SMART SURVEY FINAL REPORT – 2017

LAISAMIS AND NORTH HORR SURVEY ZONES

MARSABIT COUNTY

18th JANUARY – 29TH JANUARY, 2017

ACKNOWLEDGEMENT

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ACCROYNM AND ABBREVIATIONS

BPHS:	Basic Package of Health Services
CI:	Confidence Interval
CNO:	County Nutrition Officer
CSI:	Coping Strategy Index
DEFF:	Design Effect
ENA:	Emergency Nutrition Assessment
FGD:	Focus Group Discussion
GAM:	Global Acute Malnutrition
HAZ:	Weight-for-Age Z score
HH:	Household
HiNi:	High Impact Nutrition Intervention
KII:	Key Informant Interview
MAM:	Moderate Acute Malnutrition
MoH:	Ministry of Health
MUAC:	Mid Upper Arm Circumference
NDMA:	National Draught Management Authority
NGO:	Non-Governmental Organization
PPS:	Probability Proportional to Population Size
SAM:	Severe Acute Malnutrition
SCHMT:	Sub-County Health Management Team
SMART:	Standardized Monitoring and Assessment in Relief and Transition
UN:	United Nations
UNICEF:	United Nation Children Fund
WHO:	World Health Organization
WAZ:	Weight-for-Age Z score
WASH:	Water, Sanitation and Hygiene
WFA:	Weight-for-Age
WHZ:	Weight-for-Height Z score

EXECUTIVE SUMMARY

Marsabit County is located in the former Eastern province of Kenya and covers an area of 70,961.3 Km2. It borders Isiolo County to the South West, Samburu County to the South, Lake Turkana to the West, Ethiopia to the North and Wajir County to the North West. The County consists of four sub-counties; Laisamis, North Horr, Marsabit Central, and Moyale. Although ranked as the largest county in the country, it has an estimated population of 341,091 from an estimated 65,906 households. The county remains amongst the counties with the highest poverty index in the in Kenya and is ranked position 44 out of 47 counties with a poverty index rate of 83.2%. The county has three major livelihoods; Pastoral with 81%, agro-pastoral with about 16% and Business population at around Marsabit and Moyale towns. Other minor livelihood Zones at 3% include formal employment and fisher folk along Lake Turkana.
The County experiences poor health and nutrition outcomes which are mainly related to house hold food insecurity as a result of recurrent drought.
This Integrated SMART survey was conducted to establish the current nutrition status in the North Horr and Laisamis Sub counties.
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 immunization coverage of Measles, BCG and Oral polio vaccines (OPV1 and 3).
- ✓ To determine the coverage for deworming, zinc supplementation for diarrhea and vitamin A supplementation among children 6-59 months.
- ✓ To estimate the nutritional status of women of reproductive age 15-49 years using MUAC measurements
- ✓ To collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices

The survey was conducted in two Sub-Counties: Laisamis and North Horr. Each Sub county had its own independent sample. Sampling was done using the SMART methodology and applied two stage cluster sampling methodology with the clusters being selected using the probability proportional to population size (PPS). Stage one sampling involved the sampling of the clusters while the second stage sampling involved the selection of the households from the sampled clusters.

The number of clusters sampled was; 36 in Laisamis and 42 in North Horr. The total sample size for children aged between 6 and 59 month was; 371 in Laisamis and 407 in North Horr. The data collected during the survey included: anthropometry, morbidity, vaccination and de-worming status, Vitamin A supplementation, hygiene and sanitation practices, other indicators assessed were household food security and livelihood. The standard data collection tool recommended by the National Nutrition Information Working Group was used. All the sampled clusters were visited. In total 1,046 households were sampled from 78 clusters and 857 children aged 6 to 59 months were assessed for anthropometry. Anthropometric data was analyzed using the ENA software version (July 9th, 2015) 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	Laisamis	North Horr
Clusters	36	42
HHs covered	502	544
Nutritional Status (6 – 59 months) Weight- for-Height Z – scores (Wasting) WHO 2006 Standards		
Global Acute Malnutrition (<-2 Z-	**24.7%** (19.3-31.0)	**31.5%** (25.3-38.5)

score)		
Severe Acute malnutrition (<-3 Z-score)	**5.5%** (3.5- 8.5)	**9.8%** (6.6-14.3)
Nutritional Status (6 – 59 months) Weight- for-Age Z – scores (Underweight) WHO 2006 Standards		
Prevalence of Global Underweight (<-2 Z-score)	**40.0%** (33.6-46.9)	**36.5%** (30.5-43.0)
Nutritional Status (6 – 59 months) Height- for-Age Z – scores (Stunting) WHO 2006 Standards		
Prevalence of Global Stunting (<-2 Z-score)	**31.4%** (25.9-37.4)	**23.5%** (19.5-28.1)
Immunization Coverage (6-59 months)		
Measles Coverage at 9 Months	91.2%	87.6%
Measles Coverage at 18 Months	63.1%	55.9%
BCG by scar	98.1%	96.2%
OPV 1	97.9%	94.7%
OPV 3	93.6%	87.0%
Zinc Supplementation	75.0%	43.9%
Vitamin A (12 – 59 months) – twice	39.2%	19.5%
Deworming (12-59 months)	45.2%	41.2%
Child Morbidity (0 – 59 months)		
Sickness two weeks prior to survey	43.2%	25.2%
Acute Respiratory Infection	52.7%	41.8%
Fever	35.2%	73.6%
Watery diarrhoea	28.6%	34.5%
Bloody diarrhoea	0.0%	2.7%
Prevalence of diarrhoea	28.6%	37.3%
Maternal Health and Nutrition		
MUAC <21cm	23.5%	11.5%
MUAC (21 < 23 cm)	33.0%	32.9%
Iron Folate Supplementation	61.6%	47.7%
Household Food Consumption		
Food Consumption Score (FCS)		
Poor FCS	25.3%	14.9%
Border FCS	32.5%	9.2%
Good FCS	42.2%	75.9%
Water and Sanitation (WASH)		
Water sources		
Protected source	56.0%	38.8%
Unprotected source	44.0%	61.2%
Methods of relieving		
Open defecation	85.1%	74.8%
Shared latrine	7.6%	14.7%
Own latrine	7.2%	10.1%
Water treatment	6.4%	9.4%

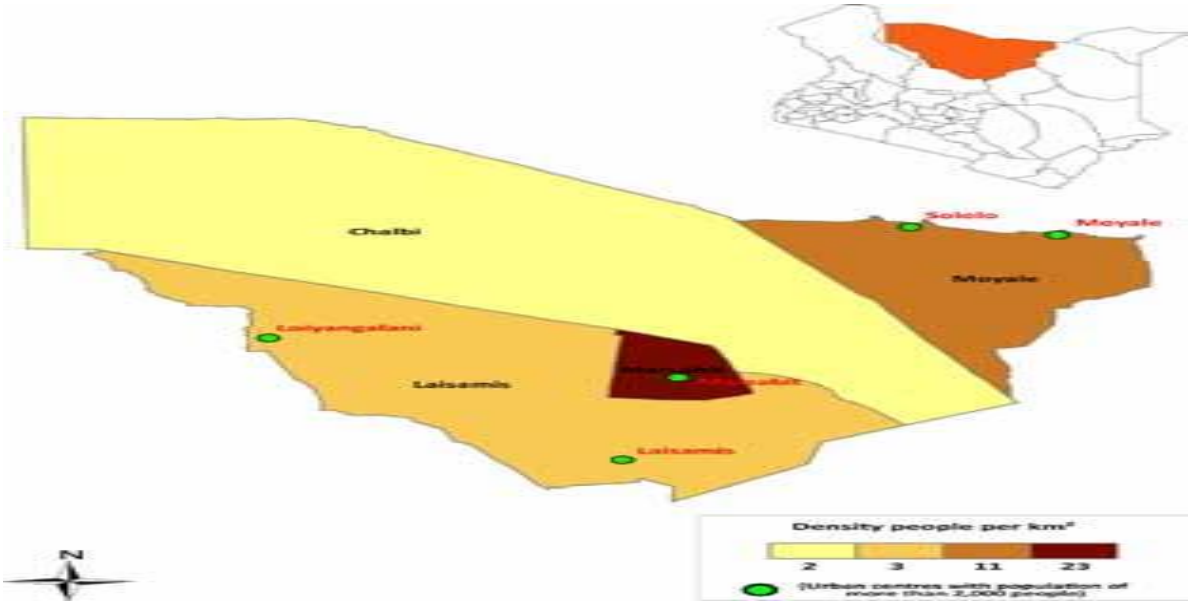
CHAPTER ONE
INTRODUCTION

1.1 Background

Marsabit County is located in the former Eastern province of Kenya and covers an area of 70,961.3 Km^2 and is ranked as the largest county in the country. The county border Ethiopia to the North, Lake Turkana to the West, Samburu County to the South West, Isiolo County to the South East and Wajir County to the North East. Marsabit County borders Isiolo County to the South West. Marsabit County consists of four sub-counties namely Laisamis, North Horr, Marsabit Central, and Moyale. The county has an estimated population of 341,091 from an estimated 65,906 households. Additionally, it is the least populated county in the country in terms people per km^2 with a density of 4 people per km^2. The county remains amongst the counties with the highest poverty index in the in Kenya and ranked position 44 out of 47 counties with a poverty rate of 83.2%. The county has three major livelihoods where the pastoral livelihood zone forms the bulk of the main livelihood zones at 81% and the other significant livelihood type is the agro-pastoral system which accounts for about 16% of the population. Other minor livelihood Zones at 3% include formal employment and fisher folk along Lake Turkana. The main source of income in the pastoral livelihood Zone is from the sale of livestock and livestock products, which accounts for about 85% of all county Income. In the Agro-pastoral livelihood Zone, livestock and food crop production account for 50% of all income.

The county experiences poor health and Nutrition outcomes especially due to Community Referral system is poor since community units are there but semi Functional and community Health services are poor hence most health facilities are not able to reach their catchment population. Thirdly, Vastness of the county and rough terrain i.e. in North Horr and Laisamis hence SCHMT operations have been narrowed to a limited scope of health facilities and with limited visits to far health facilities which are occasionally support by partners. Another major contributing factor of high malnutrition levels are: poor dietary diversity especially for women and poor child care and feeding practices which are related to hygiene and sanitation and cultural beliefs. To try to improve the health and nutrition status in the county, various partners have been working with the Ministry of Health in the implementation and up scaling the High Impact Nutrition Intervention (HiNi) in the County. For instance Concern Worldwide has been supporting the County Health Department in the implementation of the HiNi services in Moyale and North Horr Sub counties. On the other hand Food for the Hungry Kenya (FHK) has been supporting the MoH in the implementation and scaling up of HiNi in North Horr, Saku and Laisamis sub counties while World Vision has been supporting the same activities in Laisamis Sub counties. Additionally, Concern Worldwide has been implementing integrated health programs in Marsabit Central and Moyale Districts.

Figure 1: Map of Marsabit County



1.2 Survey Objectives

1.2.1 General Objective

The general objective of the survey was to establish the current health & nutrition status in the North Horr and Laisamis Sub counties.

1.2.2 Specific Objectives

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

1.3 Timing of the Survey

The survey was undertaken from 18th January, 2017. Training and piloting of the survey materials and standardization test was conducted from 18th to 21st January, 2017 and thereafter data collection from 22nd January, 2017. This survey was conducted in the middle of the short dry period as shown in the section below:

1.4 Seasonal Calendar

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Short Dry Season			**Long Rain**			**Long dry spell**			**Short Rains**		

CHAPTER TWO
METHODOLOGY

2.1 Geographic Target Area and Population Group

The survey was conducted in the Marsabit County and covered two sub-counties; North Horr and Laisamis. This was based on an emergency response initiated by UNICEF due to the prevailing hunger and drought reported in the neighboring counties evidenced by the high prevalence of malnutrition. Each of the sub-counties had its own independent sample. The primary respondent for the survey was the mother/care taker of the child for both household and child questionnaire

Data was collected on the following variables; anthropometry, morbidity, vaccination and de-worming status, Vitamin A supplementation, hygiene and sanitation practices. Other indicators assessed were, household food security and livelihood. In addition, the nutritional status of child aged 6 – 59 months mother/care taker aged 15 – 49 years was also determined.

2.2 Survey Design

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 to be included in the survey while the second stage sampling involved the selection of the households from the sampled clusters.

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 version 9th July software and the respective number of children and households required for the survey computed. 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 for the North Horr and Laisamis survey

	Laisamis	North Horr	Rationale
Estimate (GAM)	27.4%	28.7%	From 2016 SMART survey
Precision	5.5%	5.5%	From SMART Global project
Design Effect	1.35	1.44	From 2016 SMART Survey
Estimated Number of Children	371	407	
Average HH Size	5.0	5.0	From DHIS
Non-Response Rate	3.0	3.0	Based on 2016 SMART Survey Experience
Proportion of Children Under 5	16.5%	15.7%	From DHIS
Estimated Number of Households	515	594	
Number of Households per Day	14	14	Based on 2016 SMART Survey Experience
Number of Cluster	36	42	Computed from the Number of HHs per Day
Number of children per Cluster	11	10	
Number of Teams	6	6	
Number of Days	6	7	Based on the Number of Teams to be Recruited

Rationale for Parameters Used for the Survey

- ✓ GAM – 2016 SMART Survey for the two sub-counties but with higher confidence intervals since the situation was expected to have deteriorated
- ✓ Precision –5.5 percent as recommended by the Nutrition Survey Guidelines 2012
- ✓ Design Effect – 1.35 for Laisamis and 1.44 for North Horr based on the 2016 SMART Survey in the Survey Zones
- ✓ Non-Response Rate – 3.0 percent based on prior SMART survey experience in the same areas
- ✓ Average HH Size – Kenya Health Information System Population estimates
- ✓ Proportion of children under five years obtained from Kenya Health Information System population estimates
- ✓ Household to be sampled per day – based on the previous 2016 SMART survey experience and based on the number of teams to be recruited.

2.5 Cluster and Household Selection

All the villages that were accessible were included in the sampling Frame and sampled with probability proportional to size. At the second stage, each team listed all the households in a village and used the simple random sampling method in households to visit. Within the selected households all children 6-59 months fitting 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: it was recorded whether a child was male or female.

Bilateral Oedema*:* 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: the weights of children were taken with minimal or light clothing on, using Bathroom scale (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): the 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, diarrhoea).

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 24- hour 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 and a score of 0 for each of the food groups not consumed by the household, and thus the highest possible score was 12.

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 respective 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, the National Draught Management Authority, key partners on the ground (NGO and UN) and conducted in collaboration with the County and Sub-Counties 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 by the Ministry of Health office at the 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 and sampling methodology. The data collection forms and questionnaires were 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. One training was conducted and facilitated by Ministry of Health and Nutrition Information Working Group supported by Concern Worldwide, World Vision and Food for the Hungry.
- **Team work in the field:** The teams each with four members who have experience in data collection were organized/ selected from the survey area with each team consisting of 1 team leader, interviewer and 2 measurers. In addition, supervisors from MoH, NDMA, World Vision, Concern Worldwide, and Food for the Hungry, 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 Data Entry, Analysis and Report Writing

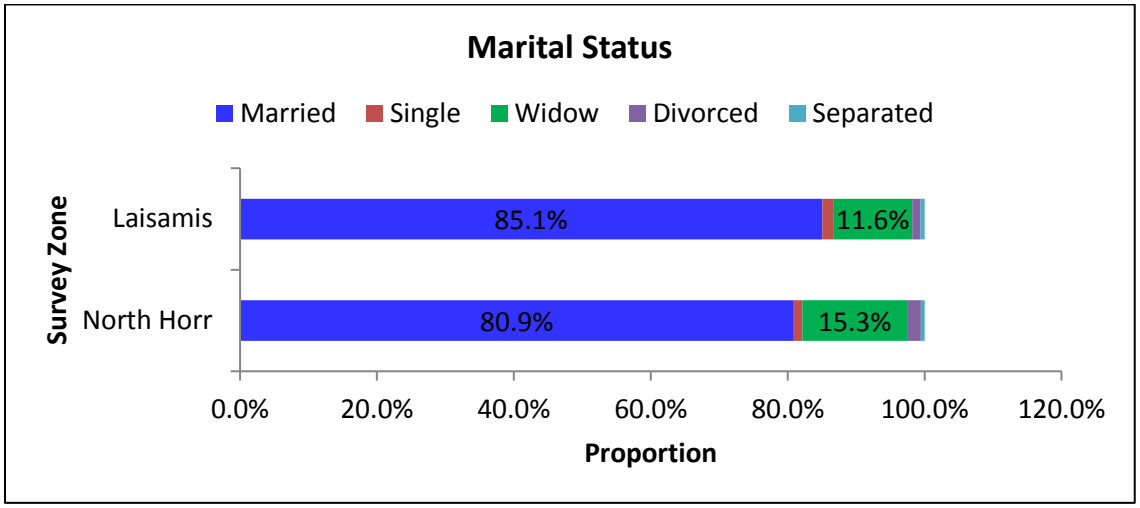
- **Data Analysis:** the data downloading and analysis was done using ENA for SMART, Excel and SPSS Statistical software version 17. The Concern Worldwide Survey and Surveillance Officer and Monitoring and Evaluation Officer of World Vision were responsible for the Data downloading, analysis and report writing. Results are presented using the new WHO reference levels.
- **Preliminary Results and Final Report:** the preliminary findings were submitted by Survey and Surveillance Officer of Concern Worldwide and Monitoring and Evaluation Officer of World Vision to the CHMTs, stakeholders and the Nutrition Information Working Group (NIWG) within two weeks of completion of the survey fieldwork at County and National level and included the prevalence of global acute malnutrition as well as the prevalence of moderate and severe acute malnutrition, vaccination and other relevant information.

CHAPTER THREE
3.0 SURVEY RESULTS AND DISCUSSION

3.1 Demographic Results

All the respondents from households in Laisamis and North Horr were residents. Majority of the respondents were married as shown in the figure below:

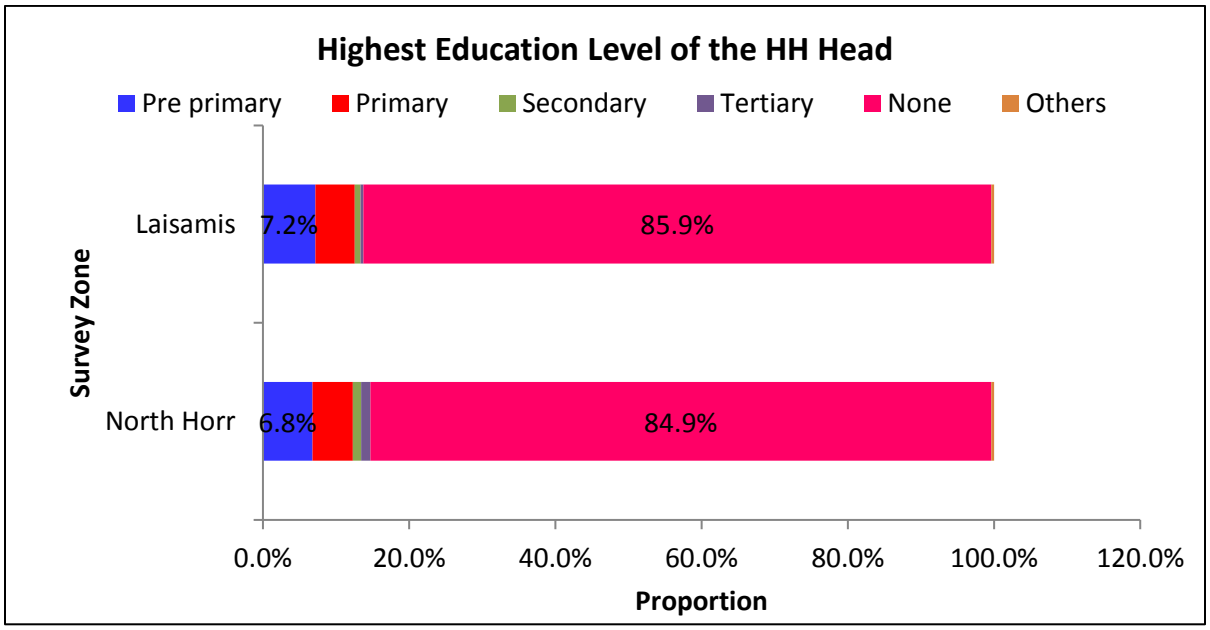
Figure 2: Respondents Marital Status



3.2 Highest Education Level of the Household Head

Majority of the Household head in both North Horr and Laisamis Sub Counties have no Education as shown below.

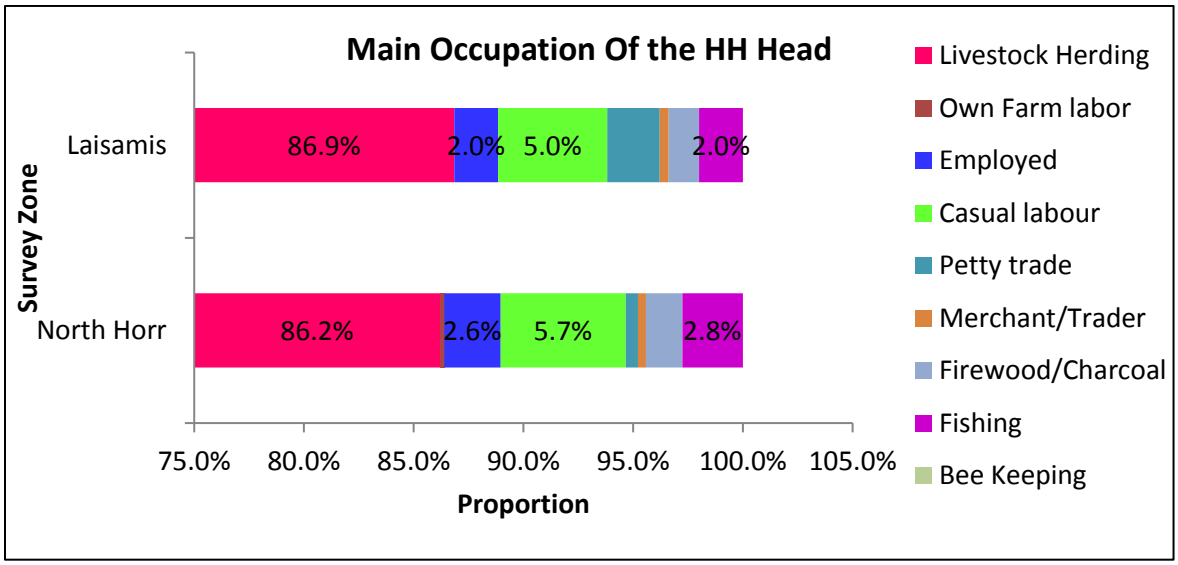
Figure 3: Highest Education Level of the HH Head



3.3 Main Occupation of the Household head

The main source of Livelihood of the Household Head in Laisamis and North Horr is livestock herding at 86.9% and 86.2 % respectively followed by Casual Labor.

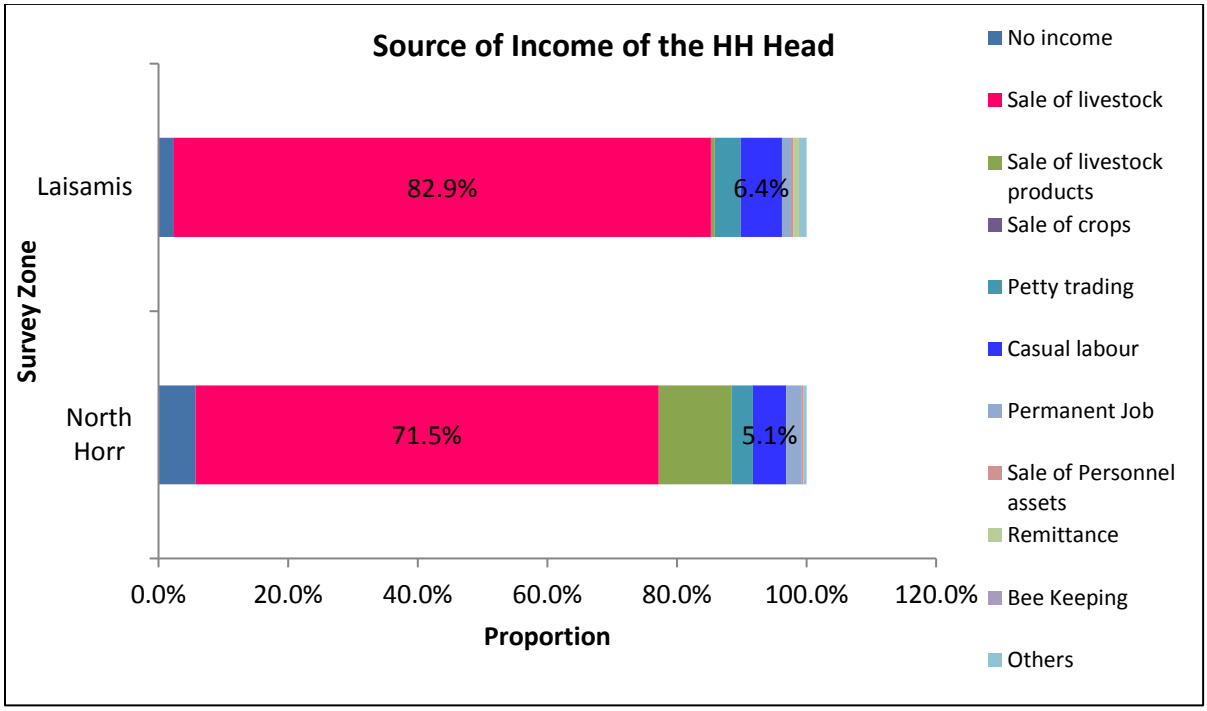
Figure 4: Main Occupation of the HH Head



3.4 Main Source of income of the Household Head

The main source of income of the Household Head in Laisamis and North Horr is sale of livestock at 82.9% and 71.5 % respectively followed by Casual Labor.

Figure 5: main Source of Income of the HH head



3.5 Nutritional Status of Under-Five Children

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

The survey managed to reach a total of 421 and 436 children aged between 6 to 59 months in Laisamis and North Horr Sub Counties respectively whose anthropometric measurements were taken.
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 edema. 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 edema.
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 edema while SAM was defined as the proportion of children with a MUAC of less than 115 mm and/or presence of edema.

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 edema
- Global acute malnutrition is defined by WFH < -2 SD and/or existing bilateral edema

Malnutrition by MUAC

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

The Global Acute malnutrition levels in Laisamis, North Horr, Sub Counties were above the emergency GAM thresholds (15.0%) indicating a critical situation. North Horr Sub County recorded the highest level of malnutrition of 31.5 percent (95% CI: 25.3-38.5) with Laisamis Sub County at 24.7 percent (95% CI: 19.3-31.0).

The nutrition situation is interpreted as very critical in North Horr and Laisamis Sub Counties with the GAM rates being >20%. In relation to the children who were severely malnourished, the nutrition situation in Laisamis and North Horr is classified as critical. The classification is based on the WHO growth standards. There were no cases of edema that were reported.
The high levels of acute malnutrition in North Horr and Laisamis sub counties can be attributed mainly to the drought condition being experienced across the Marsabit County and lack of functional community units' hence poor community health services. In addition, Low nutrition activities funding from the health department are highly contributing to high malnutrition levels.

Table 3: Prevalence of acute malnutrition by WHZ

	North Horr July 2016	North Horr January 2017	Laisamis July 2016	Laisamis January 2017
Global Acute Malnutrition (GAM)	**22.8% (17.8-28.7)**	**31.5%(25.3-38.5)**	**22.5%(18.2-27.4)**	**24.7% (19.3-31.0)**
Severe Acute Malnutrition (SAM)	**3.6% (1.8- 6.9)**	**9.8% (6.6-14.3)**	**4.7%(2.6- 8.3)**	**5.5%(3.5- 8.5)**
% of Oedema	**0.0%**	**0.0%**	**0.0%**	**0.0%**

3.5.2 Prevalence of Acute malnutrition by MUAC

The nutrition situation was also assessed using the MUAC and in comparison with the GAM rates by the WFH scores. The prevalence of Acute Malnutrition by MUAC for North Horr Sub County was 10.1% and for Laisamis Sub County was 7.1%.

Table 4: Prevalence of acute Malnutrition by MUAC

	North Horr July 2016	North Horr January 2017	Laisamis July 2016	Laisamis January 2017
Global < 125mm	3.8%(2.0- 7.2)	10.1 %(6.7-14.9)	5.7% (3.6- 9.1)	7.1% (3.8-12.9)
Severe under nutrition <115mm	0.5% (0.1- 3.8)	0.9%(0.3- 3.0)	0.4% (0.1- 1.8)	1.2%(0.4- 3.2)

3.5.3 Prevalence of Underweight

The prevalence of underweight is determined by low weight-for-age which arises from insufficient weight gain relative to age is a function of short stature, thinness or both. Underweight prevalence for Laisamis Sub County was 40.0% and North Horr Sub County was at 36.5%.

Table 5: Prevalence of Underweight

	North Horr July 2016	North Horr January 2017	Laisamis July 2016	Laisamis January 2017
Global underweight	32.1% (26.1-38.9)	36.5% (30.5-43.0)	35.3%(30.1-40.8)	40.0%(33.6-46.9)

The high prevalence of underweight in Laisamis and North Horr Sub counties is consistent with wasting prevalence an indication of same cause mainly of drought condition being experienced and poor access to health service delivery points due to poor community referral system and also the vastness of the county has limited scope of health facilities and with limited visits to far health facilities by the County Health Management Team (CHMT) like Illeret Health Centre in North Horr Sub County.

3.5.4 Prevalence of Stunting

Height-for-age is another anthropometric indices commonly used as an indicator for malnutrition. Stunting (low height-for-age), results from extended periods of inadequate food intake, poor dietary quality, increased morbidity, or a combination of the above factors. Stunting in childhood leads to reduced adult size and reduced work capacity. This, in turn, has an impact on economic productivity at the national level. The prevalence of stunting in North Horr Sub County was 23.5% and in Laisamis Sub County was 31.4%.

Table 6: Prevalence of Stunting

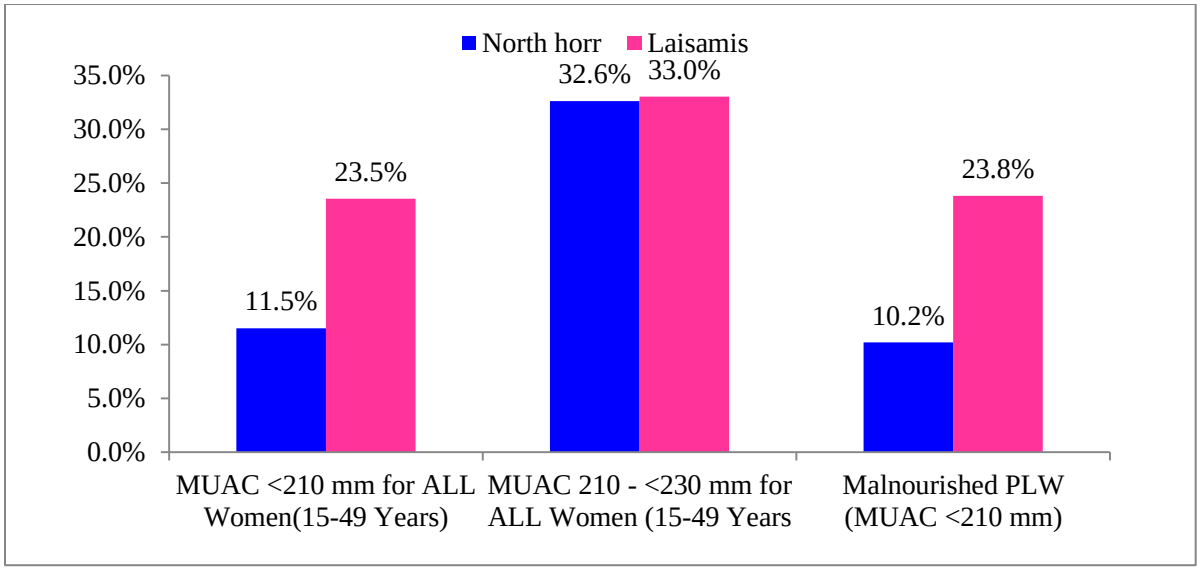
	North Horr July 2016	North Horr January 2017	Laisamis July 2016	Laisamis January 2017
Global Stunting	**25.4% (20.6-30.8)**	**23.5%(19.5-28.1)**	**30.4%(24.5-37.1)**	**31.4%(25.9-37.4)**

The high stunting levels could be attributed to the poor dietary intake both in terms of quantity and quality as evidenced by the household dietary diversity score which showed that the survey population relied heavily on 4 major food groups (cereals, legumes, fats & oils and sugars) which are predominantly high in energy but lack in the essential micronutrients required for proper growth and development mainly found in vegetables, fruits and protein-rich foods of animal sources e.g. meat, eggs, fish etc.

3.6 Maternal Nutrition Status

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. The following graph depicts the maternal nutrition situation of the women of the reproductive age and pregnant and lactating women in the two Sub counties.

Figure 6: Maternal Nutrition by MUAC



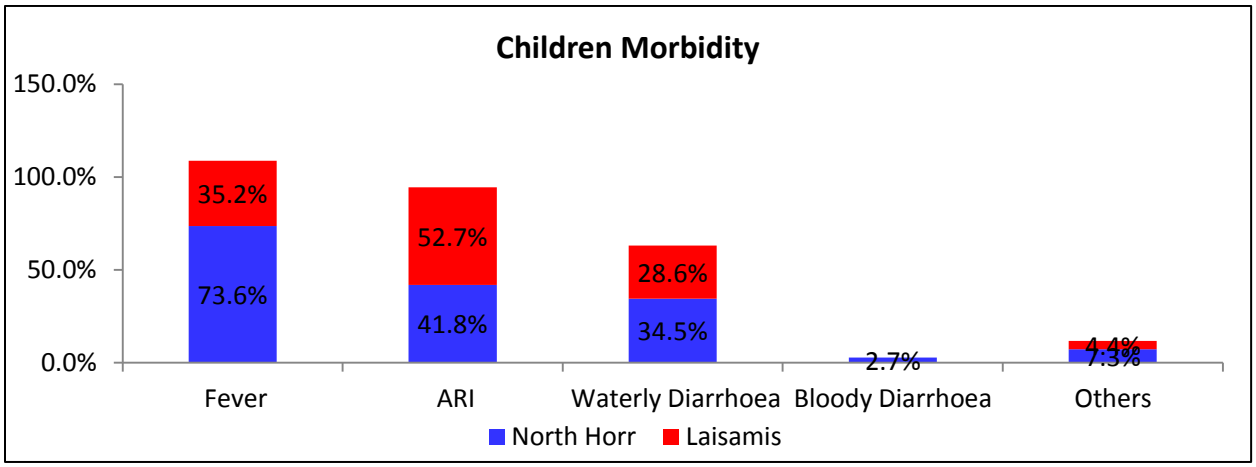
The maternal malnutrition was defined as women whose MUAC measurements were < 21.0cm while women whose MUAC measurements were between 21.0 <23.0cm were classified as at risk of malnutrition.
The proportion of malnourished pregnant and lactating women in Laisamis and North Horr sub counties was 23.8 and 10.2% respectively
The Proportion of Malnourished women of reproductive age in Laisamis and North Horr sub counties was 23.5% and 11.5% respectively.
The proportion of women of reproductive age at risk in Laisamis and North Horr sub counties was 33.0% and 32.6% respectively.

3.7 CHILD HEALTH AND IMMUNIZATION

3.7.1 Morbidity and Health Seeking Behaviour

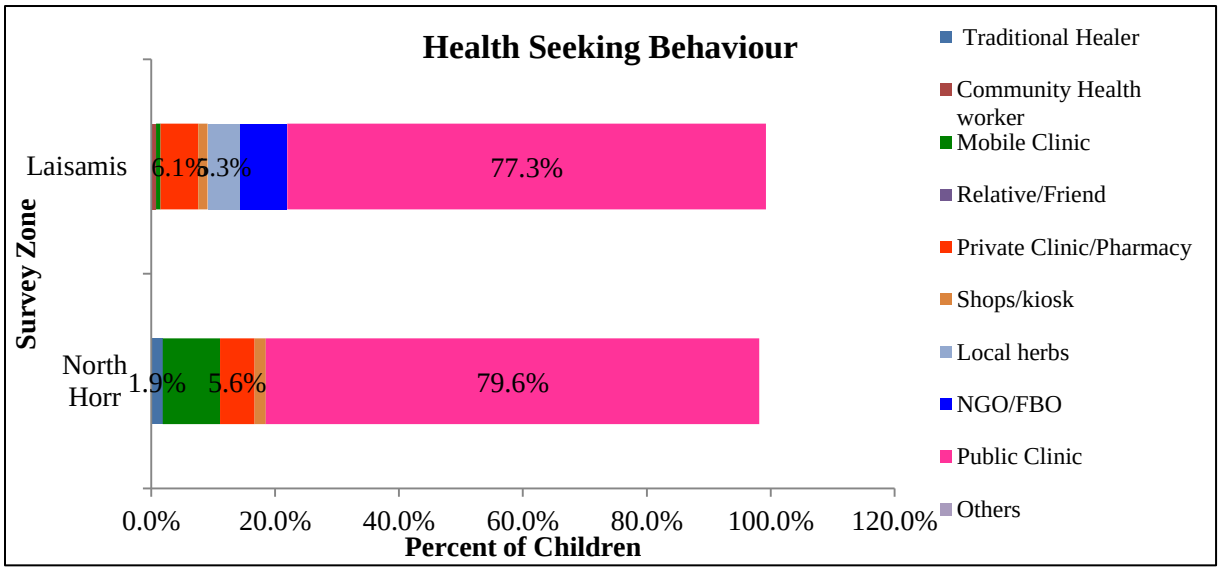
The morbidity of the children in the survey area was determined within a 2 week recall period. 25.2% (110) and 43.2% (182) of children in North Horr and Laisamis respectively were reported to have been ill two weeks prior to survey. Upon further analysis, it was found out that the leading causes of morbidity in North Horr was fever which accounted for 73.6% of the cases while in Laisamis was acute respiratory infections-ARI which accounted for 52.7% of the cases. The prevalence of watery diarrhoea was reported highest in North Horr at 34.5%. The prevalence of bloody diarrhoea was only reported in North Horr at 2.7%. This is depicted in the graph below.

Figure 7: Children Morbidity



In terms of the health seeking behaviour of the caregivers who had sick children with a period of 2 weeks before the survey, 49.1% and 72.5% of caregivers reported to have sought medical assistance when their children were ill in North Horr and Laisamis respectively.

Figure 8: Health seeking Behavior



77.3% and 79.6% of the caregivers in Laisamis and North Horr respectively sought health assistance from Public Clinic when their children were ill while 1.9% in North Horr sought health assistance from traditional healers and 5.3%in Laisamis sought health assistance from Local Herbs.

3.7.2 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 immunizations to the children were ascertained either by card (mother-child booklet) or by recall. The 1st measles immunizations coverage at 9 months by card was 72.1% and 53.7% for Laisamis and North Horr respectively. For the 2nd measles immunizations coverage at 18 months by card was 40.1% and 29.2% for Laisamis and North Horr Sub counties. For BCG vaccination which was ascertained by scar, the coverage performed quite well in the two sub-counties with all of them attaining the 80% national coverage targets.

For the OPV1 by card was 61.0% and 80.8% for North Horr and Laisamis Sub Counties respectively. For OPV3 by card was 55.3% and 76.5% for North Horr and Laisamis Sub counties respectively

In North Horr there was poor coverage of all immunizations which could be attributed to poor documentation.

Table 7: Immunization Coverage

Survey zone	North Horr			Laisamis		
Indicator	**n**	**N**	**%**	**n**	**N**	**%**
Measles at 9 Months (Yes by Card)	218	406	53.69%	287	398	72.1%
Measles at 9 Months (Yes by Recall)	138	406	33.99%	76	398	19.1%
Measles at 18 Months (Yes by Card)	96	329	29.18%	125	312	40.1%
Measles at 18 Months (Yes by Recall)	88	329	26.75%	72	312	23.1%
BCG by Scar	401	417	96.16%	403	414	97.3%
OPV 1 (Yes by Card)	266	436	61.01%	340	421	80.8%
OPV 1 (Yes by Recall)	147	436	33.72%	73	421	17.3%
OPV 3 (Yes by Card)	241	436	55.28%	322	421	76.5%
OPV 3 (Yes by Recall)	138	436	31.65%	72	421	17.1%

3.7.3 Zinc & Vitamin A Supplementation and Deworming Coverage

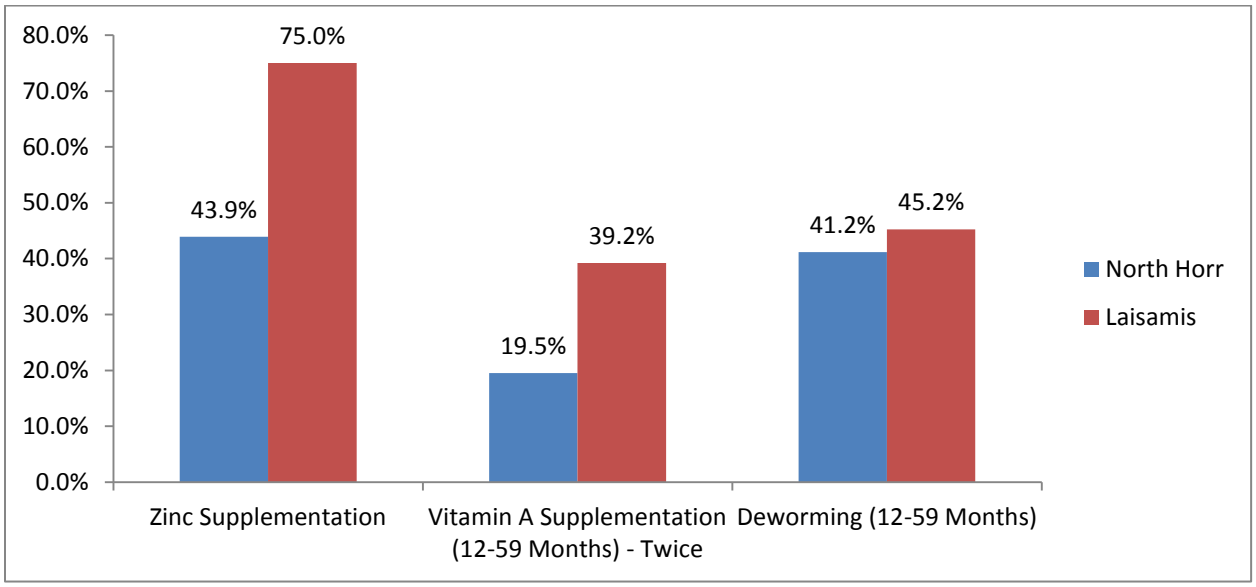
Vitamin A supplementation among children below the age of 5 years offers protection against common childhood infections and substantially reduces mortality hence improving the child's survival. Vitamin A

supplementation coverage was determined both for over the last six months and one year for all the surveyed areas. Zinc supplementation during diarrhoeal episodes is also recommended to reduce child morbidity in relation to diarrhoeal diseases. Deworming supplementation is also an important practice that gets rid of worms that compete for nutrients in the body and causing iron deficiency anaemia.

From the findings, Vitamin supplementation for children aged 12-59 months who had received Vitamin A twice was 19.5% and 39.2% for North Horr and Laisamis respectively.

With regard to Zinc supplementation, Laisamis had the coverage at 75.0% while North Horr had the coverage of 43.9%. For deworming of children aged 12-59 months, the coverage was 41.2% and 45.2% for North Horr and Laisamis respectively. The findings are summarized the graph below.

Figure 9: Zinc and Vitamin A supplementation and Deworming Coverage

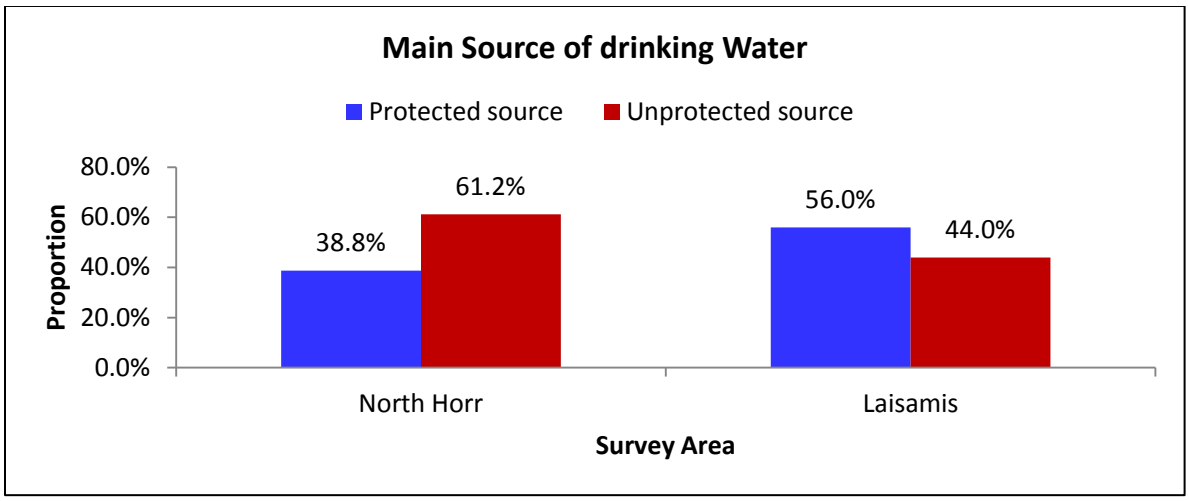


3.8 Household Water Access Sanitation and Hygiene

3.8.1 Main Sources of Drinking Water

Accessibility to improved water sources is of fundamental significance to lowering the faecal risk and frequency of associated diseases. In North Horr, 61.2% of the residence reported to get water from unprotected sources while in Laisamis 56.0% of the respondent reported to get water from protected sources. This is as shown by the graph below:

Figure 10: main source of drinking water

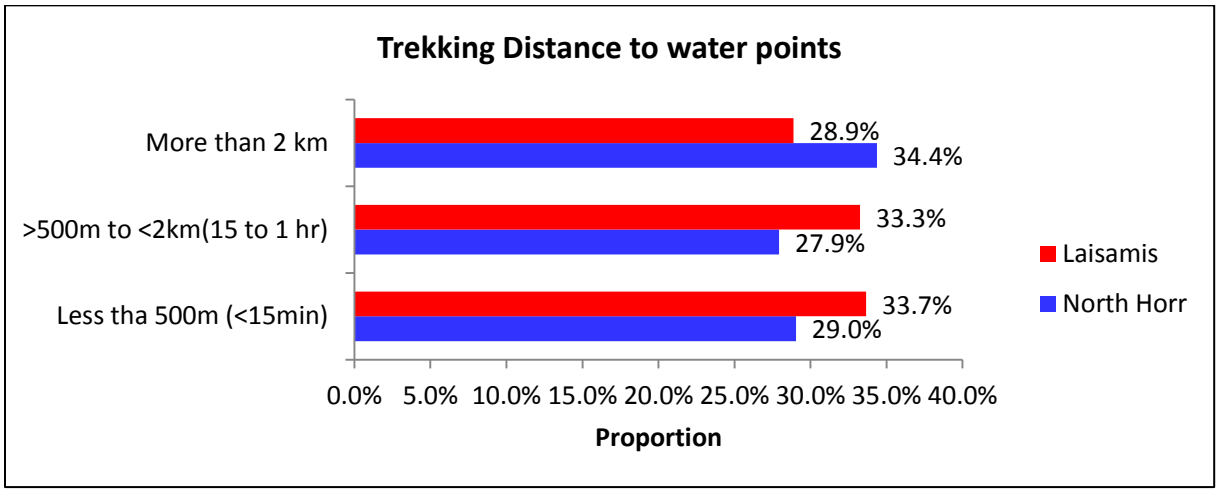


3.8.2 Trekking distance to Water point

The distance covered to access water sources is a proxy indicator for water accessibility for a significant proportion of households in the sub-counties where the survey was administered.

The trekking distances varied in both sub-counties with North Horr reporting 29.1% trekking <500m, 27.9% trekking >500m to <2km and 34.4% trekking >2km. In Laisamis, 33.7% trekked <500m, 33.3% trekked >500m to <2km and 28.9% trekked >2km. This is as shown in the graph below:

Figure 11: Trekking distance to water points

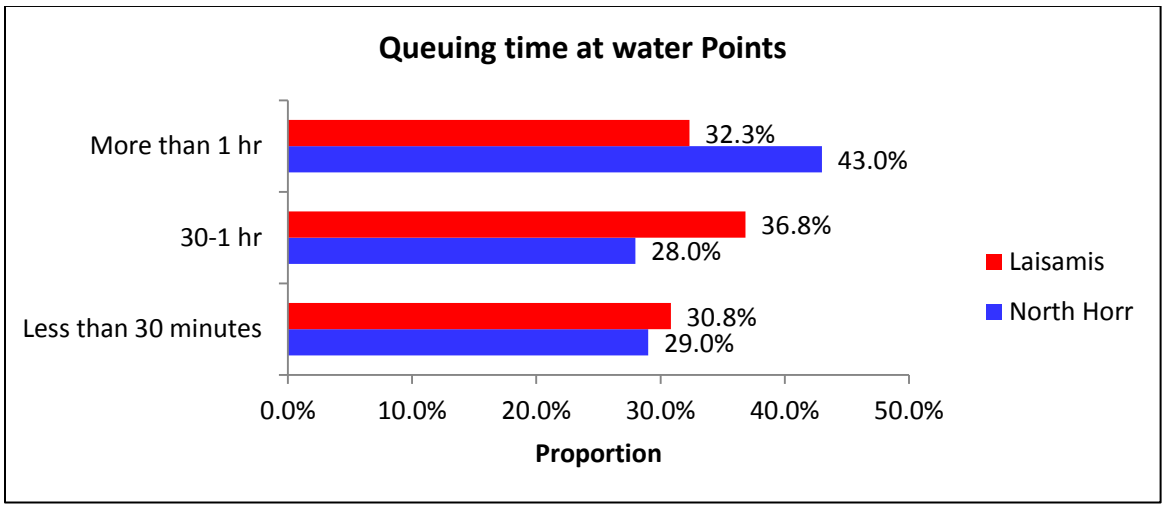


3.8.3 Queuing time at water points

There are often long queues at water access points because it takes time to fill containers and in order to reduce the time required for fetching water and to encourage the use of safe water sources, the Sphere Project recommends that no more than 15 minutes is spent waiting in queues at water access points.

The queuing time at water point in both sub-counties with North Horr reporting 29.0% queued <30 minutes, 28.0% queued>30 minutes to <1 hour and 43.0% queued >1 hour. In Laisamis, 30.8% queued <30 minutes, 36.8% queued>30 minutes to <1 hour and 32.3% queued >1 hour. This is as shown in the graph below:

Figure 12: Queuing time at water points



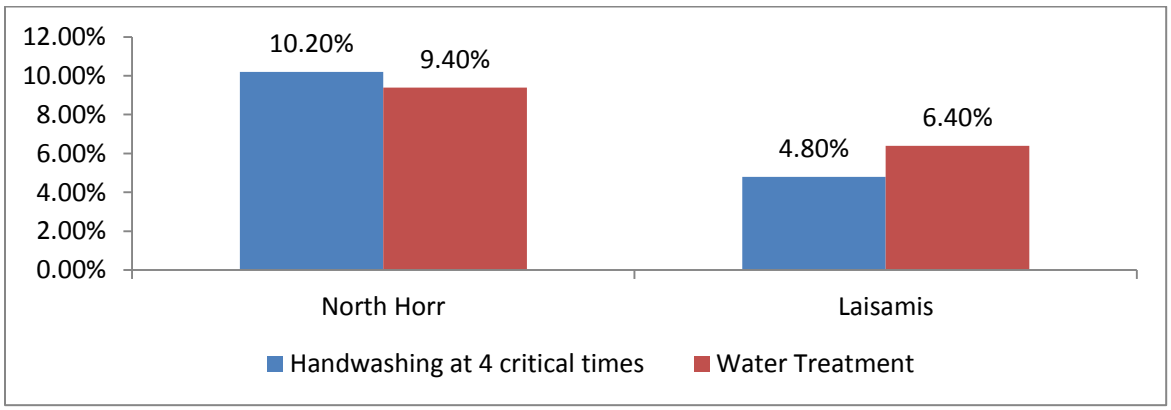
3.8.4 Water treatment and hand washing

With regard to treatment of the water before consumption, the situation varied in both sub-counties. In North Horr Sub County 9.4% while in Laisamis Sub county only 6.4% of the respondent who treated water before consumption.

Handwashing with soap is one of the most effective and inexpensive interventions for preventing diarrheal diseases and pneumonia, which together account for 3.5 million child deaths annually worldwide.[1] Handwashing is important for good health. Effective washing can be practiced with alternatives to soap and using a variety of different hygienic facilities. Overall, interventions to promote handwashing might save a million lives a year. Each person should be able to wash hands with water and soap after toilet use, before food preparation, before eating and after cleaning babies.

With regard to hand washing at 4 critical times, the practice was poor in both sub-counties with 10.2% in North Horr and 4.8% in Laisamis reported to have washed their hands at the critical times. This is as shown by the following graph:

Figure 13: Water treatment and Handwashing

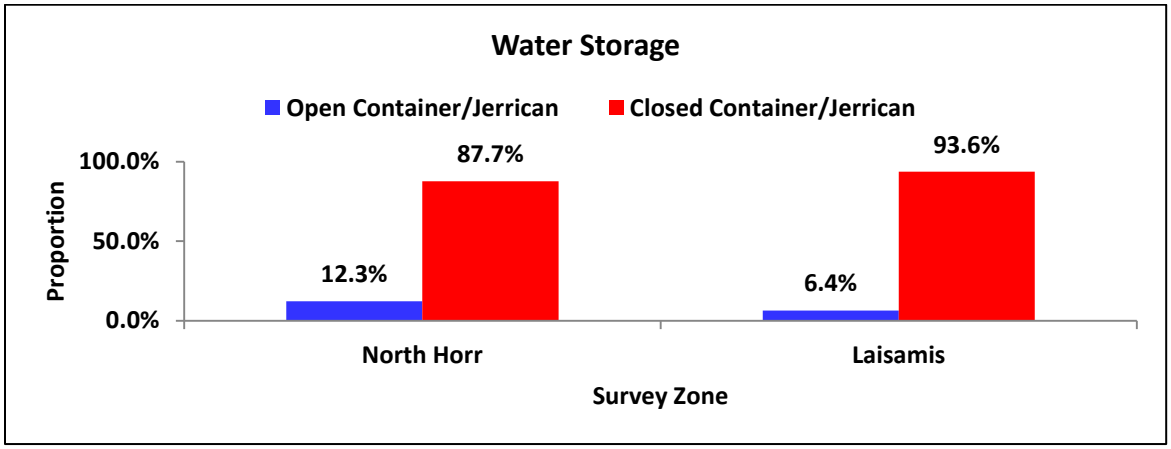


[1] Cairncross, S. and Valdmanis V. (2006) Chapter 41: Water Supply, Sanitation, and Hygiene Promotion. In D.T. Jamison, J.G. Breman, A.R. Measham, et al. (Editors), Disease Control Priorities in Developing Countries, 2nd edition (771-792). Washington (DC): World Bank.

3.8.5 Payment and water storage

With regard to water payment, 31.4% and 43.6% of the respondent pay for water in North Horr and Laisamis respectively. With regard to water storage, over 80% of North Horr and Laisamis respondents stored water in closed containers.

Figure 14: Water storage

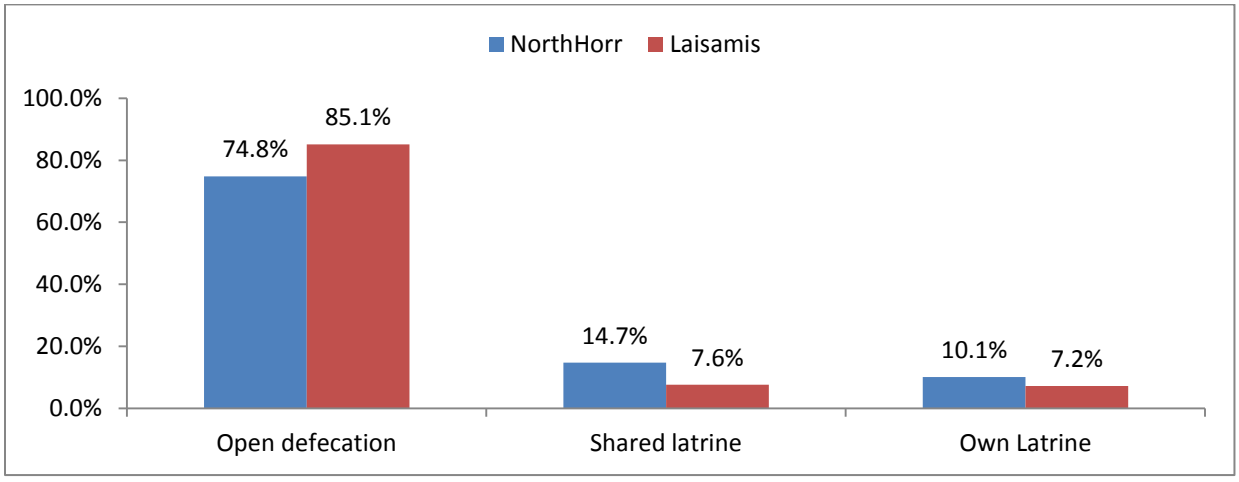


3.8.6 Access to toilet

In terms of accessing toilet facilities and ways of relieving, Over 70% of the respondent in both North Horr and Laisamis sub counties use open defecation as a method of relieving.

In term of ownership, 10.1% and 7.2% of the respondent in North Horr and Laisamis own a latrine. The findings are summarized in the graph below:

Figure 15: Access to toilet

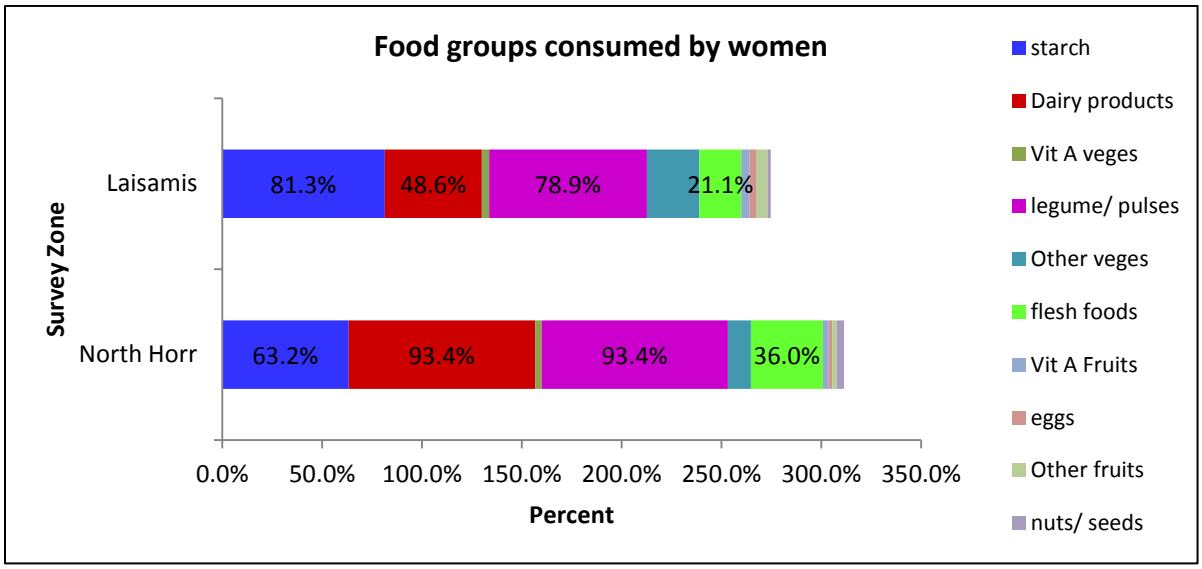


3.9 Food Security

3.9.1 Women dietary Diversity

Women of reproductive age (WRA)[2] are often nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Requirements for most nutrients are higher for pregnant and lactating women than for adult men[3]. Outside of pregnancy and lactation, other than for iron, requirements for WRA may be similar to or lower than those of adult men, but because women may be smaller and eat less (fewer calories), they require a more nutrient-dense diet [4] Insufficient nutrient intakes before and during pregnancy and lactation can affect both women and their infants. Yet in many resource poor environments, diet quality for WRA is very poor, and there are gaps between intakes and requirements for a range of micronutrients[5]. In assessing the nutritional quality and quantity of the food consumed by the surveyed women of reproductive age, a 24 hour recall period household dietary diversity questionnaire was administered and consumption of 10 food groups in the both Sub Counties is depicted in the graph below. In Laisamis, starch is the most consumed by women at 81.3% while in North Horr, dairy Products and legumes and pulses were the most consumed food groups by women at 93.4%. In Laisamis, Nuts and seeds were the least fed on food group at 1.5% while in North Horr; eggs were the least fed on food group at 1.7% by the Women within the last 24 hours. This is as shown in the graph below:

Figure 16: Food groups consumed by women



3.9.2 Minimum Dietary Diversity for Women

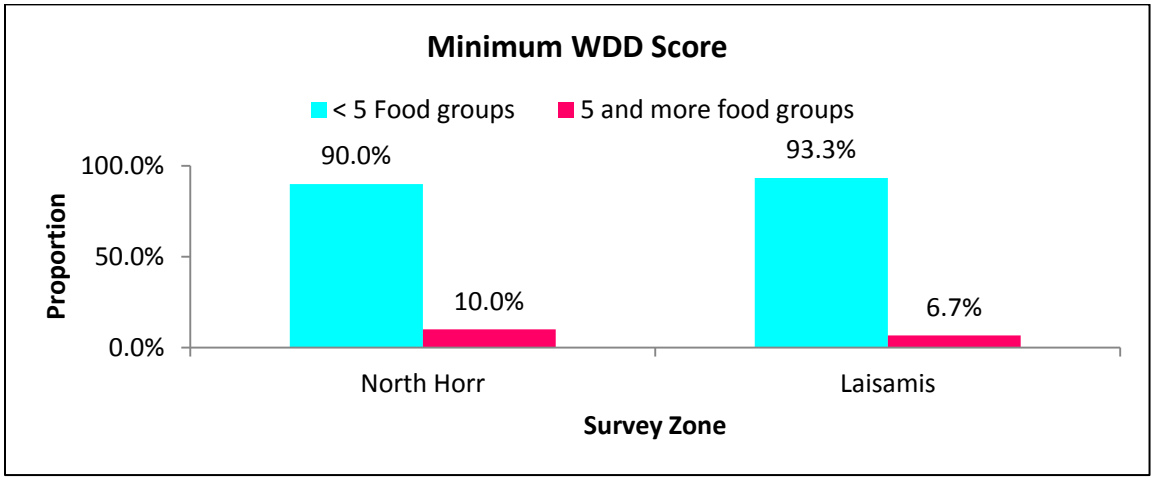
MDD-W[6] is a dichotomous indicator of whether or not women 15-49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient

[2] For the purposes of this document and indicator, WRA are defined as those 15–49 years of age.
[3] National Research Council, 2006; World Health Organization [WHO]/Food and Agriculture Organization of the United Nations [FAO], 2004
[4] "Nutrient density" refers to the ratio of nutrients (such as vitamins and minerals) to the energy content of foods.
[5] Arimond et al., 2010; Lee et al. 2013
[6] Additional background on the indicator is available at: http://www.fantaproject.org/monitoring-and-evaluation/ minimum-dietary-diversity-women-indicator-mddw.

adequacy, one important dimension of diet quality. The indicator constitutes an important step towards filling the need for indicators for use in national and subnational assessments. It is a population-level indicator based on a recall period of a single day and night, so although data are collected from individual women, the indicator cannot be used to describe diet quality for an individual woman. This is because of normal day-to-day variability in individual intakes.

With regard to Minimum WDDS, Over 90% of the women surveyed had consumed less than 5 food groups in both North Horr and Laisamis Sub counties. 10.0% and 6.7% of the women surveyed had consumed 5 and more food groups in both North Horr and Laisamis Sub counties respectively. This is as shown in the graph below:

Figure 17: Minimum Women Dietary Diversity Score

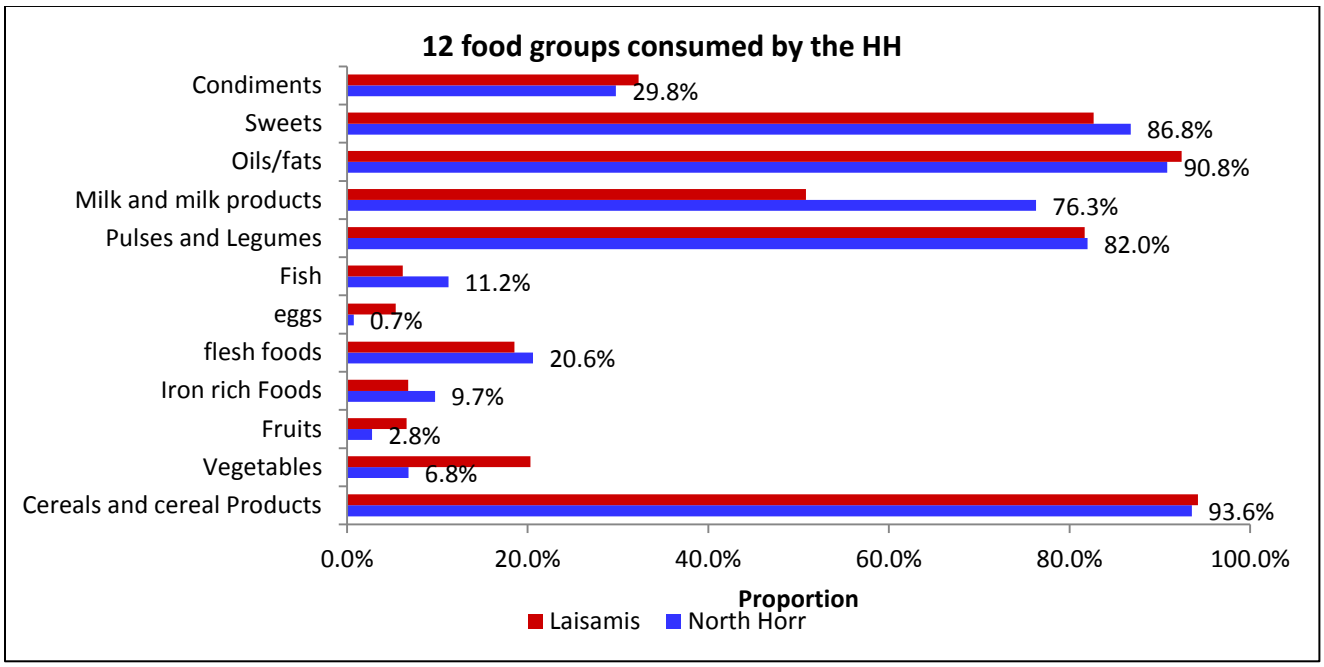


3.9.3 Household Dietary Diversity

In assessing the nutritional quality and quantity of the food consumed by the survey population, a 1 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-counties.

Four main food groups were consumed and were consistent in both sub-counties where the survey was conducted. This were cereals, legumes and pulses, fats and oils and sweets which were consumed by at least >80% of the population that was surveyed within the last 7 days. Iron rich foods, fish, eggs, fruits and vegetables was consumed by at least >15% of the surveyed population and was consistent in both sub-counties. This is as shown in the graph below:

Figure 18: 12 Food groups Consumed by the HH

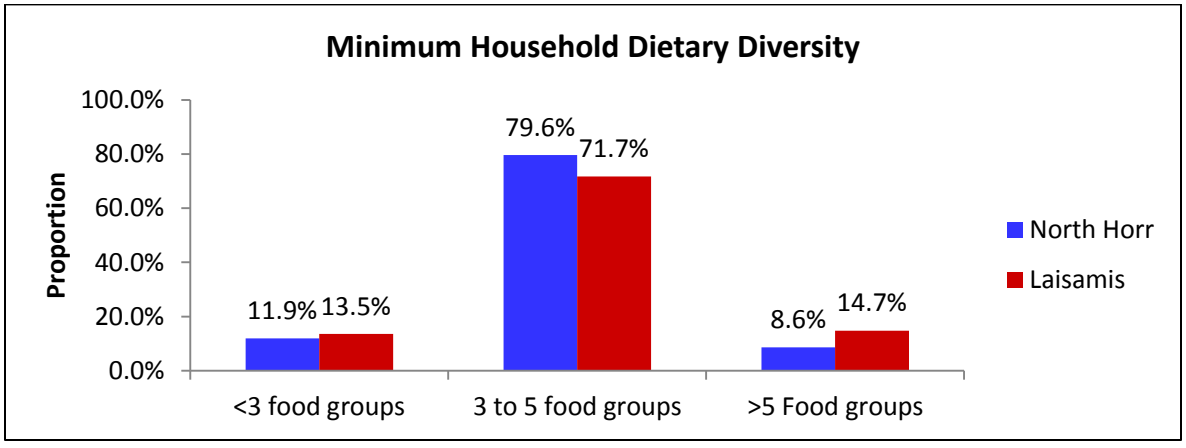


The proportion of households consuming cereals and cereal products and pulses and legumes was high and could be attributed to general food distribution during the drought period.

3.9.4 Minimum Household Dietary Diversity

Minimum Household Dietary Diversity is indicator of whether or not a household has consumed at least three out of twelve defined food groups within the last 7 days. Over 70% of the household surveyed had consumed 3 to 5 food groups in both Sub counties. 8.6% and 14.7% of the household surveyed had consumed more than 5 food groups in North Horr and Laisamis sub counties respectively.

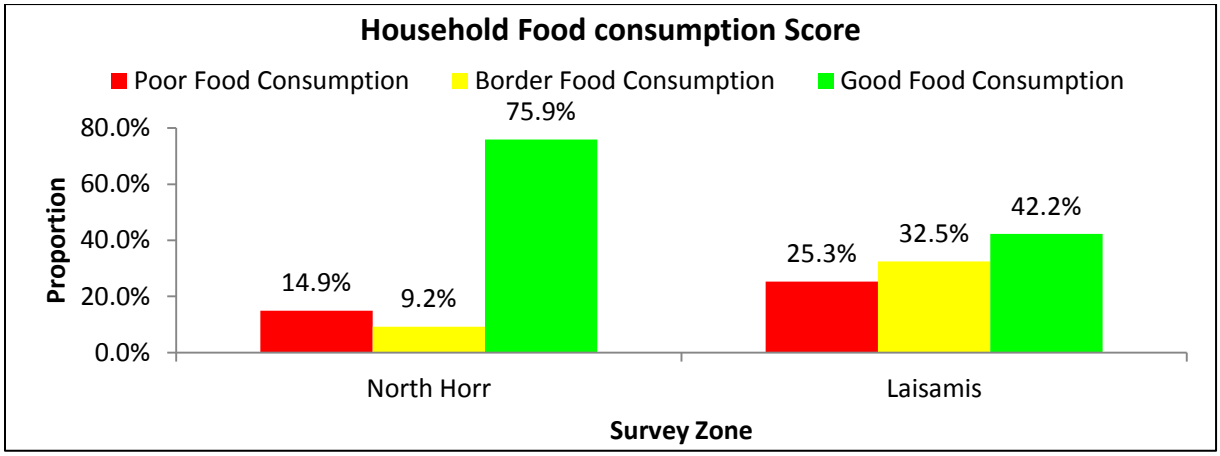
Figure 19: Minimum Household Dietary Diversity



3.9.5 Household Food Consumption Score

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. Laisamis had the highest proportion with poor food consumption (25.3%) and North Horr at 14.9%. Laisamis had the highest proportion with border food consumption at risk to poor food consumption (32.5%) and North Horr at 9.2%. This is as shown in the figure below:

Figure 20: Household Food Consumption Score



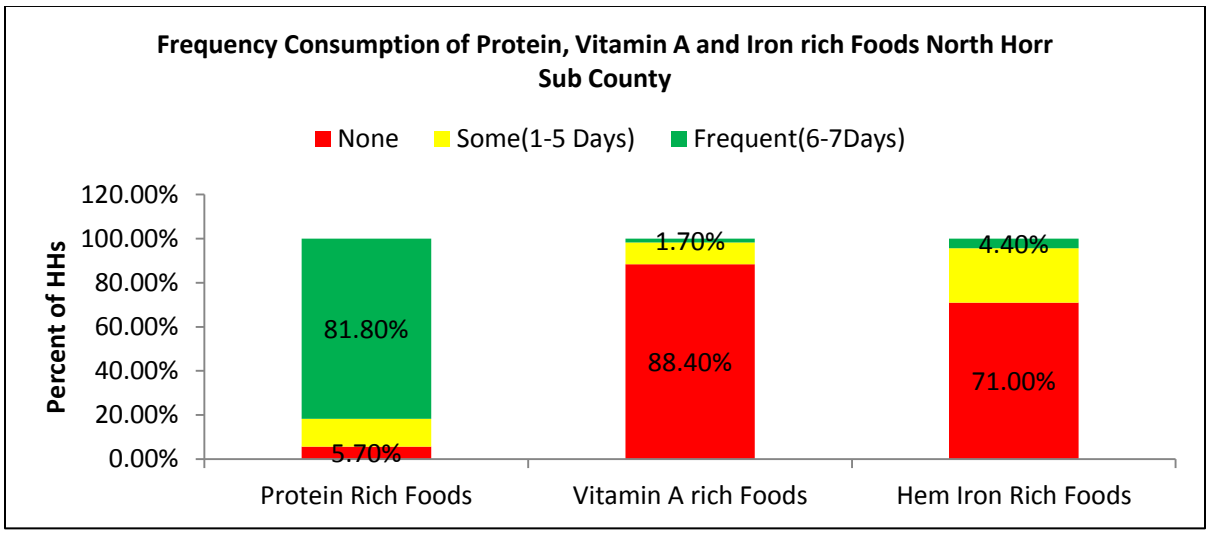
3.9.6 Food Consumption Score –Nutrition

WFP's key corporate indicator for measuring food insecurity is the Food Consumption Score (FCS) used to define categories of household (HH) food insecurity. The information gathered to develop the FCS additionally provides a wealth of unexploited data that can be used to inform on nutrient rich groups consumed by the HH and which are essential for nutritional health and well-being: protein, iron and vitamin A.

All macronutrients (carbohydrates, proteins and lipids) and micronutrients (vitamins and minerals) are important to ensure a healthy life, and all nutrients should be represented in a sufficient quantity for a balanced diet.
Macronutrients are good sources of energy. A lack in energy quickly leads to acute undernutrition. An insufficient intake of protein (essential for growth) is a risk for wasting and stunting. It also has an impact on micronutrient intake as protein foods are rich sources of vitamins and minerals.
Deficiencies in micronutrients, **such as vitamin A and iron,** over a long period of time, lead to chronic undernutrition. Iron deficiency leads to anaemia and Vitamin A deficiency leads to blindness and interferes with the normal functioning of the immune system, growth and development as well as reproduction.
This tool chooses to focus on three key nutrients; Protein, Vitamin A and Iron (hem iron) primarily for their nutritional importance but also those foods rich in these nutrients can be easily grouped from food consumption data.

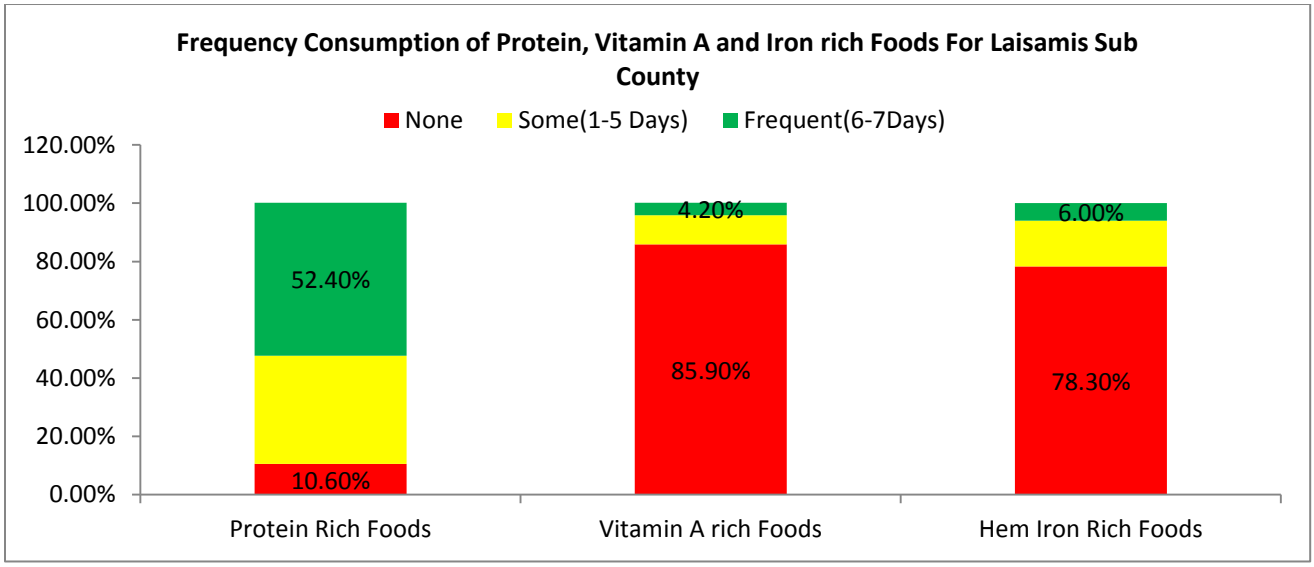
With Regard to Food consumption Score Nutrition, among the household surveyed in North Horr Sub Counties, 81.8% consumed protein Rich foods, 1.7% consumed Vitamin A rich foods and 4.4% consumed Hem Iron rich foods for 7 days.

Figure 21: Frequency Consumption of Protein, Vitamin A and Iron rich foods in North Horr Sub County



With Regard to Food consumption Score Nutrition, among the household surveyed in Laisamis Sub Counties, 52.4% consumed protein Rich foods, 4.2% consumed Vitamin A rich foods, and 6.0% consumed Hem Iron rich foods for 7 days.

Figure 22: Frequency Consumption of Protein, Vitamin A and Iron rich Foods in Laisamis Sub County



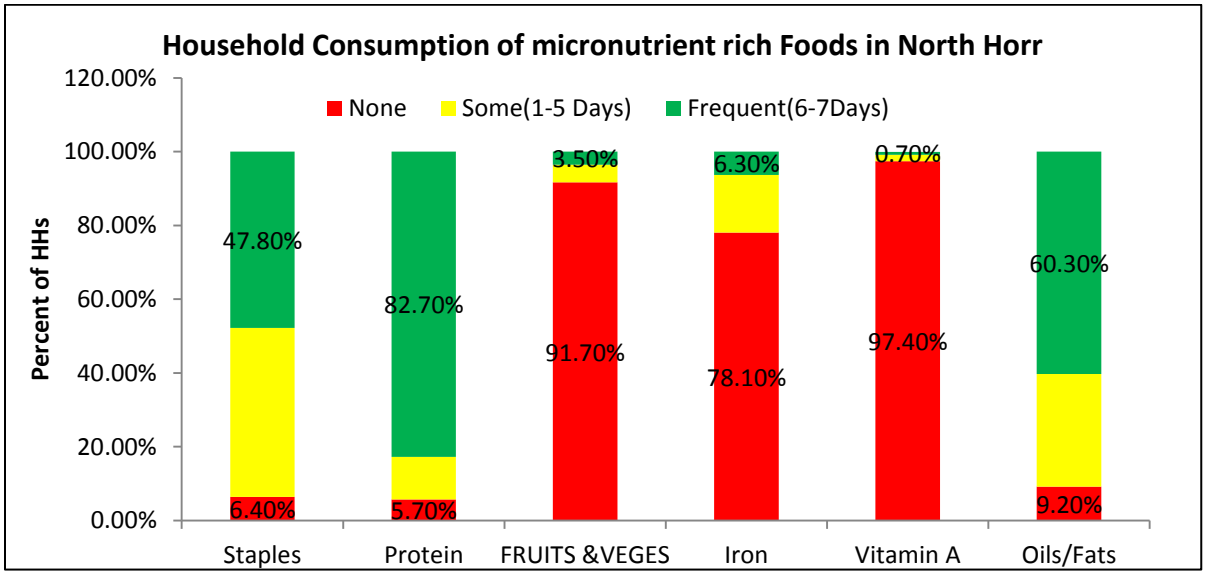
3.9.7 Micro Nutrient

The poor quality of the habitual diet and the lack of dietary diversity in much of the developing world contribute to deficiencies of micronutrients. Micronutrient malnutrition is a global problem much bigger than hunger and imposes enormous costs on societies in terms of ill health, lives lost, reduced economic productivity and poor quality of life. Addressing the global challenge of micronutrient malnutrition requires the need for many strategies – both short- and intermediate-term and long-term sustainable approaches. In addition to the conventional approaches of micronutrient supplementation and fortification, promoting sustainable food based approaches to enable adequate intakes of micronutrients

by much of the population includes dietary diversification strategies and agriculture-based approaches. Dietary diversification is possible by the promotion of homestead food production, which includes home gardening, small livestock rearing and fishing as well as the processing and preservation of food. Agriculture and agricultural biotechnology offer the opportunity of increasing crop yields and have the potential to improve the micronutrient content of staple foods and cereal crops, thus contributing to better nutrition of populations and thereby helping to achieve nutrition security. By ensuring food and nutrition security and by reducing the widespread problem of micronutrient malnutrition we may hope to achieve the targets set for the Millennium Development Goals.

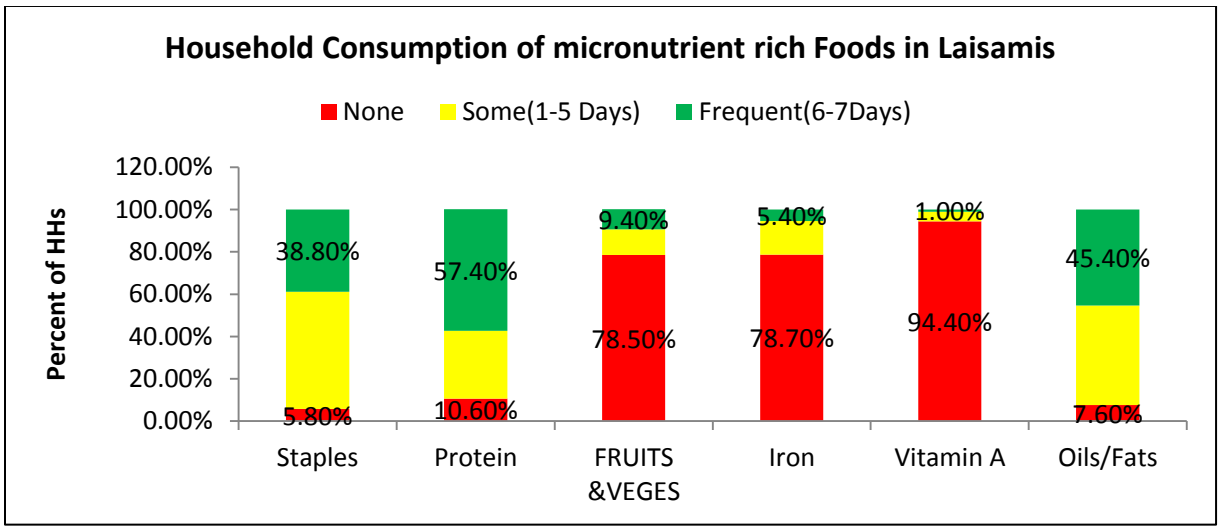
With Regard to Household Consumption of micronutrient rich Foods, among the household surveyed in North Horr Sub County, 3.5% had consumed Fruits and Vegetables, 6.3% had consumed Iron rich Foods and 0.7% had consumed Vitamin A rich foods, 82.7 % had consumed protein rich foods and 47.8% had consumed staples for 7 days.

Figure 23: Household Consumption of Micro nutrients rich foods in North Horr Sub County



With Regard to Household Consumption of micronutrient rich Foods, among the household surveyed in Laisamis Sub County, 9.4% had consumed Fruits and Vegetables, 5.4% had consumed Iron rich Foods and 1.0% had consumed Vitamin A rich foods, 57.4 % had consumed protein rich foods and 38.8% had consumed staples for 7 days.

Figure 24: Household Consumption of Micro nutrient rich foods in Laisamis Sub County



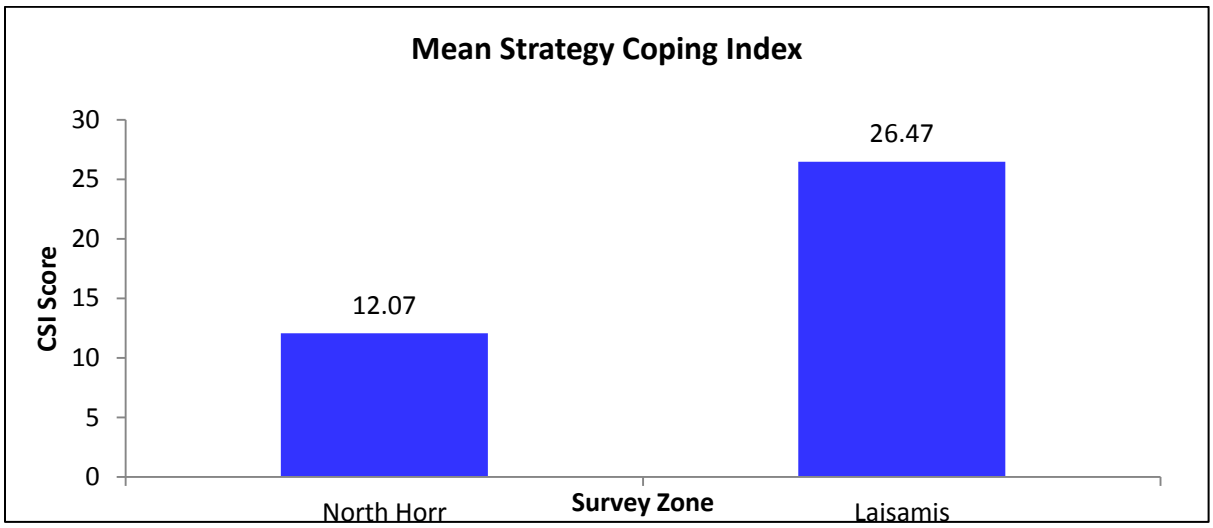
4.0 Livelihood

4.1 Coping strategy Index

The Coping Strategy Index (CSI), a tool developed by the World Food Programme, is commonly used as a proxy indicator for access to food.[7] It is a weighted score that allows one to measure the frequency and severity of coping strategies. Data is collected on the number of days in the last seven days a household used a specific coping strategy due to a shortage of food and/or income.

The mean coping strategy Index for Laisamis Sub County was 26.47 and for North Horr Sub county was 12.07.

Figure 25: Mean Strategy Coping Index



[7] 'Access to food' is just one of the three pillars of food security. Other pillars include, 'food availability' and 'food utilization'.

Chapter 4

CONCLUSION AND RECOMMENDATIONS

FINDINGS	RECOMMENDATION	ACTOR (BY WHOM?)	TIME LINE
Very Critical Levels of GAM in North Horr and Laisamis of 31.5% and 24.7% Respectively	➢ Conduct Mass screening in all the hotspots (screening of the Malnourished children and treatment through existing Health facilities and outreach sites) ➢ Scaling up of the NACS (Nutrition assessment, counselling and Support) in all the health Facilities within the hotspot areas. ➢ Scale up of integrated outreach services in both sub counties by mapping of the Old and New Health Facilities/Outreaches in the area and then identify any Gaps in services provision. ➢ Rolling out and strengthening the Community Health Strategy ➢ There is need to promote the consumption of the least consumed food groups such as eggs, fish, fruits, and vegetables. Low consumption of eggs and fish has been attached to cultural practices and hence it's important to design a BCC approach to address the issues.	IPs and the MoH	Ongoing
Low Vitamin A, Deworming Coverage and Zinc Supplementation for Diarrhoea Management	➢ Sensitization of health workers on the need for documentation of both Vitamin A and Deworming Services on Child Health Booklet ➢ Integrate Vitamin A and Deworming in the outreaches. ➢ Targeting the Early Childhood Education Centres for both	All IPS and County health department	Immediately

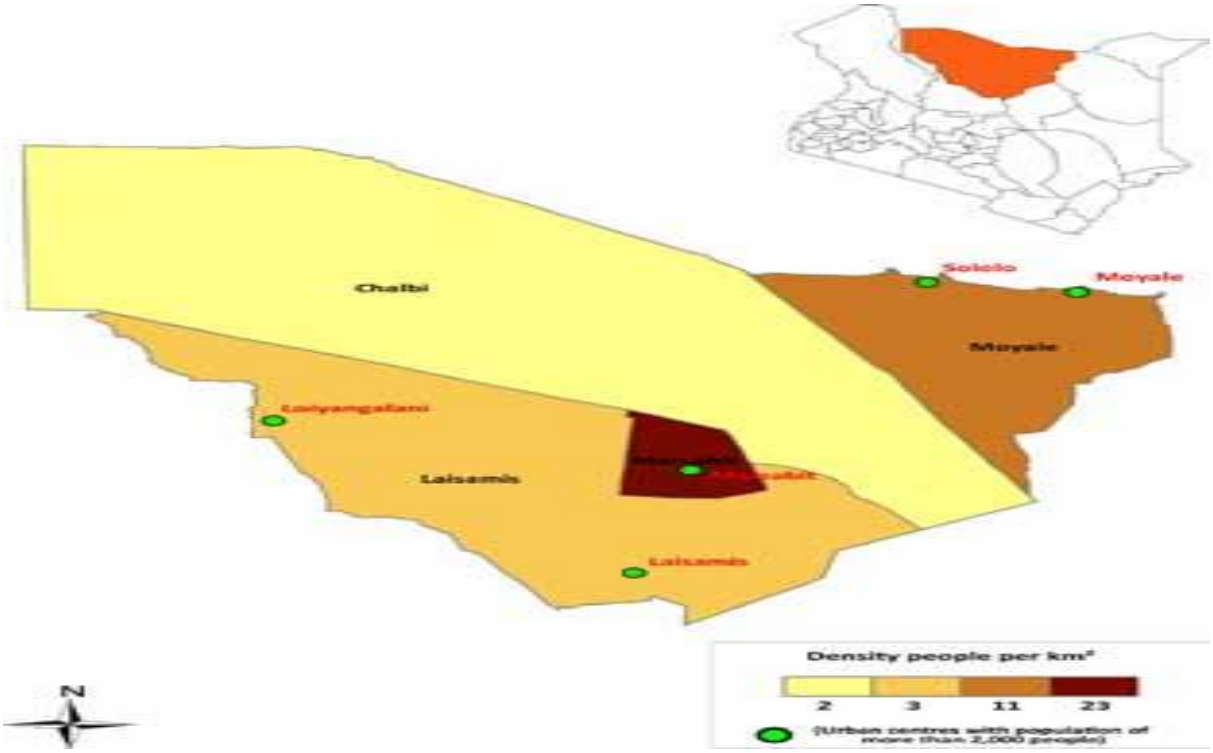
	Vitamin A and Deworming Activities. ➢ Strengthen the health system for monitoring of the nutrition indicators.		
Inadequate household water access and poor water treatment as well as poor hand washing practices	➢ Conduct/scale up health education targeting behaviour change on part of handwashing at critical times. ➢ Provision of water treatment chemicals to households obtaining water from unsafe sources	All IPS and County health department	Immediately
Poor access to health service delivery points	➢ Remapping of Outreaches to match the hotspot areas in the Sub Counties. ➢ Strengthening community referral system through the community units.	All IPS and County health department	Immediately .
Few health facilities have implementing IMAM surge Approach	➢ Full role out of IMAM surge Approach in all the health facilities	MoH and IPS	Ongoing
Poor mobilization in hygiene and sanitation related issues	➢ Community sensitization on the importance of proper human waste disposal through community based forums and schools	MoH and IPS	
Low latrine coverage	➢ Scaling up of latrine coverage using the CLTS approach	MoH and WASH Partners	
Inadequate HR in Health Facilities.	➢ Employment of CHEWs to monitor community level interventions	MoH	

ANNEXES

Annex 1: Overall Score of the Survey

Overall data quality for the Laisamis Sub County

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	**0** (1.0 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**0** (p=0.465)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**0** (p=0.154)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (4)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (5)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (7)
Standard Dev WHZ .	Excl	SD	<1.1 and	<1.15 and	<1.20 and	>=1.20 or	
.	Excl	SD	>0.9 0	>0.85 5	>0.80 10	<=0.80 20	**0** (1.02)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**0** (-0.12)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**0** (-0.03)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	**5** (p=0.000)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**5** %

The overall score of this survey is 5 %, this is excellent.

Annex 2: MAP of Marsabit County