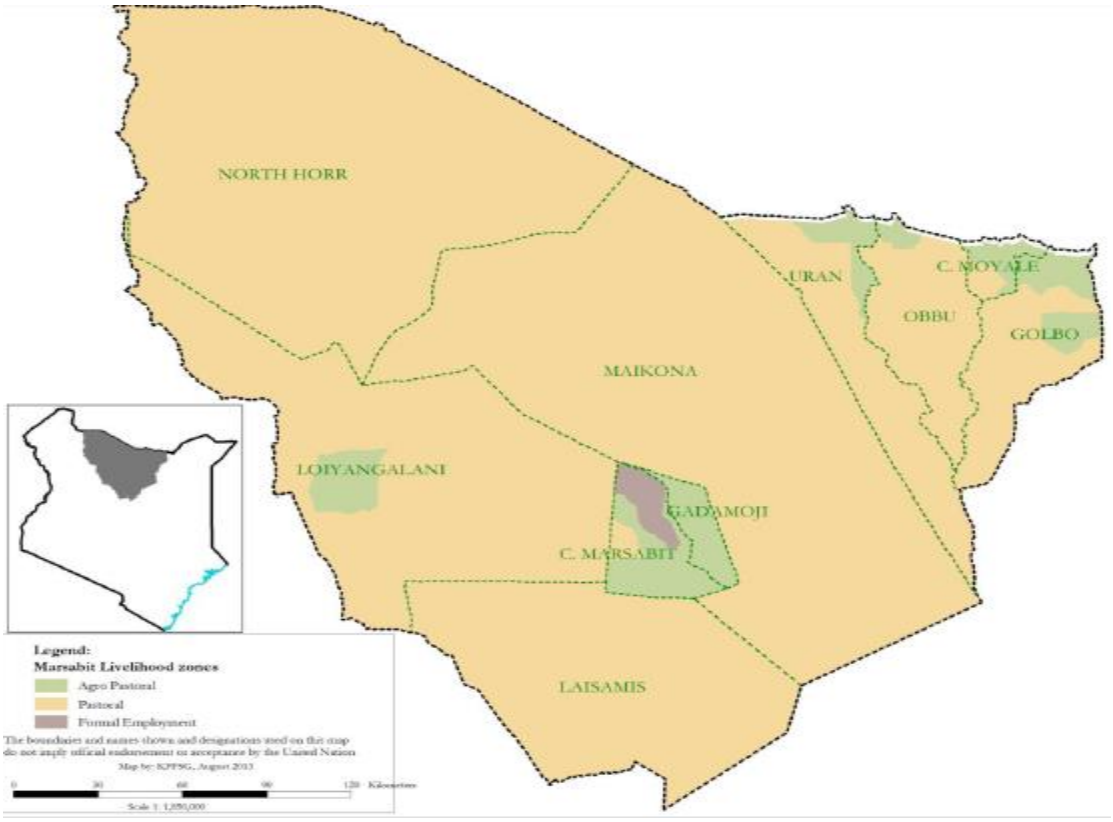
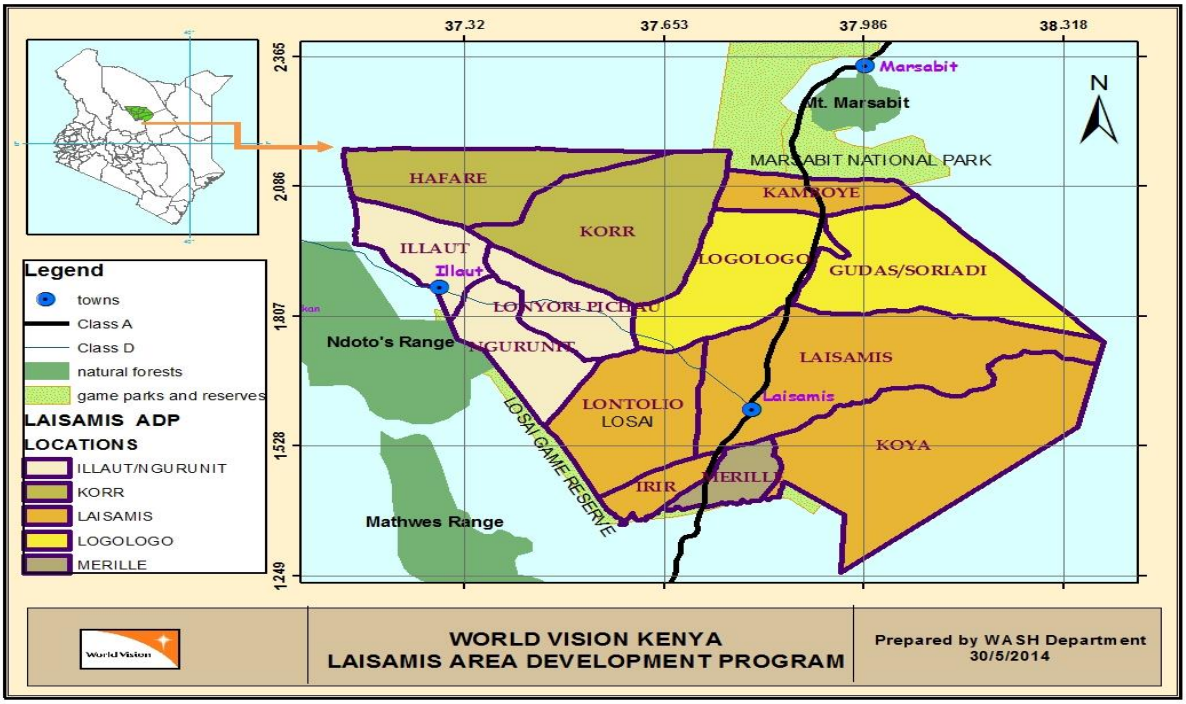


Figure 2 WVK Laisamis Operation Area



1.2 Rationale for conducting the survey

The survey was conducted as part of evaluation survey for WVK Laisamis nutrition project in addition to being part of on-going nutrition surveillance in Laisamis Sub - County. The SMART Survey results for July 2014 reported critical GAM rates of 18.2% which was an upward trend from SMART survey 2013 GAM rates of 16.9%. This survey would assess the current malnutrition rates among children 6-59 months in the Sub- County as well as among pregnant and lactating women. The timing of the survey was also to assess the impact of the long dry spell to health food and nutrition status in Laisamis community in order to inform programming and planning of interventions.

1.3 Objectives of the survey

The overall objective of the survey was to determine the prevalence of malnutrition among the children aged 6- 59 months old, pregnant and lactating mothers in Laisamis Sub -County.

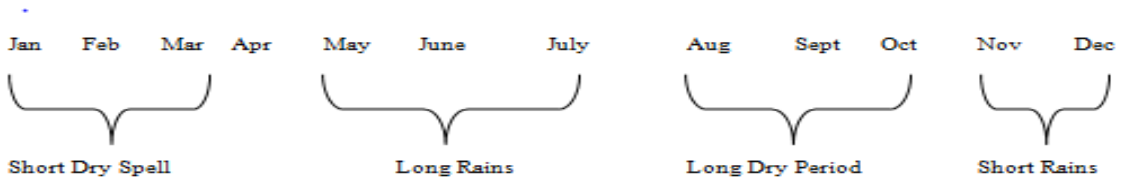
The specific objectives of the survey were;

- To estimate the current prevalence of acute malnutrition in children aged 6 – 59 months
- To compare the overall nutritional changes with the previous GAM and SAM
- To determine the morbidity rates amongst children aged 0-59 months over a two week recall period
- To estimate the coverage of Measles, BCG vaccination and deworming for children 9-59 months, 6-59 months and 12-59 months respectively
- To determine the coverage for zinc supplementation, MNP's supplementation and vitamin A supplementation among the children 6-59 months.
- To estimate the nutritional status of female caregivers aged 15-49 years using MUAC measurements
- To assess household food security
- To assess water sanitation and hygiene practices

1.4 Timing of the Survey

The survey was conducted in the month of September 2015 at the height of dry season as shown in the seasonal calendar below. Training and piloting of the survey materials and standardization test was conducted from 1st to 4th September and thereafter data collection took six days from 5th September 2015.

1.5 Seasonal Calendar



CHAPTER TWO
METHODOLOGY

2.1 Geographic Target Area and Population Group
The survey was conducted in the Laisamis Sub County. The primary respondents for the survey were mothers /care takers of children for both household and child questionnaire

Data was collected on the following variables; anthropometry, morbidity, vaccination and de-worming status, Zinc, Vitamin A and Iron Folate supplementation, hygiene and sanitation practices. Other indicators assessed were household food security and livelihood and nutritional status of both children aged 6 – 59 months and women aged 15 – 49 years.

2.2 Survey Design
The survey applied a two stage cluster sampling with the clusters being selected using the probability proportional to population size (PPS).The villages constituted the sampling frame.

2.3 Study Population
The target population for the survey was children aged 6 – 59 months for the anthropometric component and women of reproductive age between 15 – 49 years for the maternal health component

2.4 Anthropometric Sample Size
The anthropometric survey sample size was calculated using the SMART survey calculator. The parameters of interest were captured in the ENA July 9th 2015 software and the respective number of children and households required for the survey computed as shown in the table below. The sampling frame for this survey was the updated list of villages (with current projected population) from the survey area.

Table 2: Anthropometric Sample Size Calculation

Data entered on ENA software	Anthropometric values	Rationale
Estimated prevalence	18.2%	From SMART survey 2014
Desired precision	4.5%	Based on anticipated prevalence and comparison with previous weighted results
Design effect	1.4%	From SMART survey 2014
Average household size	4.9	DHIS estimates
% of under five children	16.5%	DHIS estimates
% of non-respondent	3	Based on 2014 Smart survey experience
Households to be included	619	
Children to be included	437	

2.5 Cluster and Household Selection

All villages were included in the initial sample selection with each village considered a cluster which was sampled with probability proportional to size. At stage two each team used the simple random sampling method in household selection. Within the selected households all children 6-59 months meeting the inclusion criteria were measured.

A household was defined as a group of people who lived together and shared a common cooking pot. In polygamous families with several structures within the same compound but with different wives having their own cooking pots, the structures were considered as separate households and assessed separately.

In cases where there was no eligible child, a household was still considered part of the sample. If a respondent was absent during the time of household visit, the teams left a message and re-visited later to collect data for the missing person, with no substitution of households allowed.

2.6 Variables Collected

Age: the age of the child was recorded based on a combination of child health cards, the mothers'/caretakers' knowledge of the birth date and use of a calendar of events for the district developed in collaboration with the survey team.

Sex: The gender of the child whether a male or female was recorded

Bilateral Edema*:* normal thumb pressure was applied on the top part of both feet for 3 seconds. If pitting occurred on both feet upon release of the fingers, nutritional oedema was indicated.

Weight: Children were weighed when wearing minimal or light clothing. Weight was taken using Bathroom scales (SECA digital model) with a threshold of 150kgs and recorded to the nearest 0.1kg.

Length/Height: children were measured bareheaded and barefooted using wooden UNICEF height boards with a precision of 0.1cm. Children under the age of two years were measured while lying down (length) and those over two years while standing upright (height). If child age could not be accurately determined, proxy heights were used to determine cases where height would be taken in a supine position (<87cm) or in an upright position (≥87cm).

Mid Upper Arm Circumference (MUAC): MUAC of children were taken at the midpoint of the upper left arm using a MUAC tape and recorded to the nearest 0.1cm.

Retrospective Morbidity of Children: A 2-week morbidity recall was conducted for all children (6-59 months) to assess the prevalence of common diseases (e.g. malaria, diarrhea, upper respiratory infection (URTI)).

Vaccination Status and Coverage:

For all children 6-59 months, information on BCG, Oral polio Vaccine (OPV) 1, OPV 3 and measles vaccination was collected using health cards and recall from caregivers. The vaccination coverage was calculated as the proportion of children immunized based on card and recall.

Vitamin A Supplementation Status: For all children 6-59 months of age, information on Vitamin A supplementation was collected using the child welfare cards and recall from caregivers. Information on whether the child had received supplementation in the last 6 months was collected. Vitamin A capsules were also shown to the mothers to aid in recall.

De-worming Status: Information was solicited from the care takers as to whether their child/children 6-59 months had been de-wormed in the last 6 months.

Household Food Diversity: Dietary diversity is a qualitative measure of food consumption that reflects household access to a wide variety of foods, and is also a proxy of the nutrient intake adequacy of the diet for individuals. Dietary diversity scores were created by summing the number of food groups consumed over a 7- days period to aid in understanding if and how the diets are diversified. Household dietary diversity score (HDDS) is meant to reflect, in a snap shot the economic ability of a household to consume a variety of foods. A score of 1 was allocated to each food group that was consumed by the household per day and a score of 0 for each of the food groups not consumed by the household, and thus the highest possible score per day was 16.

Household Water Consumption and Utilization: The indicators used were main source of drinking and household water, time taken to water source and back, cost of water per 20-litre jerry-can and treatment given to drinking water.

Sanitation: Information on household accessibility to a toilet/latrine, disposal of children's faeces and occasions when the respondents wash their hands was obtained.

2.7 Organization of the Survey

- **Coordination/Collaboration:** before the survey was conducted meetings were held with the county authorities and key stakeholders briefed them about the purpose, objectives and methods for the survey. The survey details were discussed with the County Steering Group, County Nutrition Technical Forum, County Information Working Group and conducted in collaboration with the County and Sub-County Health Offices. The authorities were requested to officially inform the communities (villages) that were involved in the assessment.
- **Recruiting the Survey Team:** recruitment was done in collaboration with the Ministry of Health office at the sub-county level in order to give ownership and participation in the assessment.
- **Training of the Survey Team:** the teams were given 4-days training prior to field work, including a standardization test to ensure standardization of measurement and recording

practice. All data collectors were trained on taking anthropometric measurements, completion of questionnaires, sampling methodology and mobile data collection. The data collection was pilot tested in clusters not selected to be part of the larger survey, to ensure that the interviewers and respondents understand the questions and that interviewers follow correct protocols. The pretest data was uploaded in the server for the supervisors to know how to upload and data presentation. Three facilitators one from MOH and two from WVK conducted the training.

- **Team work in the field:** The teams each with three members who have experience in data collection were organized/ selected from the survey area with each team consisting of a team leader, interviewer and measurer. In addition, supervisors from World Vision and MoH partners closely supervised the team throughout the survey. In moving from one randomly selected household to another, the teams were guided by a village leader, or a community volunteer, depending on the village and who was available.

2.8 Case Definition

The Global Acute Malnutrition (GAM) is the index which is used to measure the level of wasting in any given population. In this survey, GAM was defined as the proportion of children with a z-score of less than -2 z-scores weight-for-height and/or presence of bilateral oedema. Severe Acute Malnutrition (SAM) was defined as the proportion of children with a z-score of less than -3 z-score and/or presence of oedema. Further, using the mid-upper arm circumference (MUAC), GAM was defined as the proportion of children with a MUAC of less than 125 mm and/or presence of oedema while SAM was defined as the proportion of children with a MUAC of less than 115 mm and/or presence of oedema.

2.8.1 Malnutrition by Z-Score: WHO (2006) Standard

- Severe acute malnutrition is defined by WFH < -3 SD and/or existing bilateral edema on the lower limbs
- Moderate acute malnutrition is defined by WFH < -2 SD and >-3 SD and no oedema
- Global acute malnutrition is defined by WFH < -2 SD and/or existing bilateral oedema

2.8.2 Malnutrition by MUAC

- Severe malnutrition is defined by MUAC<115 mm and/or presence of bilateral oedema
- Moderate malnutrition is defined by MUAC < 125 mm and ≥115 mm and no oedema
- Global acute malnutrition is defined by MUAC <125 mm and/or existing bilateral oedema

2.9 Questionnaire

The survey adopted the data collection tools recommended by the Nutrition Information Working Group but converted to Open Data Kit (ODK) format to enable data collection using android phones

2.10 Data uploading, Analysis and Report Writing

- **Data Uploading:** the data uploading was done on daily basis, downloaded on excel format and analysis was done using ENA for SMART and SPSS Statistical software. The

World Vision Nutrition Project manager and Monitoring and Evaluation Officer were responsible for the downloading data from the server and analysis. They were also responsible for report writing. Results are presented using the new WHO reference levels.

- **Preliminary Results and Final Report:** the preliminary findings were submitted for validation to Nutrition Information Working Group (NIWG) at County and National levels after completion of the survey fieldwork. The report included the prevalence of global acute malnutrition as well as the prevalence of moderate and severe acute malnutrition, vaccination and other key findings.

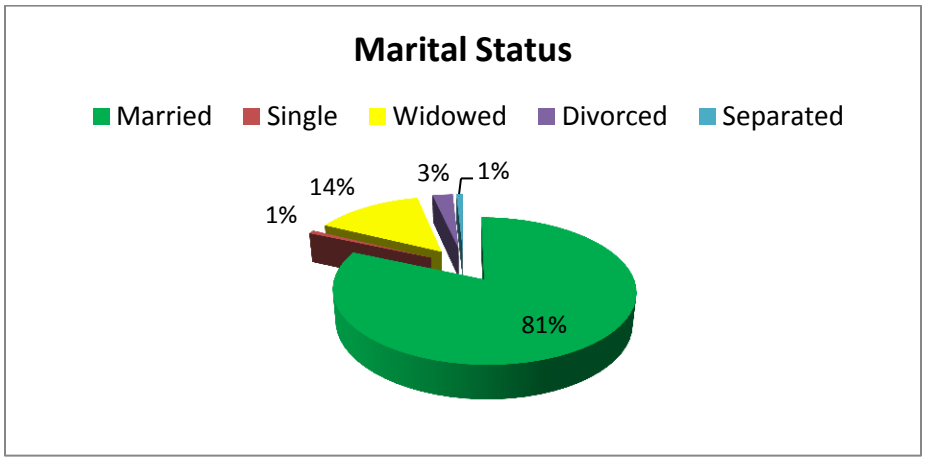
CHAPTER THREE
SURVEY RESULTS AND DISCUSSION

3.1 Household Demographic Characteristics

3.1.1 Marital Status and Residency

All the respondents interviewed were resident of Laisamis Sub County. Majority of them were married (81%) and 14% were widowed as shown in the figure below.

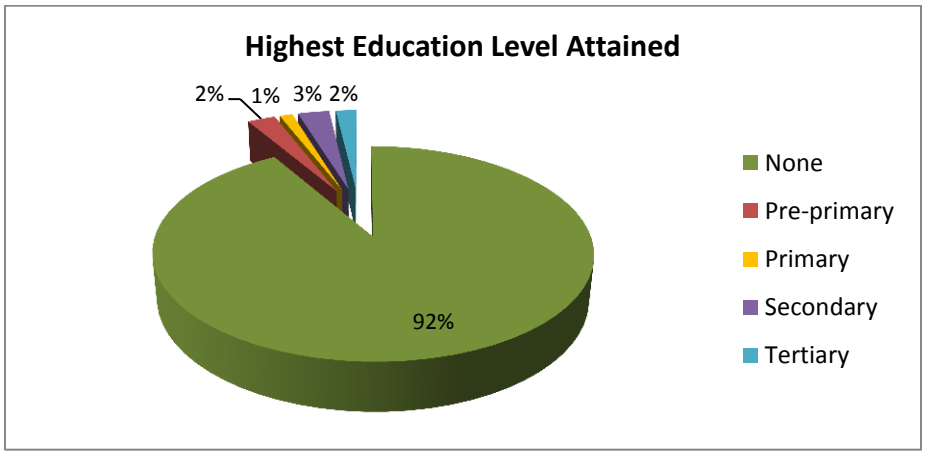
Figure 3: Marital status of the respondents



3.1.2 Highest Education Level Attained

Literacy levels in Laisamis are quite low. From the survey, 92% of the respondents said their household head had not acquired any formal education. The proportion for those who had attained secondary and tertiary education was 3% and 2% respectively as shown in the figure below

Figure 4: Highest level of education attained



3.2 Distribution of Children by Age and Sex

Among 449 children surveyed in Laisamis 47 percent were boys and 53 percent were girls. The survey attained a boy: girl sex ratio of 0.9 which is within the estimated range of 0.8-1.2 with a p-value of 0.233. This means that the boys and girls were equally represented an indication of unbiased sample. The sex ratios across majority of the child age groups were also within the accepted range except that of 6-17 and 30-41 months whose ratio of boys to girls was unbalanced at 1.3 and 0.7 respectively. Age distribution was also within recommended ranges except 54 – 59 months which was at 5.6 and could be attributed to older children being away from home during the survey.

Table 3: Distribution of age and sex

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	73	56.2	57	43.8	130	29.0	1.3
18-29	48	43.2	63	56.8	111	24.7	0.8
30-41	45	40.2	67	59.8	112	24.9	0.7
42-53	33	46.5	38	53.5	71	15.8	0.9
54-59	12	48.0	13	52.0	25	5.6	0.9
Total	211	47.0	238	53.0	449	100.0	0.9

3.3 Nutritional Status of Children Under Five Years

Global acute malnutrition (GAM) is defined as <-2 z scores weight-for-height and/or oedema. GAM is a combination of Moderate Acute Malnutrition and Severe Acute Malnutrition. Moderate Acute Malnutrition is defined as Scores of <-2SD and >-3SD while Severe Acute Malnutrition is defined as <-3z scores weight-for-height and/or oedema

The Weight for Height index is the most appropriate index to quantify wasting in a population and reflects the current nutrition/health status of the community. The weight for height index measures body mass in relation to height or length and describes the current nutritional status. Children below standard deviations of below the mean indicate wasting and represent failure to receive adequate nutrition in a period immediately preceding the survey.

The information presented here is based on the analyzable sample of eligible children whose plausible anthropometric data were collected, excluding those that were SMART flagged.

3.3.1 Prevalence of acute malnutrition (weight-for-height z-score –WHO Standards 2006)

The Global Acute Malnutrition rates were at 23.7% (95% C.I: 18.6 - 29.6) which according to WHO classification indicates a very critical nutrition situation. The prevalence of SAM was at 6.5% (95% C.I: 4.4 - 9.5 95%) with more boys being severely malnourished as compared to girls. This was attributed to poor feeding of boys plus their high energy usage as they spent most of

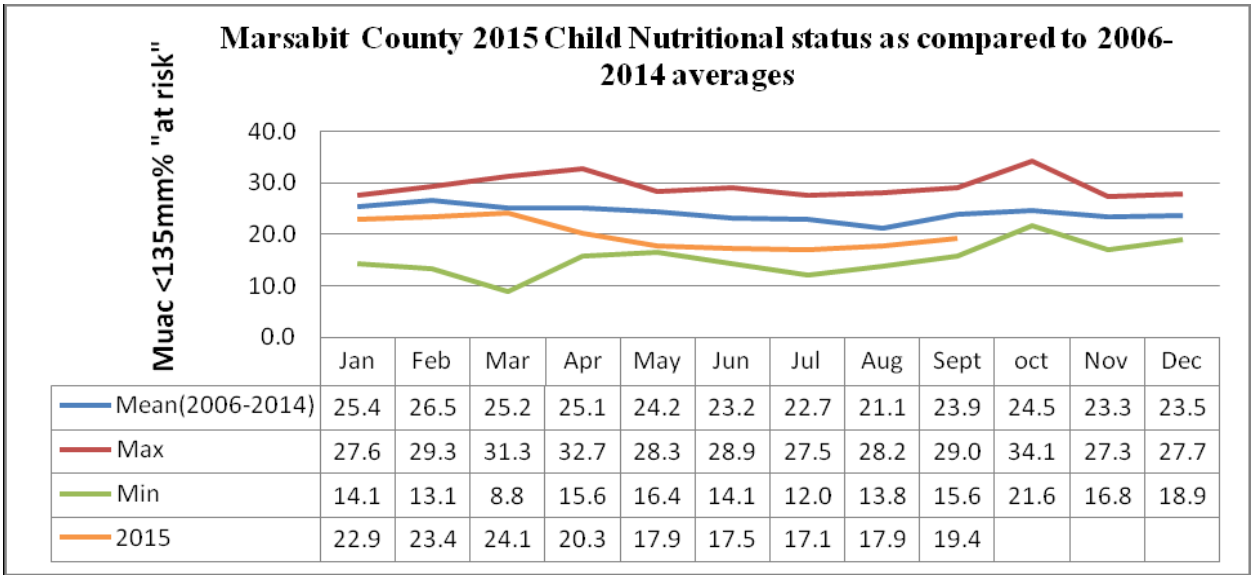
their daytime away in the field playing or accompanying older boys who were herding as compared to girls whose movement was within the Manyattas (home steads).
Only one case of edema was found.

Table 4: Prevalence of acute malnutrition based on WHZ (and/or oedema)

	All n = 448	**Boys** n = 211	**Girls** n = 237
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(106) 23.7 % (18.6 - 29.6 95% C.I.)	(59) 28.0 % (21.9 - 34.9 95% C.I.)	(47) 19.8 % (13.3 - 28.5 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(77) 17.2 % (13.4 - 21.8 95% C.I.)	(38) 18.0 % (13.8 - 23.1 95% C.I.)	(39) 16.5 % (10.6 - 24.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(29) 6.5 % (4.4 - 9.5 95% C.I.)	(21) 10.0 % (6.5 - 14.9 95% C.I.)	(8) 3.4 % (1.5 - 7.4 95% C.I.)

The malnutrition levels although high were in harmony to the seasonal context since the survey was conducted at the peak of long dry spell. Deterioration of nutrition status had gradually progressed as from July 2015. Secondary data review of NDMA data showed that there had been an increase in proportion of children within 12 to 59 months at risk of malnutrition with an average of 19.4% reported in September 2015 up from 17.1% in July 2015 as shown below

Figure 5: Monthly MUAC Status[2]

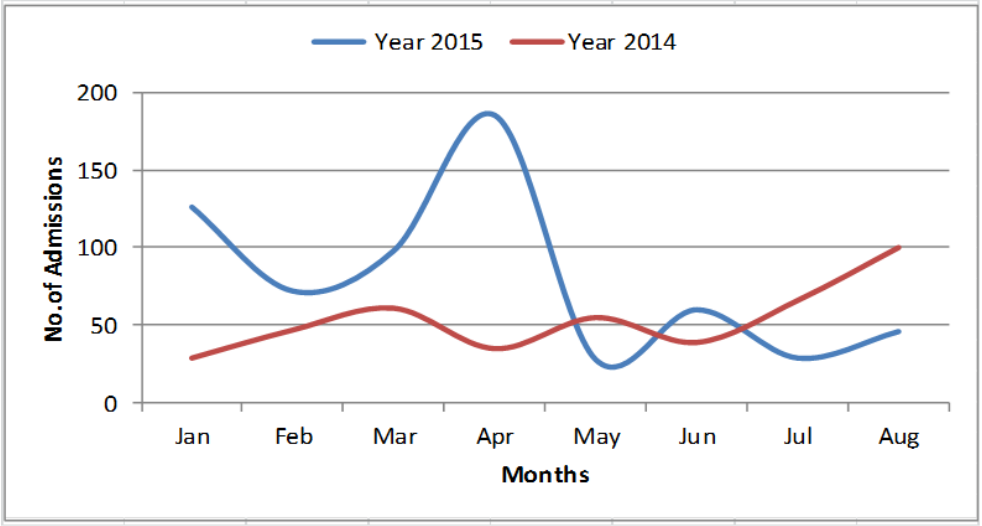


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	oct	Nov	Dec
Mean(2006-2014)	25.4	26.5	25.2	25.1	24.2	23.2	22.7	21.1	23.9	24.5	23.3	23.5
Max	27.6	29.3	31.3	32.7	28.3	28.9	27.5	28.2	29.0	34.1	27.3	27.7
Min	14.1	13.1	8.8	15.6	16.4	14.1	12.0	13.8	15.6	21.6	16.8	18.9
2015	22.9	23.4	24.1	20.3	17.9	17.5	17.1	17.9	19.4			

Further analysis of admission trend of SAM cases to outpatient therapeutic program showed upward trend from month July onwards for year 2014 and 2015 as shown in the figure below

[2] Marsabit County NDMA Drought early warning bulletin for September 2015

Figure 6: Laisamis OTP Admission Trend 2014/2015[3]



The high malnutrition levels could be attributed to food insecurity as a result of drought. During field work, it was observed that there was inadequate food consumption at household level. This was proven by result of coping strategy index (CSI) which was at 21.2 meaning the sampled population was engaging in different coping mechanisms.

The cost of food especially milk was reported to have increased as well as cost of cereals. Milk production was low because animals had migrated to far places in search for water and green pastures with many households producing less than a liter per day hence relying on purchased packet milk from the shops.[4] This is crucial in Laisamis since majority of children under 5years depend on milk as a staple food.

The high GAM rates would also be attributed to increased morbidity particularly the prevalence of diarrhea and diseases of respiratory infection which could also have been linked to the poor accessibility to nutrition programs and health services.

3.3.2 Prevalence of acute malnutrition by age (based on WHZ and/or oedema)

Children of age group between 42-59 months seems to be more affected by severe wasting while the ones in age group 30-41 and 54-59 months were more affected with moderate malnutrition.

Table 5: Prevalence of acute malnutrition by age based on WHZ

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**

[3] Kenya Health Information System, DHIS2
[4] Marsabit County NDMA Drought early warning bulletin for September 2015

(months)							
6-17	129	6	4.7	16	12.4	107	82.9
18-29	111	8	7.2	14	12.6	89	80.2
30-41	112	6	5.4	29	25.9	77	68.8
42-53	71	6	8.5	8	11.3	56	78.9
54-59	25	2	8.0	10	40.0	13	52.0
Total	448	28	6.3	77	17.2	342	76.3

3.3.3 Distribution of acute malnutrition and edema based on WHZ

The survey found twenty eight children who were severely wasted (marasmic) and were referred to the nearest health facilities to be admitted in the IMAM program. The table below shows that there were no kwashiorkor cases found.

Table 6: Distribution of acute malnutrition and oedema based on WHZ

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 28 (6.2 %)	Not severely malnourished No. 420 (93.5 %)

3.3.4 Prevalence of acute malnutrition based on MUAC (and/or oedema) and by sex

MUAC is the best indicator for mortality and is used in the community (for screening) to identify individual children in need of referral and as an admission criterion for feeding programs. MUAC directly measures thinness (or fatness).

As seen in the table 3.5 below, the prevalence of global malnutrition based on MUAC was 3.8% from which the prevalence of moderate acute malnutrition based on MUAC was 2.9% while severe acute malnutrition prevalence was 0.9%. Boys were noted to be more affected by severe malnutrition than girls.

Table 7: Prevalence of acute malnutrition based on MUAC

	All n = 449	**Boys** n = 211	**Girls** n = 238
Prevalence of global malnutrition (< 125 mm and/or oedema)	(17) 3.8 % (2.3 - 6.1 95% C.I.)	(9) 4.3 % (2.1 - 8.6 95% C.I.)	(8) 3.4 % (1.8 - 6.3 95% C.I.)
Prevalence of moderate	(13) 2.9 %	(6) 2.8 %	(7) 2.9 %

malnutrition (< 125 mm and >= 115 mm, no oedema)	(1.7 - 4.8 95% C.I.)	(1.3 - 6.2 95% C.I.)	(1.4 - 6.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(4) 0.9 % (0.4 - 2.2 95% C.I.)	(3) 1.4 % (0.5 - 4.2 95% C.I.)	(1) 0.4 % (0.1 - 2.9 95% C.I.)

3.3.5 Prevalence of acute malnutrition by age based on MUAC and/or edema

Severe wasting by MUAC was found to be more prevalent among children of age 6-17 months. Moderate malnutrition was more prevalent among children 6-29 months and 54-59 months.

Table 8: Prevalence of acute malnutrition by age based on MUAC 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	130	2	1.5	6	4.6	122	93.8	0	0.0
18-29	111	0	0.0	4	3.6	107	96.4	0	0.0
30-41	112	1	0.9	0	0.0	111	99.1	0	0.0
42-53	71	0	0.0	2	2.8	69	97.2	1	1.4
54-59	25	0	0.0	1	4.0	24	96.0	0	0.0
Total	449	3	0.7	13	2.9	433	96.4	1	0.2

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

Underweight is measured by weight for age and reflects acute and chronic malnutrition[5]. As seen in table 3.7 below, the global underweight rates for Laisamis Sub County is very high at 32.7% which is significantly higher compared to the national rate of 11% (KDHS 2014). Boys seemed to be more underweight than girls. The overall prevalence of underweight as compared to 2014 showed no significant change.

Table 9: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 446	**Boys** n = 210	**Girls** n = 236
Prevalence of underweight (<-2 z-score)	(146) 32.7 % (26.6 - 39.5 95% C.I.)	(75) 35.7 % (28.1 - 44.2 95% C.I.)	(71) 30.1 % (22.4 - 39.1 95% C.I.)
Prevalence of moderate underweight	(115) 25.8 % (21.0 - 31.2	(59) 28.1 % (22.5 - 34.5	(56) 23.7 % (17.6 - 31.2

[5] Kenya Guidelines for Conducting Nutrition and mortality Surveys, 2012

(<-2 z-score and >=-3 z-score)	95% C.I.)	95% C.I.)	95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(31) 7.0 % (4.5 - 10.6 95% C.I.)	(16) 7.6 % (4.5 - 12.7 95% C.I.)	(15) 6.4 % (3.5 - 11.3 95% C.I.)

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

The prevalence of both severe and moderate underweight is higher in children of age groups 54-59 months.

Table 10: Prevalence of underweight by age, based on weight-for-age z-scores

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	128	7	5.5	22	17.2	99	77.3	0	0.0
18-29	111	7	6.3	30	27.0	74	66.7	0	0.0
30-41	112	8	7.1	32	28.6	72	64.3	0	0.0
42-53	70	6	8.6	20	28.6	44	62.9	1	1.4
54-59	25	3	12.0	11	44.0	11	44.0	0	0.0
Total	446	31	7.0	115	25.8	300	67.3	1	0.2

3.3.8 Prevalence of stunting based on height-for-age z-scores and by sex

Stunting is measured by the index of height for age and reflects failure to receive adequate nutrition over a long period of time and is also affected by recurrent and chronic illness.

The stunting rates in Laisamis Sub County are at 25.9% percent. This according to WHO classification indicates medium levels of malnutrition. The boys seem to be more affected than the girls and this has been the trend from the previous nutrition surveys.

Stunting levels in Laisamis sub County had no significant difference compared with the national rate of 26%.

Table 11: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 433	**Boys** n = 206	**Girls** n = 227
Prevalence of stunting (<-2 z-score)	(112) 25.9 % (21.1 - 31.3 95% C.I.)	(55) 26.7 % (20.2 - 34.4 95% C.I.)	(57) 25.1 % (18.4 - 33.2 95% C.I.)
Prevalence of moderate stunting	(80) 18.5 %	(36) 17.5 %	(44) 19.4 %

(<-2 z-score and >=-3 z-score)	(14.9 - 22.7 95% C.I.)	(12.7 - 23.6 95% C.I.)	(14.2 - 25.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(32) 7.4 % (4.6 - 11.7 95% C.I.)	(19) 9.2 % (6.0 - 13.9 95% C.I.)	(13) 5.7 % (2.5 - 12.6 95% C.I.)

3.3.9 Prevalence of stunting by age based on height-for-age z-scores

The prevalence of both severe and moderate stunting is higher in children aged 18-29 months probably because this is the age where most children stops breastfeeding and they fail to receive adequate quality diets.

Table 12: Prevalence of stunting by age based on height-for-age z-scores

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	126	6	4.8	17	13.5	103	81.7
18-29	102	13	12.7	23	22.5	66	64.7
30-41	109	9	8.3	24	22.0	76	69.7
42-53	71	3	4.2	13	18.3	55	77.5
54-59	25	1	4.0	3	12.0	21	84.0
Total	433	32	7.4	80	18.5	321	74.1

3.3.10 Prevalence of overweight based on weight for height cut offs and by sex

There were no reported cases for overweight in Laisamis Sub County, probably because it was the peak of the dry season.

Table 13: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	447	-1.28±1.03	1.85	1	1
Weight-for-Age	446	-1.52±1.01	2.05	1	2
Height-for-Age	433	-1.22±1.15	1.42	0	16

* contains for WHZ and WAZ.

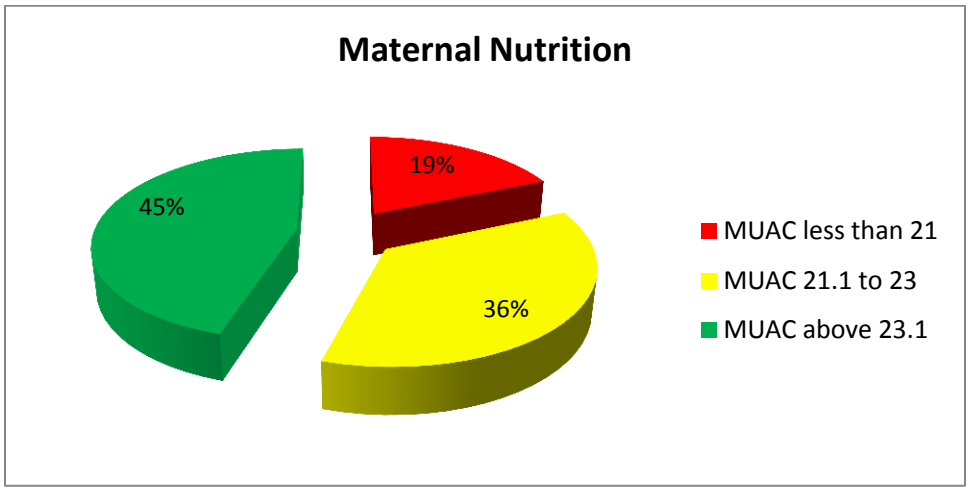
3.4 Maternal Nutrition Status

The maternal malnutrition was defined as women whose MUAC measurements were < 21.0cm while women whose MUAC measurements were between 21.0 <23.0cm were classified as at risk of malnutrition. Maternal malnutrition is usually associated with high risk of low birth weights and it is recommended that before, during and after birth, the maternal nutrition status should be adequate. MUAC was used to determine the level of undernutrition among pregnant and lactating women using a cutoff point of < 21cms.

The survey reached a total of 397 women of reproductive age. Out of these, 18.64% were found to be having undernutrition in Laisamis Sub County while 36.02% were at risk of undernutrition. This means it's important to emphasis on maternal nutrition and linking them with food security projects in the area as well as scale up maternal nutrition supplements.

Iron folate supplementation was poor among pregnant mothers in Laisamis. No mother was found to have taken IFAs for more than 270 days as per the recommendation. Out of 199 mothers, only 24.6% received the supplement for 90 days and above.

Figure 7: Maternal nutrition status



3.5 Child Health and Immunization

3.5.1 Immunization Coverage

Immunization is an important and a powerful, cost-effective preventive health measure to improve on child survival. All of the recommended vaccinations should be given before children reach their first birthday.

The survey used three antigens as a proxy for immunization coverage. These were; BCG, Oral Polio vaccination (1 and 3) and measles vaccine (1 and 2). The second measles vaccine given at 18 months was recently introduced by the Ministry of Health in the country.

The immunizations to the children were ascertained either by card (mother-child booklet) or by recall. BCG, OPV 1, OPV3 and Measles at 9 months vaccines were 90.2%, 97.4%, 93.5% and 90.2% which were above the national target of 80%. However Measles at 18 months was at 17.75 % which is below the national target. This is likely because the vaccines were lately introduced while most children have already passed the 18 months target. The summary of the immunization coverage for the sub-county is summarized below:

Table 14: Immunization Coverage in the Surveyed Areas

	n	%

OPV1		
Yes(card)	353	77.8
Yes (recall)	89	19.6
Yes (card+recall)	442	97.4
OPV3		
Yes(by card)	342	75.3
Yes (recall)	84	18.5
Yes (card+recall)	426	93.8
BCG (N= 452)	445	98.50%
BCG Scar (N= 445)	433	97.30%
Measles 9 months (Card /recall)-(N=422)	381	90.2
Measles (card only)	298	70.6
Measles (recall)	83	19.6
Measles 18 months(card+recall)-(N=321)	57	17.75
Measles (card only)	35	10.9
Measles (recall)	22	6.85

3.5.2 Zinc & Vitamin A Supplementation and Deworming Coverage

Vitamin A supplementation among children below the age of five years offers protection against common childhood infections and substantially reduces mortality hence improving the child's survival. Vitamin supplementation coverage was determined both for over the last six months and one year period. The survey findings showed low coverage of Vitamin A. Children aged 6-11 months who had received Vitamin A was 61.6% and children 12-59 months who had received Vitamin A twice or more was at 45.4% which is far much below the national target recommendation of 80%.

Deworming supplementation is also an important practice that gets rid of worms that compete for nutrients in the body and may cause iron deficiency anaemia. The survey showed that only 20% of children less than five years had received dewormers in the last one year.

Zinc supplementation during diarrhoeal episodes is highly recommended to reduce severity of the disease and reduce child mortality in relation to diarrhoeal diseases. The survey found 20 children who had suffered from diarrhea two weeks prior to the survey date. Out of these 14 were supplemented with zinc which translates to 70%. (N/B: This coverage should be used with caution due to the small sample size which may not give the true representation).

3.5.3 Micro Nutrient Supplementation (MNP)

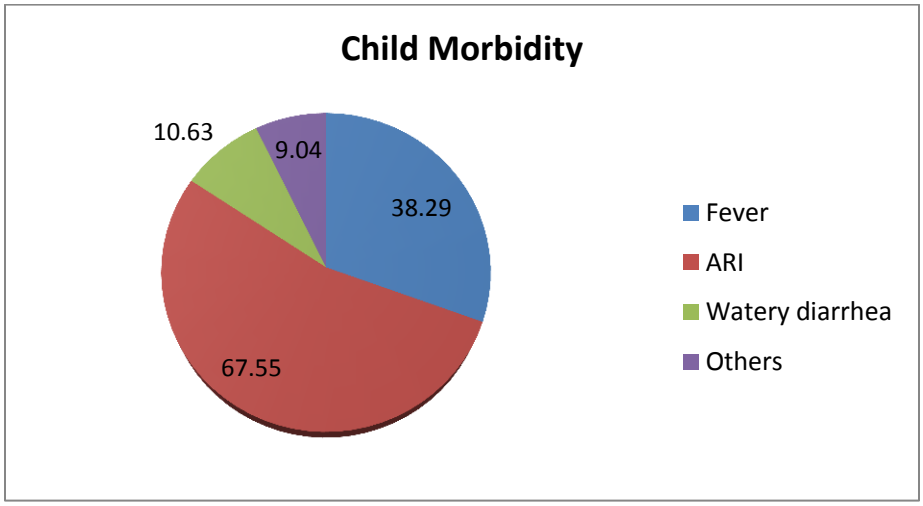
Multiple micronutrient powder (MNP) is a mixture of 15 essential Vitamins and Minerals that young children need for improved nutrition**.** MNP is added to child's food to ensure they get sufficient micronutrients in their diet that they may be lacking from their regular diet, especially when micronutrient rich foods are difficult to access.

In Laisamis, 59% of children 6-23 months who are the target group of MNP supplementation were enrolled found to be enrolled MNP programme while 41% were not enrolled. A high proportion (66.7%) of the caregivers whose children were not enrolled said they were not aware about the program. Among other reasons mentioned was that some mothers thought MNP were for malnourished children.

3.6 Children's morbidity and health seeking behaviour

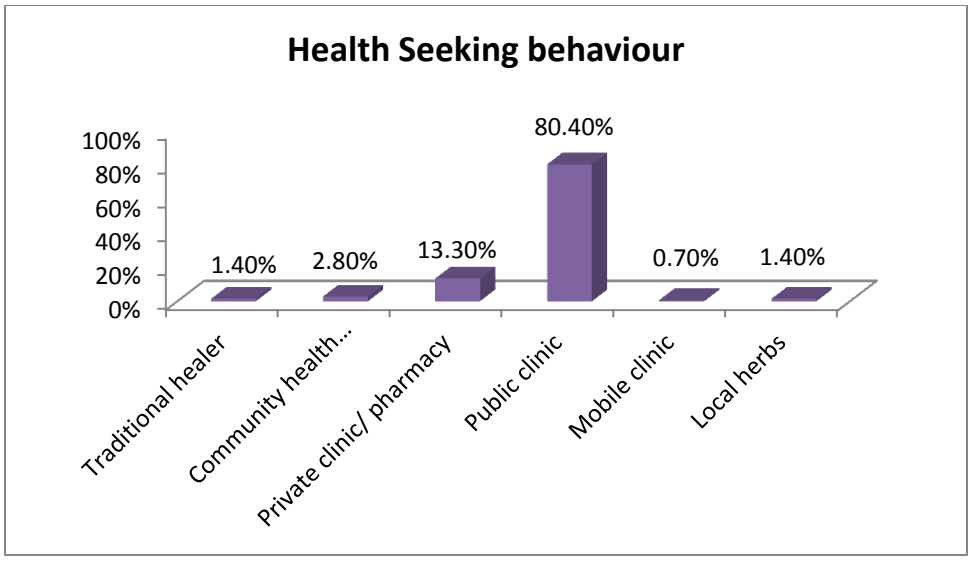
Child morbidity was assessed based on a two weeks recall period prior to the survey date. The illness prevalence was at 41.5%. The leading causes of morbidity were the acute respiratory infections- ARI which accounted for 67.55% of the cases in Laisamis, this was followed by fever with chills like malaria at 38.29%. Only 10.63% reported to had suffered from watery diarrhea as shown in the figure below

Figure 8: Child morbidity



In terms of the health seeking behaviour, 76.5% of the caregivers who had sick children within a period of two weeks before the survey, had sought medical assistance. The most preferred health service delivery points were public clinic at 80.4% followed by private clinic/ pharmacy at 13.3%. This indicates that the community appreciated health services offered by qualified health practitioners as shown in the graph below

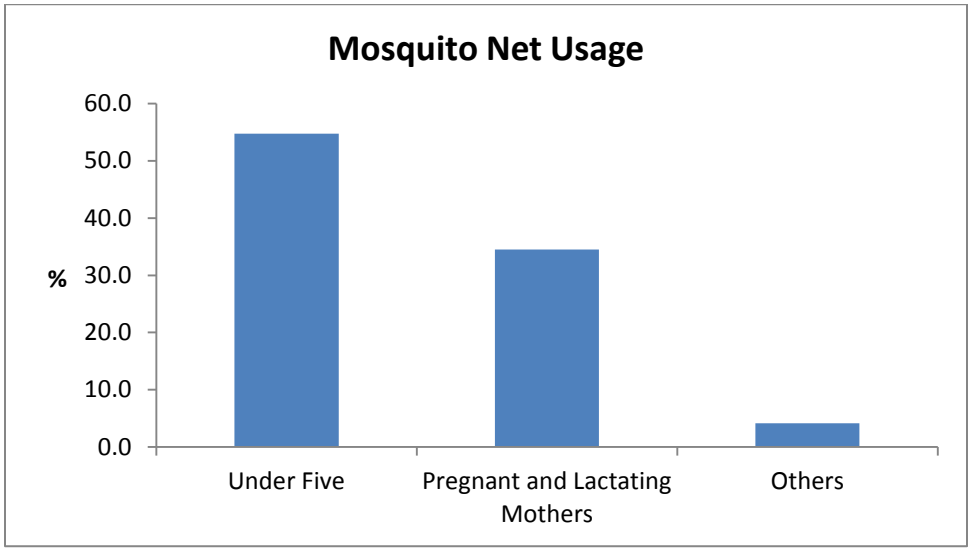
Figure 9: Health seeking behavior



3.7 Mosquito Net Ownership and Usage

Mosquito net ownership was at 28.2% among the studied population meaning a great percentage of the population did not own mosquito nets. Out of those who owned net, 54.8% and 34.5% of children less than five years and pregnant and lactating women respectively were reported to have slept under the net the previous night to the interview date as shown in the figure below

Figure 10: Mosquito Net Utilization

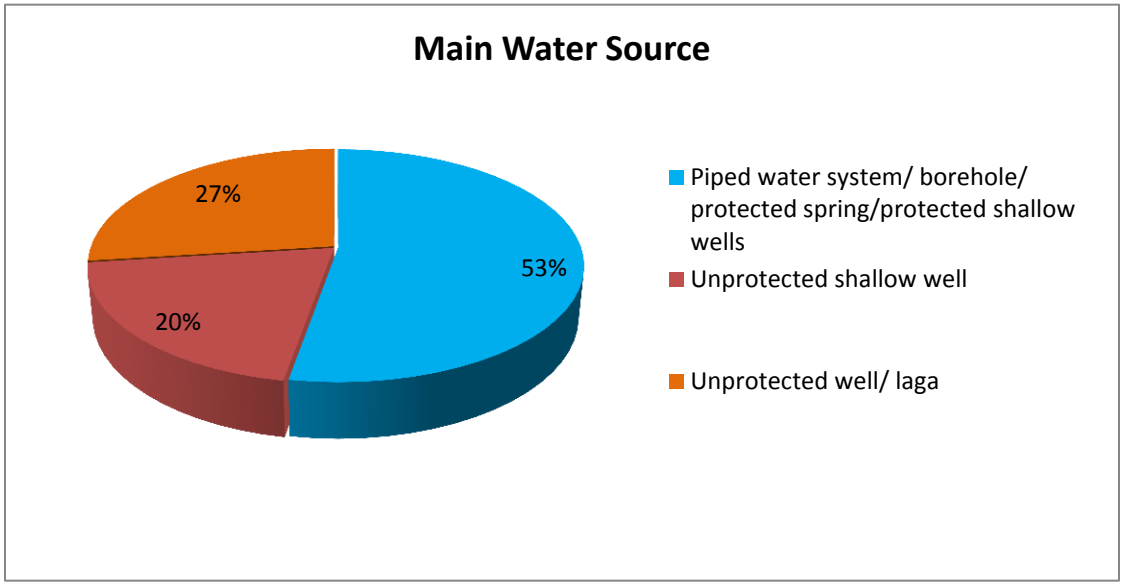


3.8 Water sanitation and hygiene practices

3.8.1 Main Water Sources

The main source of drinking water was piped water system/ borehole/protected spring/protected and shallow wells accounting for 53% of the households. The remaining 47% fetched their water from unprotected sources as depicted in the figure below

Figure 11: Main source of drinking water

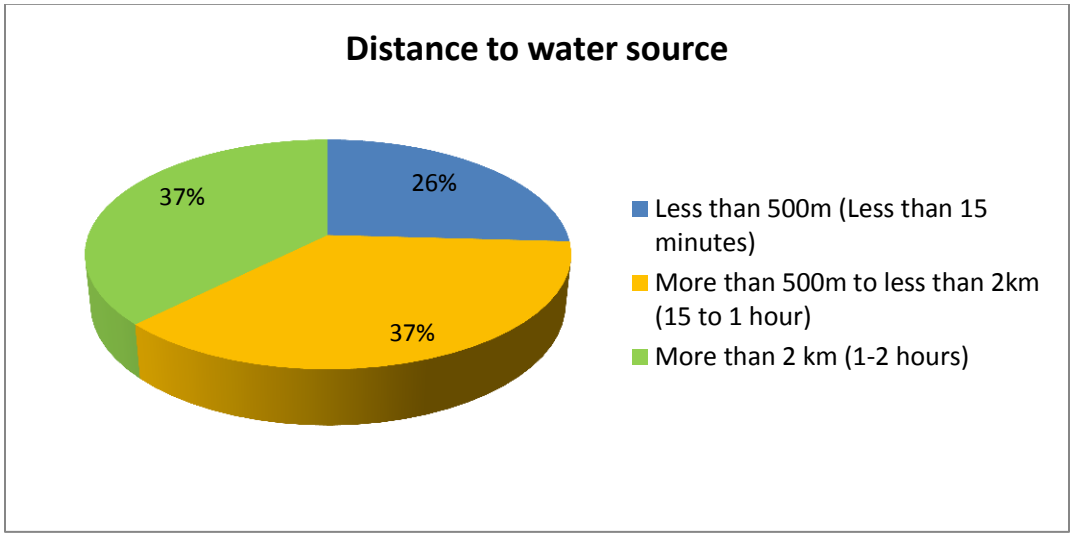


3.8.2 Distance to the water sources and Queuing time

With reference to SPHERE standards for WASH, the maximum distance from any household to the nearest water point should be 500 meters. The maximum queuing time at a water source should not exceed 15 minutes and it should not take more than three minutes to fill a 20-litre container**.**

The survey result indicated that more than half of the population 74% travel more than 500m against the SPHERE standards as shown in the figure 10 below. A higher proportion of the households (71%) took more than 30 minutes to que for water which is an indication of water scarcity in the area. Longer waiting time combined with travelling long distances meant that those who went to collect water (women) had reduced time for other essential survival tasks

Figure 12: Distance to water sources



3.8.3 Water Treatment

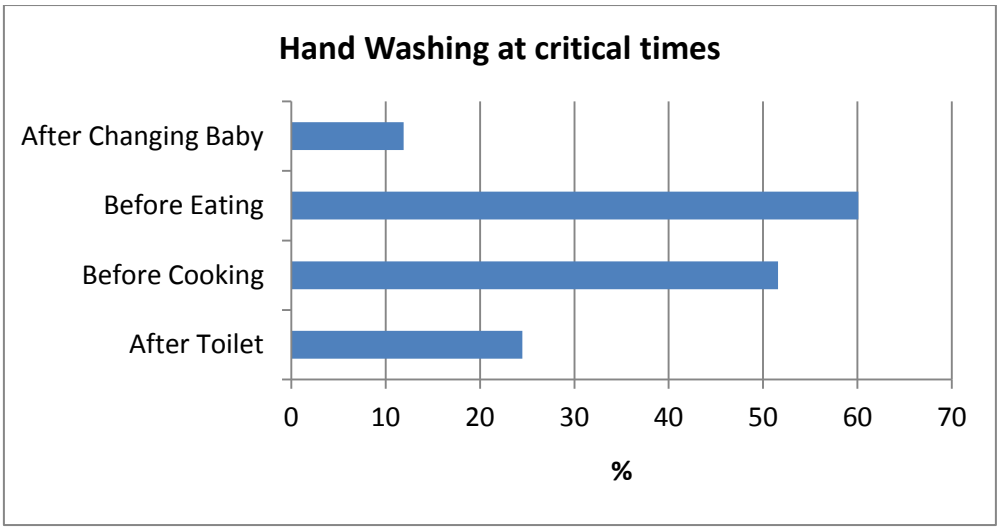
With regard to treatment of the water before consumption, the situation was critical with 95% of the respondent not using any recommended method of water treatment thus exposing themselves to risk of getting water waterborne diseases. Only 2.3% of the respondent boiled the water while those using Chemicals and pot filters were 1.5% and 1.3% respectively.

3.8.4 Hand Washing

Of all the respondents interviewed, only 2% reported to wash their hands at the four recommended critical times. About 12% washed at three critical times while majority (47.6%) washed at two critical times. More than 29% reported not to wash their hands at any given time of the four recommended critical times.

A high proportion (60.1%) reported to wash their hands before eating while those who washed their hands after fecal contact was low as shown in the figure below.

Figure 13: Hand washing at critical times



Of those who practiced hand washing 57.8% used soap and 23.7% used only water to wash their hands. These findings show there is a gap in hand washing practice and therefore a need for elaborate strategy to improve on hand washing practices in Laisamis as it can contribute significantly to reduction of diseases associated with contamination.

3.8.5 Latrine Ownership and Utilization

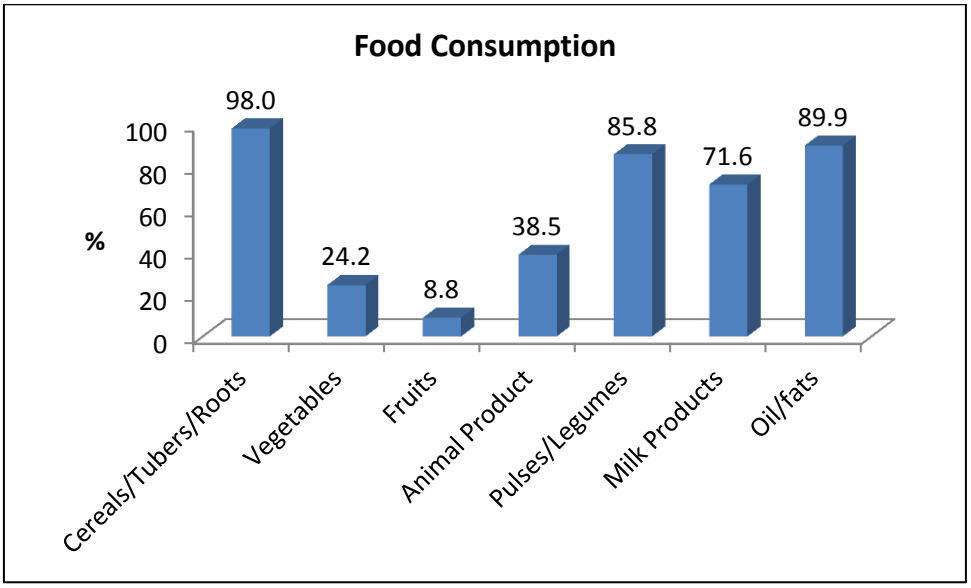
Latrine ownership and utilization in Laisamis was found to be very low with 86.2% of the households practicing open defecation. Only 5.4% of the respondents interviewed owned traditional pit/ improved latrines while 8.2% used latrine from their neighbors or shared traditional pit/improved latrine. The findings are a reflection of poor human waste disposal and pose a serious threat to disease outbreaks and contamination of water sources leading to high prevalence of water borne diseases.

3.9 Household Dietary Diversity and Food Consumption Score

3.9.1 Household Dietary Diversity

In assessing the nutritional quality and quantity of the food consumed by the survey population, a week retrospective household dietary diversity questionnaire was administered that would also help to determine the households' economic capacity to consume various foods in the sub-county. Four main food groups were consistently consumed by more than 70% of the sampled households within the last 7 days prior to survey date. These were cereals, milk, pulses/legumes and fats/oils. Fruits, vegetables and animal products were consumed by less than 40% of the households.

Figure 14: Food Frequencies



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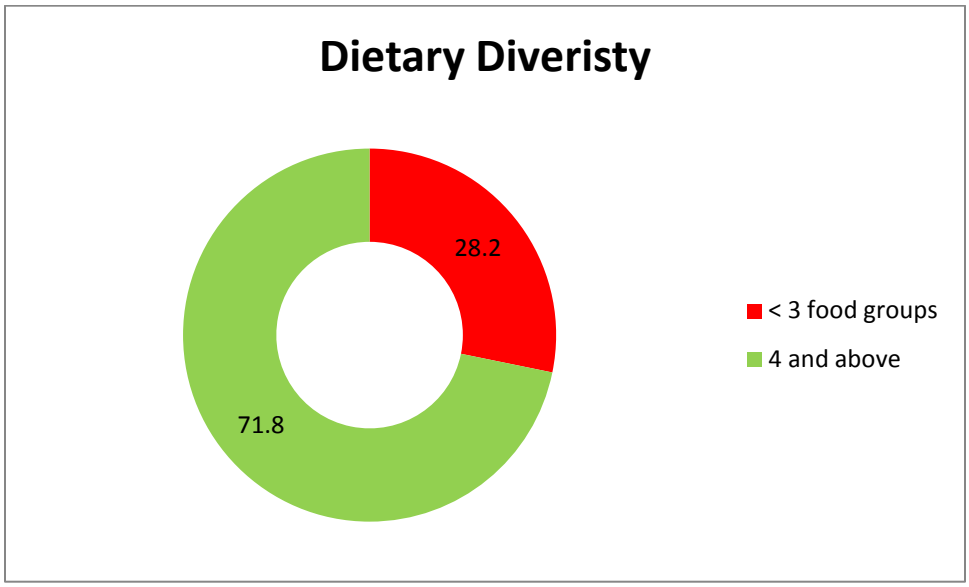
Around one third (28.2%) of the studied population seemed to be under stress as they did not consume adequate dietary diversity(less than three food groups). Most of the foods consumed were cereals/roots/tubers, milk, legumes/pulses and fats/oils as depicted in the following figure.

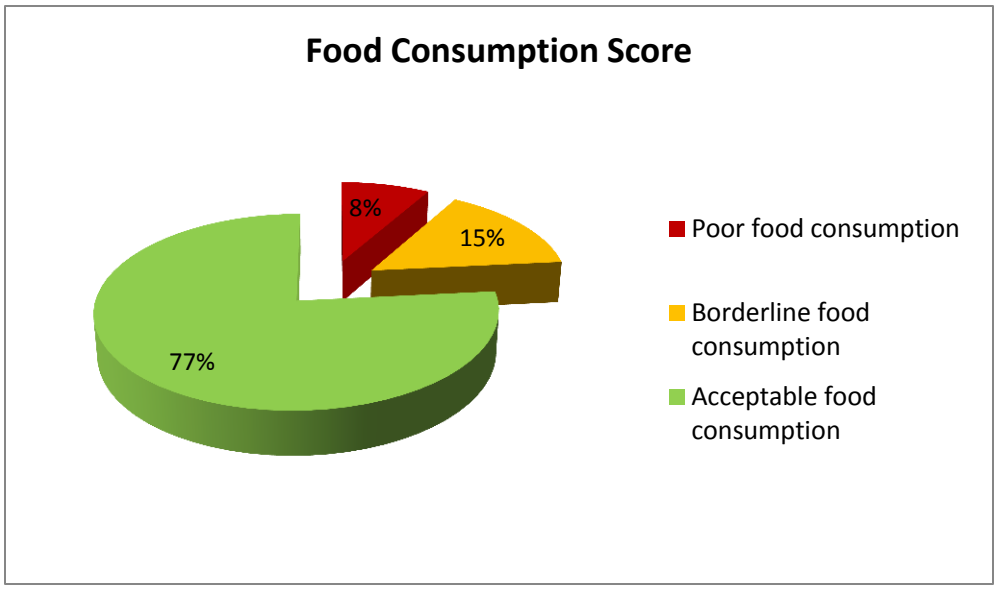
Figure 15: Household Dietary Diversity



3.9.2 Food Consumption Score and Coping Strategy Index

The food consumption score is an acceptable proxy indicator to measure caloric intake and diet quality at household level, giving an indication of food security status of the household. It's a composite score based on dietary diversity, food frequency and relative nutritional importance of different food groups. A high proportion (77%) of the sampled households had acceptable FCS, 15% were in the borderline and only 8% had poor score. The Coping strategy index (CSI) was at 21.16 meaning the sampled population engaging in different coping mechanism.

Figure 16: Food Consumption Score



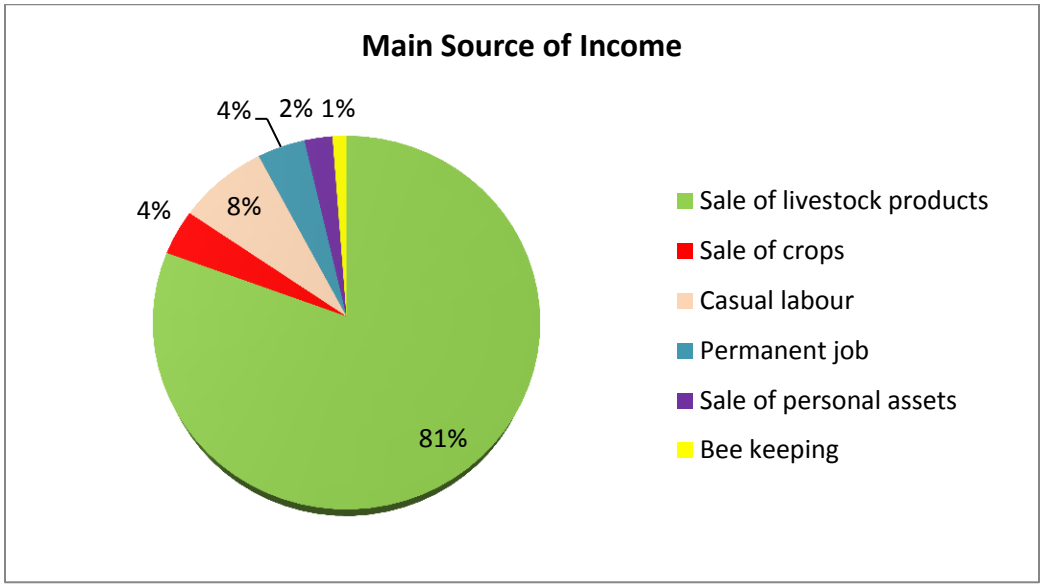
3.10 Food Security and Livelihood Indicators

Food security and livelihood indicators were collected to ascertain current food security status and livelihood activities to gauge how sustainable the livelihoods are. In addition, the information was useful in triangulating the causes of malnutrition in the county.

3.10.1 Main Source of Income

The major sources of income for the surveyed areas in the sub-county were determined and comparisons done. Sale of livestock was the main (81%) source of income. This meant that many households relied much on livestock sales to earn income. The other sources of income which contributed to smaller proportions are summarized in the figure below:

Figure 17: Main Source of Income



3.10.2 Main occupation

Majority (85%) of the sampled population do livestock herding as their main occupation. This was in line with the main source of income which is sale of livestock. Petty trading was practiced by 7% while 5% were casual laborers.

5.0 COCLUSION AND RECOMMENDATIONS

Table 15: Conclusion and recommendation

Conclusion	Probable Cause/Current Situation	Recommendations	By Who
Very Critical Levels of GAM 23.7%	**Household Food Insecurity** Inadequate food intake at HH level as reflected by high food coping strategy and dietary diversity score with majority of the households depending on cereals, oils/fats, milk and pulses/legume Decreased milk production - resulting to increased milk prices and increased prices in other food items like maize floor and rice Livestock migration to dry season grazing areas in search of pasture and water there by reducing milk availability at household level for young children	Review of nutrition contingency plan. Review of nutrition response plan for Marsabit County. Targeted integrated outreach services in hotspots areas Conduct mass screening There is need to design C4D/ SBCC projects to promote the consumption of the least consumed food groups such as eggs, fish, fruits, and vegetables. There is need to invest in value addition technologies for livestock and livestock products	County Department Health and other implementing partners County Department of Agriculture

	Morbidity Increased morbidity in the area (41.5%)	Rolling out of Integrated Community Case Management (ICCM) and strengthening the Community Health Strategy	County Department of Health and implementing Partners
Low Vitamin A, MNP, Deworming Coverage and Zinc Supplementation for Diarrhoea Management	Inadequate knowledge on the part of care givers on the importance of Vitamin A and Zinc Supplementation Weak documentation system on the part of MoH staff	Strengthen health education on the importance vitamin A, deworming and zinc supplementation County government and partners to prioritize child health campaigns Strengthen the health system for documentation, reporting and monitoring of the nutrition indicators Targeting the Early Childhood Education Centres for both Vitamin A and Deworming Activities	**County Department of Health and Implementing Partners**
Inadequate household water access and poor water treatment as well as poor hand washing	Fewer water sources and far from settlement areas thus long trekking distances to water source Lack of water treatment chemicals as well as	Increase access to water through drilling of boreholes and construction of water pipeline to	**Department of Water, Health and the Implementing**

practices	attitude/cultural practices towards water treatment before drinking and hand washing at critical times.	near settlements. Conduct/scale up health education targeting WASH activities Promotion of simple household water treatment solution like use of ceramic water filter	**Partners**
Low access to latrine facilities	Cultural practices related to latrine use Poor terrain	Community sensitization on the importance of proper human waste disposal Design projects on Behaviour change targeting proper human waste disposal Inclusion of schools in WASH activities	**Department of Health, Education and Partners**

6.0 Annexes

Annex 1: Plausibility Check Laisamis SMART Survey

	Value	Comment
Missing/Flagged data	0 .2 % (0)	Excellent
Overall Sex ratio	0.203 (0)	Excellent
Overall Age distribution	P=0.001, (4)	Acceptable
Dig pref score - weight	5 (0)	Excellent
Dig pref score - height	7 (0)	Excellent
Dig pref score - MUAC	5 (0)	Excellent
Standard Dev WHZ	1.03 (0)	Excellent
Skewness WHZ	- 0.22 (1)	Good
Kurtosis WHZ	0.16 (0)	Excellent
Poisson dist WHZ-2	P=0.000 (5)	Problematic
Overall	10%	Good

Annex 2: SMART Questionnaire

1.IDENTIFICATION	1.1 Data Collector_____	1.2 Team Leader_____	1.3 Survey date (dd/mm/yy)----------					
1.4 County	1.5 Sub County	1.6 Division	1.7 Location	1.8 Sub-Location	1.9 Village	1.10 Cluster No	1.11 HH No	1.12 Team No.

2. Household Demographics

2.1 Age Group	2.2 Please give me the names of the persons who usually live in your household.	2.3 Age (months for children <5yrs and years for over 5's) YRS	2.3 MTH	2.4 Childs age verified by 1=Health card 2=Birth certificate/ notification 3=Baptism card 4=Recall	2.5 Sex 1= Male 2= Female	2.6 If 3 yrs and under 18 Is child enrolled in school? 1 = Yes 2 = No (If yes go to 2.8; If no go t o 2.7)	2.7 Main Reason for not attending School (Enter one code from list) 1=chronic Sickness 2=Weather (rain, floods, storms) 3=Family labour responsibilities 4=Working outside home 5=Teacher absenteeism 6=Too poor to buy school items e.t.c 7=Household doesn't see value of schooling 8 =No food in the schools 9 = Migrated/ moved from school area 10=Insecurity 11-No school Near by 12=Married 13=others (specify)……..	2.8 What is the highest level of education attained?(level completed) From 5 yrs and above 1 = pre primary 2= Primary 3=Secondary 4=Tertiary 5= None 6=others(specify)	2.9 If the household owns mosquito net/s, who slept under the mosquito net last night? (*Probe-enter all responses mentioned (Use 1 if "Yes" 2 if "No and 3 if not applicable)*
< 5 YRS	1								
	2								
	3								
	4								
>5 TO 18 YRS	5								
	6								
	7								
	8								
	9								
	10								
	11								
	12								
ADULT	13(HH)								
	14)								
	15								
	16								

2.10	How many mosquito nets does this household have? _____ (Indicate no.)	
2.11	Main Occupation of the Household Head – HH. (enter code from list) 1=Livestock herding 2=Own farm labour 3=Employed (salaried) 4=Waged labour (Casual) 5=Petty trade 6=Merchant/trader 7=Firewood/charcoal 8=Fishing **9=Others (Specify)** |____|	**2.12.** What is your **main** current source of income 1. =No income 2. = Sale of livestock 3. = Sale of livestock products 4. = Sale of crops 5. = Petty trading e.g. sale of firewood 6. =Casual labor 7. =Permanent job 8. = Sale of personal assets 9. = Remittance 10. Other-Specify |____|
2.13	Marital status of the respondent 1. = Married 2. = Single 3. = Widowed	**2.14. What is the residency status of the household**? 1. IDP 2.Refugee

	4. = separated 5. = Divorced. |_____|	3. Resident |____|

Fever with Malaria: High temperature with shivering	**Cough/ARI:** Any episode with severe, persistent cough or difficulty breathing	**Watery diarrhoea:** Any episode of three or more watery stools per day	**Bloody diarrhoea:** Any episode of three or more stools with blood per day

3. CHILD HEALTH AND NUTRITION (ONLY FOR CHILDREN 6-59 MONTHS OF AGE; IF N/A SKIP TO SECTION 3.6)

Instructions: *The caregiver of the child should be the main respondent for this section*

3.1 CHILD ANTHROPOMETRY

*(**Please** fill in **ALL REQUIRED** details below. Kindly maintain the same child number as part 2)*

A Child No.	B	C	D	E	F	G	H	I	J	K	L	3.2	3.3
	what is the relationship of the respondent with the child/children 1=Mother 2=Father 3=Sibling 4=Grandmother 5=Other (specify)	SEX F/m	Exact Birth Date	Age in months	Weight (KG) XX.X	Height (CM) XX.X	Oedema Y= Yes N= No	MUAC (cm) XX.X	Has your child (NAME) been ill in the past two weeks? If No, please skip part K and proceed to 3.4) 1.Yes 2. No	If YES, what type of illness (multiple responses possible) 1 = Fever with chills like malaria 2 = ARI /Cough 3 = Watery diarrhoea 4 = Bloody diarrhoea 5 = Other (specify) *See case definitions below*	If the child **had watery diarrhoea** in the last TWO (2) WEEKS, did the child get THERAPEUTIC zinc supplementation ? *Show sample and probe further for this component* *check the remaining drugs(confirm from mother child booklet)* 1 = Yes 2 = No 3 = Do not know	**When the child was sick did you seek assistance ?** 1.Yes 2. No	**If the response is yes to question # 3.2 where did you seek assistance? (More than one response possible-** 1. Traditional healer 2.Community health worker 3. Private clinic/ pharmacy 4. Shop/kiosk 5.Public clinic 6. Mobile clinic 7. Relative or friend 8. Local herbs 9.NGO/FBO
01													
02													
03													
04													

3.4 Kindly maintain the same child number as part 2 and 3.1 above									
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Child No.	How many times has child received Vitamin A in the past year? (show sample)	How many times did you receive vitamin A capsules from the facility or out reach	If Vitamin A received how many times verified by **Card?**	How many times has child received drugs for worms in the past year? **(12-59 Months)** *(show Sample)*	Has the child received BCG vaccination? **1 = scar** **2=No scar**	Has child received OPV1 vaccination **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received OPV3 vaccination? **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received measles vaccination at 9 months *(On the upper right shoulder)?* **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received the second measles vaccination (18 to 59 months) *(On the upper right shoulder)?* **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**
01									
02									
03									
04									

3.5 MNP Programme Coverage *Kindly maintain the same child number as part 2 and 3.1 above*

3.5.1	Is the child enrolled in the MNP program?(show the example of the MNP sachet)***(circle the given answers)***	Yes =1 No=0 **If the answer is no go to 3.5.2, If the answer is yes go to section 3.6**
Child 1		
Child 2		
Child 3		
Child 4		

3.5.2	If the child, 6-23months, is not enrolled for MNP, kindly give reason. (***Multiple answers possible. circle the given answers. DO NOT READ the answers***)	Do not know about MNPs……1 Discouraged from what I heard from others…….2 The child has not fallen ill, so have not gone to the health facility……..3 Health facility or outreach is far……4 Child receiving therapeutic or supplementary foods--5 Other reason, specify…….6

3. 6 Consumption of MNP

3.6.1	Has the child consumed MNPs in the last 7 days?(shows the MNP sachet) ***(Circle the given answer)***	YES = 1 N0= 0 ***If no continue to 2.3, If yes go to 2.2***
3.6.2	If yes, how frequent do you give MNP to your child? ***(Circle the given answer)***	Every day……1 Every other day……..2 Every third day……..3 2 days per week at any day……..4 At any day when I remember……..……5
3.6.3	If no, since when did you stop feeding MNPs to your child? ***(Circle the given answer)***	1 week to 2 weeks ago .....1 2 week to 1 month ago.....2 More than 1 month.....3
3.6.4	What are the reasons to stop feeding your child with MNPs? (***Multiple answers possible. circle the given answers. DO NOT READ the answers***)	Finished all of the sachets.....1 Child did not like it.....2 Husband did not agree to give to the child.....3 Sachet got damaged .....4 Child had diarrhea after being given vitamin and mineral powder ……5 Child fell sick.....6 Forgot……..7 Child enrolled into the IMAM program……8 Other (Specify)_____ ……..9

MATERNAL NUTRITION FOR MOTHERS OF REPRODUCTIVE AGE (15-49 YEARS) *(Please insert appropriate number in the box)*				
3.7	**3.8**	**3.9**	**3.10**	**3.11**
Woman ID. **(all ladies in the HH aged 15-49 years from the demographics page)**	What is the mother's / caretaker's physiological status **1. Pregnant** **2. Lactating** **3. None of the above**	Mother/ caretaker's MUAC reading: **____.__cm**	During the pregnancy of the (name of child below 24 months) did you take iron pills, sprinkles with iron, iron syrup or iron-folate tablets? (name that appears in HH register) **1. Yes** **2. No** **3. Don't know** **4. N/A**	If Yes, for how many days? (approximate the number of days)

4.0 WATER, SANITATION AND HYGIENE (WASH)/- *Please ask the respondent and indicate the appropriate number in the space provided*

4.1 **What is the MAIN source of drinking water for the household NOW?**
1. Piped water system/ borehole/ protected spring/protected shallow wells
2. Unprotected shallow well
3. River/spring
4. Earth pan/dam
5. Earth pan/dam with infiltration well |____|
6. Water trucking /Water vendor
7. Other *(Please specify)*

4.2 What is the trekking distance to the current main water source?
1=less than 500m (Less than 15 minutes)
2=more than 500m to less than 2km (15 to 1 hour)
3=more than 2 km (1 – 2 hrs)
4=Other(specify) |____|

4.2.2a **Do you queue for water?**
1. Yes
2. No **(If No skip to question 4.3)** |____|

4.2.2b. If yes how long?
1. Less than 30 minutes |____|
2. 30-60 minutes
3. More than 1 hour

4.3a **Is anything done to your water before drinking *(Use 1 if YES and 2 if NO)*. if No skip to 4.4** |____|

4.3b If yes what do you do? (*MULTIPLE RESPONSES POSSIBLE) (Use 1 if YES and 2 if NO)*.
1. Boiling…… …… |____|
2. Chemicals (*Chlorine,Pur,Waterguard*)…… |____|
3. Traditional herb…….. |____|
4. Pot filters…….. |____|
5. Other (specify_____)…… |____|

4.4 **Where do you store water for drinking?**
1. Open container / Jerrican
2. Closed container / Jerrican |____|

4.5 How much water did your household use YESTERDAY (excluding for animals)?
(Ask the question in the number of 20 liter Jerrican and convert to liters & write down the total quantity used in liters) |____|

4.6 **Do you pay for water?**
1. Yes
2. No **(If No skip to Question 4.7.1**)
|____|

4.6.1 If yes, how much per 20 liters jerrican _____ KSh/20ltrs

4.6.2 If paid per month how much |____|

4.7.1 **Yesterday (within last 24 hours) at what instances did you wash your hands? (MULTIPLE RESPONSE-** (Use 1 if "Yes" and 2 if "No")
1. After toilet…… |____|
2. Before cooking…….. |____|
3. Before eating…… |____|
4. After taking children to the toilet…… |____|
5. Others…… |____|

4.7.2 **If the caregiver washes her hands, then probe further; what did you use to wash your hands?**
1. Only water
2. Soap and water
3. Soap when I can afford it
4. traditional herb
5. Any other specify |____|

4.8 Where do members of your household Mainly relieve themselves?
1. In the bushes, open defecation
2. Neighbor or shared traditional pit/improved latrine
3. Own traditional pit/improved latrine
4. Others Specify |____|

5.0: Food frequency and Household Dietary Diversity

	Did members of your household consume any food from these food groups in the last *7 days?(food must have been cooked/served at the household)* ***1=Yes*** ***2=No***	**If** *yes*, **mark days the food was consumed in the last 7 days?** **yes=1; no=2**								What was the **main** source of the dominant food item consumed in the HHD? **1.Own production** **2.Purchase** **3.Gifts from friends/families** **4.Food aid** **5.Traded or Bartered** **6.Borrowed** **7.Gathering/wild fruits** **8.Other (specify)**
Type of food*		**D1**	***D2***	**D 3**	**D 4**	**D5**	**D 6**	**D7**	**TOTAL**	
5.1. Cereals and cereal products *(e.g. sorghum, maize, spaghetti, pasta, anjera, bread)*?										
5.2. Vitamin A rich vegetables and tubers: Pumpkins, carrots, orange sweet potatoes										
5.3. White tubers and roots: White potatoes, white yams, cassava, or foods made from roots										
5.4 Dark green leafy vegetables: Dark green leafy vegetables, including wild ones + locally available vitamin A rich leaves such as cassava leaves etc.										
5.5 Other vegetables *(e,g, tomatoes, egg plant, onions)?*										
5.6. Vitamin A rich fruits: + other locally available vitamin A rich fruits										
5.7 Other fruits										
5.8 Organ meat (iron rich): Liver, kidney, heart or other organ meats or blood based foods										
5.9. Flesh meats and offals: Meat, poultry, offal *(e.g. goat/camel meat, beef; chicken/poultry)?*										
5.10 Eggs?										
5.11 Fish: Fresh or dries fish or shellfish										
5.12 Pulses/legumes, nuts *(e.g. beans, lentils, green grams, cowpeas)*?										
5.13 Milk and milk products *(e.g. goat/camel/ fermented milk, milk powder)?*										
5.14 Oils/fats *(e.g. cooking fat or oil, butter, ghee, margarine)?*										
5.15 Sweets: Sugar, honey, sweetened soda or sugary foods such as chocolates, sweets or candies										
5.16 Condiments, spices and beverages:										

6. COPING STRATEGIES INDEX		
		Frequency score: Number of days out of the past seven (0 -7).
	In the past 7 DAYS, have there been times when you did not have enough food or money to buy food? If No; END THE INTERVIEW AND THANK THE RESPONDENT **If YES, how often has your household had to:** *(INDICATE THE SCORE IN THE SPACE PROVIDED*)	
1	Rely on less preferred and less expensive foods?	
2	Borrow food, or rely on help from a friend or relative?	
3	Limit portion size at mealtimes?	
4	Restrict consumption by adults in order for small children to eat?	
5	Reduce number of meals eaten in a day?	
	TOTAL HOUSEHOLD SCORE: **END THE INTERVIEW AND THANK THE RESPONDENT**	