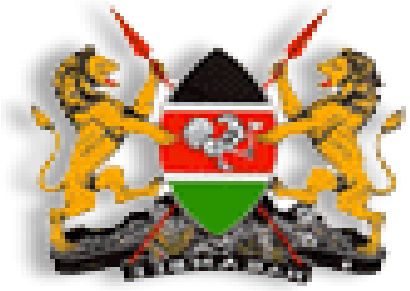


INTEGRATED SMART SURVEY MARSABIT COUNTY KENYA

JULY 2018

Felicity Munene (CWW), Anthony Mativo (WVK) and Titus Leokoe (FHK)

Table of Contents

List of figures 5

List of Tables 6

Acronym and Abbreviation 7

ACKNOWLEDGEMENT 8

EXECUTIVE SUMMARY 9

Chapter one: Introduction 13

1.1 Back ground Information 13

1.2 Rationale of the Survey 14

1.3 Timing of the Survey 14

1.4 Objective of the Survey 15

CHAPTER TWO: SURVEY METHODOLOGY 16

2.0 Survey Area 16

2.1 Survey Design 16

2.2 Study Population 16

2.3 Sample Size 16

2.4 Cluster and Household Selection 17

2.5 Data Collected 17

2.6 Survey Organisation 17

2.7 Questionnaire 18

2.8 Data Analysis and Report Writing 18

2.9 Referrals 18

2.10 Ethical consideration 18

CHAPTER THREE: SURVEY FINDINGS 19

3.1 GENERAL CHARACTERISTICS OF STUDY POPULATION AND HOUSEHOLDS 19

3.1.1 Demographics 19

3.1.2 Residency and Caregiver's Marital Status 20

3.2 Socio-economic characteristics of households 20

3.2.1 Highest Education level attained by head of household 20

3.2.2 School Enrolment for 3-18 years 21

3.2.2 Occupation of the household head 21

3.2.3. Main source of Income of the Household Head 22

3.3 Nutrition status of children 22

3.3.1 Age Verification 22

3.3.2 Prevalence of acute malnutrition (weight-for-height z-score) 23
3.3.3. Prevalence of acute malnutrition based on MUAC 25
3.3.4. Prevalence of Underweight 26
3.3.5 Prevalence of stunting 26
3.4 Children's Morbidity and Health Seeking Behavior 27
3.4.1 Child morbidity 27
3.4.1.1 Therapeutic Zinc Supplementation during Watery Diarrhea Episodes 27
3.4.2. Health Seeking Behavior 28
3.5 Childhood Immunization, Vitamin A Supplementation and Deworming 28
3.5.1. Childhood Immunization 28
3.5.2 Vitamin A supplementation 29
3.5.3. De-worming 30
3.6 Maternal Nutrition 30
3.6.1 Women physiological status 31
3.6.2 Iron and Folic Acid Supplementation (IFAS) 31
3.6.3 Maternal Nutrition 32
3.7 WATER SANITATION & HYGIENE 32
3.7.1 Main Source of Water 32
3.7.2 Distance to Water Source and Queuing Time 33
3.7.2.1 Distance to water sources 33
3.7.2.2 Queuing time to water sources 34
3.7.3 Methods of treatment and storage of drinking water 34
3.7.3.1 Household water treatment 34
3.7.3.2 Storage of Drinking water 35
3.7.3.3 Payment of Water 35
3.7.3.4 Water consumption at household level 36
3.8 Hygiene and sanitation 36
3.8.1 Hand washing 36
3.8.2 Sanitation Facilities 37
3.9 FOOD SECURITY 38
3.9.1 Dominant foods and food groups consumed by households and women 38
3.9.2 Household Dietary Diversity (HDD) 39
3.9.3 Women Dietary diversity score 40
3.9.4 Food Consumption Score Classification 41
3.9.5 Food Consumption Score –Nutrition 42
3.10 Coping strategy Index 44
3.11 Food Fortification 44

Chapter Four: Conclusion and recommendations 46
4.1 Conclusion 46
4.2 Recommendations 46
ANNEX 49
ANNEX 1: Summary of plausibility report 49
ANNEX 2: Questionnaire 50
Annex 3: Clusters Selected 65

List of figures

Figure 1: Map of Marsabit County 14
Figure 2: Marital Status for Marsabit County 20
Figure 3: Highest education level attained by the Household Head 20
Figure 4: School Enrolment for 3 -18 years 21
Figure 5: Marsabit County OTP admission trends 24
Figure 6: Marsabit County SFP admission trends 24
Figure 7: Marsabit County GAM rate Trends 2013-2018 25
Figure 8: Morbidity 27
Figure 9: OPV1 and OPV2 Vaccination Coverage 29
Figure 10: Measles Vaccination Coverage 29
Figure 11: Vitamin A supplementation Coverage 30
Figure 12: Women physiological status 31
Figure 13: Maternal Malnutrition 32
Figure 14: Trekking distance to the water sources 34
Figure 15: Queueing for water 34
Figure 16: Water treatment methods 35
Figure 17: Water storage 35
Figure 18: Mode of Water Payment 36
Figure 19: Household Dietary Diversity Score 39
Figure 20: Household Consumption of micro nutrient foods in Marsabit County 40
Figure 21:Minimum Women dietary Diversity Score 41
Figure 22: Food consumption score for Marsabit County 42
Figure 23: Food Consumption Score Nutrition 43
Figure 24: Average number of days micro nutrient are consumed in Marsabit County 43
Figure 25: CSI Score 44
Figure 26: Where they heard or learn about Food fortification 45

List of Tables

Table 1: Summary Findings 10
Table 2: Seasonal Calendar for Marsabit County 15
Table 3: Sample size Calculation for Moyale and Saku Sub Counties 16
Table 4: Sample size calculation for North Horr and Laisamis Sub Counties 16
Table 5: MUAC Guidelines 18
Table 6: Response Rate 19
Table 7: Reasons for not being at school 3-18 years 21
Table 8: Main Occupation of the Household Head 22
Table 9: Main sources of Income for the Household head 22
Table 10: Age verification 22
Table 11: Prevalence of Malnutrition By WHZ/Oedema 23
Table 12: Prevalence of Malnutrition by MUAC 25
Table 13: Prevalence of Underweight 26
Table 14: Prevalence of Stunting 26
Table 15: Therapeutic Zinc Supplementation during Watery Diarrhea Episodes 28
Table 16: Health Seeking Behavior 28
Table 17: BCG Immunization 28
Table 18: IFAS supplementation 31
Table 19: Main sources of drinking water 33
Table 20: Water consumption at household level 36
Table 21: Handwashing in Marsabit County 37
Table 22: Type of Sanitation facility 38
Table 23: Dominant food groups consumed at household level 38
Table 24: Dominant food groups consumed by Women of reproductive Age 39

Acronym and Abbreviation

ANC: Antenatal Care
ARI: Acute respiratory Infections
BCG: Bacillus Calmette–Guérin
BFCI: Baby friendly community Initiatives
CI: Confidence Interval
CHAs: Community Health Assistants
CHMT: County Health Management Team
CHS: Community Health Strategy
CLTs: Community Led Total Sanitation
CSG: County Steering Group
CSI: Coping Strategy Index
CWW: Concern Worldwide
ENA: Emergency Nutrition Assessment
FAO: Food and Agricultural Organization
FCS: Food consumption Score
FHK: Food for the Hungry Kenya
GAM: Global Acute Malnutrition
HAZ: Weight-for-Age Z score
HH: Household
HDDS: Household Dietary Diversity Score
HiNi: High Impact Nutrition Intervention
IDPs: Internally Displaced Persons
IFAS: Iron Folic Acid Supplementation
IPs: Implementing Partners
MAM: Moderate Acute Malnutrition
MIYCN: Maternal Infant Young Child Nutrition
MoH: Ministry of Health
MUAC: Mid Upper Arm Circumference
NDMA: National Draught Management Authority
NGO: Non-Governmental Organization
NIWG: Nutrition Information Working Group
NNAP: National Nutrition Action Plan
OPV: Oral Poliovirus Vaccines
ORS: Oral Rehydration Salts
OTP: Outpatient Therapeutic Programme
PPS: Probability Proportional to Population Size
SAM: Severe Acute Malnutrition
SD: Standard Deviation
SFP: Supplementary Food Programme
SMART: Standardized Monitoring and Assessment in Relief and Transition
SPSS: Statistical Packages for social Sciences
UN: United Nations
UNICEF: United Nation Children Fund
USAID: United States Agency for International Development
WASH: Water sanitation and Hygiene
WDDS: Women Dietary Diversity Score
WHO: World Health Organization
WAZ: Weight-for-Age Z score
WFA: Weight-for-Age
WHZ: Weight-for-Height Z score
WRA: Women of Reproductive age
WVK: World Vision Kenya
VAS: Vitamin A supplementation
VIP: Ventilated Improved Pit

ACKNOWLEDGEMENT

Marsabit integrated SMART survey of 2018 was made possible due to coordinated efforts by various health stakeholders. The ministry of health acknowledges the following partners due to their contribution in the entire survey process:

- Government ministries including ministry of Agriculture, ministry of health led County Nutrition Coordinator, and national drought management authority (NDMA) for their concerted efforts in planning and Implementation of the survey.
- Development partners including; UNICEF and USAID for funding the survey, Food for the Hungry - Kenya, World Vision – Kenya, Concern Worldwide and KNHP Plus for the active participation and the supervision roles they played during the survey.
- The survey team leaders and enumerators for their tireless efforts in ensuring quality and reliable data.
- The entire Marsabit county residents for collaborating and making the survey a success.

EXECUTIVE SUMMARY

Concern Worldwide has been supporting the Ministry of Health (MoH) in the improvement of health and survival of children under five and pregnant and lactating women through support of health and nutrition systems to scale up high impact nutrition interventions[1] (HINIs) in Moyale and North Horr Sub-counties while Food for the Hungry Supports the same in Laisamis and Saku Sub-counties. World Vision supports improving food and nutrition security and enhancing resilience to drought in Laisamis sub-county

The survey findings indicated a GAM prevalence rate of 12.4 %(10.2-15.0 95% C.I.), while the prevalence for severe malnutrition was 1.7 (1.2-2.5)95% C.I.). This is generally classified as an emergency by the WHO classification of malnutrition. The findings also showed the prevalence of underweight at 21.4 %(18.8-24.3)95% C.I.) where 3.8 %(2.9-4.9)95% C.I.) were severely underweight. In terms of stunting prevalence, the survey findings indicated that 24.7 %(21.8-27.8 95% C.I.) Of children in Marsabit County were stunted and 5.8 %(4.3-7.7 95% C.I.) Of the children were severely stunted.

Further analysis of the nutrition data showed that North Horr sub-county had the highest GAM rate prevalence of 23.5% that was critical, followed by Laisamis with 13.2% that was in serious situation. Moyale and Saku sub-counties have a GAM rate prevalence of 7.8% and 5.7% respectively that indicate poor situation.

The survey findings indicated that 20.5% of children aged 6-59 months in Marsabit County were reported to have been ill two weeks prior to survey. The most prevalent illness during this period was acute respiratory illnesses/ cough at 55.9%, followed by fever with chills (44.1%) and watery diarrhea (12.2%). In terms of supplementation, the survey findings indicate that the overall proportion of children (12-59 Months) supplemented with Vitamin A for at least 2 times in the period of one year preceding the survey was 26.2% that is way below the national target of 80%. In terms of zinc supplementation or oral rehydration salts (ORS), 46.4% had received the supplementation that is below the HiNi target of 80%. From the survey results, 93.5% of children were reported to have received BCG and confirmed by Scar while Measles vaccination coverage at 9 months verified by card was at 66.0%. In addition, 75.0% of care givers in Marsabit County sought Health assistance when their children were ill. In terms of the specific service points sought for the treatment, majority sought assistance from public (82%) clinics and private clinics (9%). The results of the survey showed that among the caregivers interviewed 26.3% reported practicing proper hand washing at the 4 critical times. For the household dietary diversity, analysis showed that 70% of the households consumed more than 5 food groups while the minimum maternal dietary diversity showed that 73% of the women aged 15-49 years consumed less than 5 food groups. Lastly, the survey results showed that the total weighted coping strategy score was 16.47.

The survey was conducted through the partnership of the Ministry of Health, Food for the Hungry, World Vision and Concern Worldwide and was funded by UNICEF between 3rd July and 13th July, 2018.

Methodology

The target geographical area was Marsabit County's 4 sub-counties of Moyale, Marsabit Central, North Horr and Laisamis. The survey adopted a 2 stage sampling technique. The list of the villages was first obtained for each Sub-county. The simple random sampling was employed to select villages where the survey can be conducted in all the 4 Sub-counties. That formed the 1st stage sampling. Finally, with the sampled villages, a list of all households was drawn upon which 13-15 households was sampled using simple random sampling according to different sample sizes of different Sub Counties.

Objectives of the Survey

Main Objective

- To determine the nutrition status of children aged 6- 59 months old and Women of reproductive age 15-49 Years.

Specific Objectives

- To estimate the current prevalence of acute malnutrition in children aged 6 – 59 months
- To compare the overall nutritional changes with the previous GAM and SAM
- To determine the morbidity rates amongst children aged 6-59 months over a two week recall period.
- To estimate the immunization coverage of Measles, BCG and Oral polio vaccines (OPV1 and 3)

[1] The 11 HINI include breastfeeding promotion, complementary feeding for infants after the age of six months, improved hygiene practices including: hand washing, vitamin A supplementation, zinc supplementation for diarrhea management, de-worming, iron-folic acid supplementation for pregnant women, salt iodization, iron fortification of staple foods, prevention of moderate under nutrition and treatment of acute malnutrition.

- To determine the coverage for deworming, zinc supplementation for diarrhea, MNP's supplementation 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 household food security, water, sanitation, and hygiene practices

The following table presents the summary of the indicators

Table 1: Summary Findings

Anthropometric Indicators					
Indicators	North Horr July 2018	Moyale July 2018	Saku July 2018	Laisamis July 2018	COUNTY JULY 2018
Clusters	36	30	30	36	132
HHs Targeted	461	442	450	451	1804
HHs Reached	441	411	431	466	1749
Total People Reached	2202	2435	2271	2014	8922
Proportion of Under five	17.8%	20.0%	18.3%	22.6%	19.6%
Proportion of Under two	7.5%	8.5%	11.3%	11.8%	9.7%
Average Household Size	5.0	5.9	5.3	4.3	5.1
Prevalence of global malnutrition	23.5% (19.2-28.3)	7.8% (4.7-12.5)	5.7% (3.5- 9.1)	13.2% (9.2-18.6)	12.4% (10.2 – 15.0)
Prevalence of Moderate Malnutrition	19.9% (15.8-24.8)	6.8% (3.9-11.5)	5.4% (3.3- 8.6)	10.8% (7.6-15.1)	10.7%(8.7-12.8)
Prevalence of severe malnutrition	3.5% (2.2- 5.5)	1.0% (0.4- 2.6)	0.3% (0.0- 2.1)	2.4% (1.0- 5.4)	1.7%(1.2 – 2.5)
Prevalence of global malnutrition by MUAC	4.6% (2.9- 7.2)	3.0% (1.5- 5.7)	2.0% (1.0- 3.7)	2.8% (1.5- 5.4)	3.1% (2.1- 4.5)
Prevalence of severe malnutrition by MUAC	0.6% (0.1- 2.3)	0.7% (0.2- 2.3)	0.6% (0.1- 2.2)	0.5% (0.1- 2.2)	0.6% (0.3- 1.3)
Global underweight	27.0% (22.3-32.3)	15.8% (11.4-21.5)	15.4% (11.1-21.0)	28.1% (24.2-32.4)	21.4%(18.8 – 24.3)
Severe Underweight	5.0% (3.0- 8.1)	3.0% (1.5- 5.9)	1.1% (0.5- 2.8)	5.0% (2.8- 8.6)	3.8%(2.9-4.9)
Global Stunting	23.0% (17.9-29.0)	25.4% (20.5-30.9)	22.3% (16.9-28.8)	26.9% (21.8-32.6)	26.1%(21.7 - 30.9)
Severe Stunting	5.1% (2.8- 9.1)	5.1% (3.1- 8.4	4.9% (3.0- 7.8)	7.7% (5.2-11.2)	6.5%(4.6 – 9.1)

Indicator	North Horr July 2018	Moyale July 2018	Saku July 2018	Laisamis July 2018	COUNTY JULY 2018
Measles Coverage at 9 Months by Card	53.7%	**67.3%**	66.8%	71.8%	66.0%

Measles Coverage at 9 Months by Recall	39.6%	19.7%	32.0%	19.8%	27.1%
Measles Coverage at 18 Months by Card	36.8%	6.2%	54.5%	56.5%	48.9%
Measles Coverage at 18 Months by Recall	40.8%	3.9%	33.7%	19.2%	26.3%
BCG by scar	93.8%	96.4%	92.1%	95.7%	93.5%
OPV 1 by Card	55.4%	72.3%	67.5%	75.7%	69.1%
OPV 1 by Recall	40.9%	17.8%	31.7%	20.2%	27.2%
OPV 3 by Card	56.2%	67.4%	66.9%	74.4%	67.5%
OPV 3 by Recall	38.7%	17.6%	31.7%	19.9%	27.2%
Zinc Supplementation	69.6%	42.9%	69.2%	33.3%	40.2%
Vitamin A Supplementation (6-11 Months)- Once	20.0%	42.3%	33.3%	66.7%	46.4%
Vitamin A Supplementation (12-59 Months) - Once	80.1%	80.4%	76.5%	87.3%	81.6%
Vitamin A Supplementation (12-59 Months) - Twice	83.3%	65.8%	83.0%	71.1%	77.7%
Vitamin A (6 – 59 months) – once	25.0%	17.1%	24.1%	32.3%	26.2%
Deworming (12-59 months)	80.3%	79.1%	77.3%	85.7%	81.2%
Morbidity					
Sickness two weeks prior to survey	18.5%	29.6%	11.7%	25.1%	20.5%
Fever	34.4%	15.8%	53.5%	62.2%	44.1%
Acute Respiratory Infection	64.1%	54.2%	58.1%	50.0%	55.9%
Watery diarrhea	7.8%	21.7%	7.0%	12.2%	12.2%
Bloody diarrhea	0.0%	0.0%	0.0%	1.0%	0.4%
Maternal Health and Nutrition					
MUAC <21cm for WRA	14.8%	4.2%	5.6%	14.4%	11.3%
MUAC (21 < 23 cm) For WRA	25.8%	14.2%	16.4%	28.0%	23.0%
MUAC <21cm for PLW	13.4%	5.3%	6.9%	15.3%	11.7%
Iron Folate Supplementation	79.7%	81.4%	85.4%	81.7%	82.4%
Household Food Consumption (Food consumption Score)					

Poor FCS	6.1%	10.5%	4.4%	21.5%	10.8%
Border FCS	14.1%	7.1%	18.3%	33.5%	18.7%
Good FCS	79.8%	82.5%	77.3%	45.1%	70.8%
Water and Sanitation (WASH)					
Piped to yard/plot	0.0%	0.0%	3.5%	0.2%	0.8%
Piped to Neighbors	0.9%	0.0%	2.3%	2.1%	1.2%
Public tap/standpipe	3.9%	6.1%	8.8%	22.1%	10.2%
Tube well/Borehole	19.5%	20.9%	13.2%	21.7%	22.1%
Protected well	5.9%	16.5%	1.9%	2.6%	8.1%
Unprotected well	34.5%	4.4%	3.7%	19.1%	14.0%
Unprotected spring	0.0%	3.6%	0.0%	3.0%	2.1%
Rain water	3.2%	4.6%	3.7%	2.4%	3.6%
Tanker truck	0.0%	2.7%	6.5%	0.0%	2.3%
Cart with small tank	0.2%	0.5%	0.0%	0.0%	0.2%
Water Kiosk	7.7%	0.0%	16.9%	5.8%	6.5%
Surface water	24.3%	51.6%	36.7%	9.2%	33.2%
Sanitation Facility					
Ventilated Improved Pit Latrine	14.70%	15.80%	20.40%	3.00%	13.40%
Pit latrine with slab	14.70%	33.80%	35.00%	9.90%	24.50%
Pit latrine without slab/open pit	3.60%	19.50%	18.30%	1.70%	11.80%
Composting toilet	0.00%	0.00%	0.00%	0.90%	0.20%
No facility /Bush/field	66.00%	28.00%	24.10%	82.60%	48.00%
Other	0.20%	2.70%	1.60%	0.90%	1.50%
Hanging toilet/Latrine	0.00%	0.20%	0.50%	1.10%	0.60%
Aware of handwashing	46.7%	86.9%	75.6%	63.7%	71.9%
Use soap and water for hand washing	82.5%	77.9%	41.8%	86.2%	72.4%
Hand washing at 4 critical times	22.3%	36.4%	14.7%	20.2%	26.3%
Water treatment	30.2%	35.5%	41.8%	13.9%	30.9%
Minimum Dietary Diversity of the Household					
<3 food groups	1.1%	5.8%	0.2%	2.8%	2.5%
3 to 5 Food groups	44.4%	16.5%	14.4%	33.3%	27.6%
>5 food groups	54.4%	77.6%	85.4%	63.9%	70.3%
Women Dietary Diversity					
<5 food groups	84.6%	66.0%	48.7%	82.7%	73.5%
5 or more food groups	15.4%	34.0%	51.3%	17.3%	26.6%

Chapter one: Introduction

1.1 Back ground Information

Marsabit County is located in the upper eastern region of Kenya. It borders Ethiopia to the North, Marsabit to the north east, Isiolo to the south East, Samburu to the southeast and Turkana to the west. It covers an area of 70,961.2km^2. The County has four (4) sub counties namely North Horr, Moyale, Saku and Laisamis.

The county has an estimated population of 347,970 from an estimated 66,168 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 is composed of different ethnic groups including the Gabbra, Rendile, Borana, Turkana, Samburu, Burji, El Molo, Dassanach and Waata. Marsabit town is also inhabited by people from communities generally origination from the rest of Kenya such as Meru, Kikuyu, Luo and Luhya. [2]

The county is divided into four ecologically zones namely:

- Agro-ecological zone III: This zone has rainfall and is suitable for horticultural and food crop production such as maize, beans, fruits and vegetables. It comprises only 1% of total land area in the county.
- Agro-ecological zone IV that covers 2 % of the total land area and is suitable for settled livestock rearing and some mixed farming with dry land crops.
- Agro-ecological zone V that covers 28 % of the total land area and includes landmasses falling between 700-1000m above sea level. The vegetation here includes acacia tortillis woodland on stony soils and acacia bush land on deeper soils. Suitable for small animals such as goats.
- Agro-ecological zone VI that covers 69 % of the total land area and lies 700m above sea level. High rates of evaporation and salt deposits making grass growth stunted. It is only suitable for camels.

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 four major livelihoods zones including: pastoralists, agro-pastoralists, fisheries and urban segregated in different proportions as Pastoralists 81%, Agro-pastoralists 16 % and others (formal employment, casual wage labor, petty trade & fisheries) 3%[3]. Pastoralists dominate almost all parts of the four sub-counties with agro-pastoralists mostly notable in Saku and some parts of Moyale sub-counties while others are mainly notable in urban areas mainly the county and sub-county capitals.

Marsabit is among the most conflict-prone in Kenya. As stated, the county is mainly semi-arid, and the residents are mainly pastoralist nomads who often clash over access to scarce pasture and water and cross border tensions. Women bear sole responsibility for collecting water and firewood in Marsabit, and for feeding children. This is a major challenge for many, with one woman describing how the distances travelled leave her only with enough time and energy to cook food three or four times a week. Pastoralist families in this region rely so heavily on markets for buying core foods such as rice, sugar, potatoes and cooking fat.

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 that are occasionally support by partners. Another major contributing factor of high malnutrition levels are: poor dietary diversity especially for women and poor childcare and feeding practices which are related to hygiene, 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.

[2] Focused Ethnographic Studies, Pelto & Thutha, GAIN Health, May 2016.

[3] Marsabit County CIDP

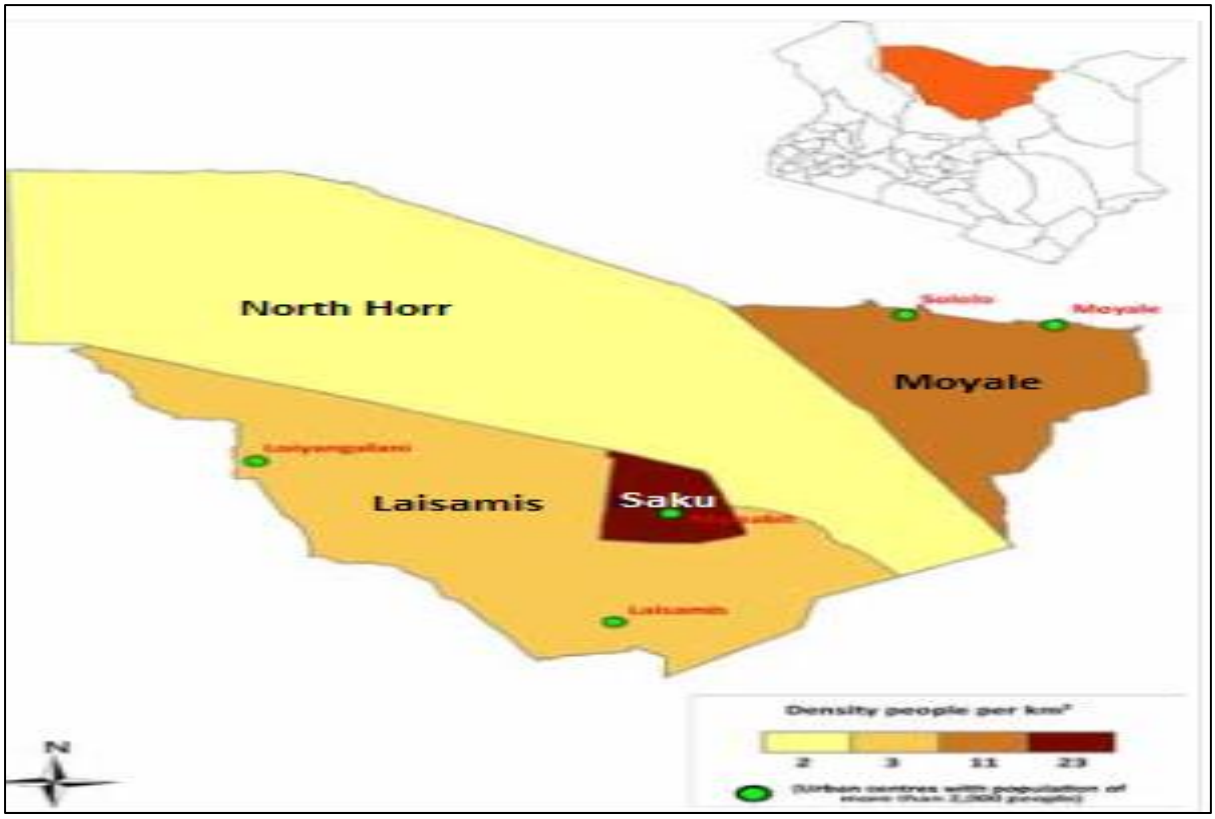


Figure 1: Map of Marsabit County

1.2 Rationale of the Survey

The survey was proposed in order to assess the levels of malnutrition and the performance of the HiNi indicators in Marsabit County. The survey was conducted through the partnership of Food for the Hungry (FH), Concern Worldwide, Ministry of Health, World Vision, UNICEF, APHIA plus and other implementing partners. This survey was conducted between 3rd July and 13th July, 2017 and helped in evaluating the extent of malnutrition among the children aged 6-59 months and the possible factors contributing to malnutrition and recommends appropriate interventions.

1.3 Timing of the Survey

Marsabit has two rainfall seasons; long rains (April-June) and short rains; (October-December) season. The seasonal calendar also characterizes dry season into short (January-March) and long; July-September dry season. The county inhabitants depend on long rains season rather than the short rains season. The integrated nutrition SMART survey was conducted in line to seasonal assessment and survey findings were used to classify and inform on outcome indicators (nutrition status) during long rains assessment in July 2018.

Table 2: Seasonal Calendar for Marsabit County

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
➢ Short rains harvests Short dry spell ➢ Reduced milk yields Increased HH Food Stocks ➢ Land preparation			➢ Long Rain ➢ Planting/Weeding ➢ High Calving Rate ➢ Milk Yields Increase			➢ Long rains harvests ➢ A long dry spell ➢ Land preparation ➢ Increased HH Food Stocks ➢ Kidding (Sept)			➢ Short Rains ➢ Planting/weeding		

1.4 Objective of the Survey

The overall objective

To determine the prevalence malnutrition amongst children aged 6-59 months age in Marsabit County.

Specific objectives

- To estimate the current prevalence of acute malnutrition in children aged 6 – 59 months
- To compare the overall nutritional changes with the previous GAM and SAM.
- To determine the morbidity rates amongst children aged 0-59 months over a two-week recall period.
- To estimate the 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

CHAPTER TWO: SURVEY METHODOLOGY

2.0 Survey Area

The target geographical area Marsabit County and it covered all four Sub Counties: Moyale, Laisamis, Saku and North Horr. Each Sub county had its own independent sample.

2.1 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.

2.2 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.

2.3 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 3: Sample size Calculation for Moyale and Saku Sub Counties

	Moyale	Saku	Rationale
Estimate (GAM)	5.4%	4.5%	From 2017 SMART survey -For Moyale point estimate was used as situation expected to remain the same due to aggravating factors like the effect asylum seekers. Saku lower limit was used as the situation is expected to improve.
Precision	2.5%	2.5%	From SMART Global project
Design Effect	1.1	1.1	Based on the finding of the 2017 SMART Survey to cater for heterogeneity
Estimated Number of Children	**376**	**316**	
Average HH Size	5.0	5.0	From KNBS
Non-Response Rate	3.0	3.0	Based on the current expected NRR due to the current situation in the county
Proportion of Children Under 5	19.5%	16.1%	From KNBS
Estimated Number of Households	**442**	**450**	
Number of Households per Day	15	15	Based on 2017 SMART Survey Experience
Number of Cluster	30	30	Computed from the Number of HHs per Day
Number of children per Cluster	13	11	Computer from Number of clusters and children
Number of Teams	**5**	**5**	
Number of Days	6	6	Based on the Number of Teams to be Recruited

Table 4: Sample size calculation for North Horr and Laisamis Sub Counties

	North Horr	Laisamis	Rationale
Estimate (GAM)	18.0%	17.3%	Lower confidence limits for Jan/Feb 2018 was used as the situation is expected to improve due to availability of milk at the Household level and also the cumulative effect of the enhanced rainfall which was well distributed and prediction of progression of the long rains in June
Precision	4.0%	4.0%	From SMART Global project
Design Effect	1.1	1.1	From Jan 2018 SMART Survey to cater for heterogeneity
Estimated Number of Children	**424**	**411**	
Average HH Size	5.0	5.0	From KNBS
Non-Response Rate	3.0	3.0	Based on the current expected NRR according to the current situation in the county

Proportion of Children Under 5	21.1%	20.9%	KNBS Estimate
Estimated Number of Households	**461**	**451**	
Number of Households per Day	13	13	Based on Jan 2018 SMART Survey Experience
Number of Cluster	36	36	Computed from the Number of HHs per Day
Number of children per Cluster	12	14	
Number of Teams	**6**	**6**	
Number of Days	6	6	Based on the Number of Teams to be Recruited

2.4 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/cluster and used the simple random sampling method to select the 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.

2.5 Data Collected

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

1. Anthropometry (weight, height, edema, MUAC, age, sex) for children aged 6-59 months and MUAC for women of reproductive age.
2. Vaccination information (OPV1 and 3, measles, BCG, and Vitamin A supplementation)
3. Incidences of childhood illnesses in the last 2 weeks prior to the survey
4. Food security information (Household Dietary Diversity Score, Women dietary Diversity Score, Food consumption Score , Food consumption Score-Nutrition and Coping strategy Index)
5. Water and sanitation Hygiene (Latrine access and coverage, water treatment and hand washing)

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

2.6 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 fieldwork, 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.
- **For the quality of training:** The teams were split into two namely: 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, supervisors from FH, World Vision, and Aphia Plus, Concern Worldwide, NDMA, MoA, MoH, and other partners closely supervised the team throughout the survey. In moving from one randomly selected household to another, a village leader, or a community volunteer, depending on the village, guided the teams and who was available.

2.7 Questionnaire

The survey adopted the data collection tools recommended in the Nutrition Information Working Group.

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 22. The Concern Worldwide Survey and Surveillance Officer, Monitoring and Evaluation Officer of World Vision and Nutrition Technical lead from Food for the Hungry, Kenya, were responsible for the Data downloading, analysis and report writing. Results are presented using the new WHO reference levels.
- **Preliminary Results and Final Report:** Survey and Surveillance Officer of Concern Worldwide and Monitoring, Evaluation Officer of World Vision and Nutrition Technical lead from Food for the Hungry presented the findings to CHMT, CSG stakeholders and the Nutrition Information Working Group (NIWG) within two weeks of completion of the survey fieldwork at County and National level.

Indicators, Guidelines and Formulas used in determining Acute Malnutrition Weight for height (WFH) index

This was estimated from a combination of the weight for height (WFH) index values (and/or edema) and by sex based on WHO standards 2006. This index was expressed in WFH indices in Z-scores, according to WHO 2006 reference standards.

Z-Score:

- Severe acute malnutrition is defined by WFH < -3 SD and/or existing bilateral edema,
- 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.

Mid upper arm circumference (MUAC) MUAC analysis was also undertaken to determine the nutrition status of sampled children and women of reproductive age (15-49 years). The following MUAC criteria were applied.

Table 5: MUAC Guidelines

MUAC guidelines:	Interpretation
Children 6-59 Months	
MUAC<115mm and /or Bilateral Edema	Severe Acute Malnutrition
MUAC >=115mm and <125mm (no bilateral edema)	Moderate acute Malnutrition
MUAC>=125mm and <135mm(No bilateral Edema)	Risk of Malnutrition
MUAC>135mm (No bilateral Edema)	Adequate Nutritional Status
Women of reproductive age (15-49 Years)	
MUAC >21-23cm	At risk of malnutrition
MUAC <21cm	Maternal Acute Malnutrition

2.9 Referrals

During the survey, all severe and moderately malnourished children as per MUAC and Weight-for-Height cut offs referred to the nearby health service delivery points offering IMAM services. Pregnant and lactating women with MUAC.

2.10 Ethical consideration

Sufficient information was provided to the local authorities about the survey including the purpose and objectives of the survey, the nature of the data collection procedures, the target group, and survey procedures. Verbal consent was obtained from all adult participants and parents/caregivers of all eligible children in the survey. The decision of caregiver to participate or withdrawal was respected. Privacy and confidentiality of survey respondent and data was protected.

CHAPTER THREE: SURVEY FINDINGS

3.1 GENERAL CHARACTERISTICS OF STUDY POPULATION AND HOUSEHOLDS

3.1.1 Demographics

In North Horr, the total number of households surveyed was 441 while in total; there were 346 children whose anthropometric measurements were taken who were aged between 6 and 59 months. The average number of persons per household in North Horr was 5.0. Further, the proportion of children under five in the same area was found to be 17.8%.

In Laisamis, the total number of households surveyed was 466 while in total; there were 386 children whose anthropometric measurements were taken who were aged between 6 and 59 months. The average number of persons per household was 4.3. Further, the proportion of children under five in the same area was found to be 22.6%.

In Moyale, the total number of households surveyed was 411 while in total; there were 402 children whose anthropometric measurements were taken who were aged between 6 and 59 months. The average number of persons per household was 5.9. Further, the proportion of children under five in the same area was found to be 20.0%.

In Saku, the total number of households surveyed was 431 while in total; there were 355 children whose anthropometric measurements were taken who were aged between 6 and 59 months. The average number of persons per household was 5.3. Further, the proportion of children under five in the same area was found to be 18.3%.

Overally, in Marsabit County, 1749 Household were surveyed and 1489 anthropometric measurement were taken. The average number of persons per household was 5.1 and the proportion of children under five in Marsabit County was found to be 19.6%.

Table 6: Response Rate

	Target per the survey			Actual No Reached					
Survey Zone	No. of HH	No. of Children	Number of Clusters	No. of HH questionnaires filled	No. of Children	Total House Hold Members	Average HH size	Proportion of under five	Design Effect
Laisamis	451	411	36	466	386	2014	4.3	22.6%	1.73
North Horr	461	424	36	441	346	2202	5.0	17.8%	1.0
Saku	450	316	30	431	355	2271	5.3	18.3%	1.16
Moyale	442	376	30	411	402	2435	5.9	20.0%	1.91
Total	**1804**	**1527**	**132**	**1749**	**1489**	**8922**	**5.1**	**19.6%**	

3.1.2 Residency and Caregiver's Marital Status

All the respondents from households in Marsabit County at 99.8% are resident while there is 0.1% of IDPs and refugee respectively. Majority of the respondents in the County were married and also its worth noting the widow are also high at 12.1% as shown in the figure below.

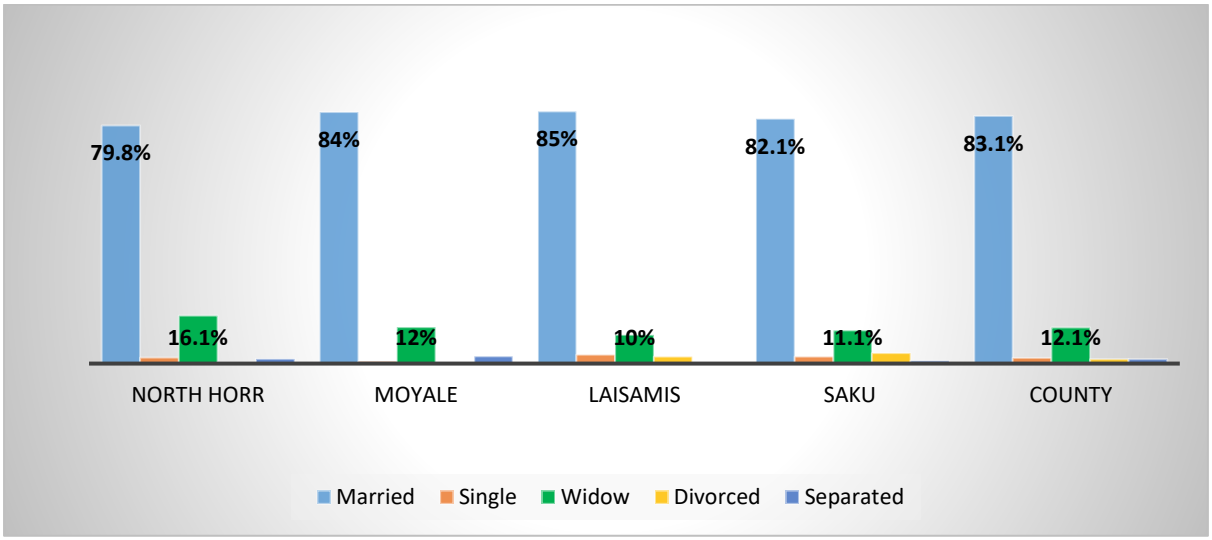


Figure 2: Marital Status for Marsabit County

The 12.1% could indicate high level of vulnerable of this households led by single care givers hence lacking key bread winners compared to the households with the married ones.

3.2 Socio-economic characteristics of households

3.2.1 Highest Education level attained by head of household

Overall, literacy levels remain very low at 76.1%. Of those with formal education, only 8.2% and 6.7% had primary and secondary education respectively and just 4.1% of the sampled population had received tertiary education. Results show little progress in attaining improved literacy among caregivers which is a major hindrance to improved care practices, capacity for knowledge and technology transfer at community level and ultimately improved income and livelihood security for optimal nutrition and health outcomes.

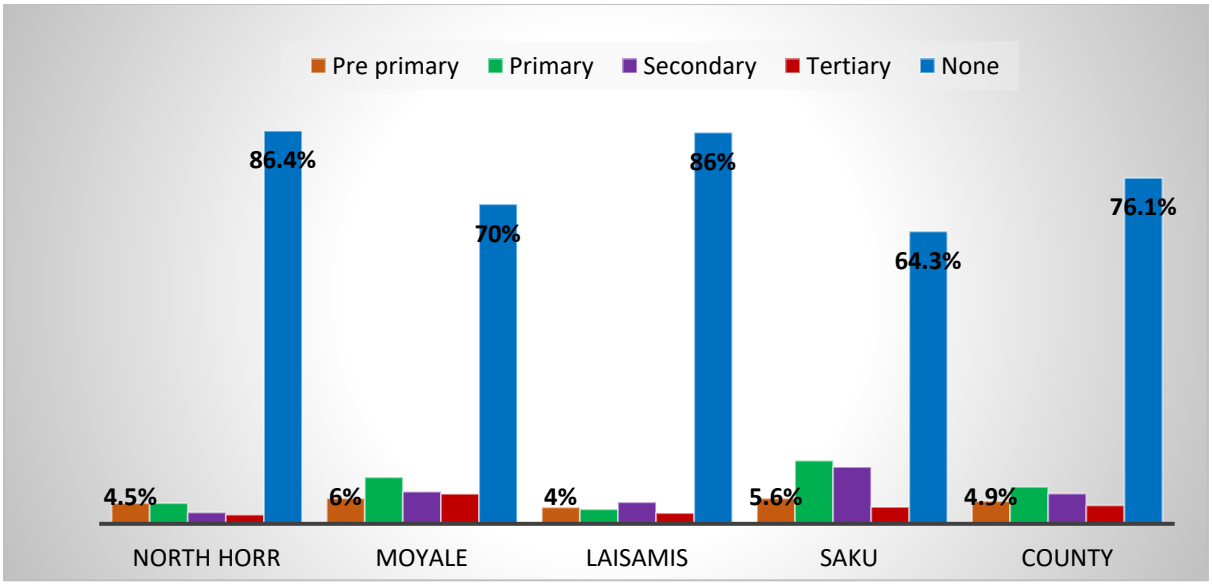


Figure 3: Highest education level attained by the Household Head

3.2.2 School Enrolment for 3-18 years

Nearly 70.0% of the respondents (3-18 year olds) in Marsabit County were enrolled in school. Further analysis showed the highest enrollment to be in Saku (92.0%) and Moyale (80.1) while lower in Laisamis (54.8%) and North Horr (56.6%) respectively. In Marsabit County, according to the County Steering Group, most children enroll to school after the attaining the age of 7 years hence low enrollment rate. This is as shown below.

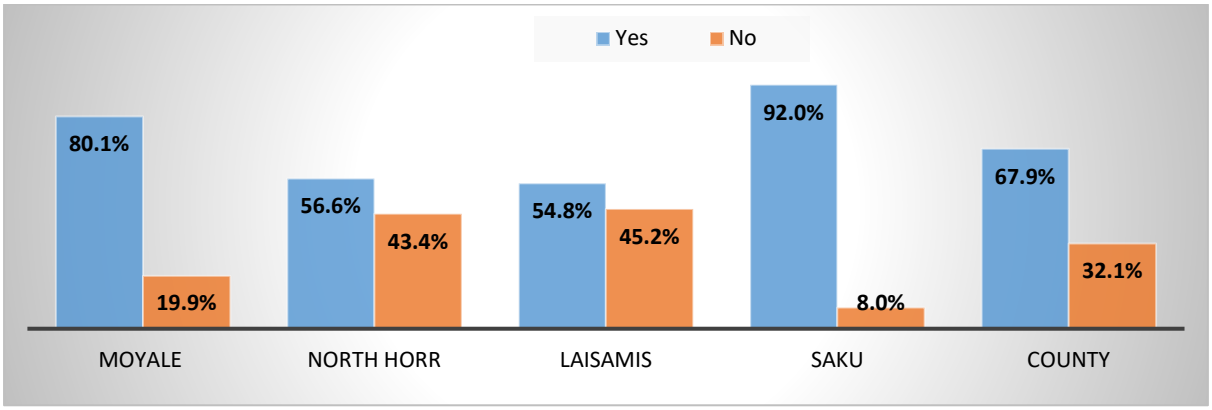


Figure 4: School Enrolment for 3 -18 years

When the data was further analysed, it was found that for the respondents that were not enrolled in schools, majority (56%) were reported due to family responsibilities like herding, while 20.0% were not enrolled since they were too young to be in school. For North Horr, family labour responsibilities (55%) were the main reason for poor school enrolment compared to Saku and Moyale where 74.0% and 72.8% were not enrolled because they were young. This is as summarized in the table below:

Table 7: Reasons for not being at school 3-18 years

Reasons for not being at school (3-18 years)	Moyale	North Horr	Laisamis	Saku	County
Family labour Responsibilities i.e. Herding	14%	55%	71%	20%	56%
Working outside home	2%	1%	1%	0%	1%
Too poor to buy school items	5%	2%	2%	3%	2%
Household doesn't see value of schooling	28%	7%	3%	5%	7%
Migrated /moved from school area	0%	2%	0%	1%	1%
No school near by	6%	5%	4%	6%	5%
Married	0%	4%	0%	0%	2%
Young	37%	17%	16%	47%	20%

3.2.2 Occupation of the household head

Marsabit county has four major livelihoods zones including: pastoralists, agro-pastoralists, fisheries and urban segregated in different proportions as Pastoralists 81%, Agro-pastoralists 16 % and others (formal employment, casual wage labor, petty trade & fisheries) 3%[4]. However, too frequent hazards coupled with years of underinvestment have resulted in alarming shifts in livelihoods in Marsabit County Livestock herding reduced to 50.9% in 2017 to 47.3% in 2018. Overall, results show that almost half (47.3%) of households rely on pastoral economy as main occupation followed by casual labor at 20.3%.

[4] Marsabit County CIDP

Table 8: Main Occupation of the Household Head

Survey Areas/Indicator	North Horr	Moyale	Laisamis	Saku	County
Main occupation of the Household Head					
Livestock Herding	74.6%	24.1%	78.1%	24.1%	47.3%
Own Farm labour	0.7%	1.0%	1.3%	9.5%	2.8%
Employed	3.9%	12.2%	4.1%	13.2%	8.8%
Casual labour	9.5%	24.3%	6.7%	40.1%	20.3%
Petty trade	4.8%	19.0%	6.0%	6.3%	10.4%
Merchant/Trader	0.9%	3.4%	0.6%	1.6%	1.9%
Firewood/Charcoal	0.7%	7.1%	1.1%	1.6%	3.2%
Fishing	0.5%	0.0%	0.4%	0.0%	0.2%

3.2.3. Main source of Income of the Household Head

The current main source of income Marsabit County for the period of 30 days prior to the survey was sale of livestock reported by 33.2% of the households followed by casual labor at 21.7%, sale of livestock products and petty trading at 12.5% respectively. This is as summarized in the table below:

Table 9: Main sources of Income for the Household head

Survey Areas/Indicator	North Horr	Moyale	Laisamis	Saku	County
Main Source of Income					
Sale of livestock	72.8%	3.6%	68.9%	3.2%	33.2%
Sale of livestock products	2.0%	16.3%	8.2%	21.3%	12.5%
Sale of crops	0.0%	1.7%	0.9%	9.3%	2.7%
Petty trading	5.2%	23.1%	7.3%	7.7%	12.5%
Casual labour	9.1%	27.3%	7.7%	40.8%	21.7%
Permanent Job	0.5%	11.7%	3.6%	12.8%	8.4%
Sale of Personnel assets	0.5%	0.7%	1.1%	1.2%	0.8%
Remittance	3.9%	2.7%	0.4%	1.9%	2.2%
Income earned by Children	0.5%	2.4%	0.6%	0.0%	1.1%
Cash Transfer	1.4%	0.7%	0.4%	0.0%	0.6%

3.3 Nutrition status of children

3.3.1 Age Verification

Out of all sampled children in the County, 53.0% of them had a health card, 0.9% birth certificate while 0.2% baptism card and these were used to verify their age. Age determination for 14.2% of the children was based on recall, hence prone to bias. Moyale (60.0%) and North Horr (64.2%) had the least proportion of children with a health card, birth certificate/notification or baptism card.

Table 10: Age verification

	Moyale	North Horr	Laisamis	Saku	County
Health Card/MNCH Booklet	60.0%	64.2%	79.0%	76.1%	69.7%
Birth Certificate	3.5%	2.0%	0.5%	2.3%	2.1%
Baptism Card	0.0%	0.0%	0.3%	0.3%	0.1%
Recall	36.6%	33.8%	20.2%	21.4%	28.1%

3.3.2 Prevalence of acute malnutrition (weight-for-height z-score)

The survey managed to reach a total of 355, 402, 346 and 386 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, the global acute malnutrition (GAM) is defined as the proportion of children with a z-score of less than -2 z-scores weight-for-height and/or presence of oedema. Additionally, severe acute malnutrition (SAM) is defined as the proportion of children with less than -3 z-scores weight-for-height and/or presence of oedema. Further, based on MUAC, GAM was defined as the proportion of children with a MUAC of less 125 mm and/or presence of oedema. SAM based on MUAC was defined as the proportion of children with a MUAC of less than 115 mm and/or presence of oedema.

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

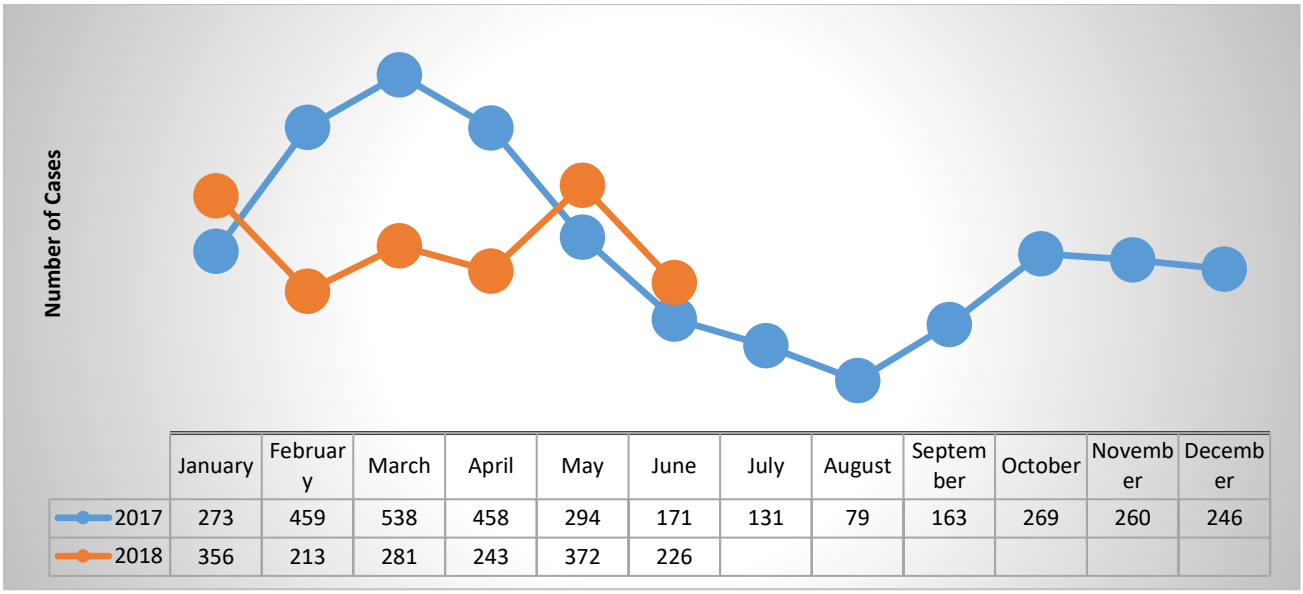
Malnutrition by MUAC

- 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 survey findings indicated a GAM prevalence rate of 12.4 %(10.2-15.0 95% C.I.), while the prevalence for severe malnutrition was 1.7 (1.2-2.5 95% C.I.). This is generally classified as *serious* by the WHO classification of malnutrition. This was slightly lower compared to July 2017 results which showed a GAM rate of 16.9% (14.5 -19.7). Further analysis showed that North Horr sub-county had the highest GAM rate of 23.5% and this is above the emergency GAM threshold (15.0%) indicating a critical situation. This was followed by Laisamis sub-county at 13.2% (9.2-18.6) this indicating a serious situation which shows a significant change from July 2017 where the GAM rate was 24.8% (20.3-29.9). Saku and Moyale Sub Counties recorded poor nutrition status with GAM rates of 5.7% (3.5- 9.1) and 7.8 %(4.7-12.5). The findings showed no significant change from the previous survey results done in July 2017 in Saku and Moyale sub Counties. There were no cases of edema that were reported.

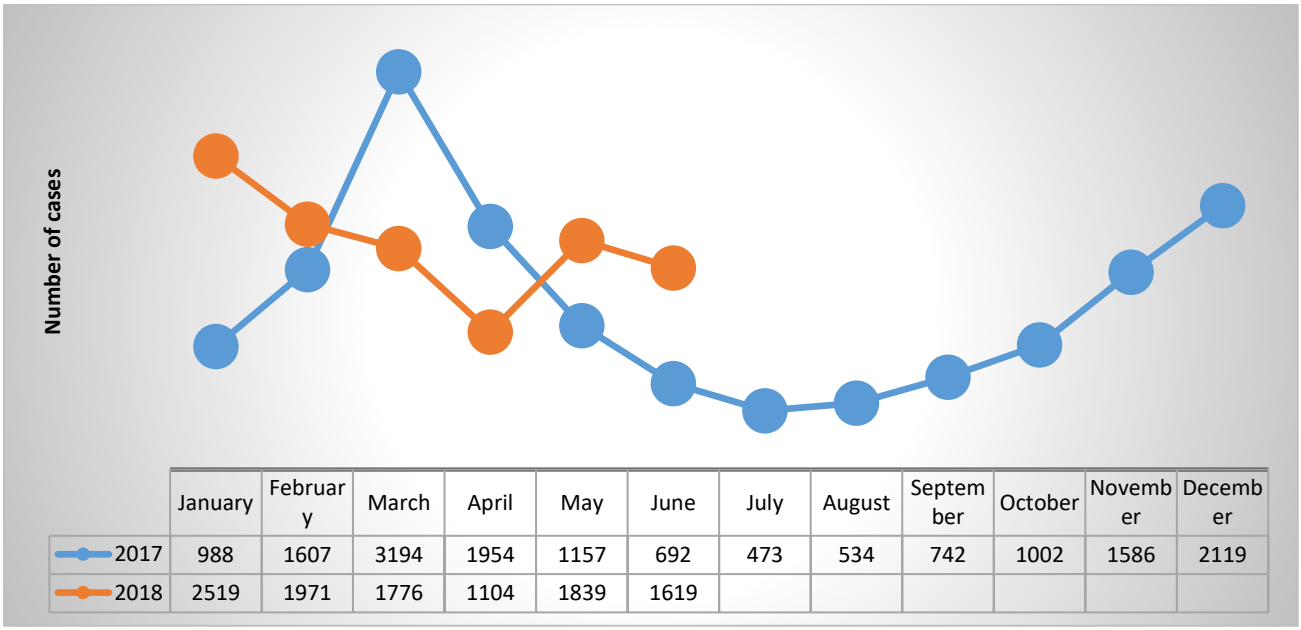
Table 11: Prevalence of Malnutrition by WHZ/Oedema

	North Horr July 2017	North Horr July 2018	Moyale July 2017	Moyale July 2018	Saku July 2017	Saku July 2018	Laisamis July 2017	Laisamis July 2018	COUNTY JULY 2017	County July 2018
Global Acute Malnutrition (GAM)	31.0% (25.4-37.1)	23.5% (19.2-28.3)	5.4% (3.2- 9.0)	7.8% (4.7-12.5)	7.5% (4.5-12.4)	5.7% (3.5-9.1)	24.8% (20.3-29.9)	13.2% (9.2-18.6)	16.9% (14.5 - 19.7)	12.4% (10.2-15.0)
Severe Acute Malnutrition (SAM)	5.0% (3.4-7.5)	3.5% (2.2-5.5)	0.3% (0.0- 2.1)	1.0% (0.4-2.6)	0.0% (0.0-0.0)	0.3% (0.0-2.1	5.3% (3.4-8.1)	2.4% (1.0-5.4)	2.9% (2.1 - 4.0)	1.7 (1.2-2.5)
% of Oedema	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



	January	February	March	April	May	June	July	August	September	October	November	December
2017	273	459	538	458	294	171	131	79	163	269	260	246
2018	356	213	281	243	372	226						

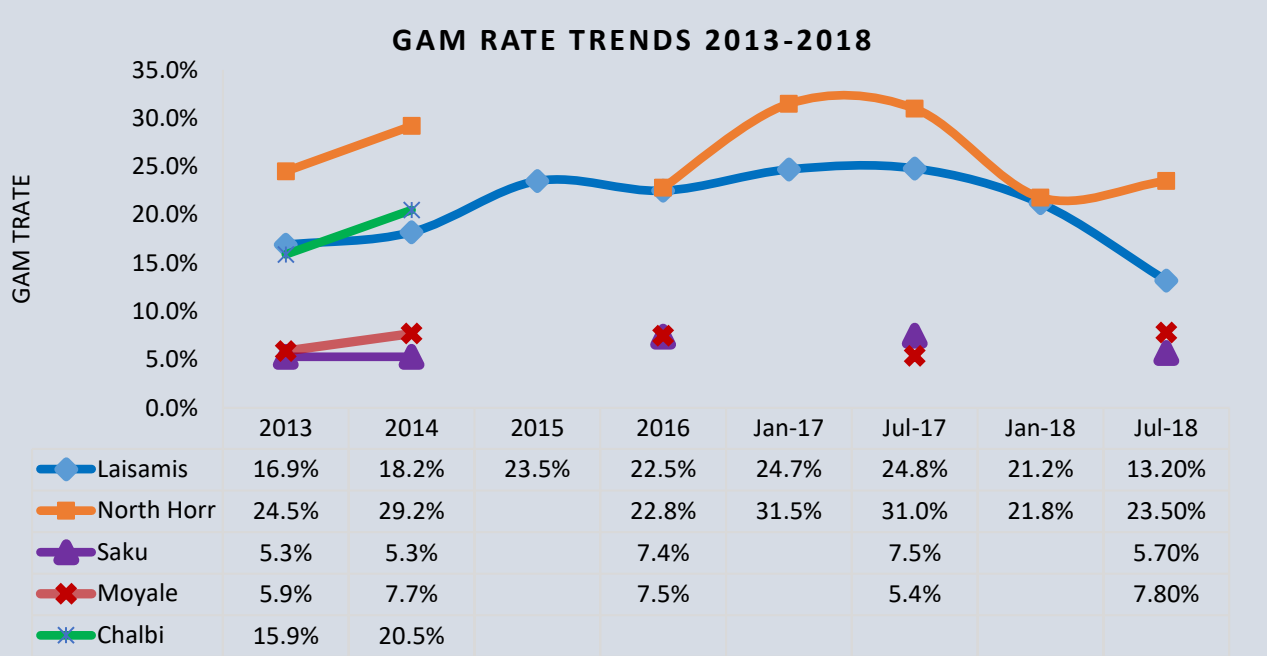
Figure 5: Marsabit County OTP admission trends



	January	February	March	April	May	June	July	August	September	October	November	December
2017	988	1607	3194	1954	1157	692	473	534	742	1002	1586	2119
2018	2519	1971	1776	1104	1839	1619						

Figure 6: Marsabit County SFP admission trends

A further look at the admissions into the IMAM program both OTP and SFP, the results shows an increase in the admissions in the month May and June 2018 compared to the same period 2017. Accessibility of many mobile sites during the heavy rains between March and April was made difficult by impassable roads coupled with migration of mobile communities into more difficult to reach areas of the County. The situation slowly improved from may leading to more children being screened for malnutrition.



	2013	2014	2015	2016	Jan-17	Jul-17	Jan-18	Jul-18
Laisamis	16.9%	18.2%	23.5%	22.5%	24.7%	24.8%	21.2%	13.20%
North Horr	24.5%	29.2%		22.8%	31.5%	31.0%	21.8%	23.50%
Saku	5.3%	5.3%		7.4%		7.5%		5.70%
Moyale	5.9%	7.7%		7.5%		5.4%		7.80%
Chalbi	15.9%	20.5%						

Figure 7: Marsabit County GAM rate Trends 2013-2018

The graph above shows the GAM trend of different Sub Counties in Marsabit County where in Laisamis and Saku sub Counties show a decline which could be attributed to the high Vegetation Index of 99.57 in the month of June, which exhibits substantial regeneration of vegetation to above normal vegetation greenness. Forage condition is very good. In addition, the milk availability increased which the pastoral communities depend on so much.

3.3.3. Prevalence of acute malnutrition based on MUAC

Compared to weight for height Z-scores, the mid-upper arm circumference (MUAC) is not a very sensitive indicator of acute malnutrition and tends to underestimate acute malnutrition for children below one year of age. It is, however, used as a rapid screening tool for admission into nutrition intervention programmes. Generally, MUAC usually tends to indicate lower GAM levels compared to WFH z-scores. The prevalence of malnutrition using MUAC is significantly lower compared to using Weight for Height Z-scores.

This means, overall significantly lower cases of malnourished children are identified using MUAC when compared to weight for height. North Horr had the highest GAM rate (4.6%) followed by Moyale (3.0%) while there was significant drop in SAM rates with all the three survey zones recording below 1% except Moyale sub County. The table 16 below summarizes prevalence of malnutrition by MUAC.

Table 12: Prevalence of Malnutrition by MUAC

	North Horr July 2017	North Horr July 2018	Moyale July 2017	Moyale July 2018	Saku July 2017	Saku July 2018	Laisamis July 2017	Laisamis July 2018	County July 2017	County July 2018
Global < 125mm	7.4% (5.0-10.7)	4.6% (2.9-7.2)	2.5% (1.2- 5.1)	3.0% (1.5-5.7)	2.7% (1.4-5.4)	2.0% (1.0-3.7)	8.3% (5.1-13.2)	2.8% (1.5- 5.4)	5.6%(4.2-7.5)	3.1% (2.1-4.5)
Severe under nutrition <115mm	1.5% (0.5-4.6)	0.6% (0.1-2.3)	0.3% (0.0- 2.1)	0.7% (0.2-2.3)	0.8% (0.2-3.1)	0.6% (0.1-2.2)	2.0% (0.7- 5.1)	0.5% (0.1- 2.2)	1.2%(0.7-2.2)	0.6% (0.3-1.3)

3.3.4. Prevalence of Underweight

The weight-for-age (WFA) index provides a composite measure of wasting and stunting and is commonly used to monitor the growth of individual children in Mother-child booklet since it enables mothers to easily visualize the trend of their children's increase in weight against age. A low WFA is referred to as underweight.

In comparison to same time last year there was a decrease in the prevalence of underweight in the county. Laisamis had the highest prevalence of underweight (28.1%) followed by North Horr (27%) and Moyale (15.8%) respectively, as illustrated in the table below. There is a slight decline in the prevalence of Underweight compared to same time last year in the county.

Table 13: Prevalence of Underweight

	North Horr July 2017	North Horr July 2018	Moyale July 2017	Moyale July 2018	Saku July 2017	Saku July 2018	Laisamis July 2017	Laisamis July 2018	County July 2017	County July 2018
Global underweight	36.5% (31.2-42.3)	27.0% (22.3-32.3)	16.1% (11.5-22.1)	15.8% (11.4-21.5)	20.0% (14.6-26.8)	15.4% (11.1-21.0)	42.0% (36.1-48.1)	28.1% (24.2-32.4)	27.7%(24.8 - 30.8)	21.4%(18.8-24.3)
Severe Underweight	10.1% (7.1-14.2)	5.0% (3.0-8.1)	2.5% (1.5-4.4)	3.0% (1.5-5.9)	2.7% (1.2-6.4)	1.1% (0.5-2.8)	13.1% (10.0-16.9)	5.0% (2.8- 8.6)	6.7%(5.4 - 8.2)	3.8%(2.9-4.9)

3.3.5 Prevalence of stunting

Height for age (stunting) is an indicator of chronic (long-term) malnutrition arising from deprivation related to persistent/chronic poor food security situation, micronutrient deficiencies, recurrent illnesses and other factors which interrupt normal growth. Unlike wasting, it is not affected by seasonality but is rather related to the long-term effects of socio-economic development and long-standing food insecurity situation. A low height-for-age reflects deficits in linear growth and is referred to as stunting.

Global stunting was highest in Laisamis (26.9%) followed by Moyale (25.4%).There is a slight decline in the prevalence of stunting compared to same time last year in the county.

Table 14: Prevalence of Stunting

	North Horr July 2017	North Horr July 2018	Moyale July 2017	Moyale July 2018	Saku July 2017	Saku July 2018	**Laisamis July 2017**	Laisamis July 2018	COUNTY JULY 2017	County July 2018
Global Stunting	25.9% (20.9-31.6)	23.0% (17.9-29.0)	21.0% (15.5-27.9)	25.4% (20.5-30.9)	26.9% (19.0-36.6)	22.3% (16.9-28.8)	37.9% (32.7-43.4)	26.9% (21.8-32.6)	26.9%(24.0 - 30.1)	24.7%(21.8-27.8)
Severe Stunting	5.4% (3.2-9.1)	5.1% (2.8-9.1)	5.2% (3.4-7.8)	5.1% (3.1-8.4)	5.2% (2.5-10.5)	4.9% (3.0-7.8)	11.2% (8.2-15.1)	7.7% (5.2-11.2)	6.6%(5.2 - 8.4)	5.8%(4.3 -7.7)

3.4 Children's Morbidity and Health Seeking Behavior

In describing the determinants of malnutrition, the UNICEF conceptual framework identifies inadequate dietary intake and disease as immediate causes of malnutrition. Disease if not disrupted may cause a vicious cycle since it not only affects food intake but may also compromise nutrient absorption, jeopardize immunity and hence further worsen disease and malnutrition. It was therefore important to assess morbidity and whether it had some effect on malnutrition.

3.4.1 Child morbidity

More than half of under-5 child deaths are due to diseases that are preventable and treatable through simple, affordable interventions. Strengthening health systems to provide such interventions to all children will save many young lives. To assess child morbidity, mothers/caregivers of children aged 6 to 59 months were asked to recall whether their children had been sick in the past 2 weeks. Those who gave an affirmative answer to this question were further probed on the type of illness that affected their children and whether and where they sought any assistance when their child/children were ill. Those who indicated that their child/children suffered from watery diarrhea were further probed on the kind of treatment that was given to them.

The survey results showed that only 20.5% of the children 6-59 months surveyed were reported to have been ill within the past two weeks. Of the ill children, Acute Respiratory Infections remained the most common ailment, accounting for 55.9% of all cases while fever-like malaria was the second most common illness at 44.1%. North Horr had the highest number of ARI cases while Laisamis was most affected by fever-like malaria at 64.1% and 65.7% respectively

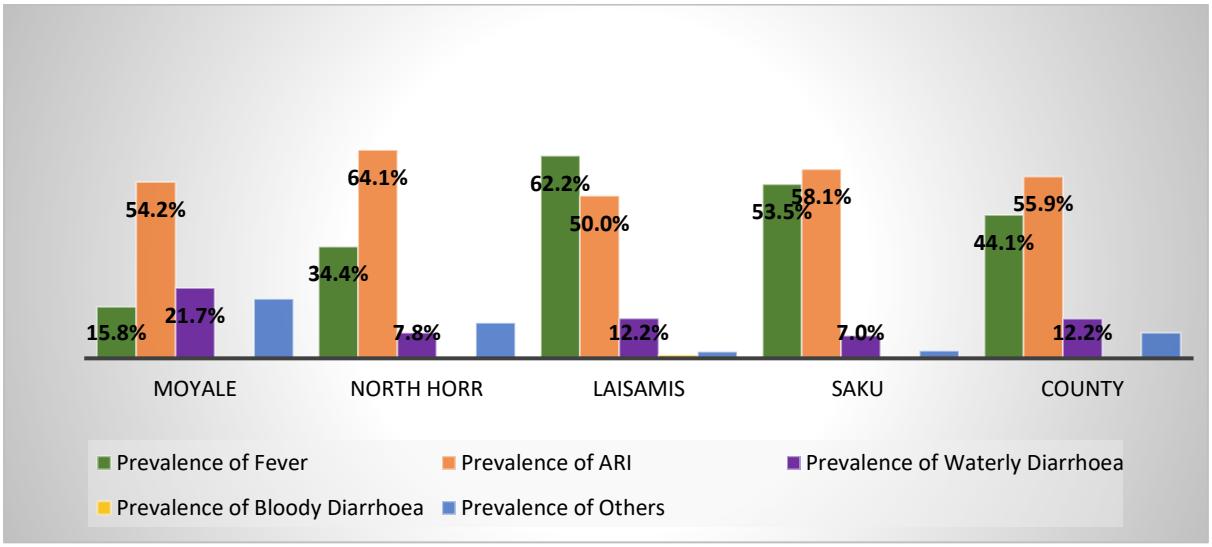


Figure 8: Morbidity

3.4.1.1 Therapeutic Zinc Supplementation during Watery Diarrhea Episodes

Based on compelling evidence from efficacy studies, that zinc supplementation reduces the duration and severity of diarrhea. In 2004 WHO and UNICEF recommended incorporating zinc supplementation (20 mg/day for 10-14 days for children 6 months and older, 10 mg/day for children under 6 months of age) as an adjunct treatment to low osmolality oral rehydration salts (ORS), and continuing child feeding for managing acute diarrhea. Kenya has adopted these recommendations and enshrined this in the Kenyan policy guideline on control and management of diarrheal diseases in children below five years where all under-fives with diarrhea should be given zinc supplements as soon as possible.

The survey sought to establish the number of children who suffered from watery diarrhea and supplemented with zinc. Results showed that in Moyale out of the 28 children who had diarrhea, 13(46.4%) were supplemented with Zinc with Moyale and Laisamis sub Counties being the most affected. Laisamis Sub County had the highest Zinc Supplementation coverage, followed by Moyale (42.3%) followed by Saku (33.3%)

Table 15: Therapeutic Zinc Supplementation during Watery Diarrhea Episodes

	Moyale		North Horr		Laisamis		Saku		County	
	n	%	n	%	n	%	n	%	n	%
Prevalence of Waterly Diarrhoea	26	21.7%	5	7.8%	12	12.2%	3	7.0%	28	12.2%
Zinc Supplementation	11	42.3%	1	20.0%	8	66.7%	1	33.3%	13	46.4%

3.4.2. Health Seeking Behavior

The proportion of caretakers who reported that their children had been ill during the past two weeks were asked if they sought any health assistance. Results showed that in Marsabit County, 75.0% of them reported to have sought assistance. Mothers and caregivers whose children were sick in the past 2 weeks and had sought assistance were further asked where they had first sought the assistance. Majority (82.0%) of the caretakers reported to have sought care form pubic clinics. It is worth noting 9% of them sough private clinic /pharmacy and 3% from mobile clinic.

Table 16: Health Seeking Behavior

	Moyale	North Horr	Laisamis	Saku	County
Health Seeking Behaviour	**79%**	**67%**	**73%**	**93%**	**75%**
Where they sought Assistance					
Community Health worker	3%	5%	1%	0%	2%
Mobile Clinic	0%	9%	1%	5%	3%
Private Clinic/Pharmacy	19%	2%	11%	5%	9%
Local herbs	0%	5%	0%	0%	1%
Shop/kiosk	0%	2%	4%	0%	2%
Public Clinic	79%	72%	88%	88%	82%
Others	0%	7%	0%	0%	1%

3.5 Childhood Immunization, Vitamin A Supplementation and Deworming

3.5.1. Childhood Immunization

Kenya aims to achieve 90% under one immunization coverage by the end of second medium term plan (2013-2017). The Kenya guideline on immunization defines a fully immunized child as one who has received all the prescribed antigens and at least one Vitamin A dose under the national immunization schedule before the first birthday. Immunization is a simple and effective way of protecting children from serious diseases. It not only helps protect individuals, it also protects the broader community by minimizing the spread of disease. Vaccines work by triggering the immune system to fight against certain diseases. If a vaccinated person comes in contact with these diseases, their immune system is able to respond more effectively, preventing the disease from developing or greatly reducing its severity. High immunization rates in the community have led to many of diseases becoming rare. However, they still exist and the risks of side effects or complications from these diseases are far greater than the very small risks of side effects from vaccination.

This survey assessed the coverage of 4 vaccines namely, BCG, OPV1, OPV3, and measles at 9 and 18 months. The BCG vaccine has variable efficacy or protection against tuberculosis (TB) ranging from 60-80% for a period ranging from 10-15 years. It is known to be effective in reducing the likelihood and severity of military TB and TB meningitis especially in infants and young children. This is especially important in Kenya where TB is highly prevalent, and the chances of an infant or young child being exposed to an infectious case are high. From the assessment, 93.5% of children were confirmed by scar to have been immunized by BCG

.

Table 17: BCG Immunization

Indicator	North Horr	Laisamis	Moyale	Saku	County
BCG with Scar	92.2%	95.7%	93.8%	92.1%	93.5%
No Scar	8.8%	4.3%	6.2%	7.9%	6.5%

Those who were immunized (based on card and recall) by OPV1 were 96.3% in 2018 respectively while for OPV3 were 94.7% in 2018. These results for OPV1 and OPV3 further signify the improved capacity of health care system by way of measuring access and utilization of services by communities in Marsabit County.

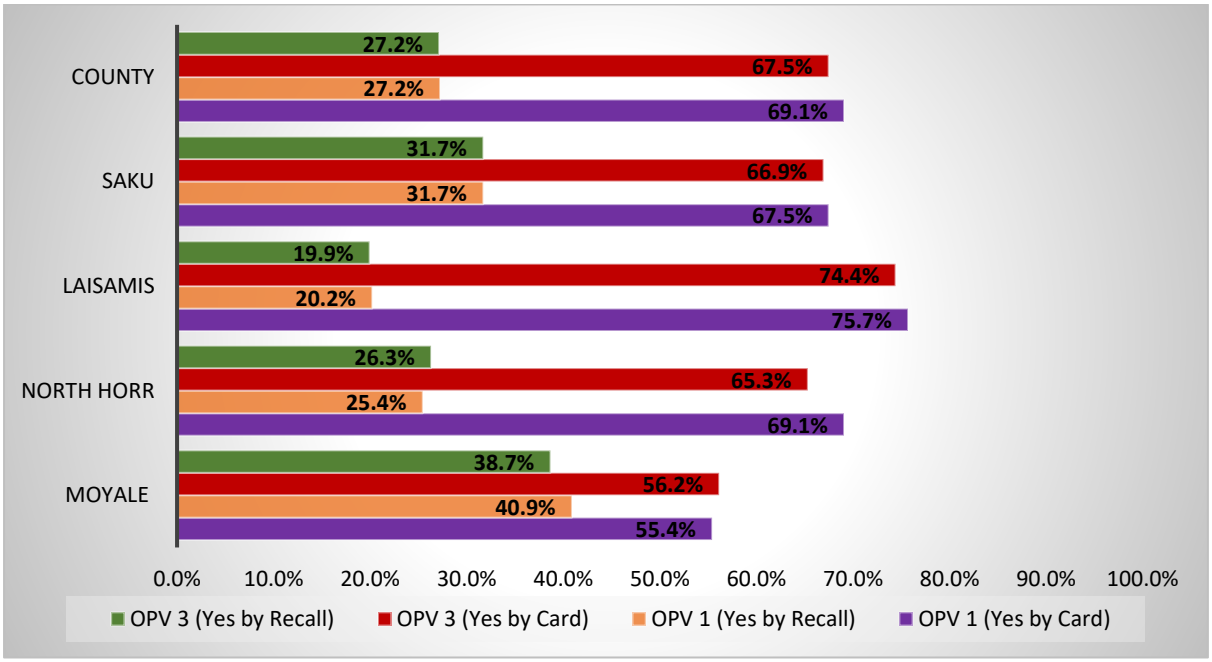


Figure 9: OPV1 and OPV2 Vaccination Coverage

However, when we assessed immunization for measles at 9 months and at 18 months, 75.2% of children had been immunized (by card and recall) with the second dose of measles antigen at 18 months while at 9 months was 93.1%.

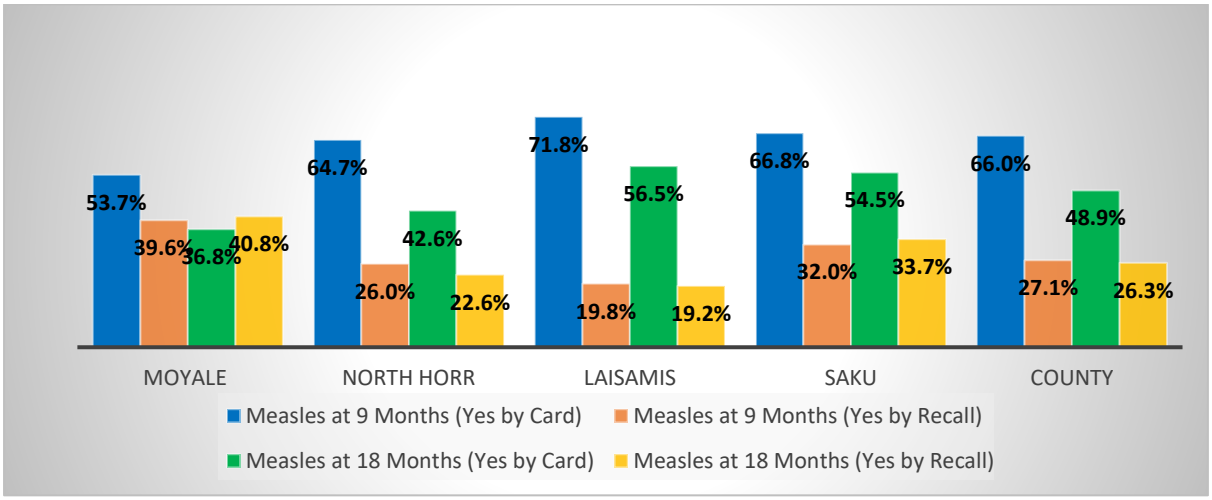


Figure 10: Measles Vaccination Coverage

3.5.2 Vitamin A supplementation

Over 140 million children are at greater risk of illness, hearing loss, blindness and even death if urgent action is not taken to provide them with life-saving vitamin A supplements. Two doses of vitamin A every year can save thousands of children's lives. According to the new UNICEF report; "Coverage at a crossroads: New directions for vitamin A supplementation programmes"[5], global coverage of vitamin A supplementation (VAS) has dropped to a

[5] UNICEF. Coverage at a Crossroads: New directions for vitamin A supplementation programmes, New York, 2018.

six-year low, leaving more than one third of children unprotected from the devastating impacts of vitamin A deficiency. Currently, the future of VAS hangs in the balance and more work is needed to make programmes sustainable. As the world mobilizes towards the 2030 Agenda for Sustainable Development – and particularly the target of ending preventable deaths in children under age 5 – there has never been a more urgent time to reprioritize this safe, cost-effective and evidence-based intervention.

According to Kenya's national nutrition action plan 2012-2017, the third priority objective is to reduce the prevalence of micro nutrient deficiencies especially through awareness, food fortification and supplementation. In these interventions, Vitamin A deficiency has been identified as a key micronutrient of concern (NNAP, 2012-2017). Furthermore, The Lancet medical journal lists vitamin A large-scale supplementation has proven potential to reduce the number of preventable child deaths each year (Jones et al, 2003). Improving the vitamin A status of deficient children enhances their resistance to disease and can reduce mortality from all causes by approximately 23 per cent (UNICEF, 2007). During much of early childhood – from 6 months to 5 years of age – two high-dose supplements of vitamin A per year, spaced four to six months apart, can strengthen the immune systems and improve chances of survival (WHO, 2018). 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.

To assess vitamin A supplementation, parents and caregivers were probed on whether children had been supplemented, for how many times in the past one year. Reference was made to the child health card and in case the card was not available recall, method was applied. According to the survey, 77.7% of the children aged 6- 11 months were supplemented with vitamin A at least once, and 81.6% children aged 12 to 59 months who had been at least supplemented once. In comparison to the ministry of health, target of 80%, Performance in Vitamin A supplementation among children 12 – 59 months among remained poor with only 26.2% receiving twice a year as recommended by MOH policy.

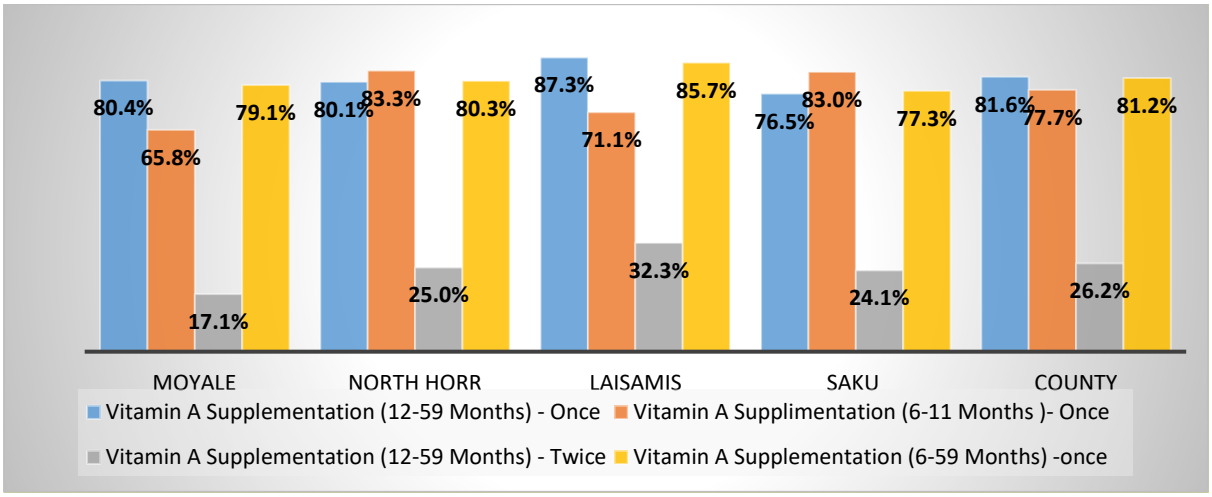


Figure 11: Vitamin A supplementation Coverage

3.5.3. De-worming

De-worming is an essential intervention in controlling parasites including helminthes, schistosomiasis (bilharzias) and prevention of anemia. WHO recommends that children in developing countries exposed to poor sanitation and poor availability of clean safe water to be de-wormed once every 6 months. In this survey, de-worming was assessed for children aged 12-59 months old. Based on the findings, 72.4% of children 12-59 months of age were dewormed in the County. Saku Sub county was highest at 82.8 %(264), followed by Laisamis at 73.4 %(259), then Moyale at 69.3 %(255) and lastly North Horr at 65.5 %(207).

3.6 Maternal Nutrition

Evidence shows that the current total deaths in children younger than five years can be reduced by 15% if populations can access ten evidence-based interventions when implemented at scale with a coverage of 90% (Bhutta, et.al. 2013). One of these strategies, has a positive effect on child survival during 'the window of opportunity' which is also referred to as the 1st 1000 days (from conception to two years of age). One of them is

optimal maternal nutrition during pregnancy, an enhanced nutrition package for the infant and young child focusing on promotion of exclusive breastfeeding. Pregnancy and lactation imposes a big nutrient-need load on mothers, which in the absence of adequate extra nutrients leads to utilization of body nutrient reserves leading to malnutrition. Gestational malnutrition leads to low birth weights and may ultimately culminate in poor child growth and development, thus there is an urgent need to address high rates of malnutrition among pregnant women. Household food insecurity is a key indicator/determinant for poor adult nutritional status. A high number of malnourished PLWs increase the risk of growth retardation of the fetus and consequently an increase in low birth weight and malnutrition burden spreads to both U5 children and caretakers from the same household faced with food insecurity and related vulnerabilities, a common scenario during nutrition emergency episodes.

3.6.1 Women physiological status

The figure below indicates that majority of the surveyed women of Reproductive age (15-49 years) were lactating (52.3%) and 35.5% were neither lactating nor pregnant but it is worth noting 0.6% of them were both lactating and pregnant.

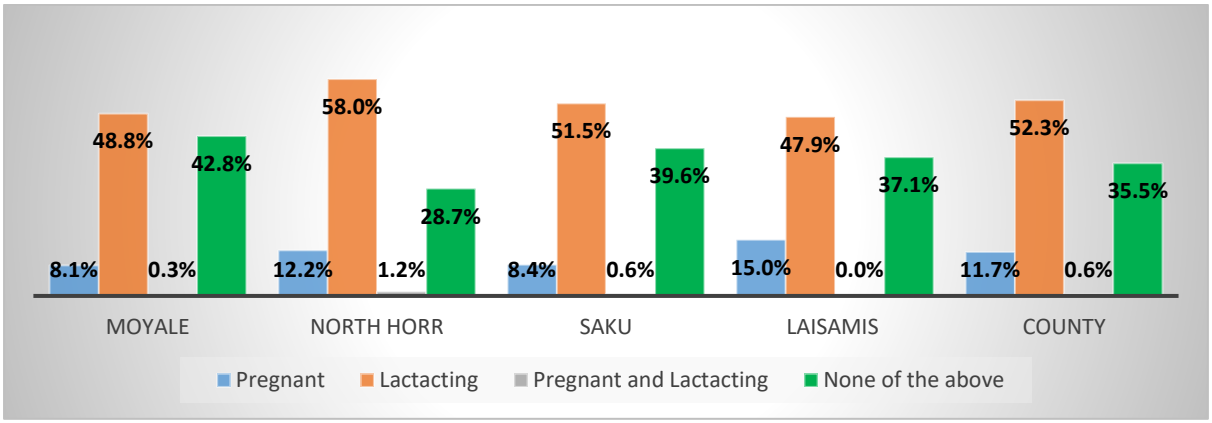


Figure 12: Women physiological status

3.6.2 Iron and Folic Acid Supplementation (IFAS)

During pregnancy, women have increased need for additional iron to ensure they have sufficient iron stores to prevent iron deficiency. Iron supplementation is recommended in resource limited settings as strategy to prevent and correct iron deficiency and anemia among pregnant women WHO recommends daily consumption of 60mg elemental iron and 0.4mg folic acid throughout the pregnancy[6] .These recommendations have since been adopted by Kenya government in its 2013 policy guidelines on supplementation of iron folic acid supplementation (IFAS) during pregnancy.

During the survey, iron folic supplementation was assessed by asking mothers of children below 2 years if they consumed iron folate in their most recent pregnancy. Results showed 82.4%(464) of the mothers of children below 2 years had been supplemented with IFAS in their pregnancy with Laisamis recording the highest at 85.4%(212) followed by Saku (82.7%) and then Moyale (81.4%) and lastly North Horr (79.7%).

The mean number of days IFAS was consumed by the women varied by sub-county i.e. the mean number of days IFAS was consumed by women in Laisamis was highest at 84.94 days, followed by Moyale (52.7 days), then Saku (48.87 days) and lastly North Horr (30.4%). 78.7% of the mothers consumed less than 90 days in Marsabit County and only 4.3% who consumed above 180 Days. While access to IFAS is high, the main challenge is now on utilization, an indication of poor health seeking behavior where mother seek ANC services late in their last trimester of pregnancy and limited counselling and peer support to encourage continued intake of IFAS.

Table 18: IFAS supplementation

	N	Moyale	N	North Horr	N	Saku	N	Laisamis	N	County
Below 90 Days	109	71.2%	110	87.3%	116	64.1%	143	85.6%	365	78.7%
90 to >= 180	44	28.8%	16	12.7%	41	22.7%	20	12.0%	79	17.0%
Above 180 Days	0	0.0%	0	0.0%	24	13.3%	4	2.4%	20	4.3%

[6] WHO. Guideline: Daily iron and folic acid supplementation in pregnant women. Geneva, World Health Organization, 2012.

3.6.3 Maternal Nutrition

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. Maternal nutrition was assessed by measuring MUAC of all women of reproductive age (15 to 49) in all sampled households. Analysis was further focused on pregnant and lactating women.

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 County was 11.7% while for all the women of the reproductive age was 11.3%. According to the results, pregnant and lactating women in Laisamis are more affected followed by North Horr with malnutrition.

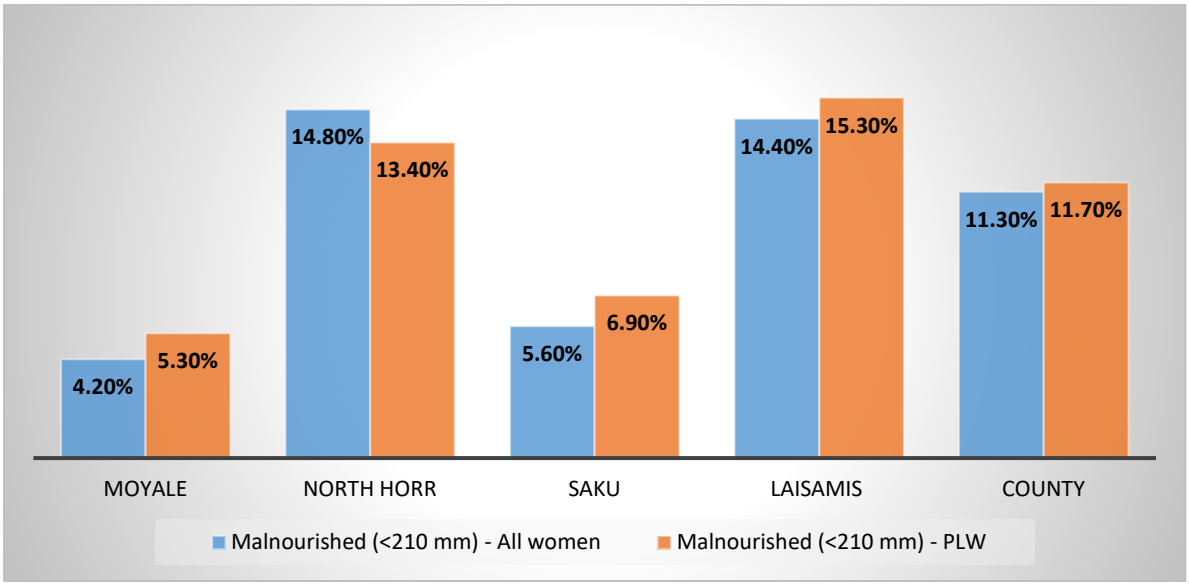


Figure 13: Maternal Malnutrition

3.7 WATER SANITATION & HYGIENE

International human rights consider access to water and sanitation as a human right.[7] This means that all individuals are entitled to have access to an essential amount of safe drinking water and to basic sanitation facilities. The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use. Water and sanitation are deeply interrelated. Sanitation is essential for the conservation and sustainable use of water resources, while access to water is required for sanitation and hygiene practices.

Furthermore, the realization of other human rights, such as the right to the highest attainable standard of health, the right to food, right to education and the right to adequate housing, depends very substantially upon the implementation of the right to water and sanitation. Research has shown that poor WASH indicators are linked to under nutrition and more so on High Stunting levels. Diarrhea, the leading killer of young children is closely linked to poor/inadequate WASH (Pruss-Ustun et al, 2014), which often causes under nutrition, which in turn reduces a child's resistance to subsequent infections, thus creating a vicious circle. An estimated 25% of stunting is attributable to five or more episodes of diarrhea before 24 months of age (Checkley et al, 2008).

3.7.1 Main Source of Water

Accessibility to improved water sources is of fundamental significance to lowering the faecal risk and frequency of associated diseases. Its association with other socioeconomic characteristics, including education and income, makes it a good universal indicator of human development. Drinking water coverage is presented as a two-step ladder that includes the proportion of the population using:

[7] The UN committee on economic, Cultural and Social rights states in its General Comment of November 2002

- Unimproved drinking water sources which include: Unprotected dug well, unprotected spring, cart with small tank/drum, tanker truck, and surface water (river, dam, lake, pond, stream, canal, irrigation channels), bottled water
- Improved drinking water sources also piped water which include: Public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs and rainwater collection, Piped household water connection located inside the user's dwelling, plot or yard.

There are three main water sources in Marsabit County: Surface water, (which includes river, dam, lake, ponds stream and canals), Tube well/boreholes and lastly unprotected well. The main sources of water in North Horr was unprotected well (34.5%) and surface water (24.3%). In Moyale, the main sources was surface water (51.6%) and tube well/borehole (20.9%). For Laisamis, the sources of water were Public tap/stand pipe (22.1%) and bore holes (21.7%). In Saku the main sources of water was surface water and tube well/borehole at 36.7% and 13.2% respectively.

Table 19: Main sources of drinking water

Indicator	North Horr	Moyale	Laisamis	Saku	County
Sources of drinking water					
Piped into dwelling	0.0%	0.2%	1.1%	0.0%	0.3%
Piped to yard/plot	0.0%	0.0%	0.2%	3.5%	0.8%
Piped to Neighbour	0.9%	0.0%	2.1%	2.3%	1.2%
Public tap/standpipe	3.9%	6.1%	22.1%	8.8%	10.1%
Tube well/Borehole	19.5%	20.9%	21.7%	13.2%	21.8%
Protected well	5.9%	16.5%	2.6%	1.9%	8.0%
Unprotected well	34.5%	4.4%	19.1%	3.7%	13.8%
Unprotected spring	0.0%	3.6%	3.0%	0.0%	2.0%
Rain water	3.2%	4.6%	2.4%	3.7%	3.6%
Tanker truck	0.0%	2.7%	0.0%	6.5%	2.3%
Cart with small tank	0.2%	0.5%	0.0%	0.0%	0.2%
Water Kiosk	7.7%	0.0%	5.8%	16.9%	6.5%
Surface water	24.3%	51.6%	9.2%	36.7%	32.7%

3.7.2 Distance to Water Source and Queuing Time

According to SPHERE handbook for minimum standards for WASH, the maximum distance from any household to the nearest water point should be 500 meters. It also gives the maximum queuing time at a water source, which should be not more than 15 minutes, and it should not take more than three minutes to fill a 20-litre container.

3.7.2.1 Distance to water sources

On the distances to water sources, almost half (47.0%) of the households interviewed obtained their water from sources less than500m (less than 15 minutes walking distance), 35.7% took between 15 min to 1 hour (approximately 500m to 2km) while the rest (17.3%) walked as far as more than 2Km (1- 2hrs) to their water sources.

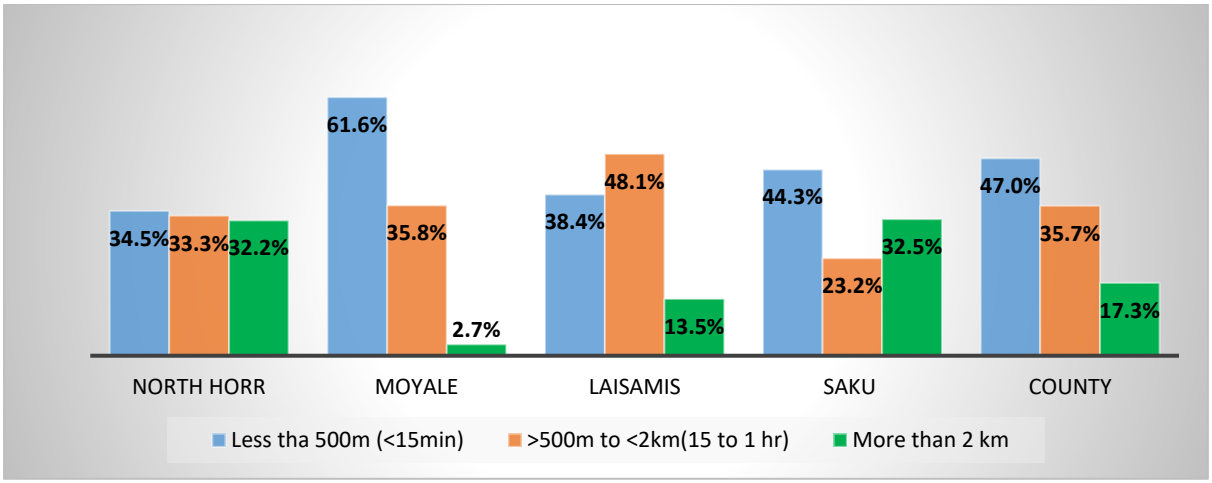


Figure 14: Trekking distance to the water sources

3.7.2.2 Queuing time to water sources

On the proportion of household queuing for water, Over two-thirds (76.0%) of the households were not queuing for water which indicates an improved access to water for households. Laisamis recorded the highest proportion of households (34.3%) queuing for water.

Out of those that were queuing for water in the county ,almost half (42.1%) of the respondents were waiting for less than 30 minutes while 34% of the households were queuing for 30 and 60 minutes as indicated in the figure above.

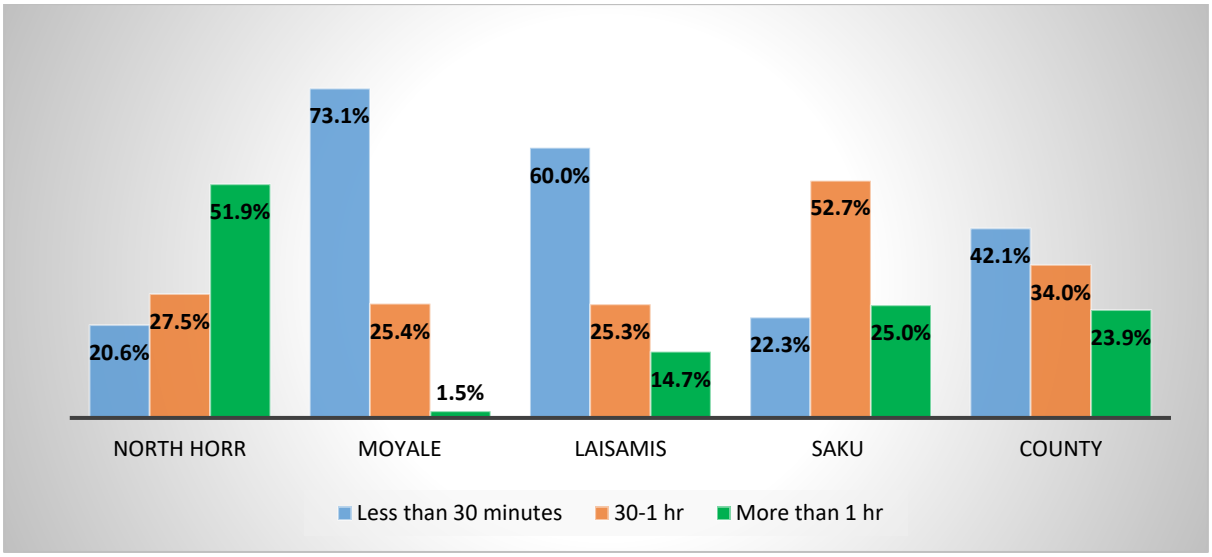


Figure 15: Queueing for water

3.7.3 Methods of treatment and storage of drinking water

3.7.3.1 Household water treatment

It is no doubt that water quantity and quality is of vital importance for the ecosystem.[8] The lack of water is further aggravated by insufficient treatment of water, particularly with rapid population growth. Despite most of the households obtaining water from unsafe sources, only 30.5% (n=539) of households sampled were treating their water before drinking. Saku Sub County was highest at 41.8 %(180) followed by Moyale 35.5 %(146), then North Horr 30.2% (133) and lastly Laisamis at 13.9% (65).

[8] UNEP, Green Hills, Blue Cities: An Ecosystems Approach to Water Resources Management for African Cities. A Rapid Response Assessment, UNEP, Nairobi 2011.

Even though just 3 in 10 households treated water for drinking, use of chemicals such as PUR or aqua tabs were the dominant method used since the county government and WASH partners have invested heavily in supply of water purifying chemicals especially during and after emergency.

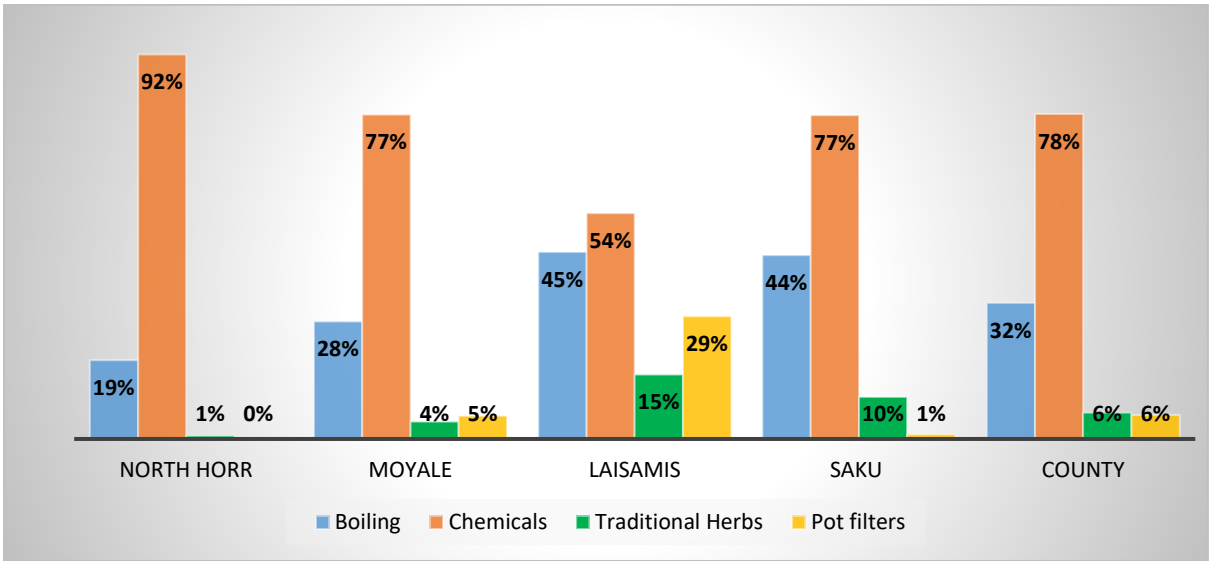


Figure 16: Water treatment methods

3.7.3.2 Storage of Drinking water

Storing water is a good survival skill to learn as it is our planet's most precious resource and should never be wasted. In addition, it is important to have for drinking, making food and personal hygiene. Out of the sampled households across the county over 80% (n=1522) were storing their drinking water in a closed container preventing it from contamination.

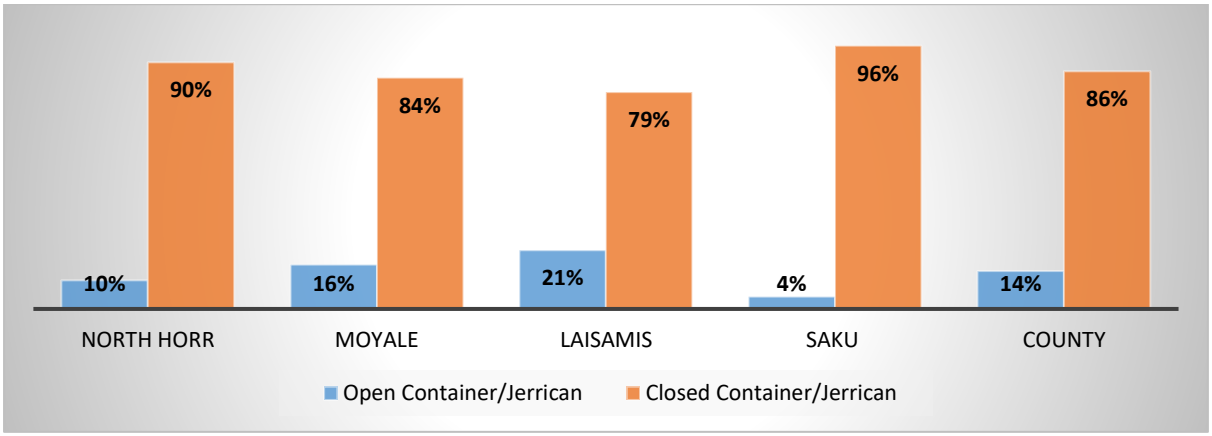


Figure 17: Water storage

3.7.3.3 Payment of Water

With regard to water payment, 47.3 %(204), 42.8% (176), 41.2% (192) and 20.6% (91) of the respondent pay for water in Saku, Moyale, Laisamis and North Horr respectively.

Of those who pay for water, 77.1% pay per 20l Jerri can and the rest on a monthly basis. In all Survey Zone most paid per 20l Jerry Can except in North Horr where most paid on Monthly basis.

On Average for the households, paying for water on monthly basis, in North Horr the average amount was Ksh.77.58, in Laisamis was Ksh.82.79, in Moyale was Ksh.212.50 and in Saku was Ksh.91.67.

On Average for the households, paying for water per 20l Jerry can, in North Horr the average amount was Ksh.6.3, in Laisamis was Ksh.13.6, in Moyale was Ksh.13.7 and in Saku was Ksh.13.8.

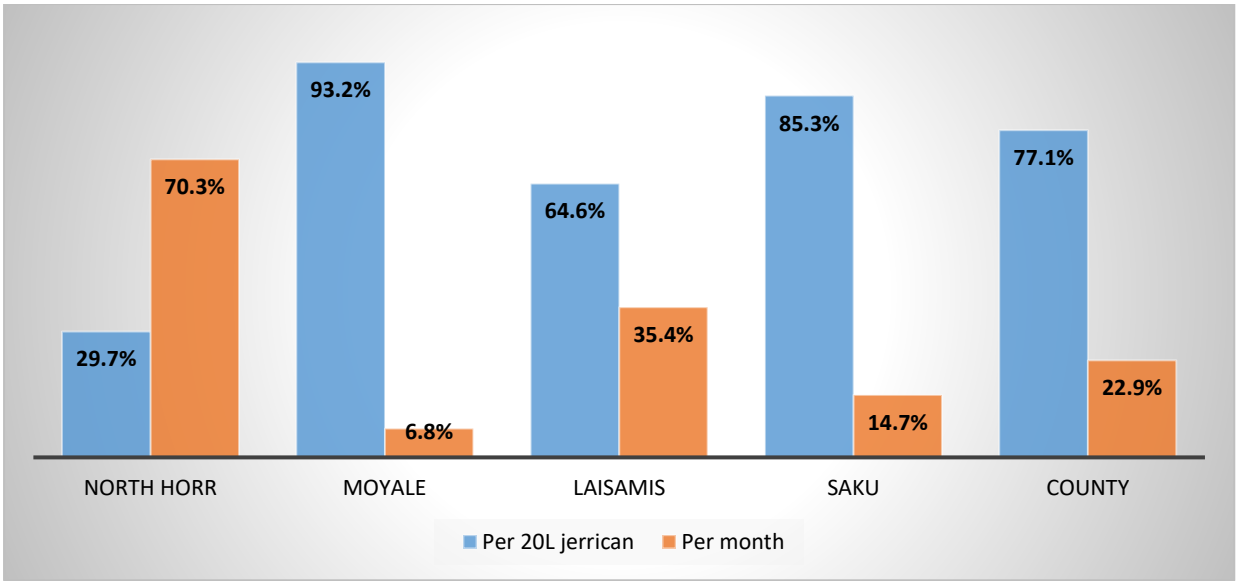


Figure 18: Mode of Water Payment

3.7.3.4 Water consumption at household level

According to the sphere standards a household members is required to consume at least 15 liters per day.[9]
A closer analysis of the amount of water consumed in Household of Marsabit county show that almost half of the population (48.4%) access adequate water. Moyale is leading at 72.3%, followed Saku at 59.4% then Laisamis and North Horr at 32.4% respectively.

Table 20: Water consumption at household level

Water Quantity Consumption	North Horr	Laisamis	Moyale	Saku	County
% of HH consuming less than 15 liters per/person/day	67.6%(298)	67.6%(315)	27.6%(114)	40.6%(175)	51.6% (902)
% of HH consuming equal or more than 15 liters/ person/day	32.4%(143)	32.4%(151)	72.3%(297)	59.4%(256)	48.4% (847)

3.8 Hygiene and sanitation

3.8.1 Hand washing

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.[10] 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, around 70% of the respondent in Marsabit County were aware of handwashing practices. When hand washing with soap is carried out properly at the four critical times, it breaks key contamination routes. This includes contact with an object or food that eventually goes into one's mouth. Contamination refers to

[9] SPHERE hand book
[10] 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.

the transmission of disease-causing germs from one human to another or via contact with human or animal faeces. (A single gram of human faeces can contain up to one trillion germs, (Franks et.al. 1998) Adults and children who practice proper hand washing will enjoy direct health benefits and other benefits. handwashing at 4 critical times, the practice was poor with only 26.3% reporting to have washed their hands at the critical times. [11] With lowest being recorded in Saku at 24.7% and highest in Moyale at 34.7%.

Hand washing 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 (Cairncross & Valdmanis, 2006). The survey indicated that 72.4% of the households were using soap and water for hand washing. Hand washing without soap does not offer effective protection against germs.

Table 21: Handwashing in Marsabit County

Description	Indicator		North Horr		Moyale		Laisamis		Saku		County
		N	%	N	%	N	%	N	%	N	%
Aware of Handwashing	Yes	206	46.7%	357	86.9%	297	63.7%	326	75.6%	1252	70.9%
	After Toilet	170	82.5%	336	94.1%	183	61.6%	321	98.5%	1082	86.4%
	Before cooking	170	82.5%	248	69.5%	203	68.4%	282	86.5%	935	74.7%
	Before Eating	178	86.4%	321	89.9%	249	83.8%	269	82.5%	1083	86.5%
	After taking children to the toilet	54	26.2%	171	47.9%	99	33.3%	73	22.4%	454	36.3%
Used to wash hands	Soap and water	170	82.5%	278	77.9%	124	41.8%	281	86.2%	907	72.4%
4 critical times	4 Critical times	46	22.3%	130	36.4%	60	20.2%	48	14.7%	329	26.3%

3.8.2 Sanitation Facilities

People with at least basic sanitation services are considered to have safely managed sanitation services if the excreta from their homes is transported through sewers and treated off-site. Poor management of excreta is linked to transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid and polio, and also contributes to malnutrition. Inadequate sanitation is estimated to cause 280 000 diarrhoeal deaths annually and is a major factor in several neglected tropical diseases, including intestinal worms, schistosomiasis, and trachoma. Proper sanitation facilities (for example, toilets and latrines) promote health because they allow people to dispose of their waste appropriately. Sanitation Facilities are classified as:

- Improved sanitation, which include:
  - ✓ Flush toilet
  - ✓ Connection to a piped sewer system
  - ✓ Connection to a septic system
  - ✓ Flush / pour-flush to a pit latrine
  - ✓ Pit latrine with slab
  - ✓ Ventilated improved pit latrine (abbreviated as VIP latrine)
  - ✓ Composting toilet
- Unimproved Sanitation which include:
  - ✓ Public or shared latrine (meaning a toilet that is used by more than one household)
  - ✓ Flush/pour flush to elsewhere (not into a pit, septic tank, or sewer)
  - ✓ Pit latrine without slab
  - ✓ Bucket latrines
  - ✓ Hanging toilet / latrine
  - ✓ No facilities / bush / field (open defecation)

[11] People wash their hands with soap at four critical times: after defecation, after changing diapers, before preparing food, and before eating

In terms of accessing toilet facilities and ways of relieving, almost half population in Marsabit County have no sanitation facility (48.0%) with the highest reported in Laisamis at 82.6%, followed by North Horr at 66.0%. These high rates, may be due to the mobile nature and as well as limited behaviour change towards acquiring and use of sanitation facilities by the communities in this sub-counties. In Moyale and Saku, Most of the residence used pit latrine with slab at 33.8% and 35.0% respectively.

Table 22: Type of Sanitation facility

Indicator	North Horr	Moyale	Laisamis	Saku	County
Ventilated Improved Pit Latrine	14.7%	15.8%	3.0%	20.4%	13.4%
Pit latrine with slab	14.7%	33.8%	9.9%	35.0%	24.5%
Pit latrine without slab/open pit	3.6%	19.5%	1.7%	18.3%	11.8%
Composting toilet	0.0%	0.0%	0.9%	0.0%	0.2%
No facility /Bush/field	66.0%	28.0%	82.6%	24.1%	48.0%
Other	0.2%	2.7%	0.9%	1.6%	1.5%
Hanging toilet/Latrine	0.0%	0.2%	1.1%	0.5%	0.6%

3.9 FOOD SECURITY

3.9.1 Dominant foods and food groups consumed by households and women

In assessing the nutritional quality and quantity of the food consumed by the survey population, 24 hour household dietary diversity questionnaire was administered that would also help to determine the households' economic capacity to consume various foods in the sub-counties.

In the entire county the four main foods consumed 24 hours prior to the survey were cereal and cereal products (80.9%), oil (76.3%), pulses and legume (62.7%), milk and milk products (67.9%).

Table 23: Dominant food groups consumed at household level

	North Horr	Moyale	Laisamis	Saku	County
Cereals and cereal Products	82.1%	89.5%	68.0%	75.9%	80.0%
vegetables	15.4%	72.7%	22.5%	67.3%	44.4%
Fruits	1.8%	2.4%	4.5%	22.3%	6.2%
Iron rich Foods/Flesh Foods	18.8%	15.1%	36.9%	32.3%	24.3%
Tubers	7.0%	29.7%	4.3%	16.2%	15.2%
eggs	1.6%	3.9%	6.0%	10.0%	4.8%
Fish	3.2%	0.0%	3.9%	1.9%	2.1%
Pulses and Legumes	60.8%	70.1%	55.2%	63.1%	62.7%
Milk and milk products	77.1%	81.8%	41.8%	65.0%	67.9%
Oils/fats	81.6%	81.0%	63.5%	78.0%	76.3%
Sweets	58.5%	72.3%	45.9%	52.2%	58.7%
Condiments	25.2%	57.7%	14.6%	30.6%	33.9%

Women of reproductive age (WRA)[12] 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[13]. 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 [14] 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[15].

[12] For the purposes of this document and indicator, WRA are defined as those 15–49 years of age.
[13] National Research Council, 2006; World Health Organization [WHO]/Food and Agriculture Organization of the United Nations [FAO], 2004
[14] "Nutrient density" refers to the ratio of nutrients (such as vitamins and minerals) to the energy content of foods.
[15] Arimond et al., 2010; Lee et al. 2013

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 four Sub Counties is depicted in the table below. In the County, WRA mainly consume three major food groups: All starchy staple foods (92.0%), Beans and pulses (83.2%) and dairy products majorly milk (68.1%).

Table 24: Dominant food groups consumed by Women of reproductive Age

Zones	Moyale	North Horr	Saku	Laisamis	County
All starchy staple foods	96.1%	87.2%	98.1%	90.9%	92.0%
Beans and peas	86.4%	86.7%	75.8%	83.9%	83.2%
Nut and seeds	0.6%	0.3%	8.1%	2.0%	2.7%
Dairy (Milk)	88.6%	78.0%	64.1%	52.4%	68.1%
Flesh foods	17.5%	30.7%	37.0%	46.5%	35.6%
Eggs	7.5%	4.9%	28.1%	11.6%	12.8%
Vitamin A rich dark green leafy Vegetables	35.5%	10.4%	63.0%	14.2%	26.9%
Other Vitamin A rich vegetables and fruits	9.0%	8.4%	34.5%	9.1%	14.9%
Other Vegetables	60.8%	20.3%	57.9%	13.9%	31.8%
Other fruits	5.7%	2.9%	20.3%	5.1%	8.0%

3.9.2 Household Dietary Diversity (HDD)

Household dietary diversity Score (HDDS) is a qualitative measure of food consumption that reflects household access to a variety of foods. It is not meant to be used in accessing dietary diversity at individual level (FAO, 2010). 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. At least more than 70% of the household surveyed had consumed more than 5 food groups in Marsabit County with Saku reporting the highest at 85.4%, followed by Moyale at 77.6%. 27.5% of them consumed 3 to 5 food groups.

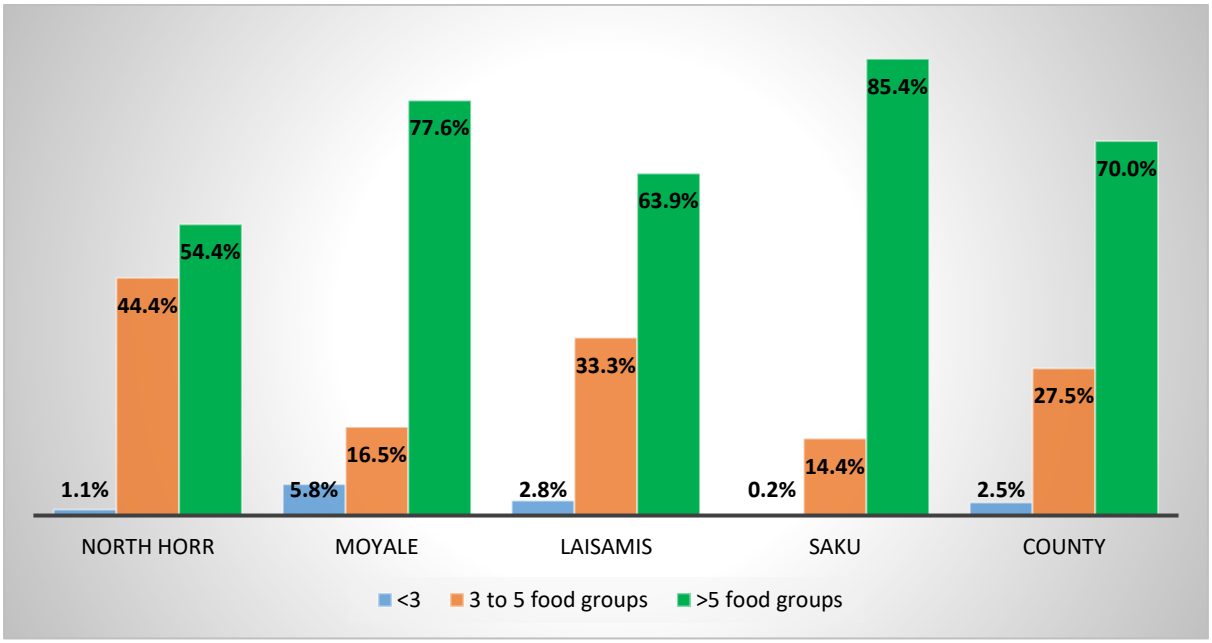


Figure 19: Household Dietary Diversity Score

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.
An analysis of micronutrient intake showed a serious deficit in meeting the recommended daily allowances as shown in figure below. The intake of fruits and vegetables, Vitamin A and Iron was very poor.

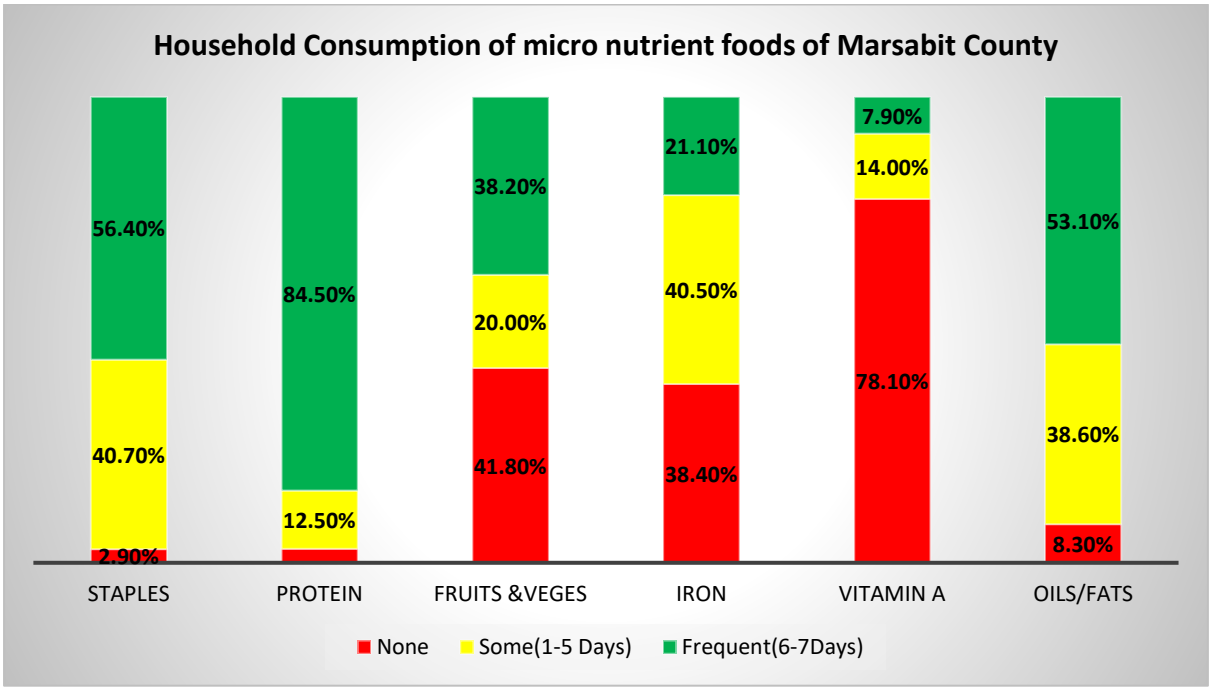


Figure 20: Household Consumption of micro nutrient foods in Marsabit County

3.9.3 Women Dietary diversity score

As for women's diversity in dietary intake, results showed that about three quarters of women consumed from just five food groups countywide with North Horr as the most affected. This is a major risk factor and contributor to poor maternal nutrition status and pregnancy outcomes. Women of reproductive age (WRA) 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 (National Research Council, 2006), World Health Organization [WHO]/ Food and Agriculture Organization of the United Nations (FAO, 2016). 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 (Torheim and Arimond, 2013). 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 (Arimond et al., 2010; Kavle, 2017).
MDD-W16 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

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

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.

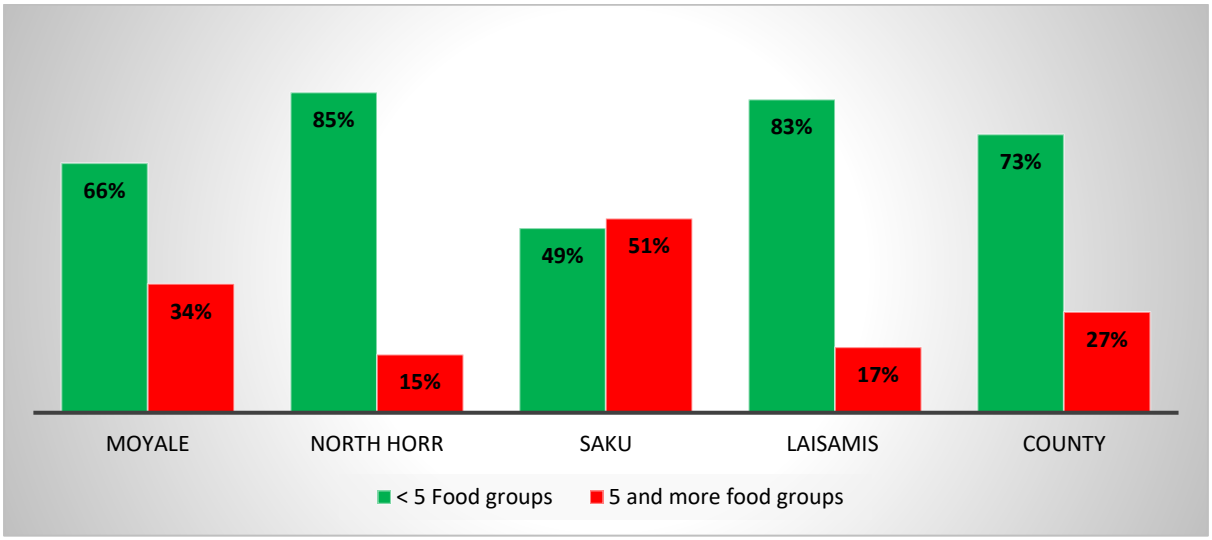


Figure 21:Minimum Women dietary Diversity Score

3.9.4 Food Consumption Score Classification

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. Food consumption score classifies households in to 3 categories namely, poor, borderline and acceptable (FAO 2010).

In Marsabit County, 70.6% of the household surveyed had acceptable food consumption Score, 18.6% had Borderline and 10.8% had poor consumption score. This is as shown in the figure below:

According to the NDMA bulletin for the Month of June, proportion of households in the agro-pastoral livelihood zone that were within the acceptable, borderline and poor food consumption score were 81.1 percent, 15.6 percent and 3.3 percent respectively. In the pastoral livelihood zone, proportion of households who were within the acceptable, borderline and poor food consumption scores were 62.1 percent, 37.1 percent and 1 percent respectively. The mean food consumption score for the month under review was 43.3 across the livelihood zone hence was within the acceptable food consumption score group from the month of March to June. Food security situation is expected to improve further due to improved performance of the March, April and May cropping season which was better compared to the long term average especially for maize and beans apart from the reported incidences of water logging and flooding, infestation of maize stalk borer, stunting of crops and emergence of weeds in the farms.

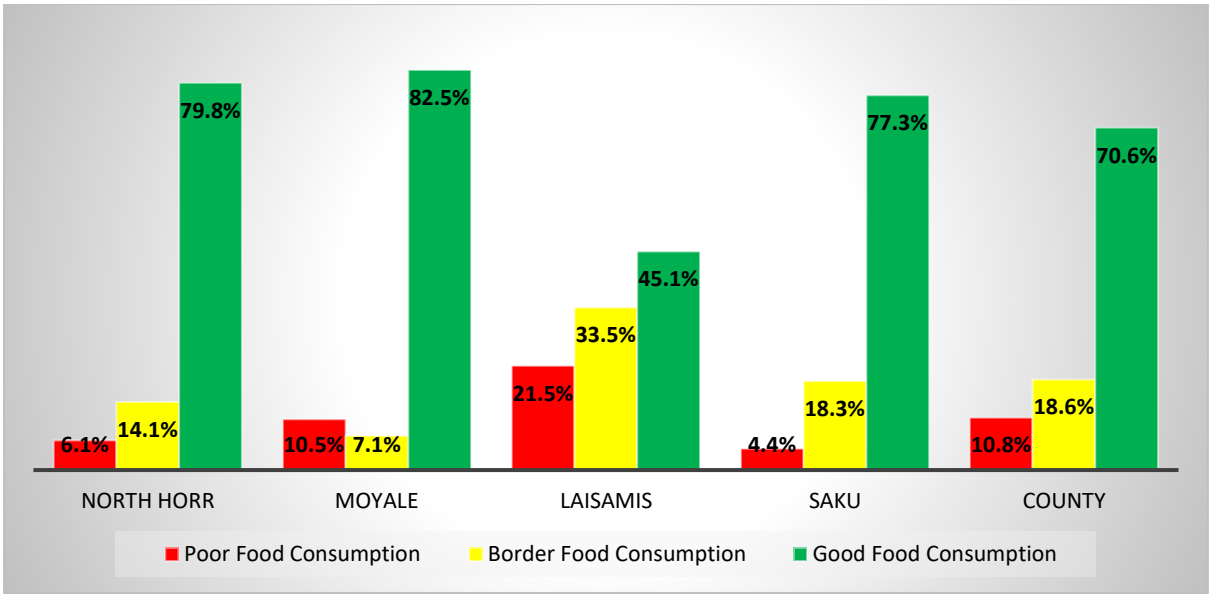


Figure 22: Food consumption score for Marsabit County

3.9.5 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, 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 Marsabit County, 80.8% consumed protein Rich foods, 19.1% consumed Vitamin A rich foods and 8.4% consumed Hem Iron rich foods for 7 days. 48.0% of the household surveyed consumed Vitamin A and 52.0% consumed Hem Iron Foods for 0 days.

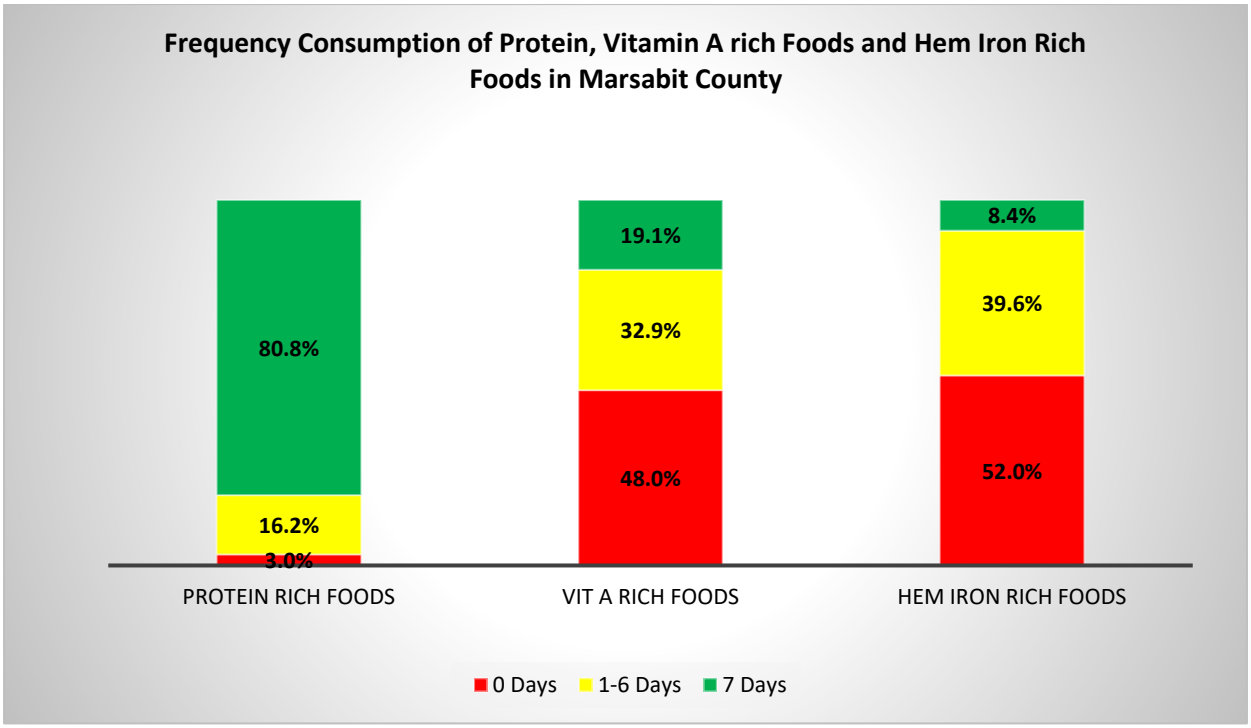


Figure 23: Food Consumption Score Nutrition

In terms of average number of days micronutrient are consumed in a household, the major micronutrient consumed in Marsabit County were Protein, Staples and Oil/fats which were consumed over 5 days in a week. The least consumed was Vitamin A, which was consumed for 1 day in a week. These results explain the deficiency in dietary micronutrient intake among households.

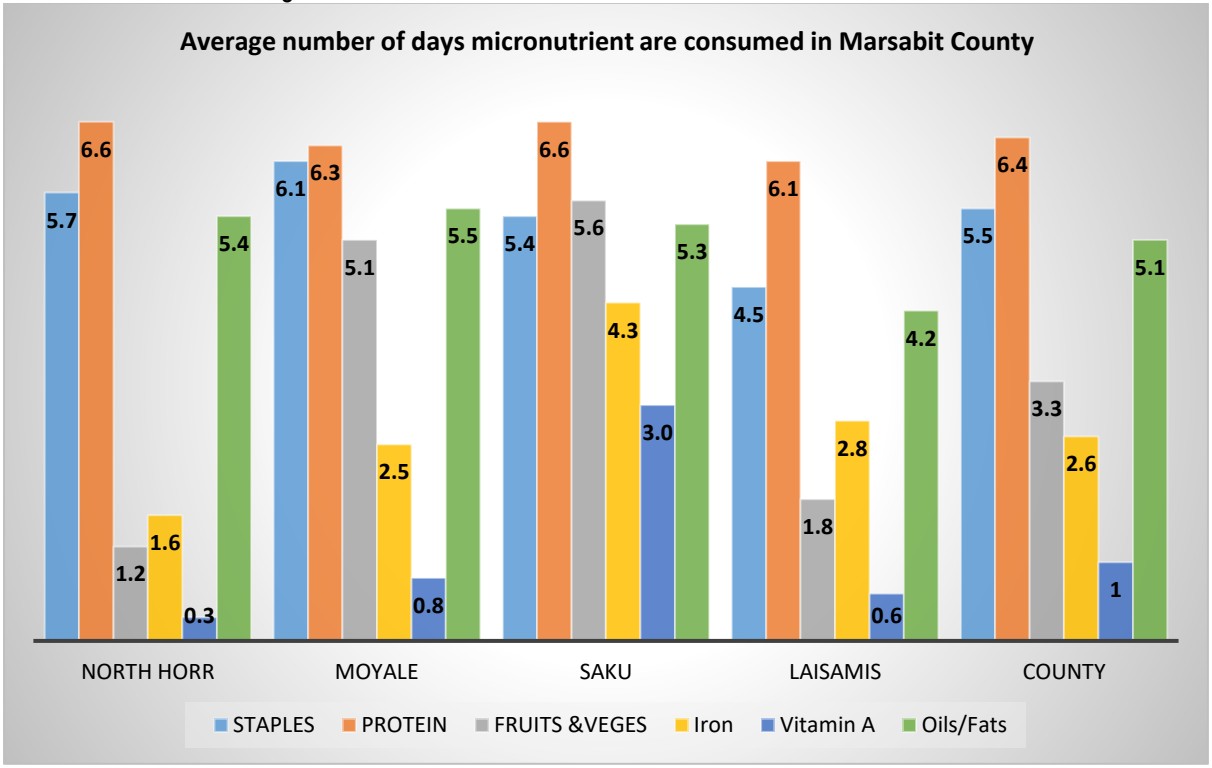


Figure 24: Average number of days micro nutrient are consumed in Marsabit County

3.10 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[17] and change in the consumption patterns of a given household. For each coping strategy, the frequency score (0 to 7) is multiplied by the universal severity weight. A weighted score 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 average CSI for Marsabit was 16.47, an indication the sampled households were food insecure and still engaging in different survival tactics. However compared to July 2017 coping index has reduced. This is an indication of improved household food security compared to the same period last year.

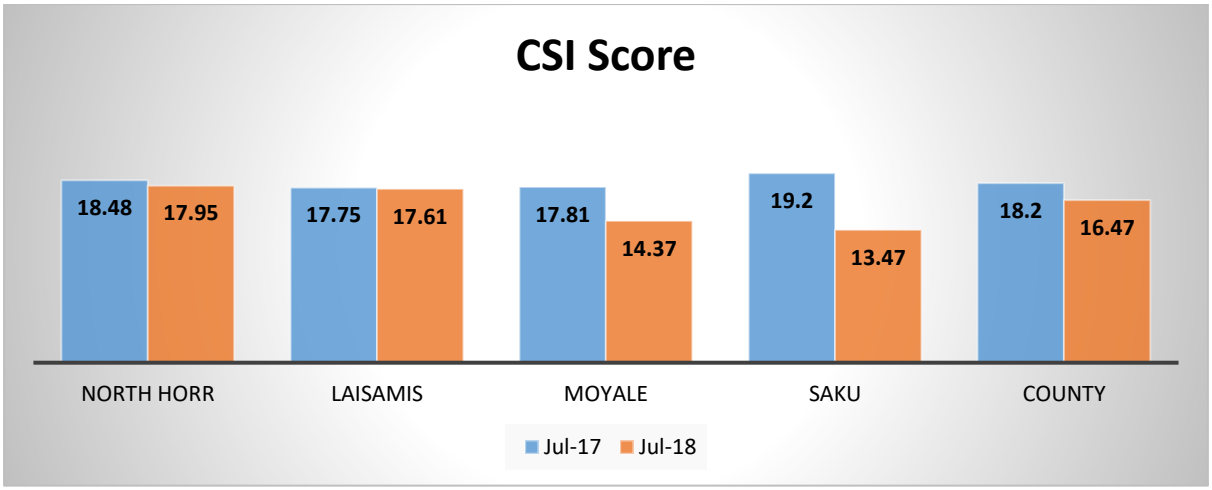


Figure 25: CSI Score

3.11 Food Fortification

Fortification is adding vitamins and minerals to foods to prevent nutritional deficiencies. The nutrients regularly used in grain fortification prevent diseases, strengthen immune systems, and improve productivity and cognitive development. Wheat flour, maize flour, and rice are primarily fortified to:

- Prevent nutritional anemia
- Prevent birth defects of the brain and spine
- Increase productivity
- Improve economic progress

Food fortification was identified as the second strategy of four by the WHO and FAO to begin decreasing the incidence of nutrient deficiencies at the global level.[18] As outlined by the FAO, the most common fortified foods are cereals (and cereal based products), milk (and milk products), fats and oils, accessory food items, tea and other beverages, and infant formulas.[19] Undernutrition and nutrient deficiency is estimated globally to cause between 3 and 5 million deaths per year.

With regard to the survey, only 9.0% (156) and 16.0% (75) of the households in Marsabit County had heard/learn about food fortification. Most of the households had heard through others means, which included Previous SMART survey, through a friend or neighbor, followed by radio.

17 'Access to food' is just one of the three pillars of food security. Other pillars include, 'food availability' and 'food utilization'.
18 World Health Organization and Food and Agriculture Organization of the United Nations Guidelines on food fortification with micronutrients. Archived 26 December 2016 at the Wayback Machine. 2006 [cited on 2011 Oct 30].
19 Micronutrient Fortification of Food: Technology and Quality Control Archived 2 September 2016 at the Wayback Machine

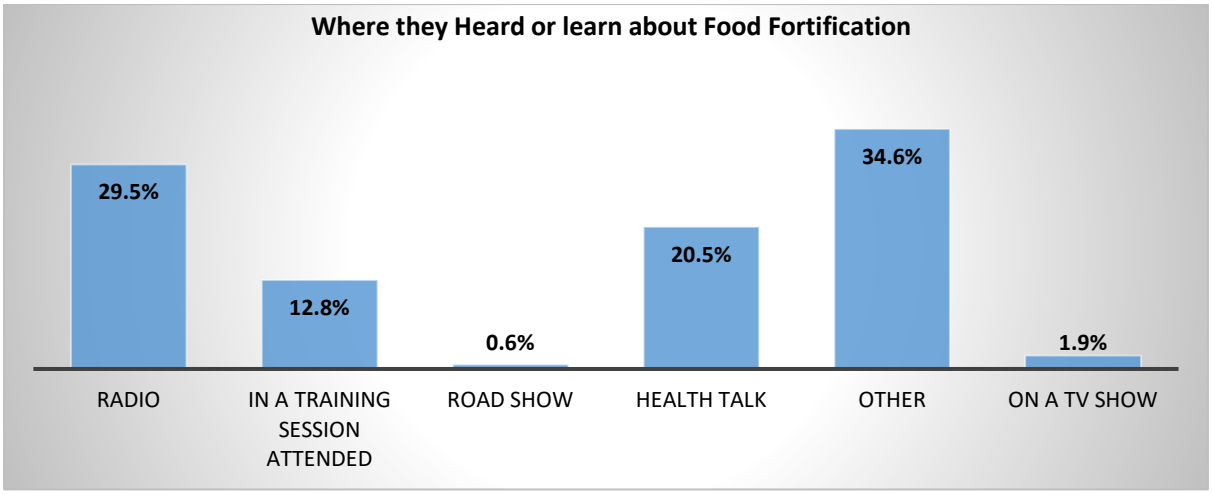


Figure 26: Where they heard or learn about Food fortification

Chapter Four: Conclusion and recommendations

4.1 Conclusion

According to the current Integrated Phase Classification (IPC) for acute malnutrition among children U5, Marsabit is ranked at serious phase (IPC Phase 3- GAM 10-14.9% percent). Nutrition status of Children has slightly improved in compared to same period last year. Acute malnutrition among women has remained high at 11.3% compared to 10.1% in 2017.The Main occupation of Households still remains to be Livestock herding among the Marsabit Communities. The main source of income in most households is sale of livestock, which compared to the same period last year most households had no source of income in all livelihood zones. Further, Low access and Utilization of a variety of health and nutrition services i.e. immunization, Micronutrient supplementation, health and nutrition care practices remain a major a concern, although we acknowledge high vitamin A supplementation coverage which is attributed to sustained routine outreaches and quarterly feedback on individual facility coverage. WASH indicators (Access and sustainability to safe drinking water, Hand Washing and Sanitation) remain suboptimal. The Household food security situation (Dietary diversity, FCS, Micronutrient intake and CSI) has largely remained unchanged. It can be concluded therefore that the key drivers of poor nutrition status include; Chronic food insecurity, High prevalence of childhood illness, Inadequate dietary diversity, Poor access to safe water, Poor hygiene practices (High rates of open defecation), Inadequate incomes and assets for the households.

4.2 Recommendations

Findings	Recommendation	Actor (By Who?)	Implementation Timeline
High Malnutrition Rate in North Horr (23.5%) and Laisamis (13.2%) and also increase in GAM rate in Moyale to 7.8%	Immediate Mass screening and treatment in North Horr, Laisamis and Moyale.	County Department of Health and Implementing partners.	Before end of July 2018
	Increase human resource for Moyale Sub County especially with the asylum seekers still on the ground.	Chief Officer Health	By Dec 2018
	Community sensitization and awareness on Malnutrition and the current situation.	County Department of Health	Monthly
	Increase investment in outreach services by the county department and implementing partners.	County Department of Health and Implementing partners.	August 2018
	Capacity building of CHAs on Basic and Technical modules on VAS	County Department of Health.	September 2018
	Redeployment of Nutritionist in the targeted malnutrition hot spots in North Horr and Laisamis.	County Department of Health	January 2019
	Proper implementation and monitoring of IMAM Surge Dash board	County Department of Health	Monthly
High Stunting rate in the County (24.7%)	Promote food dietary diversity through. 1. Food utilization and cooking demonstrations	County Department of Health and Agriculture, Health	Continuously and within the year

	2. Dialogue talks on feeding behavior change. 3. Promote local poultry keeping for egg and meat production. 4. Promote consumption of animal source food.eg eggs, meat 5. Increase coverage for BFCI	and Implementing partners	
Poor documentation especially for Vitamin A and deworming and IFAS	Procure and distribute adequate mother child booklets to all health facilities.	County Department of Health	Continuous
	Capacity building of health workers on proper filling of the mother child booklets and other tools.	County Department of Health	December 2018
	Sensitization of the mothers/caregivers on importance of the mother child booklets.	County Department of Health and Implementing partners.	December 2018
	Enhance community based spot checks and supervision by the CHAs for the community level one services	County Department of Health and Implementing partners.	Immediately
Low coverage of IFAS and ZINC supplementation coverage in all Sub Counties	Utilize the CHS to educate mothers on importance, how and when to consume IFAS.	County Department of Health	August 2018
	Ensure adequate supplies of Zinc Sulphate and adherence to diarrhea treatment protocols.	County Department of Health	Immediately
	CMEs and OJT for the Health workers at the health facility level to be promoted	County Department of Health	Continuous
Low/poor WASH indicators i.e. Use of Protected Water sources, Water treatment, Handwashing –Countywide. Laisamis Sub Counties with (66.0%) and 82.6% being bush/open field defecation in both SCs respectively.	Conduct a more detailed assessment on WASH mainly to assess practice.	County Department of Water, and Health, Implementing partners.	By September 2018
	Scale up CLTS across the county and sensitize the community	County Department of Health and Implementing partners.	Continuous

	Incorporation of Nutrition messaging with CLTs	County Department of Health and Implementing partners.	September 2018
	Support the sub counties to implement their Social Behavior Change Communication strategies.	County Department of Health and Implementing partners.	Immediately
Low Household Dietary diversity in all sub counties	Strengthening community MIYCN and Baby Friendly Community Initiative at community level.	County Department of Health and Implementing partners.	Starting August 2018
	Promote agrinutrition and food utilization by working with department of MoA/LF through behavior Change communication strategies	County Department County Department of Agriculture, livestock, & Fisheries,	September 2018
	Enhancing food security Agribusiness.	County Department of Health , Ministry of Agriculture, livestock and Fisheries and IPs	December 2018
	Support the sub counties to implement their Social Behavior Change Communication strategies.	County Department of Health and IPs	Starting August 2018
General Recommendations on wide dissemination of the survey findings	Disseminate the survey findings at the community, sub county, county and county assembly – All Critical Findings	County Department of Health	August 2018
	Use of mass media to pass key messages on the Food and nutrition security.	County Department of Health	August 2018
	Compile monthly nutrition situation for the county and dissemination.	County Department of Health with support from UNICEF	August 2018
	Updating the county portal with Food and Nutrition security information.	County Department of Agriculture, Livestock, Fisheries and Health	August 2018

ANNEX

ANNEX 1: Summary of plausibility report

Indicator	Acceptable values/range	North Horr	Laisamis	Moyale	Saku
Flagged data (% of out of range subjects)	<7.5	0 (1.4 %)	0 (1.6 %)	0 (1.0 %)	0 (0.8 %)
Overall sex ratio (significant CHI square)	>0.001	0 (p=0.197)	0 (p=0.113)	0 (p=0.618)	0 (p=0.595)
Age ratio (6-29vs 30-59) Significant CHI square	>0.001	0 (p=0.592)	0 (p=0.258)	0 (p=0.258)	0 (p=0.270
Dig. prevalence score-weight	<20	0 (4)	0 (5)	0 (4)	0 (5)
Dig. prevalence score-height	<20	0 (6)	0 (7)	0 (7)	2 (8)
Dig. prevalence score-MUAC	<20	0 (6)	0 (6)	0 (6)	2 (9)
Standard Dev. Height WHZ	>0.80	0 (1.01)	0 (0.92)	0 (1.04)	0 (1.05)
Skewness WHZ	<±0.6	0 (0.04)	0 (0.07)	0 (-0.03)	0 (0.14)
Kurtosis WHZ	<±0.6	1 (-0.22)	1 (0.24)	0 (-0.05)	1 (-0.30)
Poisson WHZ -2	>0.001	0 (p=0.717)	3 (p=0.002)	5 (p=0.000)	0 (p=0.191)
OVERALL	**<24**	**1% (Excellent)**	**4 % (Excellent)**	**5 % (Excellent)**	**5% (Excellent)**

ANNEX 2: Questionnaire

1.IDENTIFICATION	**1.1 Data Collector**_____	**1.2 Team Leader**_____	**1.3 Survey date (dd/mm/yy)----------**					
1.4 County	1.5 Sub County	1.6 Ward	1.7 Location	1.8 Sub-Location	1.9 Village	1.10 Cluster No	1.11 HH No	1.12 Team No.
1.13 Household geographical coordinates	**Latitude**	_____	**Longitude**	_____				

		2. Household Demographics								
2.1	**2.2a**	**2.2b**	**2.3**		**2.4**	**2.5**	**2.6**	**2.7a**	**2.7b**	**2.8**	**2.10**
			Age (Record age in MONTHS for children <5yrs and YEARS for those ≥ 5 years's)								
			Years	Months							
	1										
	2										
	3										
	4										
	5										
	6										
	7										

	8										
	9										
	10										
	11										
	12										
	13										
	14)										
	15										
	16										

2.9	**How many mosquito nets does this household have? _____ (Indicate no.) go to question 2.10 before proceeding to question 2.11**	
2.11	**Main Occupation of the Household Head – HH.** **(enter code from list)** 1=Livestock herding 2=Own farm labour 3=Employed (salaried) 4=Waged labour (Casual) 5=Petty trade 6=Merchant/trader 7=Firewood/charcoal 8=Fishing **9=** Income earned by children **10=Others (Specify)** |____|	**2.12.** What is the **main** current source of income **of the household?** 1. =No income 2. = Sale of livestock 3. = Sale of livestock products 4. = Sale of crops 5. = Petty trading e.g. sale of firewood 6. =Casual labor 7. =Permanent job 8. = Sale of personal assets 9. = Remittance 10. Other-Specify |____|
2.13	Marital status of the respondent 1. = Married 2. = Single 3. = Widowed 4. = separated 5. = Divorced. |____|	**2.14. What is the residency status of the household**? 1. IDP 2.Refugee 3. Resident |____|
2.15	Are there children who have come to live with you recently? 1. YES 2. NO	2.15b If yes, why did the child/children come to live with you? 1= Did not have access to food 2=Father and Mother left home 3=Child was living on the street, 4=Care giver died 5= Other specify _____

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

3.	4.	5. CHILD HEALTH AND NUTRITION (ONLY FOR CHILDREN 6-59 MONTHS OF AGE; IF N/A SKIP TO SECTION 3.6) **Instructions:** *The caregiver of the child should be the main respondent for this section* ***3.1 CHILD ANTHROPOMETRY 3.2 and 3.3 CHILD MORBIDITY*** *(**Please** fill in **ALL REQUIRED** details below. Maintain the same child number as part 2)*													
A Child No.	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**3.2 a**	**3.2 b**	**3.3 a**	**3.3 b**	**3.3 c**
	what is the relationship of the respondent with the child/children 1=Mother 2=Father 3=Sibling 4=Grandmother 5=Other (specify)	SEX Female ……F Male ……..M	Exact Birth Date	Age in months	Weight (KG) XX.X	Height (CM) XX.X	Oedema Y= Yes N= No	MUAC (cm) XX.X	Is the child in any nutrition program 1. Yes 2. No If no skip to questions 3.2	If yes to question J. which nutrition program? 1.OTP 2.SFP 3.BSFP Other Specify _____	Has your child (NAME) been ill in the past two weeks? 1.Yes 2. No <u>If No, skip to 3.4</u>	If YES, which illness (multiple responses possible) 1 = Fever with chills like malaria 2 = ARI /Cough 3 = Watery diarrhoea 4 = Bloody diarrhoea 5 = Other (specify) *See case definitions above*	**When the child was sick did you seek assistance?** 1.Yes 2. No	**If the response is yes to question # 3.2 where did you seek assistance? (More than one response possible-** 1. Traditional healer 2.Community health worker 3. Private clinic/ pharmacy 4. Shop/kiosk 5.Public clinic 6. Mobile clinic 7. Relative or friend 8. Local herbs 9.NGO/FBO	If the child **<u>had watery diarrhoea</u>** in the last TWO (2) WEEKS, did the child get: 1. ORS 2. Zinc supplementation? *Show sample and probe further for this component* *check the remaining drugs(confirm from mother child booklet)*
01															
02															

03															
04															

3.4 Maintain the same child number as part 2 and 3.1 above

	A1	**A2**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Child No.	How many times has child received Vitamin A in the past year? (show sample)	Has the child received vitamin A supplement in the past 6 months?	How many times did the child receive vitamin A capsules from the facility or out reach	If Vitamin A received how many times in the past one year did the child receive verified by **Card?**	**FOR CHILDREN 12-59 MONTHS** How many times has child received drugs for worms in the past year? *(show Sample)*	Has the child received BCG vaccination? Check for BCG scar. **1 = scar** **2=No scar**	Has child received OPV1 vaccination **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received OPV3 vaccination? **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received measles vaccination at 9 months *(On the upper right shoulder)?* **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received the second measles vaccination (18 to 59 months) *(On the upper right shoulder)?* **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**
01										
02										
03										
04										

3.5 MNP Programme Coverage. ***Maintain the same child number as part 2 and 3.1 above. Ask all the relevant questions (3.5.1 to 3.6.4) before moving on to fill responses for the next child. THIS SECTION SHOULD ONLY BE ADMINISTERED IF MNP PROGRAM IS BEING IMPLEMENTED OR HAS BEEN IMPLEMENTED***

	3.5 Enrolment in an MNP program		3.6 Consumption of MNPs			
	3.5.1. Is the child enrolled in the MNP program?(show the example of the MNP sachet) ***(record the code in the respective child's number)*** Yes =1 No=0 **If no go to 3.5.2,** **If yes go to section 3.6.1**	3.5.2 If the child, 6-23months, is not enrolled for MNP, give reason. (***Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)*** Do not know about MNPs ……1 Discouraged from what I heard from others ……2 The child has not fallen ill, so have not gone to the health facility …. ……3 Health facility or outreach is far ……4 Ch ild receiving therapeutic or supplementary foods ……5 Other reason, specify ……6 ***Skip to 3.7***	3.6.1 Has the child consumed MNPs in the last 7 days?(shows the MNP sachet) ***(record the code in the respective child's number)*** YES = 1 N0= 0 ***If no skip to 3.6.3***	3.6.2 If yes, how frequent do you give MNP to your child? ***(record the code in the respective child's number)*** Every day ……1 Every other day ……2 Every third day ……3 2 days per week at any day ….4 Any day when I remember……5	3.6.3 If no, since when did you stop feeding MNPs to your child? ***(record the code in the respective child's number)*** 1 week to 2 weeks ago ….1 2 week to 1 month ago ….2 More than 1 month ……3	3.6.4 What are the reasons to stop feeding your child with MNPs? (***Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)*** Finished all of the sachets ……1 Child did not like it ……2 Husband did not agree to give to the child ……3 Sachet got damaged ……4 Child had diarrhea after being given vitamin and mineral powder ……5 Child fell sick……6 Forgot ……7 Child enrolled in IMAM program …8 Other (Specify)_____ ..9
Child 1						
Child 2						
Child 3						
Child 4						

MATERNAL NUTRITION FOR WOMEN OF REPRODUCTIVE AGE (15-49 YEARS) *(Please insert appropriate number in the box)*									
3.7	**3.8**	**3.9**	**3.10**			**3.11**			
			During the pregnancy of the (name of the youngest biological child below 24 months) did you take the following supplements? indicate **1. Yes** **2. No** **3. Don't know** **4. N/A**			If Yes, for how many days did you take? (***probe and approximate the number of days***)			
			Iron tablets syrup	Folic acid	Combined iron and folic acid supplements	Iron tablets syrup	Folic acid	Combined iron and folic acid supplements	

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

4.1 **What is the MAIN source of drinking water for the household NOW?**

piped water
- piped into dwelling 11
- piped to yard / plot 12
- piped to neighbour 13
- public tap / standpipe 14

tube well / borehole 21

dug well
- protected well 31
- unprotected well 32

spring
- protected spring 41
- unprotected spring 42

rainwater 51
tanker-truck 61
cart with small tank 71
water kiosk 72
surface water (river, dam, lake, pond, stream, canal, irrigation channel) 81

packaged water
- bottled water 91
- sachet water 92

1.

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

4.2b – Who MAINLY goes to fetch water at your current main water source?

1=Women,
2=Men,
3=Girls,
4=Boys

4.2.2a **How long do you queue for water?**
1. Less than 30 minutes
2. 30-60 minutes
3. More than 1 hour
4. Don't que for water

1.

.3 Do you do anything to your water before drinking? (*MULTIPLE RESPONSES POSSIBLE) (Use 1 if YES and 2 if NO).* |____|
1. Nothing
2. Boiling…… ……
   |____|
3. Chemicals (*Chlorine,Pur,Waterguard*)……
   |____|
4. Traditional herb……...
   |____|
5. Pot filters……..
   |____|

5.

4.3a |____|

6.

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

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

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

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

4.6.2 If paid per month how much |____|

4.7.1a	We would like to learn about where members of this household wash their hands. Can you please show me where members of your household most often wash their hands? *Record result and observation.* **OBSERVED** FIXED FACILITY OBSERVED (SINK / TAP) IN DWELLING.....1 IN YARD /PLOT.....2 MOBILE OBJECT OBSERVED (BUCKET / JUG / KETTLE)..... 3 NOT OBSERVED NO HANDWASHING PLACE IN DWELLING / YARD / PLOT..... 4 NO PERMISSION TO SEE 5	4.7.1b Is soap or detergent or ash/mud/sand present at the place for handwashing? YES, PRESENT .....1 NO, NOT PRESENT..... ……**2**
4.7.1	**Yesterday (within last 24 hours) at what instances did you wash your hands? (MULTIPLE RESPONSE-** (Use 1 if "Yes" and 2 if "No") 1. After toilet…… |____| 2. Before cooking…… |____| 3. Before eating…… |____| 4. After taking children to the toilet…… |____| 5. Others…… |____|	
4.7.2	**If the caregiver washes her hands, then probe further; what did you use to wash your hands?** 1. Only water 2. Soap and water 3. Soap when I can afford it 4. traditional herb 5. Any other specify |____|	**4.8 What kind of toilet facility do members of your household usually use?** **If 'Flush' or 'Pour flush', probe:** **Where does it flush to?** |____| **If not possible to determine, ask permission to observe the facility.** **flush / pour flush** **flush to piped sewer system 11** **flush to septic tank 12** **flush to pit latrine 13** **flush to open drain 14** **flush to DK where 18** **pit latrine** **ventilated improved pit latrine 21** **pit latrine with slab 22** **pit latrine without slab / open pit 23** **composting toilet 31** **bucket 41** **hanging toilet / hanging latrine 51** **no facility / bush / field 95** 1. **OTHER (specify) 96**

5.0: Food frequency and Household Dietary Diversity

Type of food*	**Did members of your household consume any food from these food groups in the last** *7 days?(food must have been cooked/served at the household)* ***0-No*** ***1-Yes***	**If** *yes*, **mark days the food was consumed in the last 7 days?** ***0-No*** ***1-Yes***								What was the **main** source of the dominant food item consumed in the HHD? **1.Own production** **2.Purchase** **3.Gifts from friends/families** **4.Food aid** **5.Traded or Bartered** **6.Borrowed** **7.Gathering/wild fruits** **8.Other (specify)**	**WOMEN DIETARY DIVERSITY** **ONLY FOR WOMEN AGE 15 TO 49 YEARS. REFER TO THE HOUSEHOLD DEMOGRAPHICS SECTION Q2.3 AND Q2.5** **Please describe the foods that you ate or drank yesterday during day and night at home or outside the home (start with the first food or drink of the morning)** ***0-No*** ***1-Yes***			
		D1	***D2***	**D 3**	**D 4**	**D5**	**D 6**	**D7**	**TOTAL**		Woman ID……	Woman ID……	Woman ID …….	Woman ID……
5.1. Cereals and cereal products *(e.g. sorghum, maize, spaghetti, pasta, anjera, bread*)?														
5.2. Vitamin A rich vegetables and tubers: Pumpkins, carrots, orange sweet potatoes														
5.3. White tubers and roots: White potatoes, white yams, cassava, or foods made from roots														

5.4 Dark green leafy vegetables: Dark green leafy vegetables, including wild ones + locally available vitamin A rich leaves such as cassava leaves etc.														
5.5 Other vegetables *(e.g., tomatoes, egg plant, onions)?*														
5.6. Vitamin A rich fruits: + other locally available vitamin A rich fruits														
5.7 Other fruits														
5.8 Organ meat (iron rich): Liver, kidney, heart or other organ meats or blood based foods														
5.9. Flesh meats and offals: Meat, poultry, offal *(e.g. goat/camel meat, beef; chicken/poultry)?*														
5.10 Eggs?														
5.11 Fish: Fresh or dries fish or shellfish														
5.12 Pulses/legumes, nuts *(e.g. beans, lentils, green grams, cowpeas)*?														
5.13 Milk and milk products *(e.g. goat/camel/ fermented milk, milk powder)?*														
5.14 Oils/fats *(e.g. cooking fat or oil, butter, ghee, margarine)?*														
5.15 Sweets: Sugar, honey, sweetened soda														

or sugary foods such as chocolates, sweets or candies														
5.16 Condiments, spices and beverages:														

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

4.1 FOOD FORTIFICATION (FF)/- *Please ask the respondent and indicate the appropriate number in the space provided*		
	Have you heard about food fortification? 1. Yes 2. No 3. Don't know	
	If yes, where did you hear or learn about it? (MULTIPLE RESPONSE ARE POSSIBLE- (Use 1 if "Yes" and 2 if "No") 6. Radio…… |____| 7. Road show……... |____| 8. In a training session attended……. |____| 9. On a TV show…… |____| 10. Others……. |____|	
1.2	**Respondent's knowledge on the food fortification logo (Show the food fortification logo to the respondent and record the response). Do you know about this sign?** 1. Yes 2. No 3. Don't know	|____|
1.3	**What is the MAIN source of Maize flour for the household <u>NOW</u>?** 2. Bought from the shops, supermarket e.t.c 3. Maize is taken for milling at a nearby Posho Mill 4. Bought from a nearby Posho Mill 5. Other *(Please specify)* |_____|	**1.1b Do you know if the maize flour you consume is fortified or not?** 1. Yes 2. No 3. Don't know
1.4	**What brands of the following foods does your household consume?** 1. Maize flour 2. Wheat flour 3. Margarine 4. Oils 5. Fats 6. Sugar	|_____| |_____| |_____| |_____| |_____|

		|_____ __| |_____ __|

Annex 3: Clusters Selected

Saku		Moyale		North Horr		Laisamis	
village_area	**CL_No**	**village_area**	**CL_No**	**village_area**	**CL_No**	**village_area**	**CL_No**
molu_guracha	1	burqa	1	dadacha	1	Manyatta sambamba	1
kulow	2	gaya	2	barambate	2	Manyatta ntiliya	2
qampicha	3	sam_sora	3	normadic_boji_boqe	3	Lpusi	3
siko_hirbo	4	huqa_murrow	4	rage_centre	4	losidan	4
kibera_center	5	ilman_oga	5	old_yaalgana_gotcha	5	Merille Center 2	5
silango_1	6	dokisano	6	shankera	6	Orguba	6
nasgakwe	7	denge_okotu	7	balesa_ali_boru	7	mero town	7
lakartnya	8	guyo_huqa	8	yaagara_new	8	goobore leybor	8
isiolo	9	bododha_village	9	mathare	9	uyaam	9
kiwanja	10	dabasso_bante	10	nairobi	10	ongeli ngosoni/ G.O AOLE	10
milimani	11	guracha_borbor	11	roba_umuro	11	dubsahay ogorjebo	11
leyai	12	qallaliwe	12	shurr	12	ongeli kapina/Chere	12
ILMAN LIBAN	13	shauri_yako	13	baulo	13	tubcha galale	13
adhi_huqa	14	dam_village	14	watalii	14	Nahgan Machan	14
diid_adhi	15	kunyara	15	nangolei	15	balah centre	15
dirib_1	16	yabalo_godha_2	16	ilgele	16	ntil	16
godana_kote	17	hallo_bulla	17	telegaye	17	Civicon village	17
gabra_scheme	18	hussein_wosha	18	malabot	18	loruko/Ngosoni	18
dogogich	19	age_adola	19	goricha	19	lengima/Masola	19
haro_huqa	20	dambi_diba	20	gallas	20	3B town Center	20
quppi_qallo_2	21	edin_abdi_ali	21	elmudha_madho	21	2A Sarai	21
hussein_bere	22	adan_mala	22	el_besso	22	Manyatta juu east	22
MOLU GURACHA	23	mama_adeo	23	qorqa_gudha	23	sambamba	23
jillo_abdikadir	24	mohamed_qalla	24	bura	24	Ibarok 1	24

roba_dabasso	25	mohamed_boru	25	qabdo	25	ongeli	25
tuko_chudo	26	aliow_wachile	26	fila	26	Serima	26
rob_golombo	27	gurumesa_2	27	sesa_raha	27	st.martin	27
dokata_ali	28	gurumesa_4	28	centre	28	Dakaye	28
mohamed_adan	29	olla_galgalo_ture	29	mata_lamani	29	Moite	29
kosi_banchale	30	guyo_debicha	30	garwole	30	Losikiriachi	30
				elyibo	31	Town olturot	31
				bales_saru	32	Galthelan	32
				south_c	33	Rongumo Golob	33
				yaalgana	34	Bagasi	34
				elhadi_centre	35	Laparan	35
				marime	36	Tungu	36