

SMART SURVEY FINAL REPORT

MARSABIT COUNTY

18TH JULY – 1ST AUGUST, 2016

ACKNOWLEDGEMENTS

This survey has been carried out with the support and participation of many partners at different levels who are highly acknowledged. These include; UNICEF and GIZ for funding the survey, Ministry of Health, National Drought Management Authority (NDMA), Ministry of Agriculture, Department of Health Marsabit County, Food for the Hungry - Kenya, World Vision – Kenya, Concern Worldwide, Kenya Red Cross, World Food Programme, GAIN, KNHP Plus and ILRI for the active participation and the supervision roles they played during the survey.

At the community level, special gratitude is due to the households which participated in the survey. The local administrators are also acknowledged for their role in mobilizing the community and acting as guides to the enumerators during the exercise.

The survey teams composed of the enumerators and team leaders are highly appreciated for the hard work of collecting the high quality data to the best of their abilities.



TABLE OF CONTENTS

ACKNOWLEDGEMENTS	II
TABLE OF CONTENTS	III
LIST OF FIGURES	V
LIST OF TABLES	V
ACRONYMS	VI
EXECUTIVE SUMMARY	VII
CHAPTER ONE	1
1.0 BACK GROUND	1
1.1 Rationale of the Survey	2
1.2 Objective of the Survey	2
1.3 Timing of the survey	3
1.4 Seasonal Calendar	3
CHAPTER TWO	4
2.0 SURVEY METHODOLOGY	4
2.1 Survey Area.....	4
2.2 Survey Design	4
2.3 Study Population	4
2.4 Sample Size	4
2.5 Cluster and Household Selection	5
2.6 Data Collected.....	5
2.7 Survey Organisation.....	6
2.8 Data Analysis and Report Writing.....	6
CHAPTER THREE	7
3.0 SURVEY RESULTS AND DISCUSSION	7
3.1 Demographic Results.....	7
3.2 Highest Level of Education Attained	7
3.3 Main Occupation and source of income of Household Head	8
3.4 Nutritional Status of Children Under-Five Years	9
3.4.1 Prevalence of acute malnutrition (weight-for-height z-score –WHO Standards 2006).....	9
3.4.2 Prevalence of Acute malnutrition by MUAC	10
3.4.3 Prevalence of Underweight	10
3.4.4. Prevalence of Stunting.....	11
3.5 Maternal Nutrition Status	11
3.6 Child Health and Immunization	12

3.6.1 Morbidity and Health Seeking Behavior	12
3.6.2 Immunization Coverage.....	14
3.6.3 Zinc & Vitamin A Supplementation and Deworming Coverage.....	15
3.7 Household Water Access Sanitation and Hygiene	16
3.7.1 Main Sources of Drinking Water.....	16
3.7.2 Trekking distance to Water point	17
3.7.3 Queuing time at water points	17
3.7.4 Water treatment and hand washing	18
3.7.5 Water Payment and storage.....	19
3.7.6 Access to toilet	19
3.8 Food Security	20
3.8.1 Women dietary Diversity	20
3.8.2 Minimum Dietary Diversity for Women.....	21
3.8.3 Household Dietary Diversity.....	22
3.8.4 Minimum Household Dietary Diversity.....	23
3.8.5 Household Food Consumption Score	24
3.8.6 Food Consumption Score –Nutrition	24
3.9 Livelihood.....	26
3.9.1 Coping strategy Index	26
CHAPTER FOUR.....	27
CONCLUSION AND RECOMMENDATION.....	27

List of Figures

Figure 1: Map of Marsabit County	1
Figure 2: Respondents Marital Status	7
Figure 3: Highest Education Level of the HH head	7
Figure 4: Main Occupation of HH Head	8
Figure 5: Maternal Malnutrition by MUAC.....	11
Figure 6: Morbidity Rate.....	12
Figure 7: Children Morbidity	13
Figure 8: Health Seeking Behavior	14
Figure 9: Zinc & Vitamin A Supplementation and Deworming Coverage	16
Figure 10: Main Sources of Drinking Water	16
Figure 11: Trekking distance to water point.....	17
Figure 12: Queuing time at water points.....	17
Figure 13: Water treatment and hand washing.....	18
Figure 14: Water Storage	19
Figure 15: Access to toilet.....	20
Figure 16: Food Groups Consumed by women	21
Figure 17: Minimum WDD Score	21
Figure 18: 12 Food Groups consumed by Household	22
Figure 19: Minimum Household Dietary Diversity	23
Figure 20: Household Food consumption Score.....	24
Figure 21: Frequency Consumption of Protein, Vitamin A and Hem Iron rich foods In Marsabit County	25
Figure 22: Mean coping strategy index	26

List of Tables

Table 1: summary of the key findings:.....	viii
Table 2: Sample Size Calculation.....	4
Table 3: sample size calculation for Laisamis.....	5
Table 4: Prevalence of acute malnutrition by WHZ.....	9
Table 5: Prevalence of Acute malnutrition by MUAC	10
Table 6: Prevalence of Underweight.....	10
Table 7: Prevalence of Stunting.....	11
Table 8: Immunization Coverage	15
Table 9: Summary of Conclusion and Recommendation	27

ACRONYMS

CI:	Confidence Interval
BCG:	Bacillus Calmette–Guérin
CNO:	County Nutrition Officer
CSI:	Coping Strategy Index
CHEWs:	Community Health Extension Workers
CBSS:	Community based Surveillance System
CHVs:	Community Health Volunteers
DHIS:	District Health Management System
DEFF:	Design Effect
ENA:	Emergency Nutrition Assessment
GAM:	Global Acute Malnutrition
FCS:	Food Consumption Score
HAZ:	Weight-for-Age Z score
HH:	Household
HiNi:	High Impact Nutrition Intervention
IMAM:	Integrated Management of Acute Malnutrition
MoA:	Ministry Of Agriculture
MoH:	Ministry of Health
MAM:	Moderate Acute Malnutrition
MUAC:	Mid Upper Arm Circumference
NIWG:	Nutrition Information Working Group
NDMA:	National Draught Management Authority
NGO:	Non-Governmental Organization
OPV:	Oral Polio Vaccine
ODK:	Open Data Kit
PLW:	Pregnant and lactating women
PPS:	Probability Proportional to Population Size
SAM:	Severe Acute Malnutrition
SCHMT:	Sub-County Health Management Team
CHMT:	County Health Management Team
SMART:	Standardized Monitoring and Assessment in Relief and Transition
SD:	Standard Deviation
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
WRA:	Women of Reproductive age
WHZ:	Weight-for-Height Z score
WDDS:	Women dietary Diversity 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 Marsabit County. 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 all four Sub-Counties: Moyale, Laisamis, Saku 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, 36 in North Horr, 30 in Moyale and 30 in Marsabit Central (Saku). The total sample size for children aged between 6 and 59 month was; 423 in Laisamis, 365 in North Horr, 332 in Moyale and 271 in Saku.

All the sampled clusters were visited by the survey team for data collection where a total of 1,907 households were reached against a target of 1,919 households. Data collection was done using android mobile phones installed with ODK app. The analysis for anthropometric data was done using the ENA 9th July 2015 software while other indicators were analyzed using Microsoft Excel and SPSS Version 20.0

The survey established that majority of the residents (99.4%) of Marsabit County are residence The prevalence of Global acute malnutrition for children was at 14.4% which is *serious*, stunting at 28.8%

which is *medium* and underweight at 28.2% which is *high* according to WHO standards. Wasting for pregnant and lactating mothers (PLW) was at 8.8% and 8.7% for women of reproductive age (WRA).

Children morbidity prevalence was at 33.7% with ARI being the leading cause. The respondents reported to have good health seeking behaviour with most of them (70.0%) seeking health services from Public Clinics Vitamin A coverage for children 12-59 months was high at 84.4% and above the national target of 80%. Water Sanitation and Hygiene indicators were found to be poor with only 41.3% of the residence accessing water from protected sources while only 19.6% managed to treat their water before drinking. Latrine access was poor (51%) and similarly hand washing at 4 critical times was poor 11.6%.

The survey found that 50.4% of the households consumed more than 5 food groups and 37.6% of the women consumed 5 or more food groups.

Table 1: summary of the key findings:

Indicators	Laisamis	North Horr	Saku	Moyale	County
Clusters	36	36	30	30	132
HHs Targeted	592	532	383	412	1919
HHs Reached	589	535	375	408	1907
Nutritional Status (6 – 59 months) Weight- for-Height Z – scores (Wasting) WHO 2006 Standards					
Global Acute Malnutrition (<-2 Z-score)	22.5% (18.2-27.4)	22.8% (17.8-28.7)	7.4% (4.8-11.3)	7.5% (5.2-10.7)	14.4% (12.6 -16.3)
Severe Acute malnutrition (<-3 Z-score)	4.7% (2.6- 8.3)	3.6% (1.8- 6.9)	1.4% (0.5- 3.6)	0.5% (0.1- 2.1)	2.30% (1.7 - 3.2)
Nutritional Status (6 – 59 months) Weight- for-Age Z – scores (Underweight) WHO 2006 Standards					
Prevalence of Global Underweight (<-2 Z-score)	35.3% (30.1-40.8)	32.1% (26.1-38.9)	20.0% (14.4-27.1)	25.4% (19.4-32.4)	28.20% (25.2 -31.5)
Nutritional Status (6 – 59 months) Height- for-Age Z – scores (Stunting) WHO 2006 Standards					
Prevalence of Global Stunting (<-2 Z-score)	30.4% (24.5-37.1)	25.4% (20.6-30.8)	27.3% (20.7-35.2)	30.8% (24.6-37.6)	28.80% (26.1 -31.7)
Immunization Coverage (6-59 months)					
Measles Coverage at 9 Months by Card	58.87%	67.3%	74.64%	58.6%	63.6%
Measles Coverage at 9 Months by Recall	30.5%	19.7%	23.57%	31.5%	27.2%

Measles Coverage at 18 Months by Card	7.65%	6.2%	14.48%	7.9%	8.5%
Measles Coverage at 18 Months by Recall	7.65%	3.9%	7.24%	6.5%	6.3%
BCG by scar	97.78%	96.4%	97.32%	93.3%	96.8%
OPV 1 by Card	66.7%	72.3%	77.3%	69.2%	70.7%
OPV 1 by Recall	31.4%	17.8%	22.7%	28.0%	25.4%
OPV 3 by Card	61.59%	67.4%	70.67%	66.6%	67.4%
OPV 3 by Recall	31.4%	17.6%	21.7%	29.3%	25.8%
Zinc Supplementation	69.6%	42.9%	69.2%	33.3%	40.2%
Vitamin A (12 – 59 months) – twice	37.2%	48.6%	59.8%	47.0%	47.6%
Deworming (12-59 months)	57.4%	58.6%	80.1%	47.8%	58.4%
Child Morbidity (0 – 59 months)					
Sickness two weeks prior to survey	42.4%	19.1%	30.0%	39.4%	33.7%
Acute Respiratory Infection	73.4%	56.0%	63.3%	46.7%	57.4%
Fever	29.2%	66.7%	28.9%	45.4%	41.2%
Watery diarrhoea	10.4%	17.3%	14.4%	26.3%	19.0%
Bloody diarrhoea	1.6%	1.3%	0.0%	3.3%	2.1%
Prevalence of diarrhoea	11.98%	18.7%	14.4%	29.6%	20.9%
Maternal Health and Nutrition					
MUAC <21cm for WRA	15.2%	10.6%	4.0%	6.5%	8.7%
MUAC (21 < 23 cm) For WRA	33.0%	31.9%	13.4%	12.1%	21.2%
MUAC <21cm for PLW	17.6%	9.5%	3.4%	4.9%	8.8%
Iron Folate Supplementation	71.7%	41.7%	89.9%	71.2%	63.0%
Household Food Consumption (Food consumption Score)					
Poor FCS	10.2%	6.4%	0.8%	3.9%	3.3%
Border FCS	12.6%	13.6%	2.7%	7.1%	6.6%
Good FCS	77.2%	80.0%	96.5%	89.0%	90.2%
Water and Sanitation (WASH)					
Water sources Protected source	45.5%	42.1%	51.2%	33.1%	41.3%
Water sources Unprotected source	54.5%	57.9%	48.8%	66.9%	58.7%
Methods of relieving Open defecation	77.9%	75.3%	19.5%	23.5%	48.9%
Methods of relieving Shared latrine	10.2%	22.1%	2.4%	25.5%	20.6%
Methods of relieving Own latrine	11.9%	2.6%	57.9%	51.0%	30.5%
Water treatment	12.2%	13.1%	30.7%	24.0%	19.6%

Minimum Dietary Diversity of the Household					
<3 food groups	23.1%	3.0%	0.0%	0.2%	12.1%
3 to 5 Food groups	45.7%	49.5%	5.6%	15.7%	37.5%
>5 food groups	31.2%	47.5%	94.4%	84.1%	50.4%
Women Dietary Diversity					
<5 food groups	72.7%	90.9%	29.3%	55.3%	62.4%
5 or more food groups	27.3%	9.1%	70.7%	44.7%	37.6%

From the survey results, a number of recommendations were made to help improve the health and nutrition indicators in Marsabit County. Considering the poor access to health service delivery points, there is need to strengthen community referral systems through community units. The County and partners should work together to strengthen the existing Community Units to be active and establish new ones especially for areas that are vast like North Horr and Laisamis Sub Counties. Community Health Volunteers (CHVs) should continue to be capacity built and be trained on Community Nutrition Technical Module. In order to enhance monitoring of the community units the County should employ more CHEWs. There is need to fully role out IMAM surge approach in all the health facilities since only few health facilities are currently implementing the model. Further, community mobilization efforts on WASH need to be intensified to raise awareness through community forums and schools. The county Government should also prioritize and commit to strengthening County nutrition surveillance activities i.e. CBSS and mass screening by increasing funding of the Nutrition related activities.

Chapter One

1.0 BACK GROUND

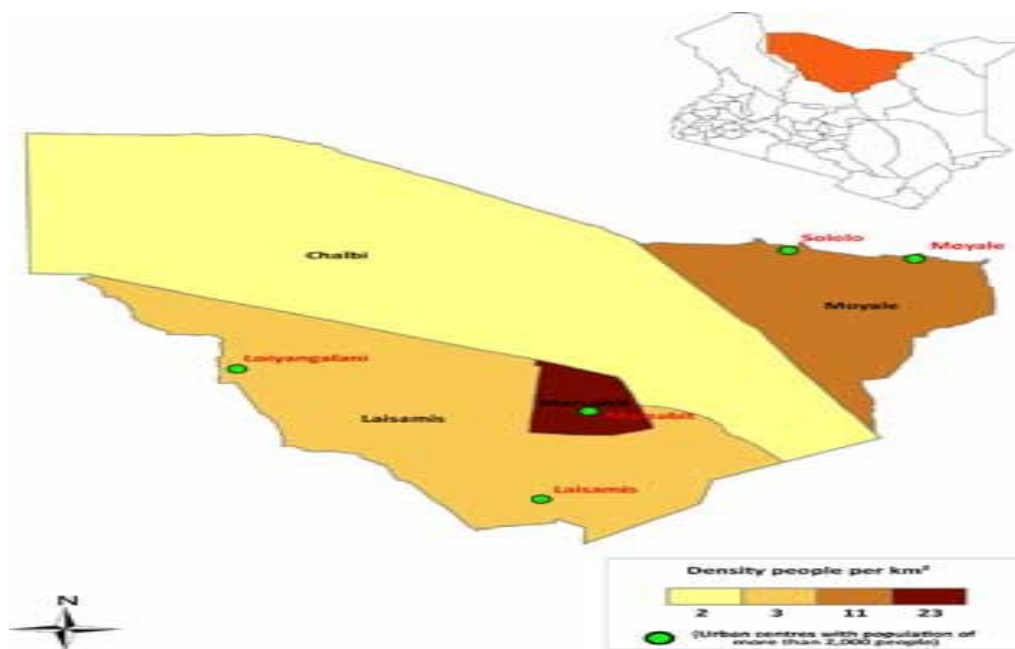
Marsabit County is located in the former Eastern province of Kenya and covers an area of 70,961.3 Km². It borders Isiolo County to the South West, Samburu County to the South, Lake Turkana to the West, Ethiopia to the North and Wajir County to the North West. The County consists of four sub-counties; 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 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 which are mainly related to house hold food insecurity as a result of recurrent drought, poor dietary diversity especially for women and poor child care and feeding practices which are related to cultural beliefs. The vastness of the county and rough terrain coupled with poor Community Referral system are also major factors that contribute to poor health and nutrition outcomes.

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 similar activities in Laisamis Sub counties.

Figure 1: Map of Marsabit County



1.1 Rationale of the Survey

The survey was carried to assess the levels of malnutrition and also to determine the performance of some of the HiNi indicators in Marsabit County. The survey also looked at the possible factors contributing to malnutrition and recommended appropriate interventions.

The survey period was between 19th July and 1st August, 2016.

1.2 Objective of the Survey

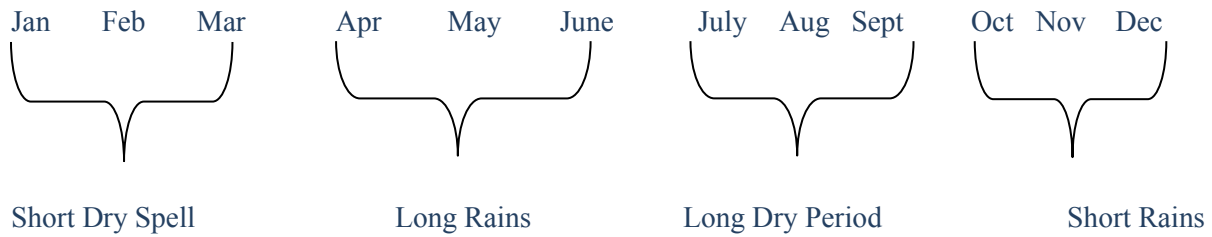
The overall objective of the survey was to establish the current nutrition status in the Marsabit County. Specific objectives of the baseline survey were:

- 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

1.3 Timing of the survey

The survey was undertaken from 19th July, 2016. Training and piloting of the survey materials and standardization test were conducted from 19th to 22nd July, 2016 and thereafter data collection from 23rd July, 2016. Data was collected using the Open Data Kit (ODK) hence reducing time which could be used for data entry. This survey was conducted in the middle of the long dry period as shown in the below seasonal calendar:

1.4 Seasonal Calendar



Chapter Two

2.0 SURVEY METHODOLOGY

2.1 Survey Area

The survey covered Marsabit County and it focused on all the four Sub Counties: Moyale, Laisamis, Saku and North Horr. Each Sub county had its own independent sample.

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 nutrition component.

2.4 Sample Size

The anthropometric survey sample size was calculated using the SMART survey calculator. The parameters of interest were captured in the ENA 9th July 2015 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: Sample Size Calculation

	North	Moyale	Saku	Total	Rationale
Estimate (GAM)	23.3%	5.4%	5.3%		From 2014 SMART survey
Precision	5.0%	3.0%	3.0%		From SMART Global project
Design Effect	1.2	1.4	1.16		From 2014 SMART Survey
Estimated Number of Children	365	332	271	968	
Average HH Size	5.0	5.6	4.9		From DHIS
Non-Response Rate	3.0	3.0	3.0		Based on 2014 SMART
Proportion of Children Under 5	15.7%	16.5%	16.5%		From DHIS
Estimated Number of Households	532	412	383	1327	
Number of Households per Day	15	14	13		Based on 2014 SMART
Number of Cluster	36	30	30	96	Computed from the Number of HHs per Day
Number of children per Cluster	11	11	10		
Number of Teams	6	5	5	16	
Number of Days	6	6	6		Based on the Number of Teams to be Recruited

Table 3: sample size calculation for Laisamis

	Laisamis	Rationale
Estimate (GAM)	23.7%	From 2015 SMART survey
Precision	5.0%	From SMART Global project
Design Effect	1.4	From 2015 SMART Survey
Estimated Number of Children	423	
Average HH Size	5.0	From DHIS
Non-Response Rate	3.0	Based on 2015 SMART Survey Experience
Proportion of Children Under 5	16.4%	From DHIS
Estimated Number of Households	592	
Number of Households per Day	17	Based on 2015 SMART Survey Experience
Number of Cluster	36	Computed from the Number of HHs per Day
Number of children per Cluster	12	
Number of Teams	6	
Number of Days	6	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 were measured.

Prior to the survey, 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 since it was integrated survey other household related information was collected. If a respondent or child 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 Data Collected

Quantitative data collection method was used to collect the survey data; the following data was collected:

- Anthropometry (weight, height, edema, MUAC, age, sex) for children aged 6-59 months and MUAC for women of reproductive age.
- Vaccination information (OPV1 and 3, measles, BCG, and Vitamin A supplementation)
- Incidences of childhood illnesses in the last 2 weeks prior to the survey

- Food security information (Household Dietary Diversity Score, Women dietary Diversity Score, Food consumption Score , Food consumption Score-Nutrition and Coping strategy Index)
- Water and sanitation Hygiene (Latrine access and coverage, water treatment and hand washing)

The survey adopted the data collection tools recommended in the National guidelines for nutrition assessments in Kenya with a few modifications to cater for all the objectives of the survey.

2.7 Survey Organisation

- **Coordination/Collaboration:** before the survey was conducted meetings were held with the respective authorities and key stakeholders briefed them about the purpose, objectives and methods for the survey. The survey details were discussed with the County Health office, key partners on the ground (NGO and UN). 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 County level in order to give ownership and participation in the assessment. Twenty two teams of four were selected to include two measurers, one enumerator and a team leader.
- **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 understood the questions and also to identify any necessary correction to be done on the tools.
- **For the quality of training,** the teams were split into two such that Moyale and North Horr teams were trained together and Saku and Laisamis team were trained together.
- **Team work in the field:** Twenty two 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, officers from MoH, NDMA, MoA, UNICEF, FHK, WVK, Aphia Plus and Concern Worldwide 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 Analysis and Report Writing

- **Data Analysis:** the data downloading and analysis was done using ENA for SMART, Excel and SPSS Statistical software version 20. The Concern Worldwide Survey and Surveillance Officer and WVK Monitoring and Evaluation Officer were responsible for Data downloading, analysis and report writing. Results are presented using the new WHO reference levels.
- **Preliminary Results and Final Report:** the preliminary findings were presented to the CHMTs, stakeholders and the Nutrition Technical Information Working Group (NITWG) within two weeks of completion of the survey fieldwork. The survey results were validated by both the County and National NITWG level.

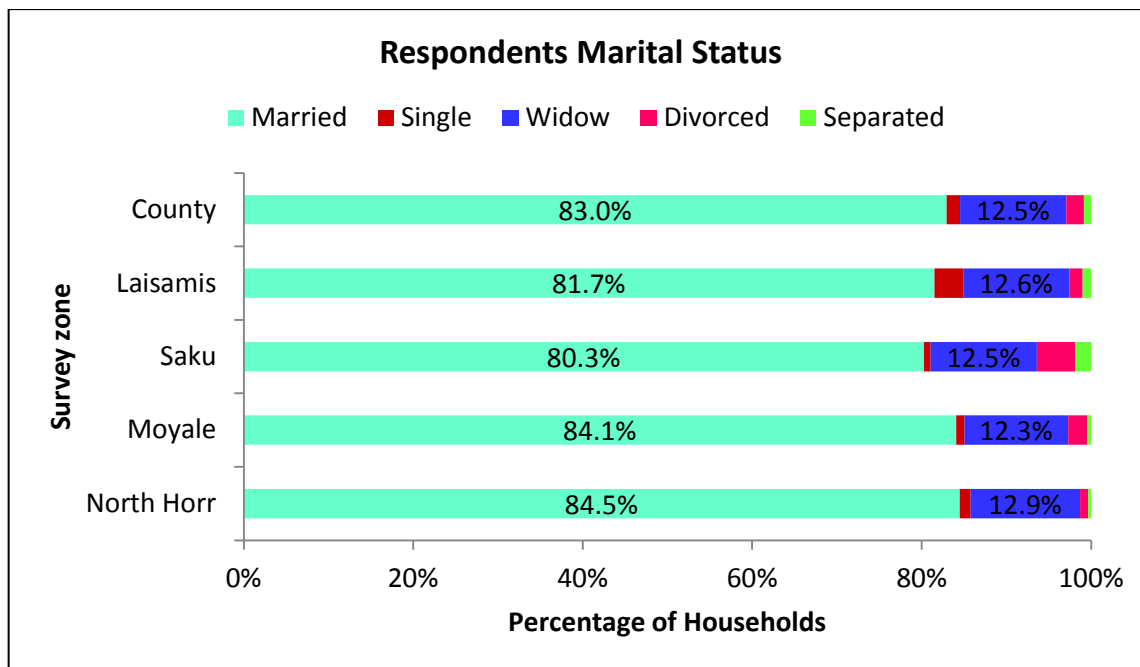
CHAPTER THREE

3.0 SURVEY RESULTS AND DISCUSSION

3.1 Demographic Results

All the respondents from households in Laisamis, Saku and North Horr Sub-Counties were residents except in Moyale Sub County where only 3.5% of households were IDPs. Majority of the respondents were married as shown in the figure below

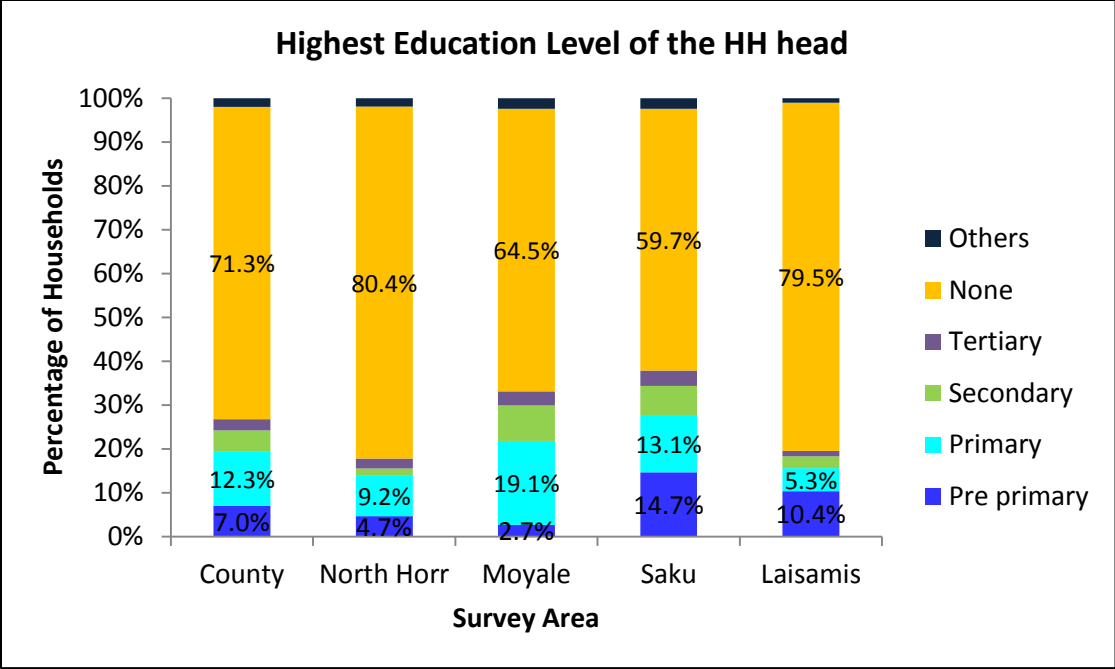
Figure 2: Respondents Marital Status



3.2 Highest Level of Education Attained

Illiteracy levels in Marsabit County were found to be high (71.3%) with few (12.3%) of the respondents interviewed reporting that the household head had acquired primary level education as shown below.

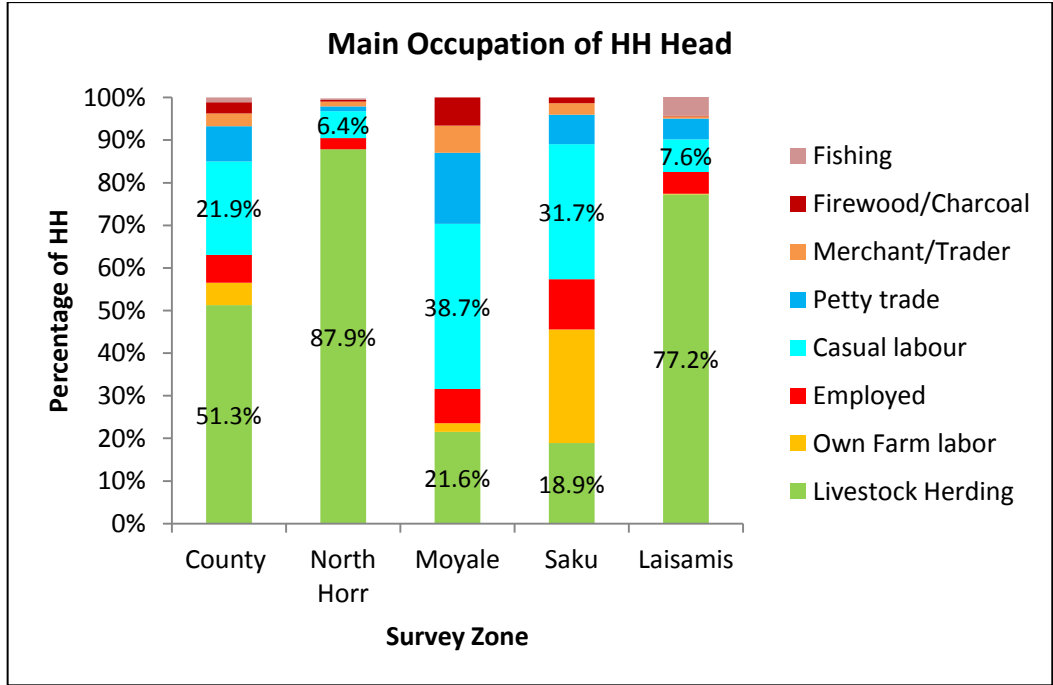
Figure 3: Highest Education Level of the HH head



3.3 Main Occupation and source of income of Household Head

Livestock herding was found to be the main occupation for the households' head at 51.3% followed by casual labour (21.9%). Livestock herding was dominant in Laisamis (77.2%) and North Horr (87.9%) Sub Counties while casual labour was majorly practiced in Saku (31.7%) and Moyale (38.7%) Sub Counties as shown below

Figure 4: Main Occupation of HH Head



3.4 Nutritional Status of Children Under-Five Years

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

The survey managed to reach a total of 300, 386, 393 and 453 children aged between 6 to 59 months in Saku, Moyale, North Horr and Laisamis 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 (GAM) levels in Marsabit County generally indicate a *serious* situation with GAM rate of 14.4% (95% CI: 12.6 - 16.3). The malnutrition levels in Laisamis and North Horr , Sub Counties were at 22.5 percent (95% CI: 18.2-27.4) and 22.8 percent (95% CI: 17.8-28.7) respectively and this was above the emergency GAM thresholds (15.0%) indicating a critical situation. Saku and Moyale Sub Counties recorded poor nutrition status with GAM rates of 7.4 % (4.8-11.3) and 7.5% (5.2-10.7) respectively. The findings showed no significant change from the previous survey results done in 2014 in North Horr, Saku and Moyale and in 2015 in Laisamis Sub Counties. There was no cases of edema that were reported.

Table 4: Prevalence of acute malnutrition by WHZ

	North Horr2014	North Horr2016	Moyale 2014	Moyale 2016	Saku 2014	Saku 2016	Laisamis 2015	Laisamis 2016	Weighted County
Global Acute Malnutrition	29.2% (23.3-36.0)	22.8% (17.8-28.7)	7.7% (5.4-10.9)	7.5% (5.2-10.7)	5.3% (3.3- 8.3)	7.4% (4.8-11.3)	23.7 % (18.6 - 29.6)	22.5% (18.2-27.4)	14.4% (12.6 - 16.3)

Severe Acute Malnutrit	7.6% (5.5-10.5)	3.6% (1.8- 6.9)	0.5% (0.2-1.6)	0.5% (0.1-2.1)	0.5% (0.1- 2.0)	1.4% (0.5- 3.6)	6.5 % (4.4 - 9.5)	4.7% (2.6- 8.3)	2.30% (1.7 - 3.2)
% of Oedema	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

3.4.2 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 overall prevalence of Acute Malnutrition by MUAC for Marsabit County was 4.2% with the worst affected sub-county being Laisamis which recorded the highest prevalence of 5.7% while North Horr, Moyale and Saku had 3.8%, 3.4% and 3.3% respectively.

Table 5: Prevalence of Acute malnutrition by MUAC

	North Horr2014	North Horr2016	Moyale 2014	Moyale 2016	Saku 2014	Saku 2016	Laisamis 2015	Laisamis 2016	Weighted county
Global < 125mm	10.9% (7.8-15.1)	3.8% (2.0-7.2)	2.6% (1.4-5.1)	3.4% (2.1-5.4)	1.3% (0.5-2.9)	3.3% (1.7-6.3)	3.8 % (2.3-6.1)	5.7% (3.6-9.1)	4.2% (3.3-5.3)
Severe under nutrition	2.0% (1.1-3.9)	0.5% (0.1-3.8)	0.4% (0.1-1.4)	0.5% (0.1-2.1)	0.0	0.7% (0.2-2.7)	0.9 % (0.4 - 2.2)	0.4% (0.1-1.8)	0.5% (0.3-1.1)

3.4.3 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 Marsabit County was 28.2% with Laisamis at 35.3% which was the highest while North Horr, Moyale and Saku reported 32.1%, 25.4% and 20.0% respectively.

Table 6: Prevalence of Underweight

	North Horr 2014	North Horr 2016	Moyale 2014	Moyale 2016	Saku 2014	Saku 2016	Laisamis 2015	Laisamis 2016	Weighted County 2016
Global underweight	34.9% (30.1-40.1)	32.1% (26.1-38.9)	14.0% (10.2-19.0)	25.4% (19.4-32.4)	12.1% (8.5-16.9)	20.0% (14.4-27.1)	32.7% (26.6 - 39.5)	35.3% (30.1-40.8)	28.2% (25.2 - 31.5)

The high prevalence of underweight in Laisamis and North Horr Sub counties is consistent with wasting prevalence. Some of the factors that lead to high levels of wasting and underweight include poor dietary intake, high morbidity and poor child care practices coupled with poor hygiene and sanitation practices. Other underlying factors include poor access to health service delivery points due to poor community referral system and also the vastness of the county.

3.4.4. 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 Marsabit County was 28.8% with Moyale Sub County having highest prevalence of 30.8%. Laisamis, North Horr and Saku sub counties had 30.4%, 25.4% and 27.3% respectively.

Table 7: Prevalence of Stunting

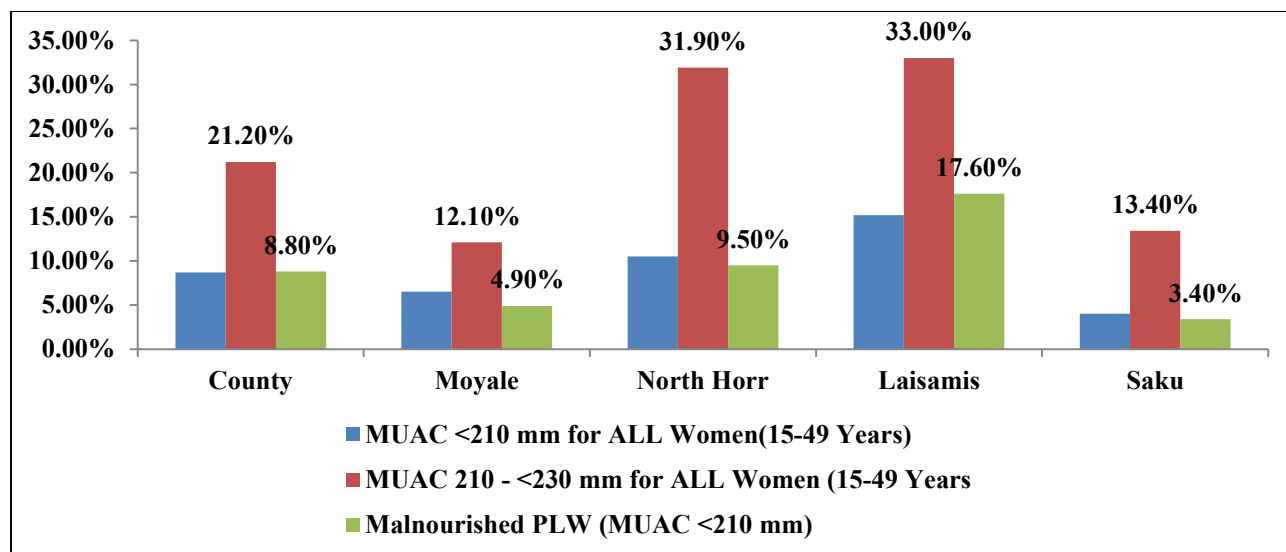
	North Horr 2014	North Horr 2016	Moyale 2014	Moyale 2016	Saku 2014	Saku 2016	Laisamis 2015	Laisamis 2016	Weighted County 2016
Global Stunting	26.0% (22.3-30.1)	25.4% (20.6-30.8)	22.1% (18.1-26.7)	30.8% (24.6-37.6)	17.9% (14.8-21.5)	27.3% (20.7-35.2)	25.9 % (21.1 - 31.3)	30.4% (24.5-37.1)	28.8% (26.1 - 31.7)

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 5 major food groups (cereals, legumes, milk, 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.

3.5 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 four sub-counties and for the Marsabit County.

Figure 5: Maternal Malnutrition 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 Marsabit was 8.8% with Laisamis recording the highest proportion of pregnant and lactating women who were malnourished at 17.6% which was followed by North Horr at 9.5%. Saku and Moyale were at 3.4% and 4.9% respectively.

The Proportion of Malnourished women of reproductive age in Marsabit County was 8.7% with Laisamis recording the highest at 15.2%, followed by North Horr at 10.5%, Moyale and Saku were at 6.5% and 4.00% respectively.

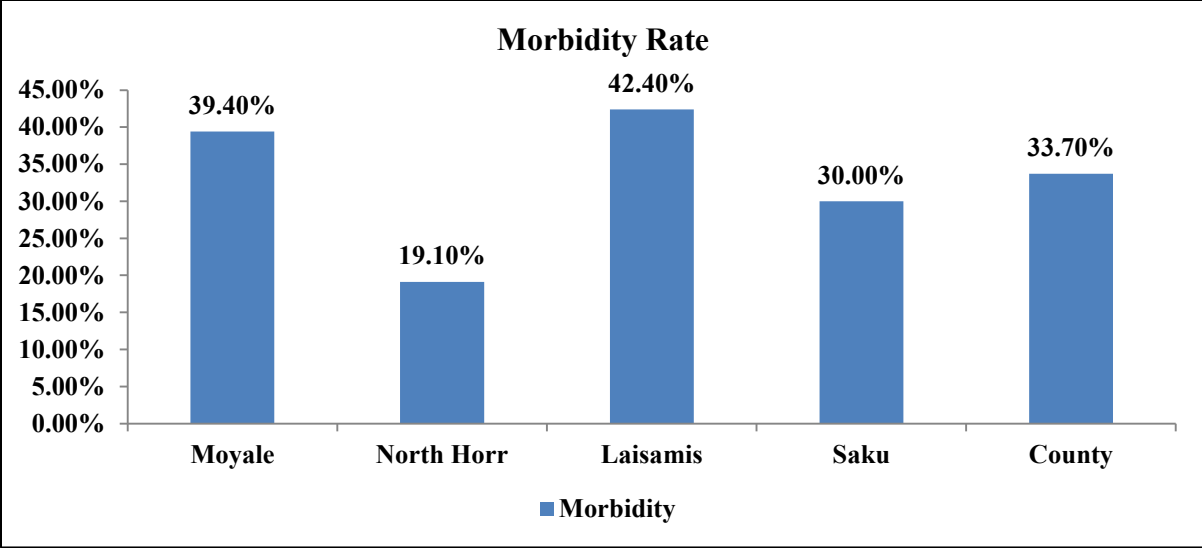
The proportion of women of reproductive age at risk in Marsabit County was 21.2% with still Laisamis leading with 33.00% followed closely by North Horr at 31.90%.

3.6 Child Health and Immunization

3.6.1 Morbidity and Health Seeking Behavior

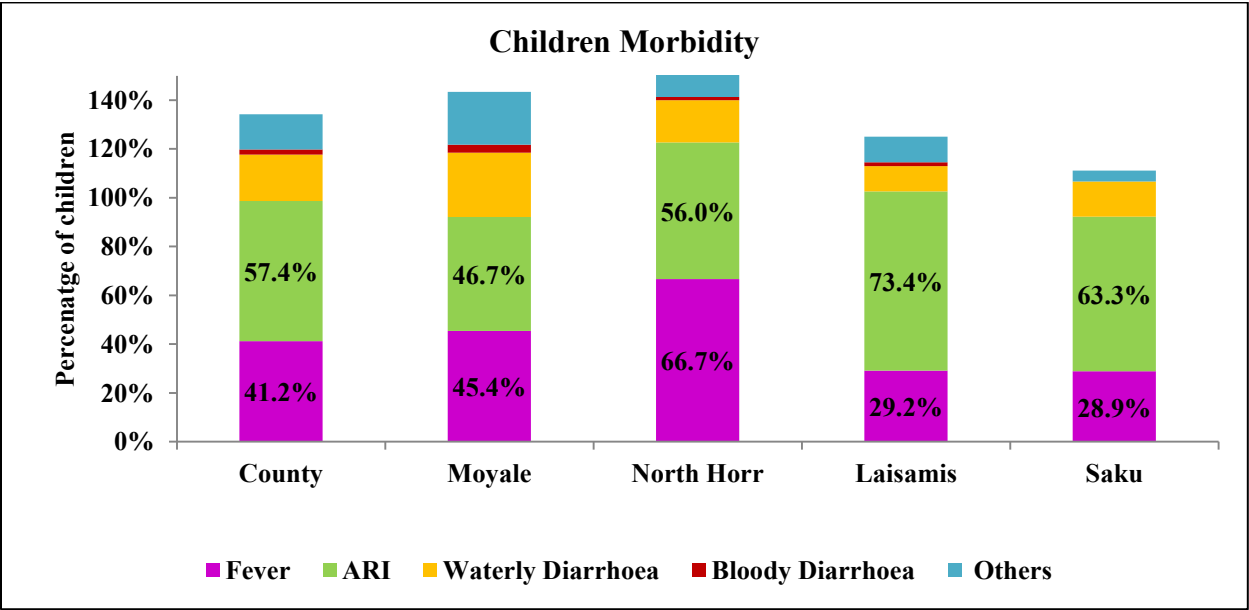
The morbidity of the children in the survey area was determined within a two weeks recall period. The prevalence for Morbidity for Marsabit County was 33.70% with most cases of disease reported in Laisamis (42.4%) which was followed by Moyale at 39.40% and Saku at 30.00%. North Horr recorded the least at 19.10%. The following graph shows the morbidity results for the four sub-counties and the overall for the County where the survey was conducted.

Figure 6: Morbidity Rate



Upon further analysis, it was found out that the leading causes of morbidity cutting across the 4 sub-counties were the acute respiratory infections- ARI which accounted for 74.4%% of the cases in Laisamis, 56.0% in North Horr 46.7% in Moyale and 63.3% in Saku. This was followed by fever where North Horr accounted for 66.7% of the cases reported while Laisamis accounted for 29.2%, 45.4% in Moyale and 28.9% in Saku. The prevalence of watery diarrhoea was reported highest in Moyale at 26.3% followed by North Horr at 17.3% while Laisamis and Saku accounted for 10.4% and 14.4% respectively. The prevalence of bloody diarrhoea was reported highest in Moyale at 3.3% followed by Laisamis at 1.6% while North Horr accounted for 1.3%. This is depicted in the graph below.

Figure 7: Children Morbidity

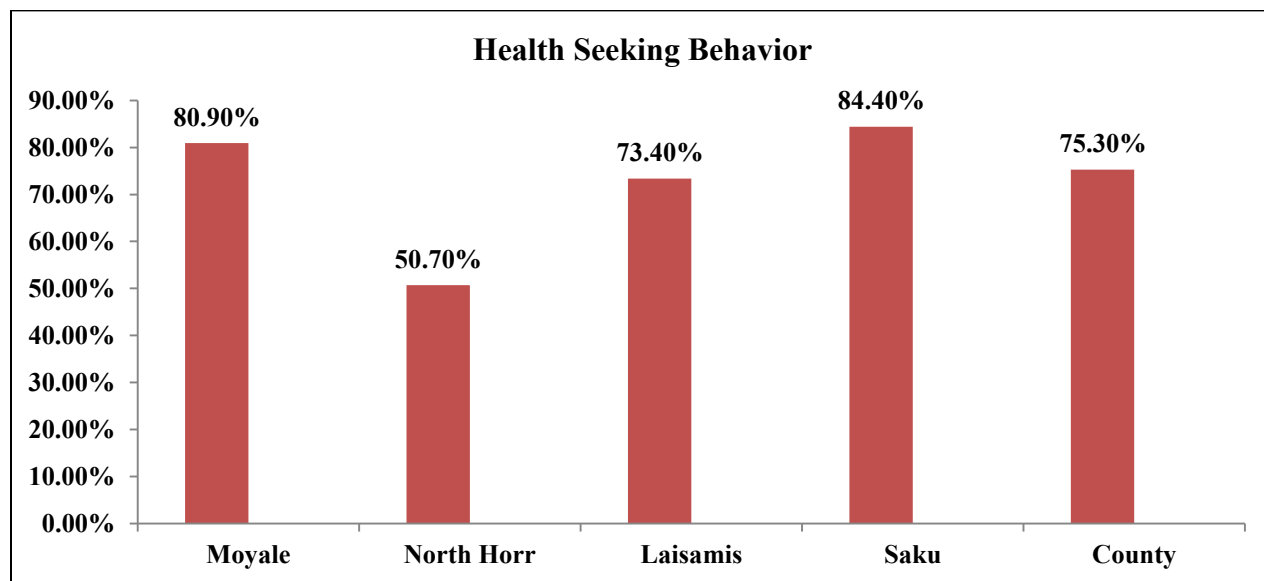


The high prevalence for acute respiratory infections could be as a result of the cold season which accompanies the long rains and hence most of the children < 5 years are prone to these diseases. In

Moyale the high prevalence for the diarrhoeal cases could be as a result of poor hygiene and sanitation practices as well as drinking of unsafe water

In terms of the health seeking behaviour of the caregivers who had sick children within a period of two weeks before the survey, a majority of caregivers in Saku and Moyale had sought medical assistance with 84.4% and 50.70% respectively of the caregivers reporting to have sought medical help. North Horr recorded the poorest health seeking behaviour with only 50.7% of the caregivers reporting to have sought medical assistance which could be attributed to long distance to the nearest health facility. This is as depicted by the graph below:

Figure 8: Health Seeking Behavior



70.0% of the Marsabit County sought health assistance from Public Clinic when their children were ill while 1.3% sought health assistance from traditional healers.

3.6.2 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 higher in Saku (74.64%) which was followed by North Horr (67.3%) and lowest in Moyale at 58.6%. For the 2nd measles immunizations coverage at 18 months by card was low in all the sub-counties where the survey was conducted with Saku having the highest of 14.48% followed by Moyale at 7.9%. For BCG vaccination which was ascertained by scar, the coverage performed quite well in the four sub-counties with all of them attaining the 80% national coverage targets.

For the OPV1 by card Saku recorded highest at 77.33% followed by North Horr at 72.3%.Laisamis recorded the least at 66.67%. For OPV3 by card Saku recorded highest at 70.67% followed by North Horr at 67.4%. Laisamis recorded least at 61.59%.

Table 8: Immunization Coverage

	Moyale			North Horr			Laisamis			Saku		
	n	N	%	n	N	%	n	N	%	n	N	%
Measles at 9 Months (Yes by Card)	218	372	58.6%	253	376	67.30%	249	423	58.87%	209	280	74.64%
Measles at 9 Months (Yes by Recall)	117	372	31.5%	74	376	19.70%	129	423	30.50%	66	280	23.57%
Measles at 18 Months (Yes by Card)	23	292	7.9%	19	308	6.20%	26	340	7.65%	32	221	14.48%
Measles at 18 Months (Yes by Recall)	19	292	6.5%	12	308	3.90%	26	340	7.65%	16	221	7.24%
BCG by Scar	349	374	93.3%	353	366	96.4%	436	445	97.98%	291	299	97.32%
OPV 1 (Yes by Card)	267	386	69.2%	284	393	72.3%	302	453	66.67%	232	300	77.33%
OPV 1 (Yes by Recall)	108	386	28.0%	70	393	17.8%	142	453	31.35%	68	300	22.67%
OPV 3 (Yes by Card)	257	386	66.6%	265	393	67.4%	279	453	61.59%	212	300	70.67%
OPV 3 (Yes by Recall)	113	386	29.3%	69	393	17.6%	142	453	31.35%	65	300	21.67%

3.6.3 Zinc & Vitamin A Supplementation and Deworming Coverage

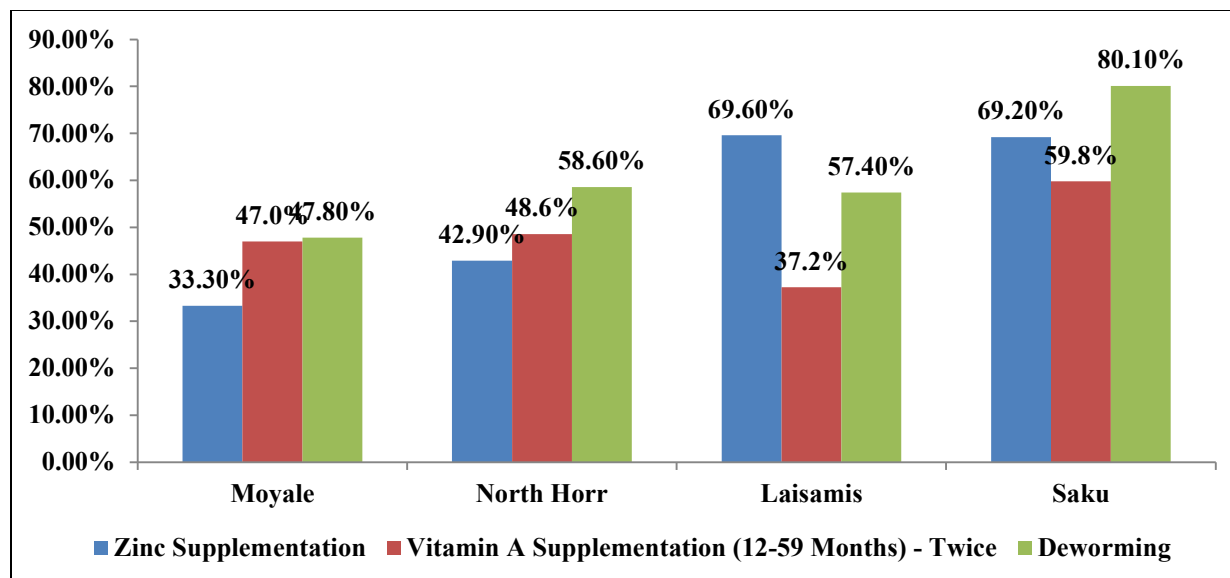
Vitamin A supplementation among children below the age of 5 years offers protection against common childhood infections and substantially reduces mortality hence improving the child’s survival. Vitamin A supplementation coverage was determined both for over the last six months and one year for all the 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 highest in Saku (59.8%) which was followed by North Horr (48.6%) and was lowest in Laisamis (37.2%).

With regard to Zinc supplementation, Laisamis had the highest coverage at 69.6% which was followed closely by Saku at 69.2% and the lowest was recorded in Moyale at 33.3%. For deworming of children

aged 12-59 months, Saku had the highest coverage at 80.1% followed by North Horr at 58.6% and Moyale recorded the lowest coverage at 47.8%. The findings are summarized the graph below.

Figure 9: Zinc & Vitamin A Supplementation and Deworming Coverage

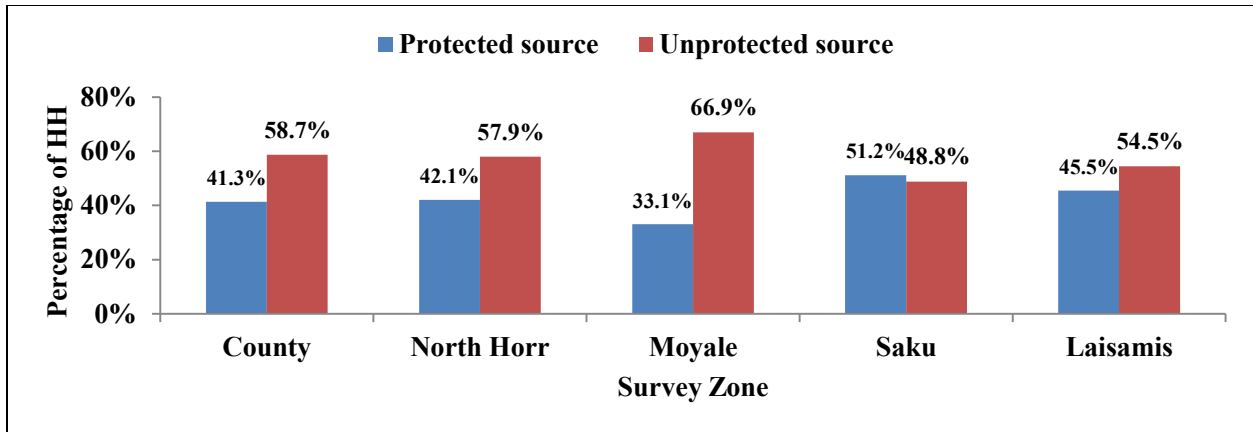


3.7 Household Water Access Sanitation and Hygiene

3.7.1 Main Sources of Drinking Water

Accessibility to improved water sources is of fundamental significance to lowering the faecal risk and frequency of associated diseases. The major sources of water in the county are varied by the sub-counties. In Marsabit County Majority reported to get water from unprotected sources (57.8%) and 41.3% get water from protected water sources. A majority in all the four Sub Counties reported to get water from unprotected sources, with Moyale recording the highest at 66.9%, followed by Moyale at 57.9%. Saku recorded the lowest at 48.8%. Majority in Saku reported to get water from protected sources at 51.2% followed by Laisamis at 45.5%. Moyale reported least at 33.1% get water from protected sources. This is as shown by the graph below:

Figure 10: Main Sources of Drinking Water

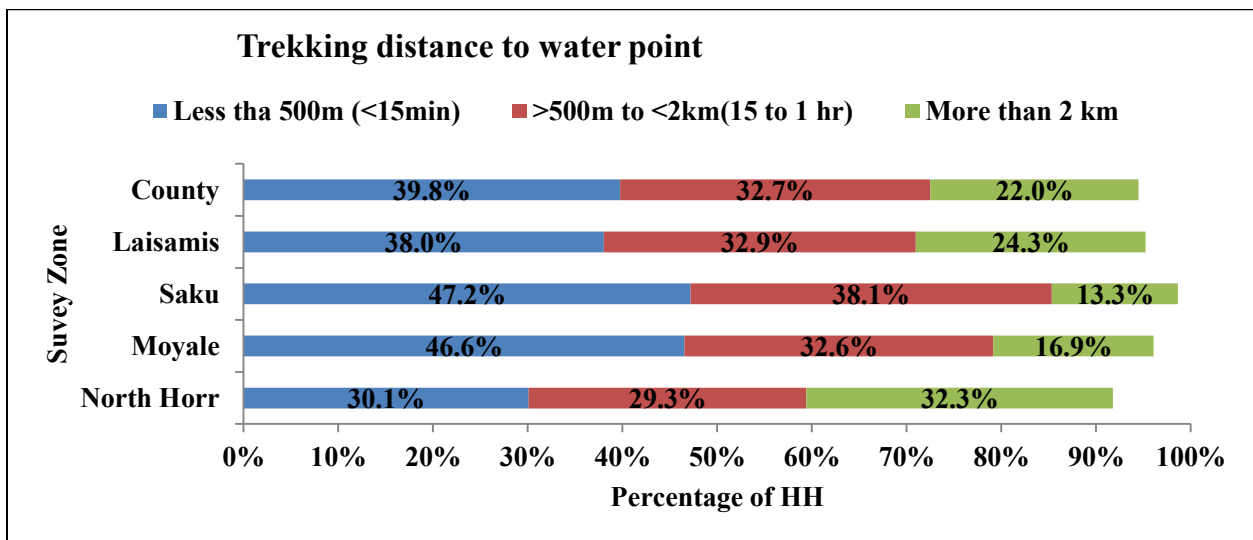


3.7.2 Trekking distance to Water point

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 per the sub-counties with North Horr reporting high proportion of households, 32.3% trekking more than 2km. This is as shown in the graph below:

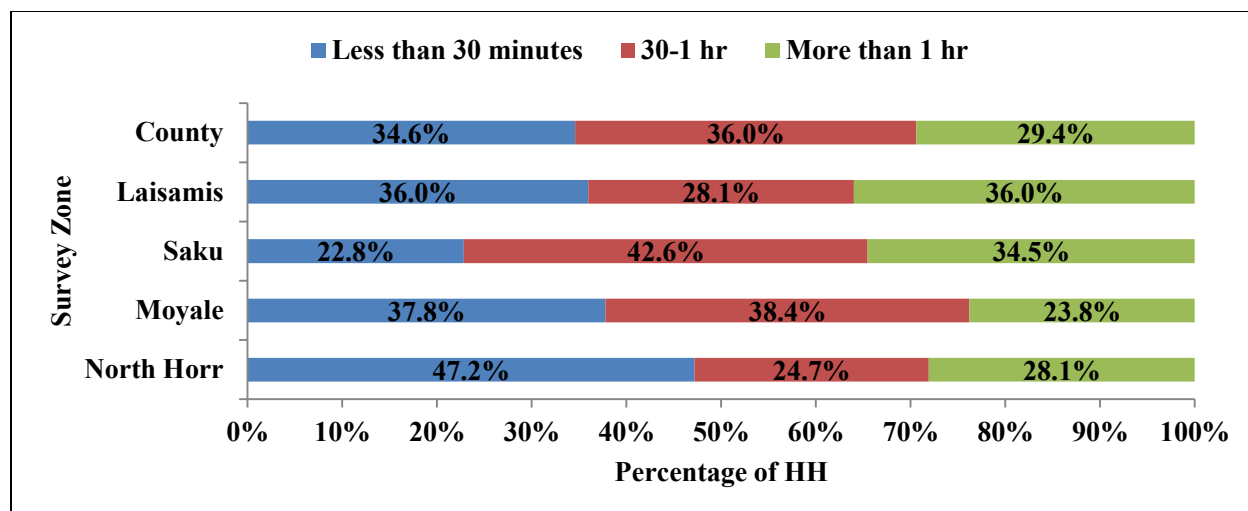
Figure 11: Trekking distance to water point



3.7.3 Queuing time at water points

The Sphere Project recommends that no more than 15 minutes is spent waiting in queues at water access points. However, more than 60% of Marsabit households take more than 30 minutes queuing for water at water points. The queuing time at water point per the sub-counties is as shown in the graph below

Figure 12: Queuing time at water points



3.7.4 Water treatment and hand washing

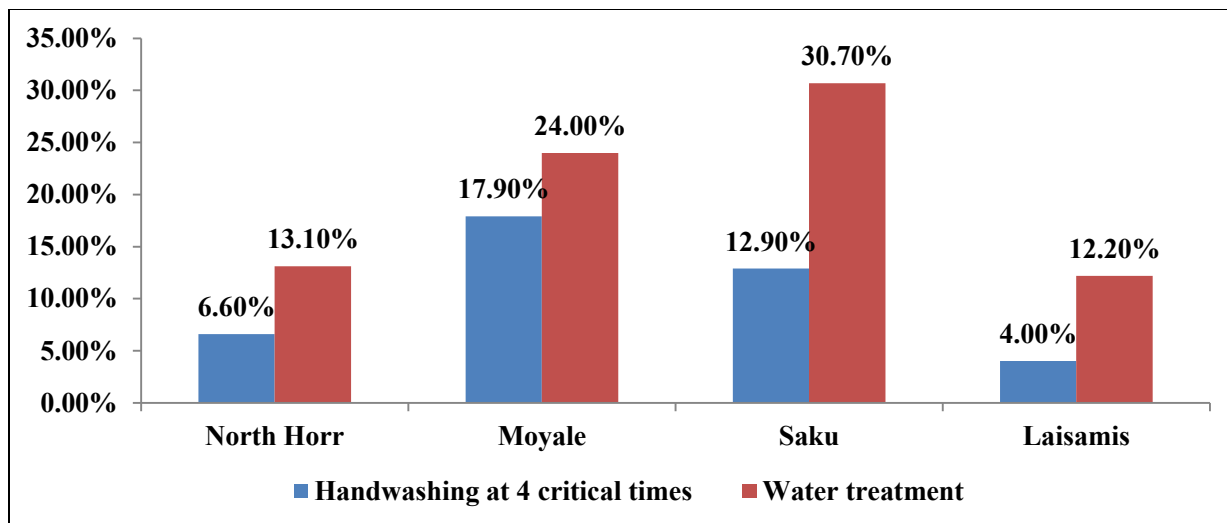
With regard to treatment of the water before consumption, the situation varied in the sub-counties. Saku had the highest number of respondents (30.7%) who treated the water before consumption while North Horr (13.1%) and Laisamis (12.2%) had the lowest numbers of respondents who treated water before consumption. Moyale had 24.0% of the respondent who treated water before consumption.

Handwashing is important for good health. Effective washing can be practiced with alternatives to soap and using a variety of different hygienic facilities. Washing hands with soap reduces the risk of diarrheal diseases by 42–47%¹. There are also indications that handwashing is an important preventive measure in the incidence of acute respiratory infections. 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 across the four sub-counties with 6.6% in North Horr, 12.9% in Saku, 17.9% in Moyale and 4.0% 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 hand washing

¹ Curtis, V., and Cairncross, S. "Effect of washing hands with soap on diarrhoea risk in the community: a systematic review.", *The Lancet infectious diseases*, Vol 3 nr. 5, 1 May 2003

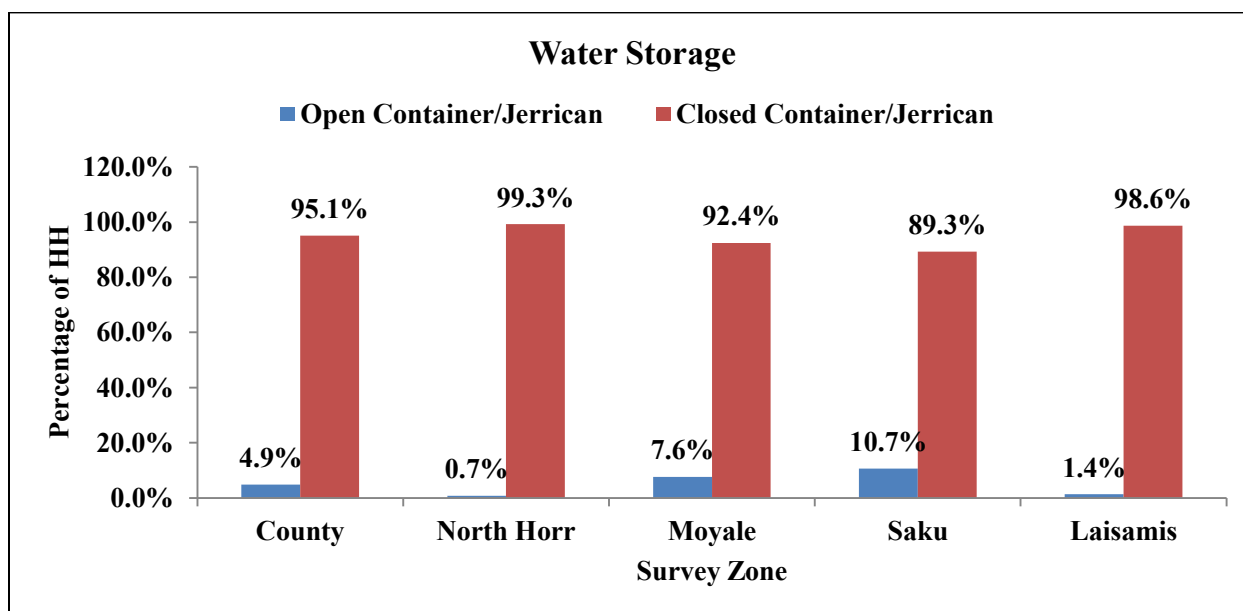


3.7.5 Water Payment and storage

With regard to water payment, the situation varied in the sub counties. Moyale had the highest number of the respondent who paid for water (76.5%) followed by Saku (74.1%). North Horr had the least number of respondent paying for water (20.9%).

With regard to water storage, over 80% of the Marsabit County respondents stored water in closed containers.

Figure 14: Water Storage



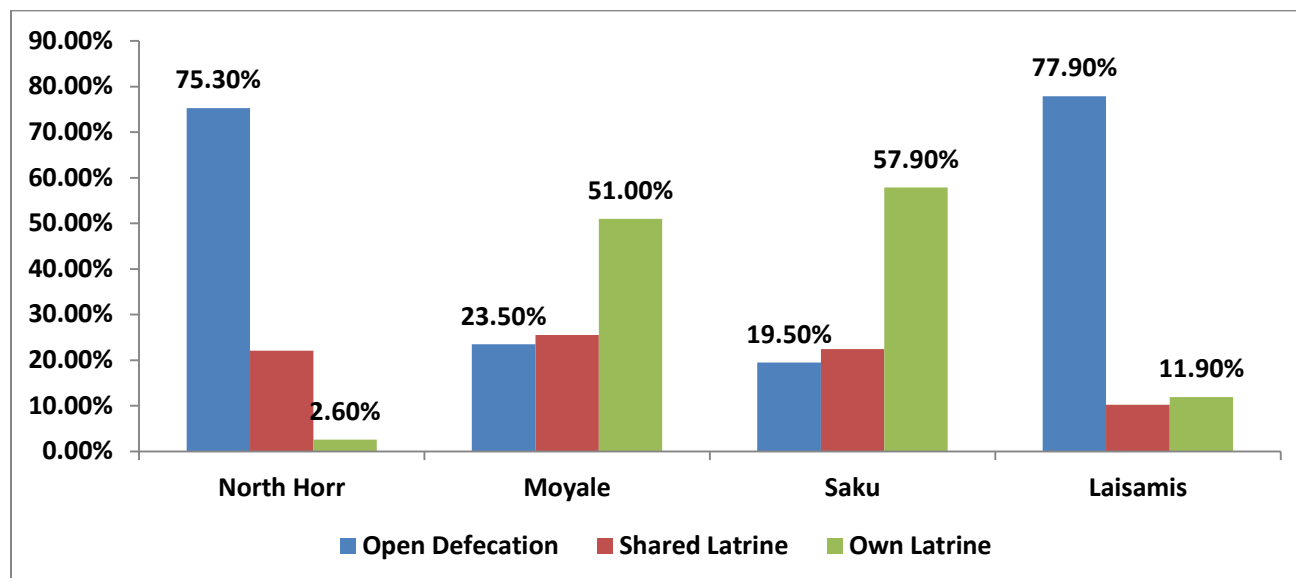
3.7.6 Access to toilet

In terms of accessing toilet facilities and ways of relieving, Laisamis recorded the highest proportion (77.9%) of persons using open defecation as a method of relieving which was followed by North Horr (75.3%) and Moyale (51.0%) which recorded the lowest rate of open defecation.

In term of ownership, Saku recorded the highest proportion (57.9%) of persons who own a latrine followed by Moyale (51.0%) and North Horr (2.6%) which recorded the lowest rate of latrine ownership.

The findings are summarized in the graph below:

Figure 15: Access to toilet



3.8 Food Security

3.8.1 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 men³. 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 diet⁴. 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 micronutrients⁵. 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 Sub Counties is depicted in the graph below. Over 80% of the WRA consumed Starch in all the Sub Counties. Dairy products and Legumes/pulses are the food groups that were consumed by at least over 75% of the population that were surveyed within the last 24 hours. Nuts and seeds 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:

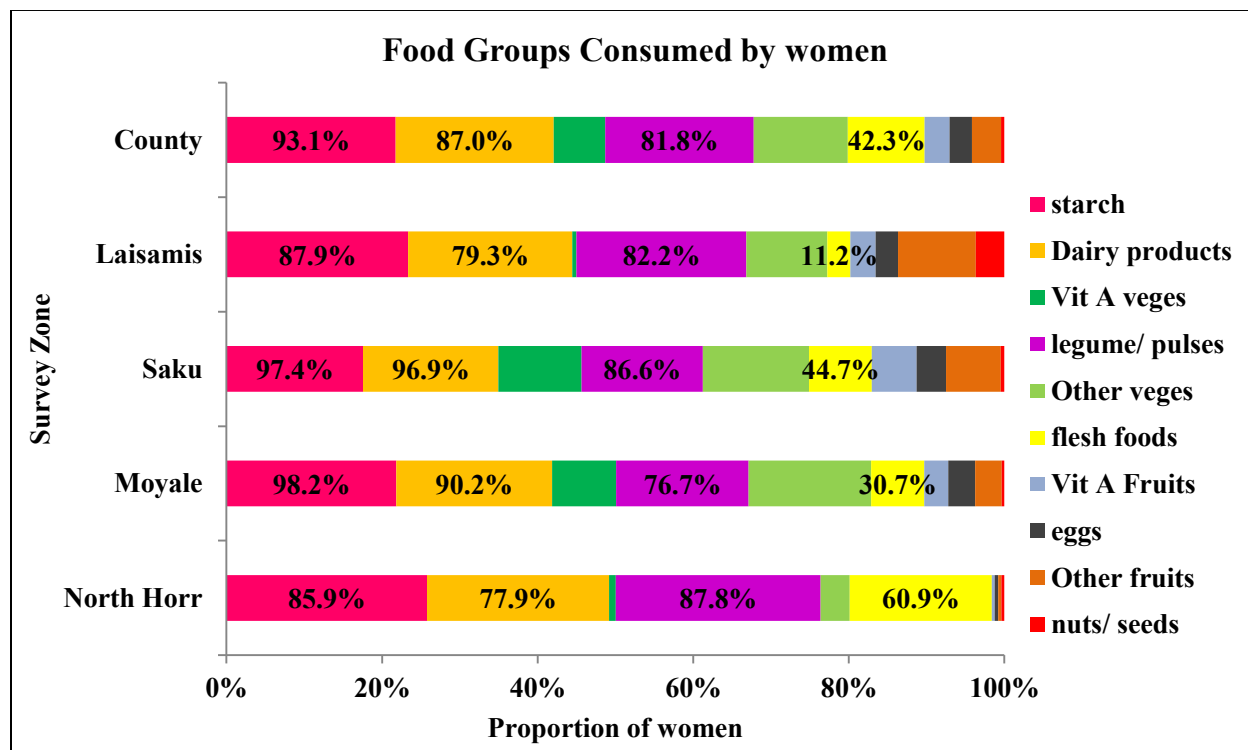
² For the purposes of this document and indicator, WRA are defined as those 15–49 years of age.

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

Figure 16: Food Groups Consumed by women



3.8.2 Minimum Dietary Diversity for Women

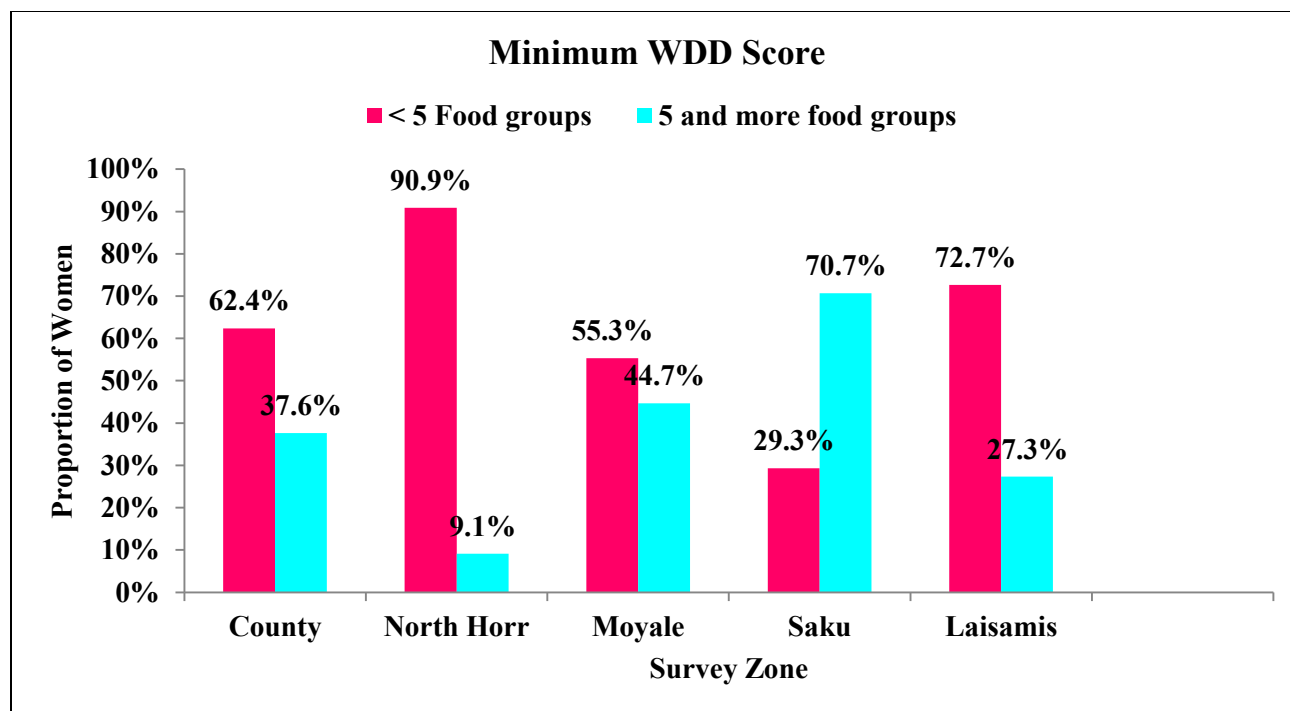
MDD-W⁶ is a dichotomous indicator of whether or not women 15-49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15-49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient 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, 62.4% of the women surveyed had consumed less than 5 food groups in Marsabit County. The highest was North Horr at 90.9% followed by Laisamis at 72.7%. The least was Saku at 29.3% of the surveyed women who consumed less than 5 food groups.

37.6% of the women surveyed had consumed 5 and more food groups in Marsabit County. 70.7% of the women surveyed in Saku consumed 5 and more food groups which were highest, followed by Moyale at 55.3%. This is as shown in the graph below:

Figure 17: Minimum WDD Score

⁶ Additional background on the indicator is available at: <http://www.fantaproject.org/monitoring-and-evaluation/minimum-dietary-diversity-women-indicator-mddw>.

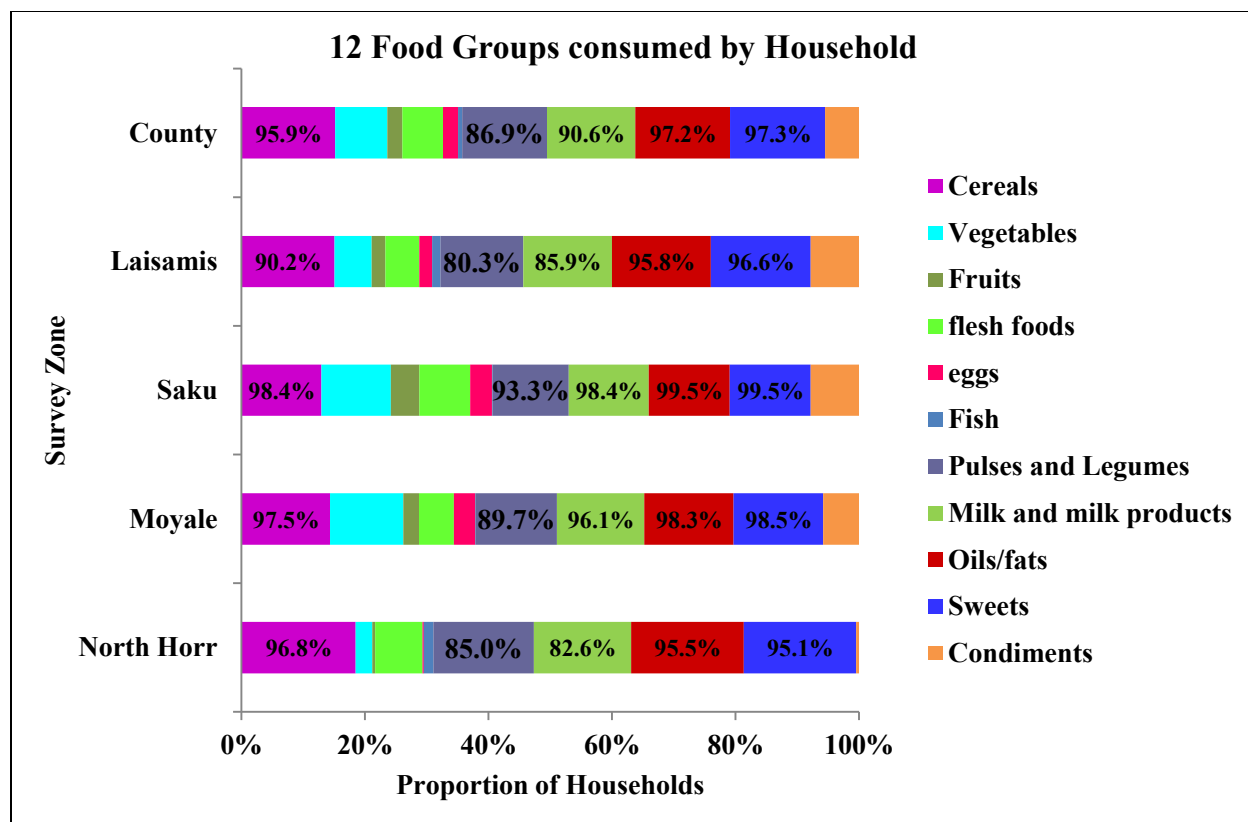


3.8.3 Household Dietary Diversity

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.

Five main food groups were consumed and were consistent with the 4 sub-counties where the survey was conducted. These were cereals, legumes and pulses, milk and milk products, 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 were consumed by at least >35% of the surveyed population and were consistent for the 4 sub-counties. The other foods that were consumed by the least number of people (<20% of the surveyed population) included: fruits and fish. This is as shown in the graph below:

Figure 18: 12 Food Groups consumed by Household



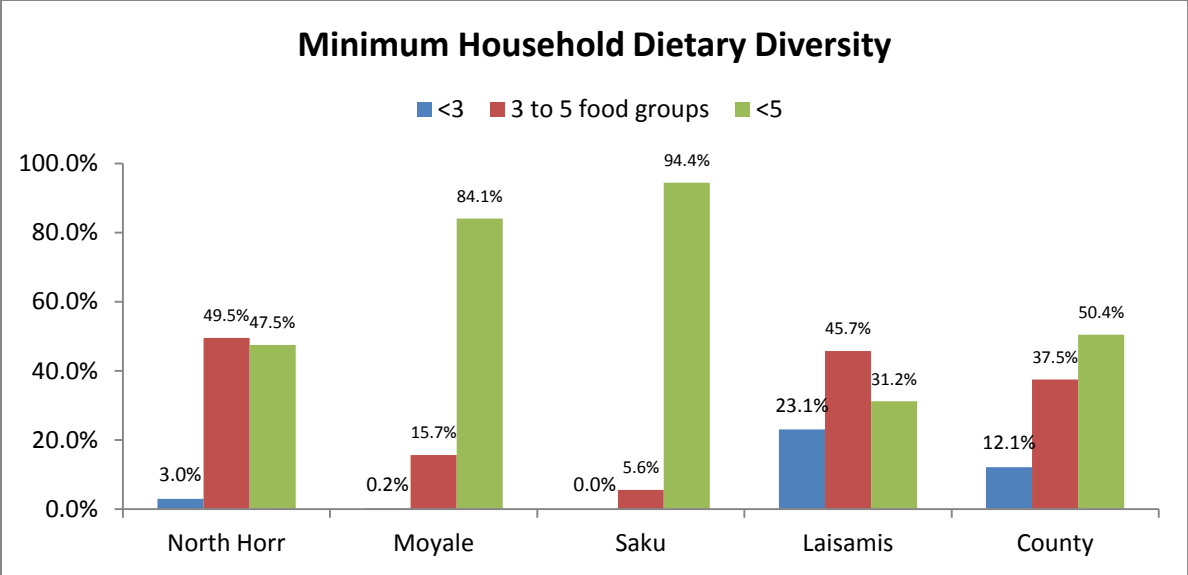
The proportion of households consuming milk was high and could be attributed to milk availability among the pastoral communities. The consumption of cereals, milk, sugar and oil at household level are a characteristic of the population and it is expected compared to the other food items.

3.8.4 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. 50.4% of the household surveyed had consumed more than 5 food groups in Marsabit County with Saku Sub County having the highest at 94.4% followed by Moyale at 84.1% and the least was Laisamis at 31.2%.

12.1% of the household surveyed had consumed less than 3 food groups in Marsabit County within Laisamis being highest at 23.1% followed by North Horr at 3.0% and the least was Saku at 0.0%.

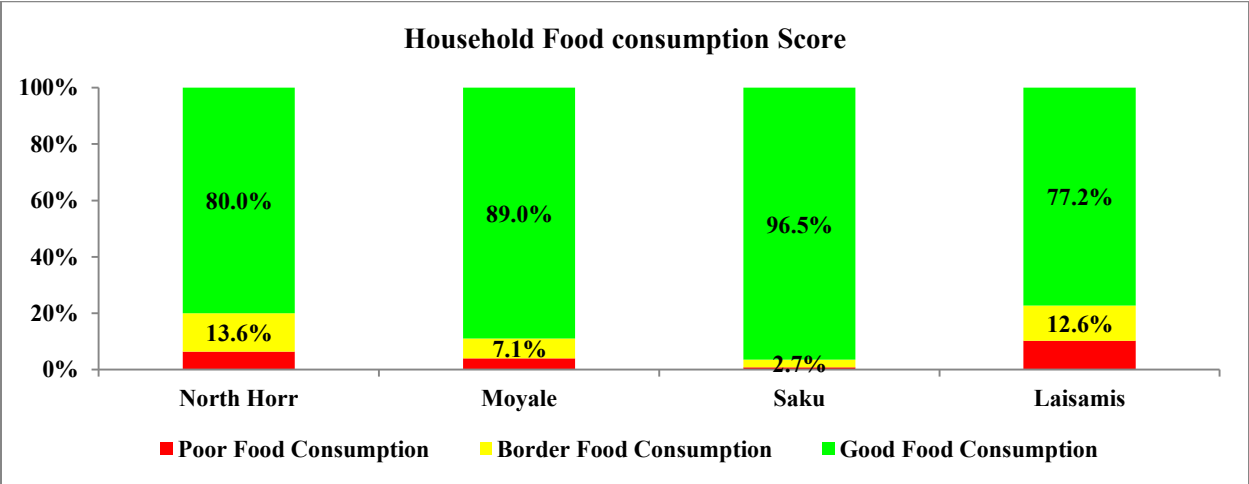
Figure 19: Minimum Household Dietary Diversity



3.8.5 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 (10.2%) with North Horr at 6.4%, Moyale at 3.9% while Saku had 0.8%. This was also consistent with the population who were at border food consumption (at risk to poor food consumption) where North Horr had the highest proportion (13.6%) which was followed by Laisamis (12.6%), Moyale at 7.1% and Saku (2.7%). This is as shown in the figure below:

Figure 20: Household Food consumption Score



3.8.6 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.

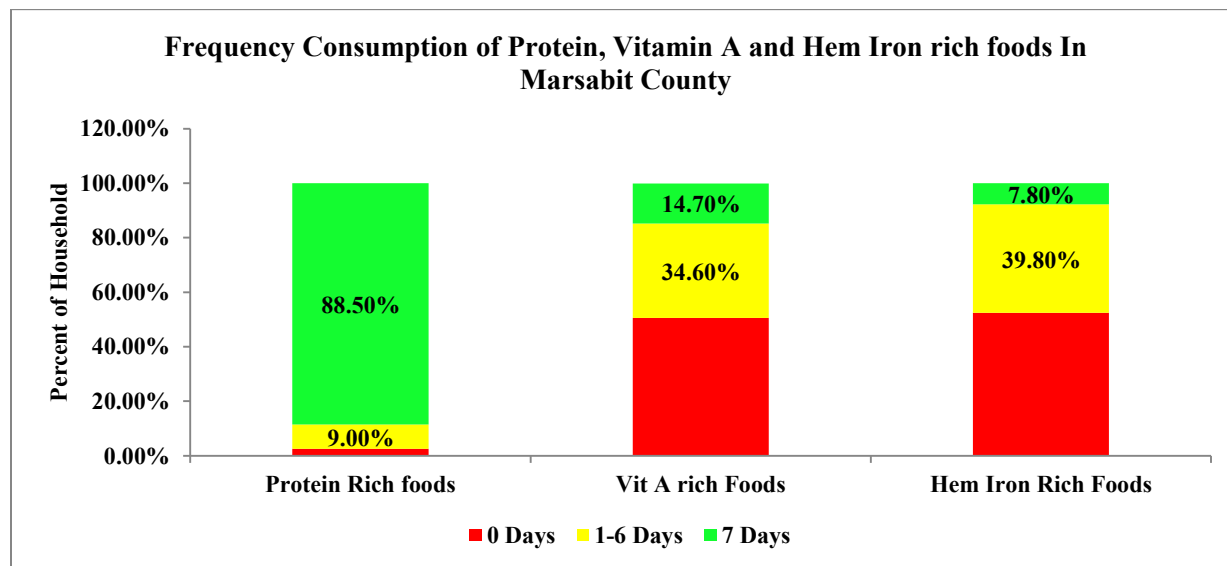
Macronutrients are good sources of energy. A lack in energy quickly leads to acute undernutrition. An insufficient intake of protein (essential for growth) is a risk for wasting and stunting. It also has an impact on micronutrient intake as protein foods are rich sources of vitamins and minerals.

Deficiencies in micronutrients, **such as vitamin A and iron**, over a long period of time, lead to chronic undernutrition. Iron deficiency leads to anemia 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 Marsabit County, 88.5% consumed protein Rich foods, 14.7% consumed Vitamin A rich foods and 7.8% consumed Hem Iron rich foods for 7 days.

Figure 21: Frequency Consumption of Protein, Vitamin A and Hem Iron rich foods In Marsabit County



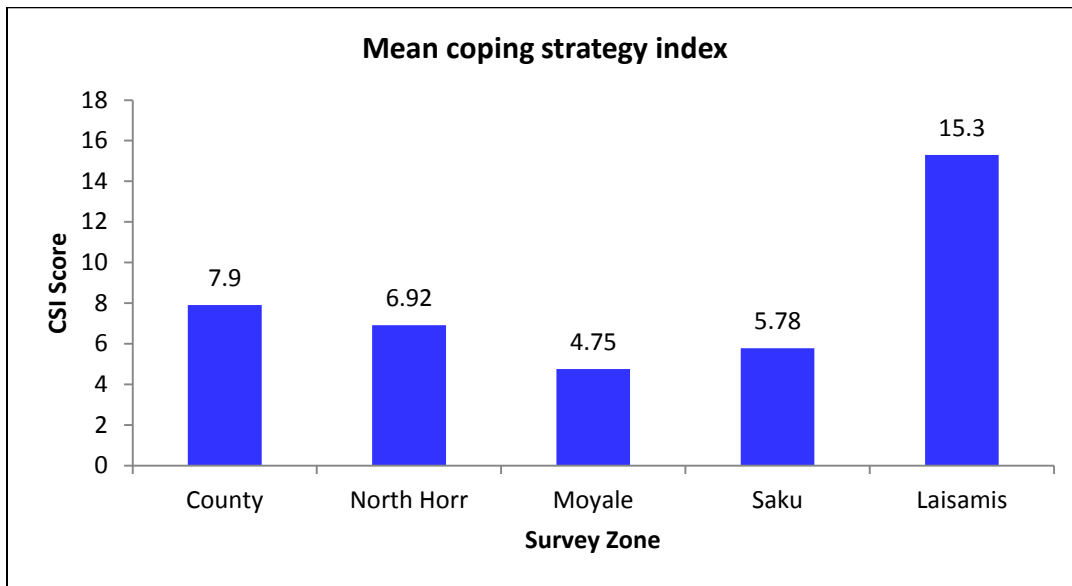
3.9 Livelihood

3.9.1 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 Marsabit County was 7.9 with Laisamis highest at 15.3 followed by North Horr at 6.92 and Moyale had the least at 4.75.

Figure 22: Mean coping strategy index



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

Chapter four Conclusion and Recommendation

Table 9: Summary of Conclusion and Recommendation

FINDINGS	RECOMMENDATION	ACTOR (BY WHOM?)	TIME LINE
Key nutrition sensitive actors missing in the dissemination meeting	<ul style="list-style-type: none"> ➤ Hold a meeting with the key actors i.e. Agriculture, livestock, NDMA and water sector. 	<ul style="list-style-type: none"> ➤ CNO to be supported by the CEC to convene the meeting 	<ul style="list-style-type: none"> ➤ In one week time. Week of 22nd August 2016
Very Critical Levels of GAM in North Horr and Laisamis of 22.8% and 22.5% respectively.	<ul style="list-style-type: none"> ➤ Strengthening the Community Health Strategy. 	<ul style="list-style-type: none"> ➤ County Department of Health and implementing Partners 	<ul style="list-style-type: none"> ➤ Ongoing
Poor access to health service delivery points	<ul style="list-style-type: none"> ➤ Strengthening community referral system through the community units. ➤ Remapping of Outreaches to match the hotspot areas in the County. 	<ul style="list-style-type: none"> ➤ County Department of Health and implementing Partners 	<ul style="list-style-type: none"> ➤ Immediately.
Lack of holistic assessment for CUs in the H/Fs	<ul style="list-style-type: none"> ➤ Strengthening of growth monitoring at the health facilities 	<ul style="list-style-type: none"> ➤ County Department of Health 	<ul style="list-style-type: none"> ➤ Immediately
Low nutrition activities funding from the health department	<ul style="list-style-type: none"> ➤ County government to prioritize and commit to strengthening County nutrition surveillance activities i.e. CBSS, Surge model approach and mass screening. 	<ul style="list-style-type: none"> ➤ County Department of Health and implementing Partners 	<ul style="list-style-type: none"> ➤ Urgently in hotspot areas

Few health facilities have implementing IMAM surge Approach	➤ Full role out of IMAM surge Approach in all the health facilities	➤ County Department of Health and implementing Partners	➤ Ongoing
Few CHVs trained on MIYCN	➤ Training of all the CHVs on community nutrition technical module	➤ County Department of Health and implementing Partners	
Poor mobilization in hygiene and sanitation related issues	➤ Raising awareness around WASH through community based forums and schools	➤ County Department of Health and implementing Partners	
Low latrine coverage and especially in the lowlands	➤ Scaling up of latrine coverage using the CLTS approach	➤ County Department of Health and WASH Partners	
Inadequate HR in community units	➤ Employment of CHEWs to monitor community level interventions	➤ County Department of Health	