INTEGRATED SMART SURVEY MARSABIT COUNTY KENYA

JULY 2019

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Table of Contents

Lists of tables

List of Figures

Acronym and Abbreviation

ANC: Antenatal Care
ARI: Acute respiratory Infections
BCG: Bacillus Calmette–Guérin
BSFP: Blanket Supplementary feeding program
CI: Confidence Interval
CHAs: Community Health Assistants
CHMT: County Health Management Team
CHS: Community Health Strategy
CHV: Community Health Volunteer
CLTs: Community Led Total Sanitation
CSG: County Steering Group
CSI: Coping Strategy Index
CWW: Concern Worldwide
DEFF: Design Effect
ENA: Emergency Nutrition Assessment
FAO: Food and Agricultural Organization
FCS: Food consumption Score
FHK: Food for the Hungry Kenya
FNS: Food and Nutrition Security
GAM: Global Acute Malnutrition
HDDS: Household Dietary Diversity Score
HiNi: High Impact Nutrition Intervention
IDPs: Internally Displaced Persons
IFAS: Iron Folic Acid Supplementation
IPC: Integrated Food Security Phase Classification
IPs: Implementing Partners
KNBS: Kenya National Bureau Statistics
KNHP: Kenya Nutrition and Health Program
MAM: Moderate Acute Malnutrition
MoA: Ministry of Agriculture
MoH: Ministry of Health
MoLF: Ministry of Livestock and fisheries
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
PLW: Pregnant and lactating Women
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
TB: Tuber Culosis
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
WFP: World Food Program
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 2019 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 livestock and fisheries, ministry of health led County Nutrition Coordinator, and national drought management authority (NDMA) for their concerted efforts in planning and Implementation of the survey.
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- 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

Through funding from UNICEF, 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 Marsabit County. World Vision supports improving food and nutrition security and enhancing resilience to drought in Laisamis sub-county, NHP plus works to improve nutrition status through working on 3 key result areas i.e. increasing access and demand for quality nutrition, strengthen commodity management and improve food and nutrition security. Food for the Hungry, Kenya, implements Food and Nutrition security with the aim of enhancing resilience and WFP supports the continue in capacity building of the education sector focusing on management and support of ECDs, supporting the county the County with Supplementary feeding commodities and agriculture value chain addition.

The survey findings indicated a GAM prevalence rate of 18 %(15.6 - 20.7 95% C.I.), while the prevalence for severe malnutrition was 2.9 %(2.1 - 4.0 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 23.1 %(20.4 - 26.1 95% C.I.) where 4.9%(3.8 - 6.3 95% C.I.) were severely underweight. In terms of stunting prevalence, the survey findings indicated that 21.1 %(18.9 - 23.4 95% C.I.) Of children in Marsabit County were stunted and 4.7 %(3.5 - 6.3 95% C.I.) Of the children were severely stunted.

Further analysis of the nutrition data showed that Laisamis sub-county had the highest GAM rate prevalence of 30.7% that was extremely critical, followed by North Horr with 25.1% that was in critical situation. Moyale and Saku sub-counties have a GAM rate prevalence of 9.0% and 9.5% respectively that indicate poor situation.

The survey findings indicated that 29.0% 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 55.4%, followed by fever with chills (30.0%) and watery diarrhea (20.5%). 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 43.8% that is way below the national target of 80%. In terms of zinc supplementation or oral rehydration salts (ORS), 73.0% had received the supplementation that is below the HiNi target of 80%. From the survey results, 97.0% of children reported to have received BCG and confirmed by Scar while Measles vaccination coverage at 9 months verified by card was at 70.6%. In addition, 75.0% of caregivers 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 (77.8%) clinics and private clinics (15.6%). The results of the survey showed that among the caregivers interviewed 27% reported practicing proper hand washing at the four critical times. For the household dietary diversity, analysis showed that 77% of the households consumed more than five food groups while the minimum maternal dietary diversity showed that 72% of the women aged 15-49 years consumed less than five food groups. Lastly, the survey results showed that the total weighted coping strategy score was 11.57.

The survey was conducted through the partnership of the Ministry of Health, Concern Worldwide, World Vision , KNHP plus , World Food Programme and was funded by UNICEF between 24th June and 5th July, 2019.

Methodology

The target geographical area was Marsabit County's four 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 four Sub-counties. That formed the first stage sampling. Finally, with the sampled villages, a list of all households was drawn upon which 12-16 households was sampled using simple random sampling according to different sample sizes of different Sub Counties.

[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.

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)
- 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 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 2019	Moyale July 2019	Saku July 2019	Laisamis July 2019	COUNTY JULY 2019
Clusters	41	36	30	42	149
HHs Targeted	649	451	342	593	2035
HHs Reached	620	456	366	623	2065
Proportion of Under five	16.4%	18.2%	12.9%	21.0%	17.6%
Average Household Size	4.7	5.7	5.5	5.4	5.3
Prevalence of global malnutrition	25.1% (20.0-31.0)	9.0% (6.1-13.0)	9.5% (4.8-18.0)	30.7% (26.0-35.9)	18.0%(15.6 - 20.7)
Prevalence of Moderate Malnutrition	22.0% (17.3-27.5)	7.7% (5.3-11.2)	8.6% (4.1-17.0)	24.3% (20.6-28.4)	15.1%(10.1-20.5)
Prevalence of severe malnutrition	3.1% (1.7- 5.5)	1.2% (0.5- 3.3)	1.0% (0.2- 3.8)	6.4% (4.2- 9.8)	2.9%(2.1 - 4.0)
Prevalence of global malnutrition by MUAC	4.5% (2.7- 7.4)	3.7% (2.2- 6.2)	0.9% (0.2- 3.8)	6.4% (4.3- 9.3)	4.4% (3.4- 5.8)
Prevalence of severe malnutrition by MUAC	0.5% (0.1- 2.0)	0.7% (0.2- 2.3	0.5% (0.1- 3.5)	1.2% (0.6- 2.5)	0.8% (0.4- 1.5)
Global underweight	27.2% (21.9-33.3)	13.7% (9.7-18.9)	14.2% (7.9-24.4)	39.6% (35.8-43.5)	23.1%(20.4 - 26.1)
Severe Underweight	5.1% (3.3- 7.8)	2.2% (0.9- 5.2)	3.3% (1.0-10.5)	10.2% (7.9-13.0)	4.9%(3.8 - 6.3)
Global Stunting	16.7% (13.7-20.2)	19.6% (15.7-24.3)	19.2% (13.9-25.9)	28.3% (24.2-32.8)	21.1%(18.9 - 23.4)

Severe Stunting	2.3% (1.1- 4.9)	3.8% (2.2- 6.6)	3.8% (1.9- 7.6)	8.7% (6.0-12.4)	4.7%(3.5 - 6.3)
	North Horr July 2019	**Moyale July 2019**	**Saku July 2019**	**Laisamis July 2018**	**COUNTY JULY 2018**
Measles Coverage at 9 Months by Card	78.7%	63.6%	66.5%	77.0%	70.6%
Measles Coverage at 9 Months by Recall	14.5%	31.0%	30.1%	17.7%	24.1%
Measles Coverage at 18 Months by Card	61.4%	50.2%	61.2%	61.6%	57.0%
Measles Coverage at 18 Months by Recall	15.1%	27.3%	33.3%	20.5%	23.9%
BCG by scar	93.5%	96.3%	93.5%	99.2%	96.7%
OPV 1 by Card	83.9%	69.5%	67.6%	81.9%	75.5%
OPV 1 by Recall	13.1%	29.3%	31.0%	16.5%	22.8%
OPV 3 by Card	84.4%	67.5%	66.7%	80.3%	74.2%
OPV 3 by Recall	11.8%	30.3%	31.5%	16.5%	23.0%
Zinc Supplementation	38.5%	78.8%	62.5%	82.1%	72.5%
Vitamin A Supplementation (12-59 Months) - Once	91.2%	80.3%	89.9%	86.8%	85.7%
Vitamin A Supplementation (12-59 Months) - Once-Verified by Card	37.2%	6.0%	38.3%	39.2%	25.7%
Vitamin A Supplementation (12-59 Months) - Once-by recall	49.6%	74.2%	52.9%	50.8%	60.0%
Vitamin A Supplementation (6-11 Months) - Once	79.5%	83.7%	88.0%	87.0%	84.0%
Vitamin A Supplementation (6-11 Months)- Once- Verified by Card	24.1%	0.0%	11.4%	12.0%	10.1%
Vitamin A Supplementation (6-11 Months)-	63.0%	83.7%	68.2%	76.0%	74.0%

Once- by Recall					
Vitamin A (12 – 59 months) – twice	52.9%	37.3%	48.2%	44.6%	43.8%
Vitamin A (6 – 59 months) – once	89.7%	80.4%	90.3%	86.9%	85.4%
Vitamin A Supplementation (6-59 Months) - once- Verified By card	36.8%	5.5%	36.2%	36.6%	24.4%
Vitamin A Supplementation (6-59 Months) -by Recall	50.1%	74.9%	53.5%	53.7%	61.0%
Deworming 12-59 Months	86.7%	72.1%	84.7%	82.3%	79.6%
Morbidity					
Sickness two weeks prior to survey	27.9%	26.1%	25.0%	35.0%	28.6%
Fever	44.1%	29.5%	31.5%	20.5%	30.0%
Acute Respiratory Infection	63.1%	37.1%	50.0%	73.3%	55.4%
Watery diarrhea	11.7%	31.4%	14.8%	15.9%	20.5%
Bloody diarrhea	0.0%	2.9%	0.0%	0.0%	1.1%
Maternal Health and Nutrition					
MUAC <21cm for WRA	13.1%	4.4%	4.5%	19.2%	10.1%
MUAC (21 < 23 cm) For WRA	31.9%	8.6%	15.2%	30.7%	20.7%
MUAC <21cm for PLW	14.6%	5.5%	2.0%	21.7%	11.8%
Iron Folate Supplementation	88.3%	84.7%	84.3%	82.2%	84.8%
Household Food Consumption (Food consumption Score)					
Poor FCS	9.7%	2.6%	20.2%	14.4%	10.4%
Border FCS	22.9%	5.3%	41.8%	38.2%	24.1%
Good FCS	67.4%	92.1%	38.0%	47.4%	65.5%
Water and Sanitation (WASH)					
Piped into dwelling	0.3%	0.0%	0.0%	4.7%	1.2%
Piped to yard/plot	0.6%	0.4%	0.0%	1.4%	0.6%
Piped to Neighbors	1.0%	0.0%	0.5%	3.7%	1.2%
Public tap/standpipe	9.8%	0.2%	16.7%	28.9%	10.2%
Tube well/Borehole	14.2%	36.0%	26.8%	32.1%	27.9%

Protected well	9.7%	13.6%	2.5%	1.9%	7.8%
Unprotected well	15.5%	0.2%	6.0%	13.5%	8.2%
Protected spring	0.2%	0.2%	0.0%	0.0%	0.1%
Unprotected spring	0.2%	0.2%	0.0%	0.0%	0.1%
Rain water	2.3%	2.4%	3.3%	0.5%	2.1%
Tanker truck	3.4%	9.9%	12.6%	4.7%	7.5%
Cart with small tank	0.0%	1.8%	1.9%	0.0%	0.9%
Water Kiosk	18.4%	2.9%	23.2%	0.3%	9.9%
Surface water	14.5%	28.3%	1.9%	6.1%	14.8%
Sanitation Facility					
Ventilated Improved Pit Latrine	16.1%	18.0%	11.7%	5.5%	13.4%
Pit latrine with slab	16.9%	47.1%	41.5%	17.5%	31.6%
Pit latrine without slab/open pit	1.1%	19.3%	14.2%	0.8%	9.4%
Composting toilet	0.2%	0.2%	0.8%	0.2%	0.3%
No facility /Bush/field	61.8%	10.5%	28.1%	75.1%	41.9%
Other	1.9%	4.6%	1.9%	0.3%	2.4%
Hanging toilet/Latrine	1.6%	0.2%	0.5%	0.5%	0.7%
Aware of handwashing	61.8%	88.8%	89.1%	59.7%	75.2%
Use soap and water for hand washing	78.6%	61.5%	60.1%	62.9%	65.0%
Hand washing at 4 critical times	17.0%	52.1%	7.4%	6.7%	26.7%
Water treatment	30.6%	22.6%	17.5%	15.9%	22.1%
Minimum Dietary Diversity of the Household					
<3 food groups	1.9%	0.2%	1.4%	1.1%	1.1%
3 to 5 Food groups	30.5%	2.6%	29.5%	34.2%	22.0%
>5 food groups	67.6%	97.1%	69.1%	64.7%	77.0%
Women Dietary Diversity					
<5 food groups	78.3%	55.1%	78.3%	86.1%	72.0%
5 or more food groups	21.7%	44.9%	21.7%	13.9%	28.0%
Household Hunger Scale					
Little	70.5%	91.7%	74.6%	52.3%	
Moderate	24.0%	7.9%	22.7%	41.9%	
Severe	5.5%	0.4%	2.7%	5.8%	

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 **322,567** population of from an estimated **66,168** households (2018 population estimates-KNBS). 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.

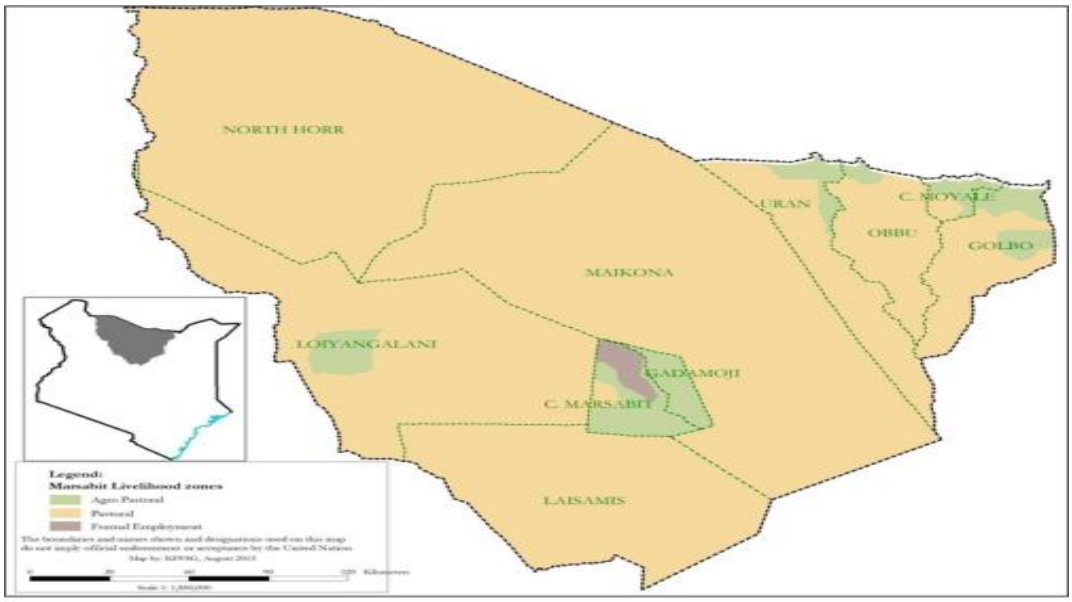
The County remains amongst the counties with the highest poverty index in the in Kenya and ranked position 44 out of 47 counties with a poverty rate of 83.2%. The county has four major livelihoods zones including: pastoralists, agro-pastoralists, fisheries and urban segregated in different proportions 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. 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. 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 Marsabit County. World Vision supports improving food and nutrition security and enhancing resilience to drought in Laisamis sub-county, NHP plus works to improve nutrition status through working on 3 key result areas i.e. increasing access and demand for quality nutrition, strengthen commodity management and improve food and nutrition security. Food for the Hungry, Kenya, implements Food and Nutrition security with the aim of enhancing resilience and WFP supports the continue in capacity building of the education sector focusing on management and support of ECDs, supporting the county the County with Supplementary feeding commodities and agriculture value chain addition.

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

[3] Marsabit County CIDP



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. Secondly, last SMART survey conducted in July 2018 showed overall serious nutrition situation in Marsabit County but ranged from alert levels Saku (5.7%) and Moyale(7.8%), to serious levels in Laisamis (13.2%) and critical levels in North Horr(23.5%). Thirdly, According to NDMA bulletin in the month of April, Marsabit drought classification was at the **alarm** phase which is on stable trend. The agro pastoral and Pastoral livelihood zones were at the alarm phase though stable but the fisher folk, casual labour and petty trading zones was at the alert phase and deteriorating. Additionally, according to SRA 2019 the food security phase classification for the county was Stressed (IPC Phase 2). The food security situation is likely to improve to none (IPC Phase 1) in the agro pastoral livelihood zones and remain Stressed (IPC Phase 2) in the pastoral livelihood zones.

The survey was conducted through the partnership of Marsabit County Government ministry of Health with Concern Worldwide, World Vision, NHP Plus, UNICEF, Food for the Hungry (FH), and other implementing partners. This survey was conducted between 24th June and 3rd July, 2018 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 2019.

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 diarrhoeal 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: Moyale and Saku Sample Size Calculation

Variable	Moyale	Saku	Rationale
Estimated Prevalence (%)	7.8	5.7	Point prevalence was used because According to the NDMA Bulletin the situation is stable hence expecting no significant change. Also the Admission trends is decreasing compared to the month of March to April 2019.
Precision (%)	3.5	3.0	Precision guided by Global SMART for the given prevalence
Design Effect	1.91	1.16	As per July 2018 SMART Survey
Estimated No of children	**469**	**290**	
Average Household size	5.9	5.3	As per July 2018 SMART Survey
Proportion of children < 5 yrs. (%)	20.0	18.3	As per July 2018 SMART Survey
Non Response rate (%)	2%	3%	As per July 2018 SMART survey
Estimated No. of Households	**451**	**342**	
No of Households per day	13	12	Based on 2018 SMART Survey Experience
No of clusters	36	30	Computed from the Number of HHs per Day
No of Teams	6	5	
No of days	6	6	Based on the Number of Teams to be Recruited

Table 4: North Horr and Laisamis Sample Size Calculation

Variable	N. Horr	Laisamis	Rationale
Estimated Prevalence (%)	28.3	18.5	Upper CI was used because According to the NDMA Bulletin the situation is stable but looking at the Admission trends is increasing from the month of February 2019 to April 2019. Also the Mass screening conducted in North Horr Sub county indicated high GAM rate by MUAC.
Precision (%)	5.0	4.7	Precision guided by Global SMART for the given prevalence
Design Effect	1.5	1.78	Guided by July 2018 SMART Survey. For North Horr DEFF was 1.0 so it was adjusted upward the sampling is cluster method and DEF cannot be 1
Estimated No of children	**509**	**508**	
Average Household size	5.0	4.3	As per July 2018 SMART Survey
Proportion of children < 5 yrs (%)	17.8	22.6	As per July 2018 SMART Survey
Non Response rate (%)	2.0	2.0	As per July 2018 SMART survey
Estimated No. of Households	**649**	**593**	
No of Households per day	16	15	Based on 2018 SMART Survey Experience
No of clusters	42	42	Computed from the Number of HHs per Day
No of Teams	7	7	
No 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 five 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 five 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 Concern Worldwide, World Vision, and Aphia Plus, FHK, NDMA, MoA, MoH, MoLF 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, was 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 County Nutrition Coordinator 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.

2.11 Survey Limitation

In North Horr sub County, there was issue with insecurity in Illeret Ward hence inaccessible thus replacing the clusters with reserve clusters thus achieving 41 Clusters. In North Horr Sub County, Illeret Ward which was not accessible has the most population of under five children compared to the other wards in the Sub County.

In Saku Sub County, due to insecurity incidence prior to the survey, most households took away their children in safe place away from home leaving men behind hence not reaching the target of the number of children for the survey area. Also in Saku Sub County, the urban set up especially gated community, the respondent denied access to their children by saying that the children are not available. Other limitation for Saku was migration of pastoral communities to Laisamis west, north Horr and kargi for search of pasture. Population over estimation with 18.1percent as opposed to 16.1 percent (DHIS 2019)

CHAPTER THREE: SURVEY FINDINGS

3.1 GENERAL CHARACTERISTICS OF STUDY POPULATION AND HOUSEHOLDS

3.1.1 Demographics

In North Horr, a total of 41 clusters were visited where 6 Clusters were not visited in Illeret Ward due to insecurity hence substituting with Reserve clusters hence reaching 41 Clusters. Secondly, the total number of households surveyed was 620 while in total; there were 396 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 4.7. Further, the proportion of children under five in the same area was found to be 16.4%.

In Laisamis, the total number of households surveyed was 623 while in total; there were 503 children whose anthropometric measurements were taken who were aged between 6 and 59 months. The average number of persons per household was 5.4. Further, the proportion of children under five in the same area was found to be 21.0%.

In Moyale, the total number of households surveyed was 456 while in total; there were 403 children whose anthropometric measurements were taken who were aged between 6 and 59 months. The average number of persons per household was 5.7. Further, the proportion of children under five in the same area was found to be 18.2%.

In Saku, the total number of households surveyed was 366 while in total; there were 214 children whose anthropometric measurements were taken who were aged between 6 and 59 months. The average number of persons per household was 5.5. Further, the proportion of children under five in the same area was found to be 12.9%.

Overly, in Marsabit County, 2065 Household were surveyed and 1516 anthropometric measurement were taken. The average number of persons per household was 5.3 and the proportion of children under five in Marsabit County was found to be 17.6%.

Table 6: Response Rate

Survey Zone	No. of HH	No. of HH questionnaires filled	No. of Children	No. of Children	Number of Clusters	Number of Clusters Achieved	Average Household Size	% of Under Five	Design Effect
Laisamis	593	**623**	508	**503**	42	**42**	**5.4**	**21.0%**	**1.43**
North Horr	649	**620**	509	**396**	42	**41**	**4.7**	**16.4%**	**1.54**
Saku	342	**366**	290	**214**	30	**30**	**5.5**	**12.9%**	**2.35**
Moyale	451	**456**	469	**403**	36	**36**	**5.7**	**18.2%**	**1.37**
Marsabit	2035	**2065**	1776	**1516**	150	**149**	**5.3**	**17.6%**	

3.1.2 Residency and Caregiver's Marital Status

All the respondents from households in Marsabit County at 99.9% are resident while there is 0.1% of IDPs. Majority of the respondents in the County were married and it is worth noting the widow are also high at 17.6%. The highest number of widows are in Saku Sub County as shown in the figure below.

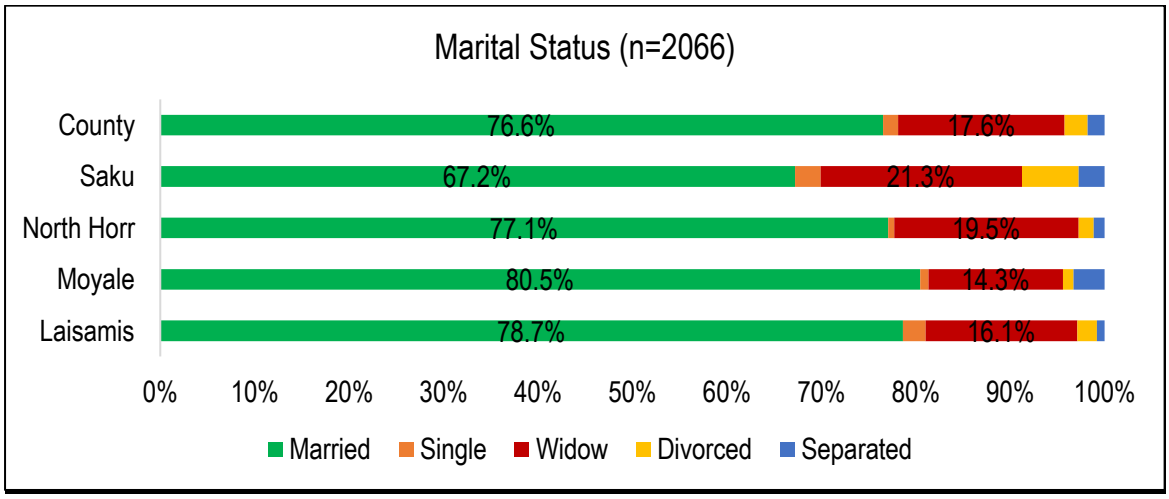


Figure 1: Marital Status

3.2 Socio-economic characteristics of households

3.2.1 Highest Education level attained by head of household

Overall, illiteracy levels remain very high at 75.4%. Of those with formal education, only 8.9% and 6.3% had primary and secondary education respectively and just 5.3% 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.

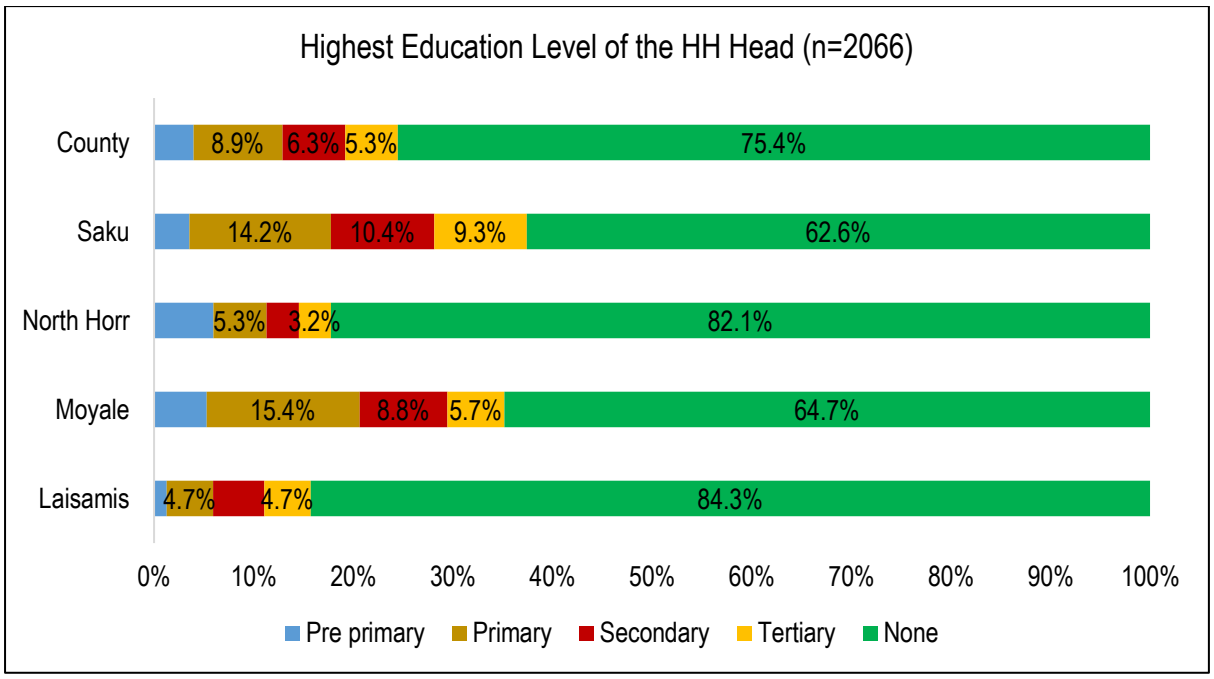


Figure 2: Highest Education Level of the Household Head

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 enrolment to be in Saku (81.7%) and Moyale (77.5) while lower in Laisamis (56.4%) and North Horr (59.6%) respectively. In Marsabit County, according to the County Steering Group, most children enrol to school after the attaining the age of 7 years hence low enrolment rate. This is as shown below.

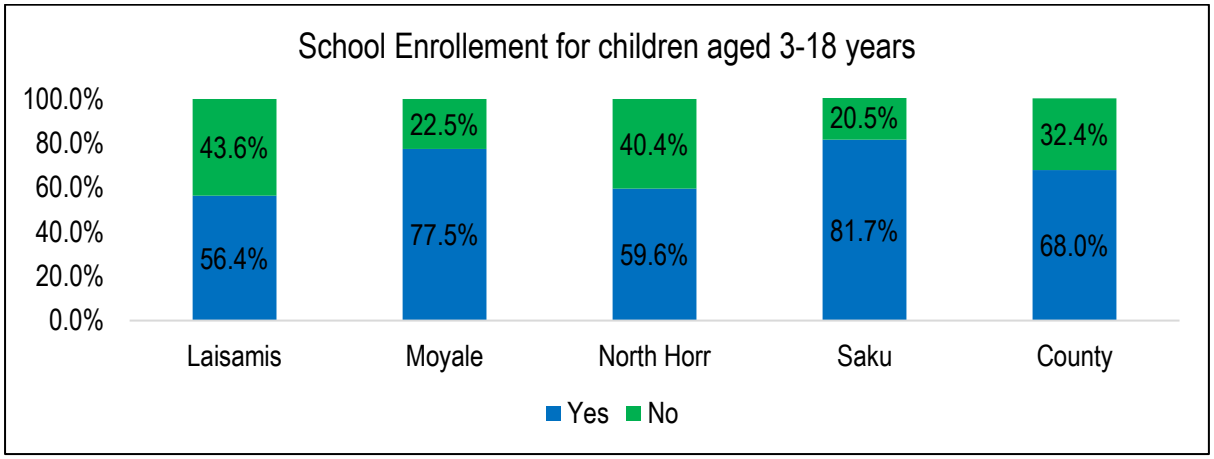


Figure 3: School Enrolment for children aged 3-18 Years

When the data was further analysed, it was found that for the respondents that were not enrolled in schools, majority (58.7%) were reported because they were too young to be in school and others are attending Madrasa, while 22.2% were not enrolled due to family responsibilities. In North Horr 35.4% of them were not in school due to family responsibilities compared to Saku and Moyale sub Counties. This is as summarized in the table below:

Table 7: Reasons for being not in School

	Laisamis	Moyale	North Horr	Saku	County
Chronic Sickness	0.6%	1.7%	0.8%	2.2%	1.1%
Weather	0.0%	0.6%	0.0%	0.0%	0.1%
Family labour Responsibilities i.e. Herding	27.3%	2.8%	35.4%	5.4%	22.2%
Teacher Absenteeism	0.3%	0.0%	0.0%	0.0%	0.1%
Too poor to buy school items	2.6%	2.2%	1.5%	2.2%	2.1%
Household doesn't see value of schooling	3.5%	1.1%	3.8%	2.2%	3.0%
Migrated /moved from school area	1.0%	0.0%	0.4%	2.2%	0.7%
Insecurity	0.0%	0.0%	0.4%	0.0%	0.1%
No school near by	13.2%	3.3%	9.1%	2.2%	8.6%
Married	5.1%	0.6%	3.8%	0.0%	3.2%
Others i.e. Young to go to School, attending Madrasa	46.3%	87.8%	44.9%	83.7%	58.7%

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 labour, petty trade & fisheries) 3%[4]. Overall, results show that almost half (53.2%) of households rely on pastoral economy as main occupation followed by casual labour at 17.5%.

[4] Marsabit County CIDP

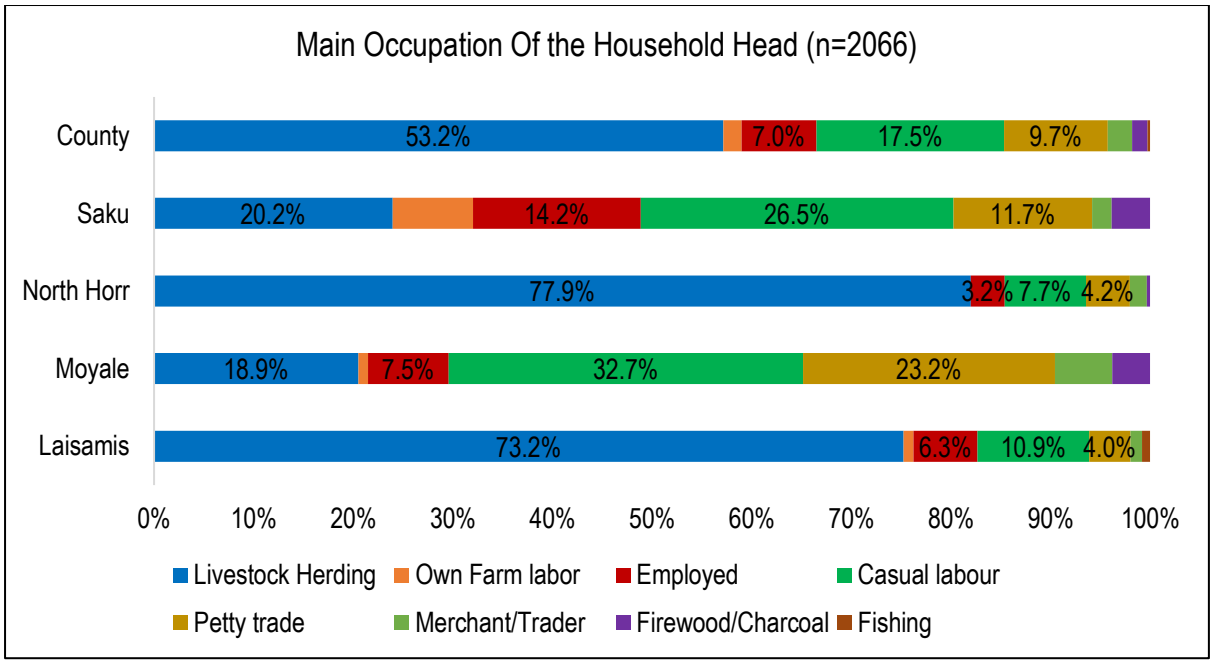


Figure 4: Main Occupation of the Household Head

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 47.5% of the households followed by casual labour at 18.0%, petty trading at 11.5% respectively. This is as summarized in the figure below:

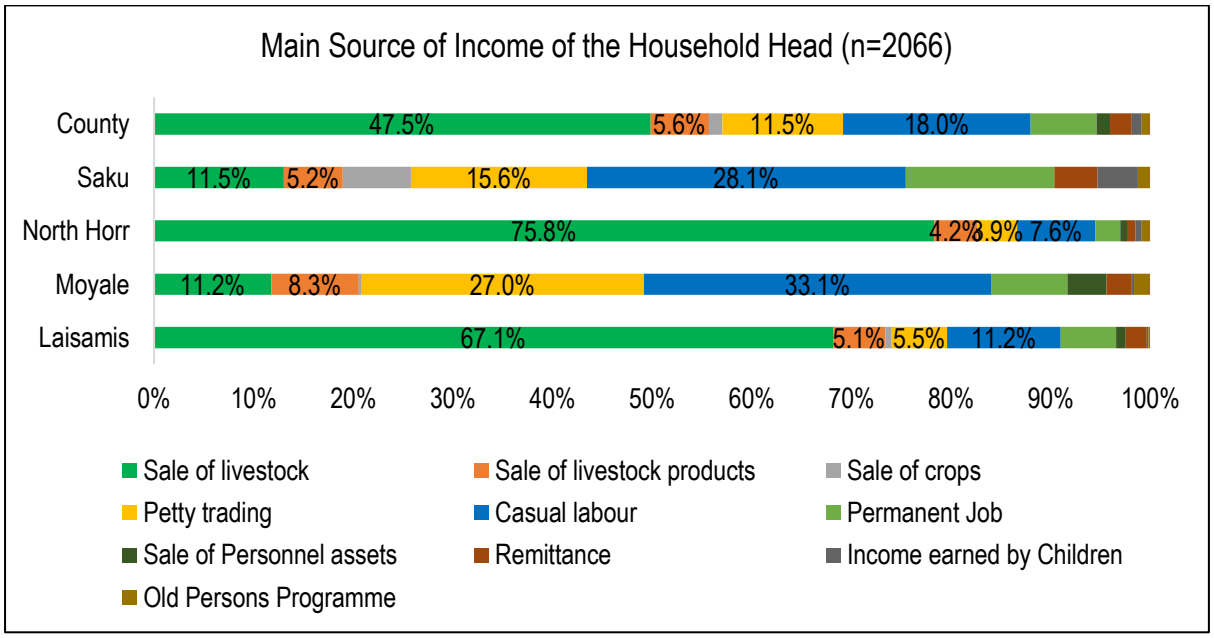


Figure 5: Main Source of income of the Household Head

3.3 Nutrition status of children

3.3.1 Age Verification

Out of all sampled children in the County, 72.5% of them had a health card, 3.3% birth certificate while 0.1% baptism card and these were used to verify their age. Age determination for 24.2% of the children was based on recall, hence prone to bias. Moyale (60.9%) and Saku (59.8%) had the least proportion of children with a health card, birth certificate/notification or baptism card.

Table 8: Age Verification

	Moyale	North Horr	Laisamis	Saku	County
Health Card/MNCH Booklet	60.9%	78.5%	82.3%	59.8%	72.5%
Birth Certificate	9.2%	1.1%	0.7%	2.4%	3.3%
Baptism Card	0.0%	0.0%	0.0%	0.4%	0.1%
Recall	29.8%	20.5%	17.1%	37.4%	24.2%

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

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 18.0 %(15.6-20.7 95% C.I.), while the prevalence for severe malnutrition was 2.9 %(2.1 - 4.0 95% C.I.). This is generally classified as critical by the WHO classification of malnutrition. This was slightly significant change compared to July 2018 results which showed a GAM rate of 12.4 %(10.2-15.0). Further analysis showed that Laisamis sub-county had the highest GAM rate of 30.7 % (26.0 - 35.9)and this is above the emergency GAM threshold (15.0%) indicating extreme critical situation which shows a significant change from July 2018 where the GAM rate was 13.2% (9.2-18.6). This was followed by North Horr sub-county5 at 25.1 % (20.0 - 31.0) this indicating a critical situation which shows no significant change from July 2018 where the GAM rate was 23.5% (19.2-28.3). Saku and Moyale Sub Counties recorded poor nutrition status with GAM rates of 9.5% (4.8 - 18.0) and 9.0 % (6.1 - 13.0)The findings showed no significant change from the previous survey results done in July 2018 in Saku and Moyale sub Counties. There were no cases of edema that were reported.

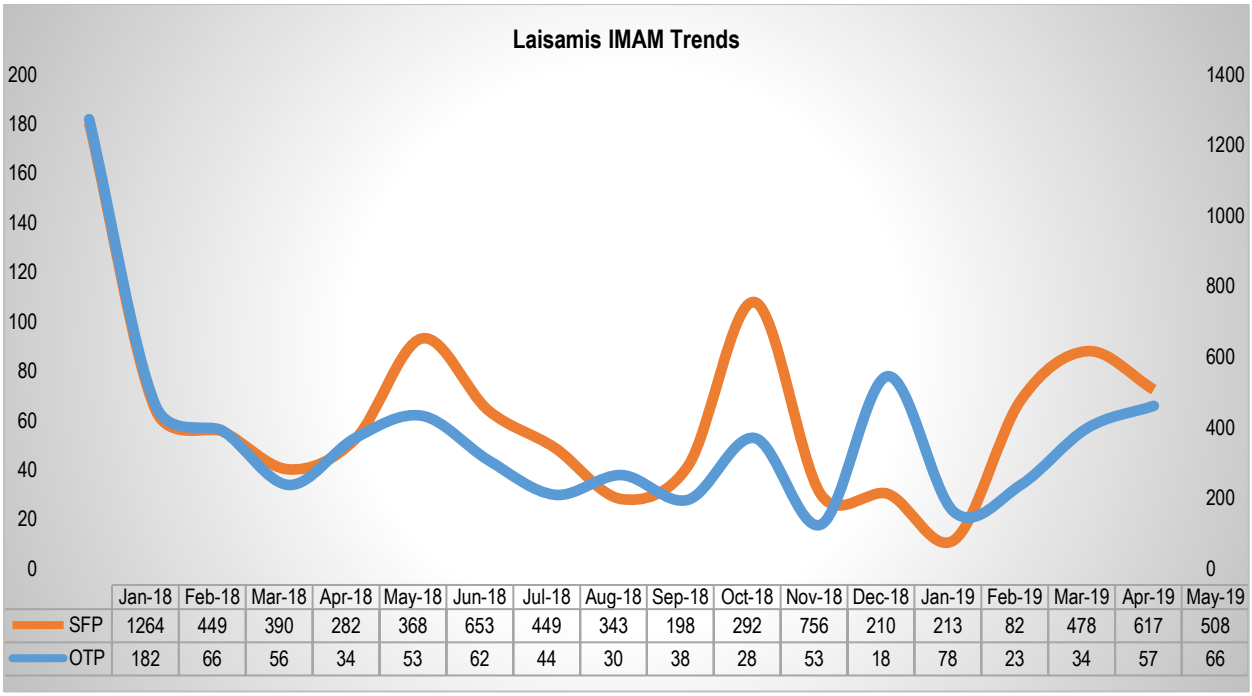
Table 9: Prevalence of Malnutrition by WHZ/Oedema

	N. Horr July 2018	N. Horr July 2019	Moyale July 2018	Moyale July 2019	Saku July 2018	Saku July 2019	Laisamis July 2018	Laisamis July 2019	County July 2018	County July 2019
Global Acute Malnutrition (GAM)	23.5% (19.2-28.3)	25.1 % (20.0 - 31.0)	7.8% (4.7-12.5)	9.0 % (6.1 - 13.0)	5.7% (3.5-9.1)	9.5% (4.8 - 18.0)	13.2% (9.2-18.6)	30.7 % (26.0 - 35.9)	12.4%(10.2-15.0)	18.0%(15.6-20.7)
Severe Acute Malnutrition (SAM)	3.5% (2.2-5.5)	3.1 % (1.7 - 5.5)	1.0% (0.4-2.6)	1.2 % (0.5 - 3.3)	0.3% (0.0-2.1	1.0 % (0.2 - 3.8)	2.4% (1.0- 5.4)	6.4 % (4.2 - 9.8)	1.7%(1 .2-2.5)	2.9%(2 .1 - 4.0)

[5] This result do not Include Illeret Ward

% of Oedema	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

The graph below shows the admission trend of Laisamis Sub County which had the Highest GAM rate which show the Number of Malnutrition for both SFP and OTP on from the month of February 2019.



	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19
SFP	1264	449	390	282	368	653	449	343	198	292	756	210	213	82	478	617	508
OTP	182	66	56	34	53	62	44	30	38	28	53	18	78	23	34	57	66

Figure 6: Laisamis IMAM trends

The graph below shows the GAM trend of different Sub Counties in Marsabit County. All the sub Counties show a deteriorating situation, which could be attributed to the high Vegetation Index of 19.95 in the month of June due to Continued long dry spell coupled with deteriorating vegetation cover led to a shift the 3-months vegetation condition index from moderate vegetation deficit to severe vegetation deficit band. This led to poor condition of the pasture hence reduction in consumption of milk across the County due massive livestock migration to drought fall back areas hence limiting milk availability and access at household level. As the livestock migrated only few lactating herds, especially camels and goats were available near homestead, which provided milk to the households.

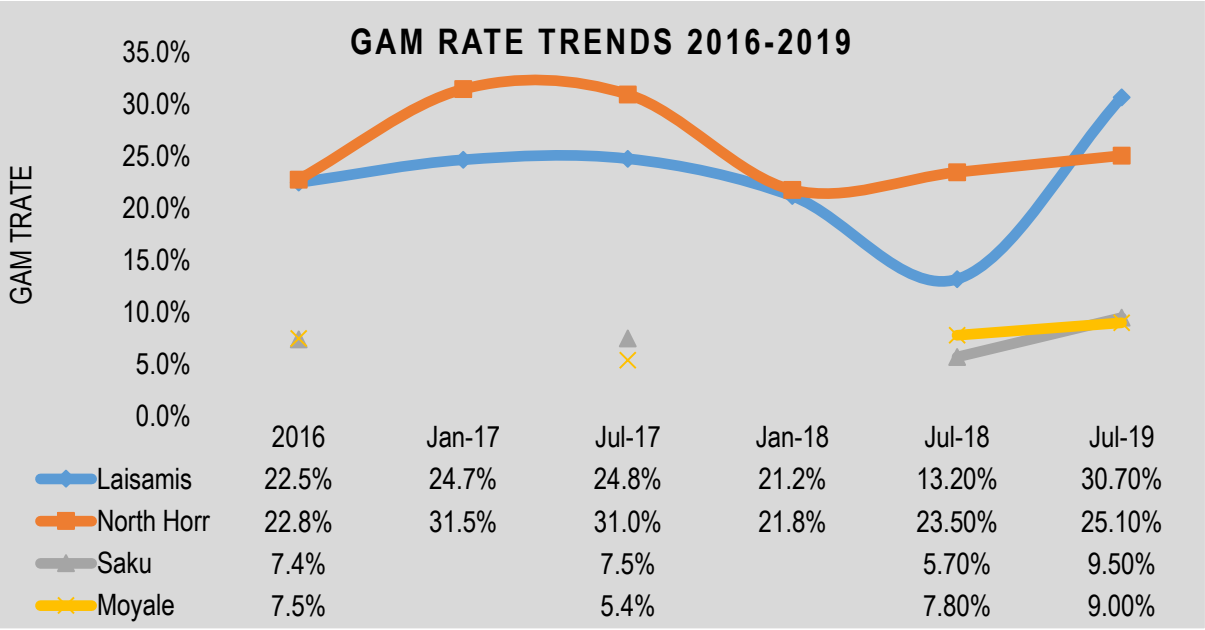


Figure 7: Marsabit County GAM Trends

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 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. Laisamis had the highest GAM rate (6.4%) followed by North Horr (4.5%) while there was no change in SAM rates with all the three survey zones recording below 1% except Laisamis sub County. The table below summarizes prevalence of malnutrition by MUAC.

Table 10: Prevalence of Malnutrition By MUAC

	North Horr July 2018	North Horr July 2019	Moyale July 2018	Moyale July 2019	Saku July 2018	Saku July 2019	Laisamis July 2018	Laisamis July 2019	County July 2018	County July 2019
Global < 125mm	4.6% (2.9- 7.2)	4.5 % (2.7 - 7.4)	3.0% (1.5- 5.7)	3.7 % (2.2 - 6.2)	2.0% (1.0- 3.7)	0.9 % (0.2 - 3.8)	2.8% (1.5- 5.4)	6.4 % (4.3 - 9.3)	3.1% (2.1- 4.5)	4.4% (3.4- 5.8)
Severe under nutrition <115mm	0.6% (0.1- 2.3)	0.5 % (0.1 - 2.0)	0.7% (0.2- 2.3)	0.7 % (0.2 - 2.3)	0.6% (0.1- 2.2)	0.5 % (0.1 - 3.5)	0.5% (0.1- 2.2)	1.2 % (0.6 - 2.5)	0.6% (0.3- 1.3)	0.8% (0.4- 1.5)

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 no significant change in the prevalence of underweight in the county. Laisamis had the highest prevalence of underweight (39.6%) followed by North Horr (27.2%) and Saku (14.2%) respectively, as illustrated in the table below.

Table 11: Prevalence of Underweight

	North Horr July 2018	North Horr July 2019	Moyale July 2018	Moyale July 2019	Saku July 2018	Saku July 2019	Laisamis July 2018	Laisamis July 2019	County July 2018	County July 2019
Global underweight	27.0 % (22.3-32.3)	27.2 % (21.9 - 33.3)	15.8% (11.4-21.5)	13.7 % (9.7 - 18.9)	15.4% (11.1-21.0)	14.2 % (7.9 - 24.4)	28.1% (24.2-32.4)	39.6 % (35.8 - 43.5)	21.4% (18.8-24.3)	23.1%(20.4 - 26.1)
Severe Underweight	5.0% (3.0-8.1)	5.1 % (3.3 - 7.8)	3.0% (1.5-5.9)	2.2 % (0.9 - 5.2)	1.1% (0.5-2.8)	3.3 % (1.0 - 10.5)	5.0% (2.8-8.6)	10.2 % (7.9 - 13.0)	3.8%(2.9-4.9)	4.9%(3.8 - 6.3)

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 (28.3%) followed by Moyale (19.6%).There is a slight decline in the prevalence of stunting compared to same time last year in the county although not significant.

Table 12: Prevalence of stunting

	North Horr July 2018	North Horr July 2019	Moyale July 2018	Moyale July 2019	Saku July 2018	Saku July 2019	Laisamis July 2018	Laisamis July 2019	County July 2018	County July 2019
Global Stunting	23.0% (17.9-29.0)	16.7% (13.7 - 20.2)	25.4% (20.5-30.9)	19.6 % (15.7 - 24.3)	22.3% (16.9-28.8)	19.2% (13.9-25.9)	26.9% (21.8-32.6)	28.3 % (24.2 - 32.8)	24.7% (21.8-27.8)	21.1% (18.9 - 23.4)
Severe Stunting	5.1% (2.8-9.1)	2.3 % (1.1 - 4.9)	5.1% (3.1-8.4)	3.8 % (2.2 - 6.6)	4.9% (3.0-7.8)	3.8 % (1.9 - 7.6)	7.7% (5.2-11.2)	8.7 % (6.0 - 12.4)	5.8% (4.3-7.7)	4.7% (3.5 - 6.3)

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 diarrhoea were further probed on the kind of treatment that was given to them.

The survey results showed that only 29.0% 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 55.4% of all cases while fever-like malaria was the second most common illness at 30.0%.Waterly diarrhoea followed closely at 20.5% and also there were few incidences of bloody diarrhoea at 1.1%. Laisamis had the highest number of ARI cases while North Horr was most affected by fever-like malaria at 73.3% and 44.1% respectively. Water Diarrhoea was exhibited only in Moyale Sub County at 2.9% which is mainly attributed to use of surface water for drinking.

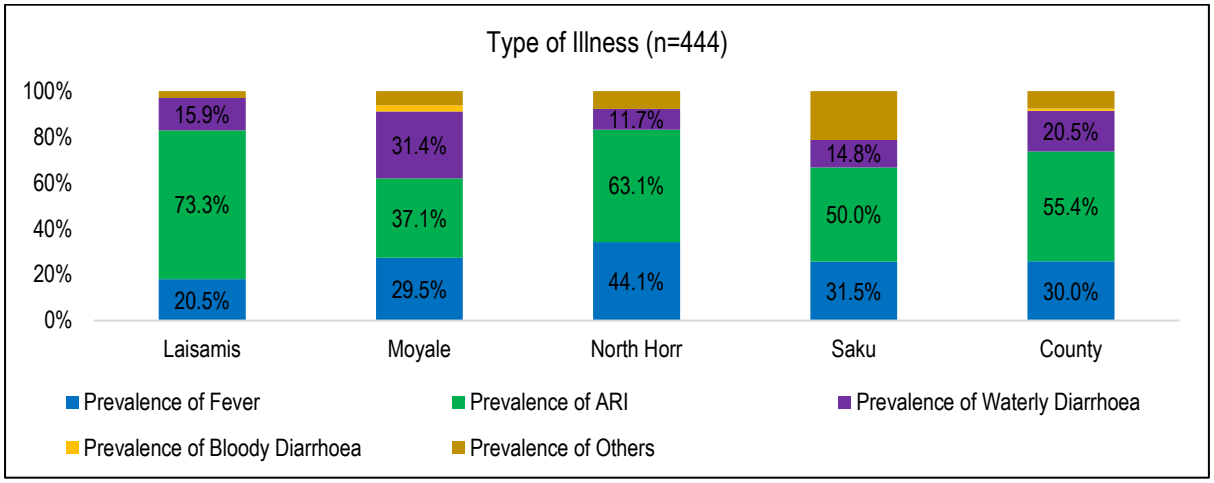


Figure 8: Type of Illness

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 diarrhoea. 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 diarrhoea. 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 diarrhoea should be given zinc supplements as soon as possible.

The survey sought to establish the number of children who suffered from watery diarrhoea and supplemented with zinc. Results showed that in Moyale out of the 33 children who had diarrhoea, 26 (78.8%) were supplemented with Zinc. In North Horr out of the 13 children, 5 (38.5%) were supplemented while in Laisamis Sub County out of the 28 children 23 (82.1%) were supplemented and lastly in Saku out of the 8 children 5 (62.5%) were supplemented. In conclusion, at the County the Zinc supplementation coverage is at 73.0%.

Table 13: Zinc Supplementation

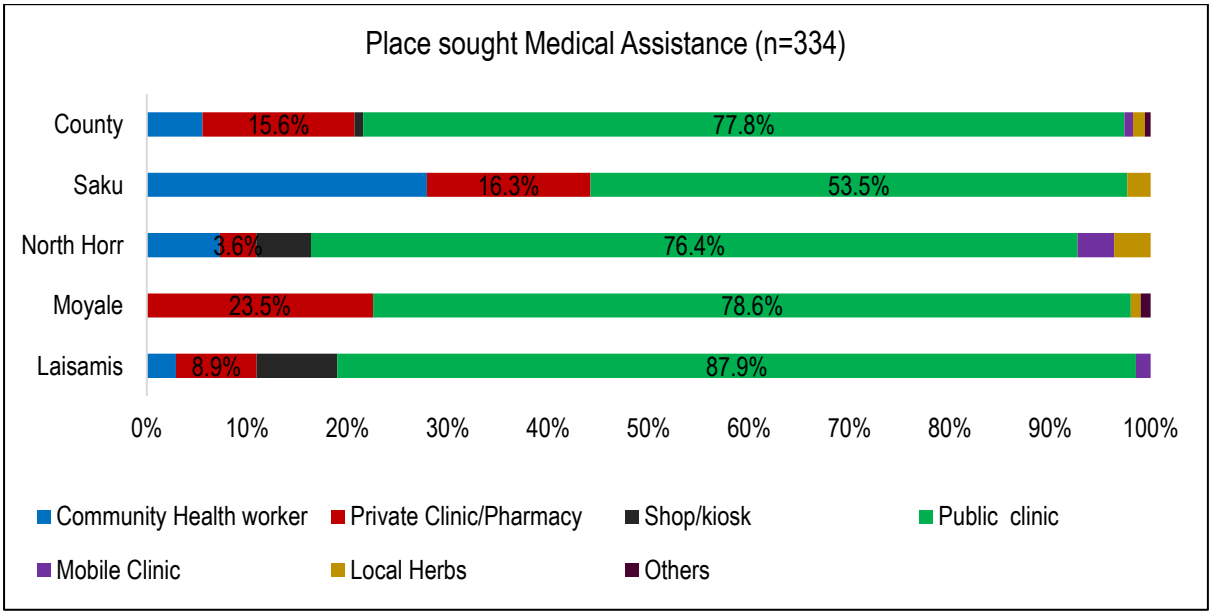
	Moyale		North Horr		Laisamis		Saku		County	
	n	%	n	%	n	%	n	%	n	%
Prevalence of Watery Diarrhoea	33	31.4%	13	11.7%	28	15.9%	8	14.8%	91	20.0%
Zinc Supplementation	26	78.8%	5	38.5%	23	82.1%	5	62.5%	66	73.0%

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 (77.8%) of the caretakers reported to have sought care form pubic clinics. It is worth noting 15.6% of them sough private clinic /pharmacy and 5.7% from Community Health Worker. Seeking medical assistance from the CHV is on rise in Saku Sub County where access to the health facility is good which could be attributed to the coordination at the sub County level between the Community Health strategy focal person and the CHAs and CHVs. In Addition also the human resource in Saku Sub County is much higher compared to the other sub Counties.

Table 14: Seeking Medical Assistance



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, 96.3% (388), 385 (96.7%), 499 (99.2%), 202 (93.5%), 1502 (97.0%) of the children in Moyale, North Horr, Laisamis, Saku and the County respectively were reported to have received BCG and confirmed by Scar.

Those who were immunized (based on card and recall) by OPV1 were 98.3% in 2019 respectively while for OPV3 were 97.2% in 2019. 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. In Saku and Moyale Sub County, a lot of recall was reported showing lack of documentation.

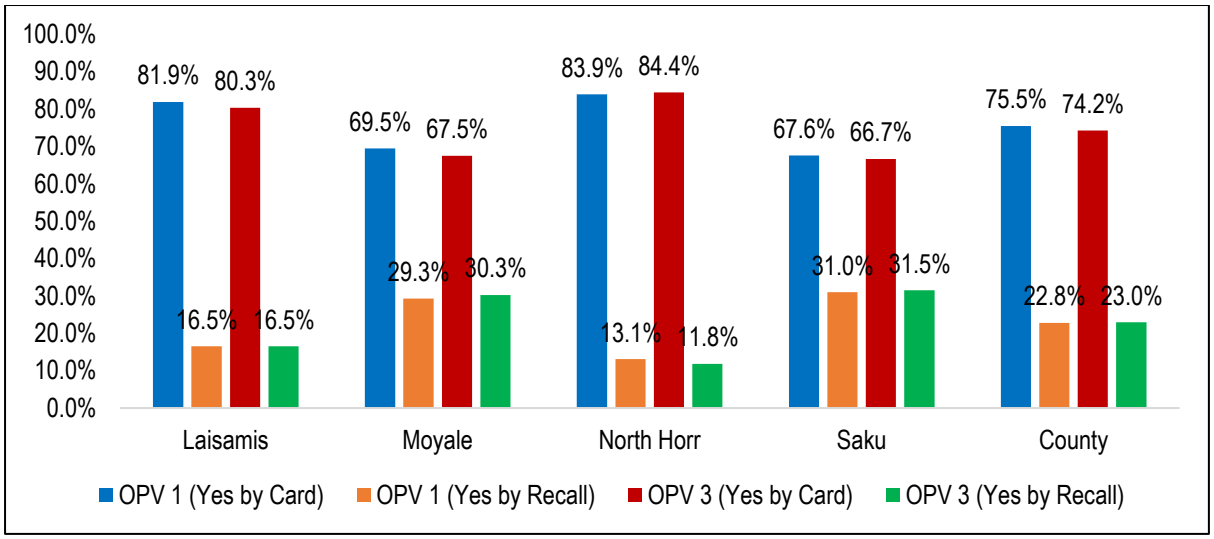
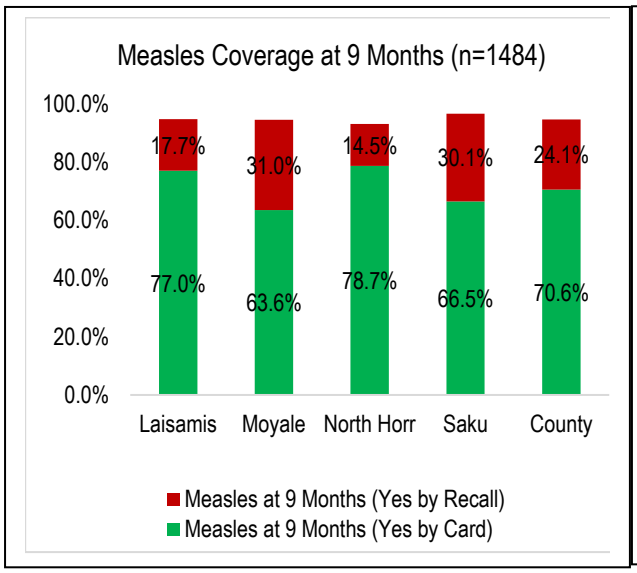
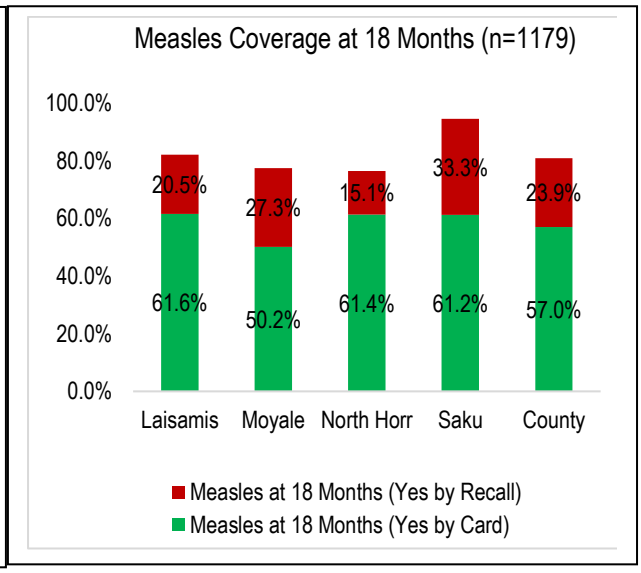


Figure 9: OPV1 and OPV3 Coverage

However, when we assessed immunization for measles at 9 months and at 18 months, 80.9% of children had been immunized (by card and recall) with the second dose of measles antigen at 18 months while at 9 months was 94.7%. For the at 18 Months measles antigen the lowest was reported in North Horr at 76.5% followed by Moyale sub County at 77.5%.





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"[6], global coverage of vitamin A supplementation (VAS) has dropped to a 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

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

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, 84.0% of the children aged 6- 11 months were supplemented with vitamin A at least once, and 85.7% 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 43.8% receiving twice a year as recommended by MOH policy with North Horr Sub County reporting the highest at 52.9% followed by Saku at 48.2%.

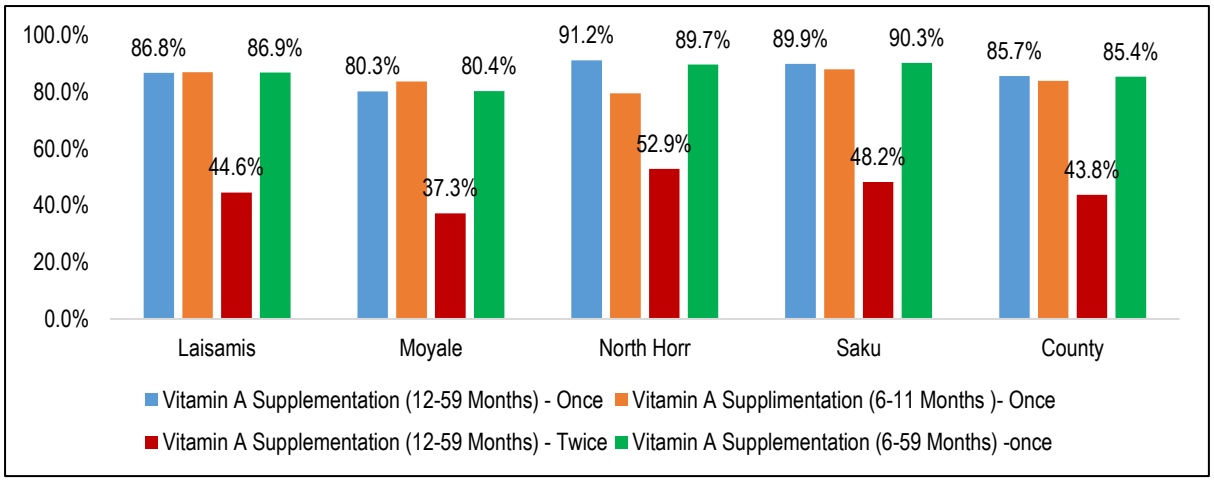


Figure 11: Vitamin A Supplementation

3.5.3. De-worming

De-worming is an essential intervention in controlling parasites including helminths, schistosomiasis (bilharzias) and prevention of anaemia. 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, 80.0% of children 12-59 months of age were dewormed in the County. North Horr Sub county was highest at 86.7 %(306), followed by Saku at 84.7 %(161), then Laisamis at 82.3 %(367) and lastly Moyale at 72.1 %(259).

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 neither lactating nor pregnant and lactating 45.3% and 43.9% respectively, but it is worth noting 0.5% of them were both lactating and pregnant.

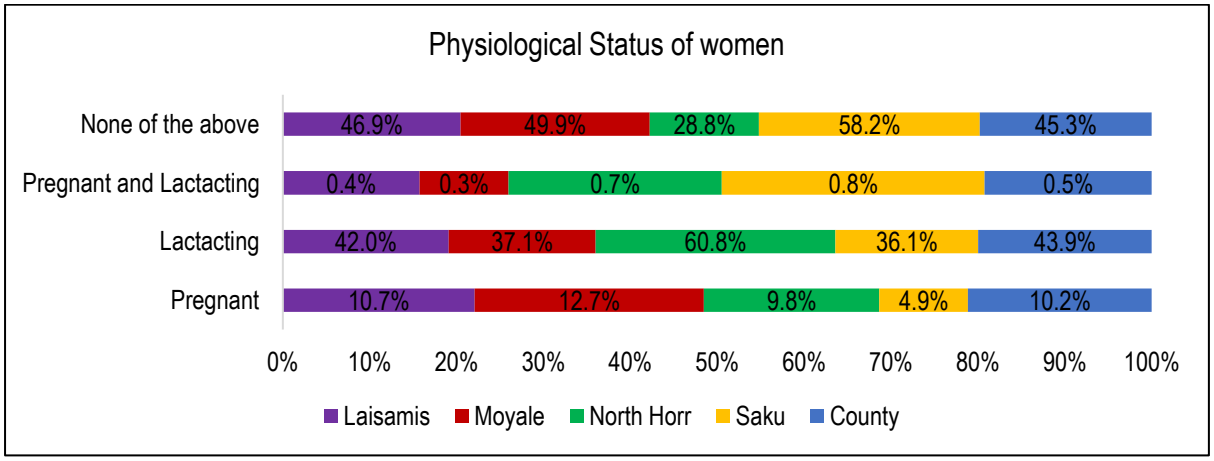


Figure 12: WRA physiological Status

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 anaemia among pregnant women WHO recommends daily consumption of 60mg elemental iron and 0.4mg folic acid throughout the pregnancy[7] .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 84.8%(642) of the mothers of children below 2 years had been supplemented with IFAS in their pregnancy with North Horr recording the highest at 88.3%(188) followed by Moyale 84.7%(150) and then Saku 84.3%(91) and lastly Laisamis 82.2% (212).

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 Saku was highest at 60.02 days, followed by Moyale (58.34 days), then Laisamis (57.61 days) and lastly North Horr (46.77 days). 73.7% of the mothers consumed less than 90 days in Marsabit County and only 2.6% who consumed above 180 Days. While access to IFAS is high, the main challenge is now on utilization, an indication of poor health seeking behaviour 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 15: IFAS Consumption

	N	Moyale	N	North Horr	N	Saku	N	Laisamis	N	County
Below 90 Days	105	70.0%	136	72.3%	68	74.7%	169	79.7%	473	73.7%
90 to >= 180	45	30.0%	52	27.7%	17	18.7%	29	13.7%	151	23.5%
Above 180 Days	0	0.0%	0	0.0%	6	6.6%	14	6.6%	17	2.6%

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.

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

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 12.0% while for all the women of the reproductive age was 10.0%. According to the results, pregnant and lactating women in Laisamis are more affected followed by North Horr with malnutrition.

Table 16: Maternal Nutrition

Zones	N	Moyale	N	North Horr	N	Saku	N	Laisamis	N	County
Malnourished (<210 mm) - All women	16	4.4%	59	13.1%	11	4.5%	90	19.2%	155	10.0%
Malnourished (<210 mm) - PLW	10	5.5%	47	14.6%	2	2.0%	54	21.7%	99	12.0%

3.7 WATER SANITATION & HYGIENE

International human rights consider access to water and sanitation as a human right.[8] 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. Diarrhoea, 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 diarrhoea 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:

- 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 Tube well/borehole (32.1%) and Public tap/stand pipe (28.9%). In Moyale, the main sources was tube well/borehole (36.0%) and surface water (28.3%). For Laisamis, the sources of water were tube well/borehole (26.8%) and water kiosk (23.2%). In Saku the main sources of water was water kiosk and unprotected well at 18.4% and 15.5% respectively.

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

Table 17: Main Drinking Water Sources

	North Horr	Moyale	Saku	Laisamis	County
Source of Water					
Piped into dwelling	4.7%	0.0%	0.3%	0.0%	1.2%
Piped to Neighbor	3.7%	0.0%	1.0%	0.5%	1.2%
Public tap/standpipe	28.9%	0.2%	9.8%	16.7%	12.4%
Tube well/Borehole	32.1%	36.0%	14.2%	26.8%	27.9%
Protected well	1.9%	13.6%	9.7%	2.5%	7.8%
Unprotected well	13.5%	0.2%	15.5%	6.0%	8.2%
Rain water	0.5%	2.4%	2.3%	3.3%	2.1%
Tanker truck	4.7%	9.9%	3.4%	12.6%	7.5%
Water Kiosk	0.3%	2.9%	18.4%	23.2%	9.9%
Surface water	6.1%	28.3%	14.5%	1.9%	14.8%
Others	1.9%	3.7%	10.0%	4.4%	5.0%

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 (42.2%) of the households interviewed obtained their water from sources less than 500m (less than 15 minutes walking distance), 33.5% took between 15 min to 1 hour (approximately 500m to 2km) while the rest (23.4%) walked as far as more than 2Km (1- 2hrs) to their water sources.

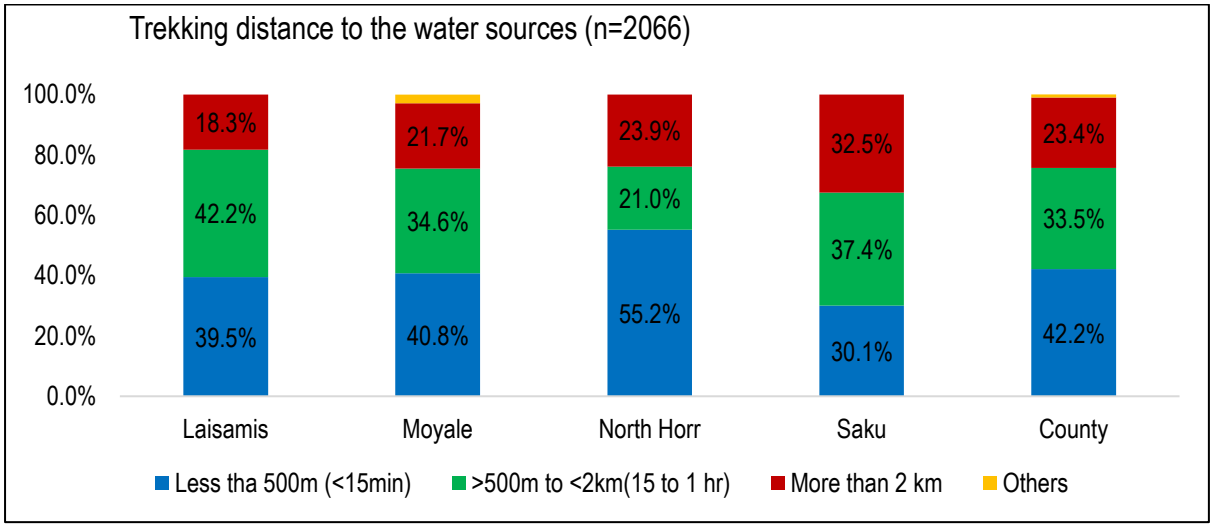


Figure 13: Trekking Distance to the Water Sources

3.7.2.2 Queuing time to water sources

On the proportion of household queuing for water, Half of the population in Marsabit queue for water (50.7%) of which indicates problem with access to water for households. Saku recorded the highest proportion of households (54.9%) queuing for water.

Out of those that were queuing for water in the county , (31.6%) of the respondents were waiting for less than 30 minutes while 32.4% of the households were queuing for 30 and 60 minutes and 35.9% are queuing for more than 1 hour as indicated in the figure above.

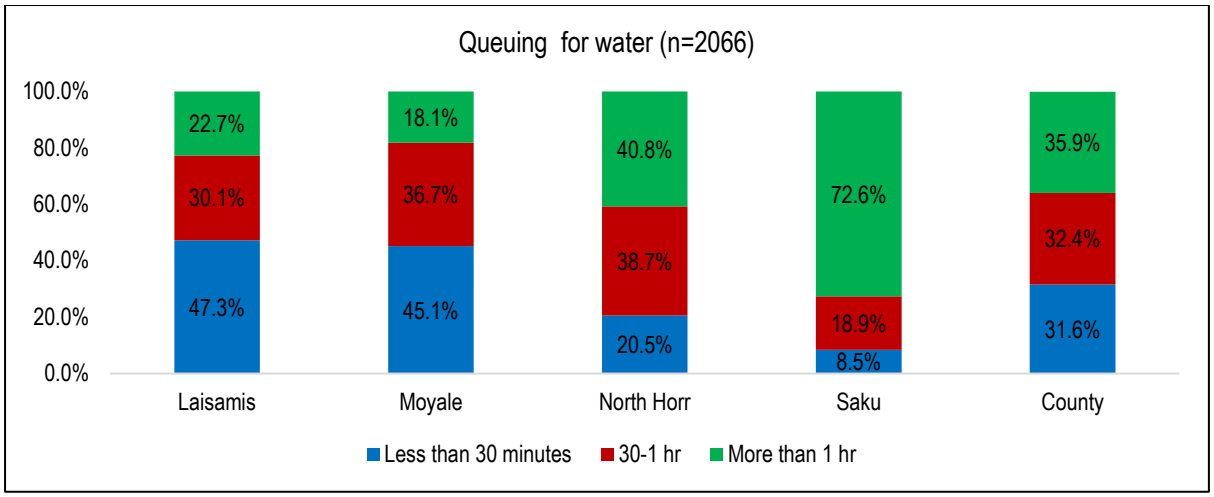


Figure 14: Queuing at the water sources

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.[9] 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 22.1% (n=457) of households sampled were treating their water before drinking. North Horr Sub County was highest at 30.6 %(190) followed by Moyale 22.6 %(103), then Saku at 17.5% (64) and lastly Laisamis at 15.9% (99).

Even though just 2 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.

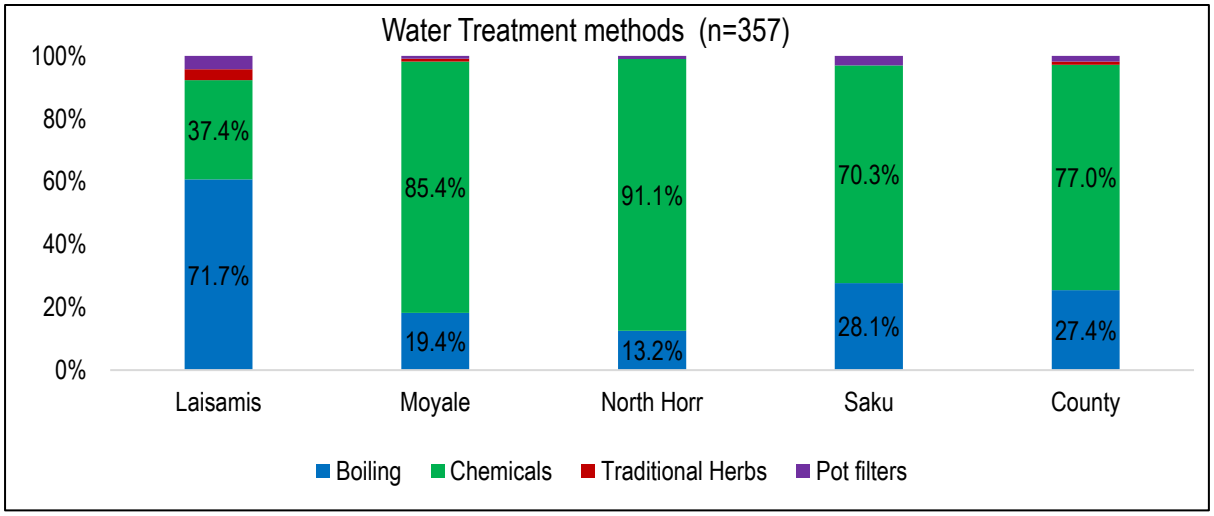


Figure 15: Water Treatment Methods

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 93% (n=1921) were storing their drinking water in a closed container preventing it from contamination.

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

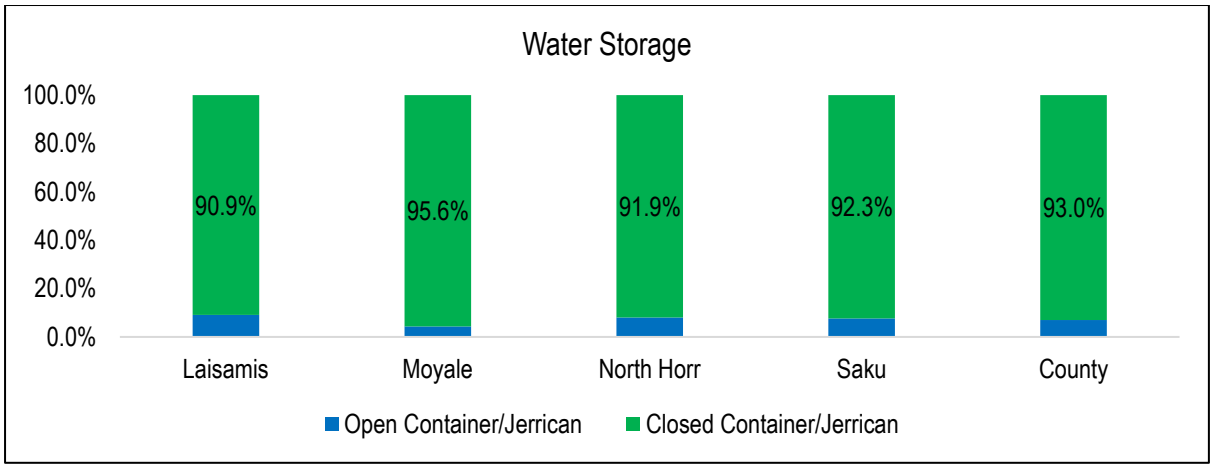


Figure 16: Water storage

3.7.3.3 Payment of Water and Consumption

With regard to water payment, 78.7 %(288), 78.5% (358), 47.8% (298) and 46.0% (285) of the respondent pay for water in Saku, Moyale, Laisamis and North Horr respectively. Of those who pay for water, 78.4% pay per 20l Jerri can and the rest on a monthly basis. In all Survey Zone most paid per 20l Jerry can except in Laisamis where 53.0% paid on monthly basis.

According to the sphere standards a household members is required to consume at least 15 litres per day.[10]

In terms of consumption, only 32% of the population in Marsabit consume more than 15 litres per day per Person with Saku reporting the lowest followed by Laisamis sub County.

Table 18: Payment of Water and Consumption

	Laisamis	Moyale	North Horr	Saku	Marsabit
Pay water	47.8%	78.5%	46.0%	78.7%	63.2%
Household using <=15litres per day	22.5%	46.9%	36.0%	22.1%	32%

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.[11] 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 75.2% 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 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,

[10] SPHERE hand book

[11] 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 practice was poor with only 26.7% reporting to have washed their hands at the critical times. [12] With lowest being recorded in Laisamis at 6.7% and highest in Moyale at 52.1%.

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 65.0% of the households were using soap and water for hand washing. Hand washing without soap does not offer effective protection against germs.

Table 19: Hand Washing

Description	Indicator		Laisamis		Moyale		North Horr		Saku		County
		N	%	N	%	N	%	N	%	N	%
Aware of Handwashing	Yes	372	59.7%	405	88.8%	383	61.8%	326	89.1%	1554	75.2%
When do you wash hands	After Toilet	292	78.5%	400	98.8%	331	86.4%	237	72.7%	1349	86.8%
	Before cooking	202	54.3%	351	86.7%	257	67.1%	130	39.9%	1033	66.5%
	Before Eating	322	86.6%	389	96.0%	338	88.3%	289	88.7%	1415	91.1%
	After taking children to the toilet	58	15.6%	223	55.1%	90	23.5%	41	12.6%	497	32.0%
Used to wash hands	Soap and water	234	62.9%	249	61.5%	301	78.6%	196	60.1%	1010	65.0%
4 critical times	4 Critical times	25	6.7%	211	52.1%	65	17.0%	24	7.4%	415	26.7%

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)

In terms of accessing toilet facilities and ways of relieving, 41.9% population in Marsabit County have no sanitation facility with the highest reported in Laisamis at 75.1%, followed by North Horr at 61.8%. These high rates, may

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

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 47.1% and 41.5% respectively.

Table 20: Sanitation Facilities

	Laisamis	Moyale	North Horr	Saku	County
Flush to Pit latrine	0.0%	0.0%	0.0%	0.8%	0.1%
Ventilated Improved Pit Latrine	5.5%	18.0%	16.1%	11.7%	13.4%
Pit latrine with slab	17.5%	47.1%	16.9%	41.5%	31.6%
Pit latrine without slab/open pit	0.8%	19.3%	1.1%	14.2%	9.4%
Composting toilet	0.2%	0.2%	0.2%	0.8%	0.3%
No facility /Bush/field	75.1%	10.5%	61.8%	28.1%	41.9%
Other	0.3%	4.6%	1.9%	1.9%	2.4%
Bucket	0.0%	0.0%	0.3%	0.0%	0.1%
Hanging toilet/Latrine	0.5%	0.2%	1.6%	0.5%	0.7%

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 five main foods consumed 24 hours prior to the survey were cereal and cereal products (98.0%), oil (94.7%), sweets (93.7%), pulse and Legumes (88.7%) and condiments (85.9%). The least consumed are fish (3.2%) followed by fruits (11.1%) and then eggs (14.1%).

Table 21: Dominant foods and food groups consumed by households

	Laisamis	Moyale	North Horr	Saku	County
Cereals and cereal Products	99.0%	99.6%	95.0%	97.5%	98.0%
vegetables	47.2%	92.1%	37.6%	74.0%	64.6%
Fruits	7.1%	14.9%	4.5%	18.6%	11.1%
Iron rich Foods/Flesh Foods	47.0%	52.2%	61.6%	40.7%	51.3%
eggs	9.6%	24.6%	4.2%	14.5%	14.1%
Fish	9.6%	0.7%	1.1%	2.2%	3.2%
Pulses and Legumes	92.8%	94.3%	81.6%	83.1%	88.7%
Milk and milk products	41.7%	93.4%	84.8%	29.0%	67.3%
Oils/fats	91.2%	99.8%	89.8%	96.4%	94.7%
Sweets	85.4%	99.6%	93.5%	94.0%	93.7%
Condiments	94.1%	98.2%	58.5%	90.2%	85.9%
Tubers	12.7%	52.4%	20.0%	32.0%	31.2%

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

[13] For the purposes of this document and indicator, WRA are defined as those 15–49 years of age.
[14] National Research Council, 2006; World Health Organization [WHO]/Food and Agriculture Organization of the United Nations [FAO], 2004

more nutrient-dense diet [15] 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[16].

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 (92.9%), Beans and pulses (77.0%) and dairy products majorly milk (60.4%). The least consumed by WRA are Nuts and seeds (1.5%), other fruits (9.3%) and Other Vitamin A rich vegetables and fruits (9.6%).

Table 22: Dominant foods and Food groups consumed by Women

	Laisamis	Moyale	North Horr	Saku	County
All starchy staple foods	92.8%	98.1%	81.4%	99.6%	92.9%
Beans and peas	90.4%	72.6%	83.1%	57.8%	77.0%
Nut and seeds	1.7%	0.6%	2.2%	2.0%	1.5%
Dairy (Milk)	23.9%	90.6%	81.6%	17.2%	60.4%
Flesh foods	39.9%	30.7%	54.8%	23.4%	37.6%
Eggs	8.3%	15.5%	4.4%	8.2%	9.9%
Vitamin A rich dark green leafy Vegetables	11.1%	36.0%	13.3%	45.9%	26.1%
Other Vitamin A rich vegetables and fruits	3.6%	13.6%	7.8%	12.3%	9.6%
Other Vegetables	27.5%	86.1%	29.0%	61.9%	54.1%
Other fruits	4.3%	14.4%	4.7%	12.7%	9.3%

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 77% of the household surveyed had consumed more than 5 food groups in Marsabit County with Moyale reporting the highest at 97.1%, followed by Saku at 69.1%. 22.0% of them consumed 3 to 5 food groups.

[15] "Nutrient density" refers to the ratio of nutrients (such as vitamins and minerals) to the energy content of foods.
[16] Arimond et al., 2010; Lee et al. 2013

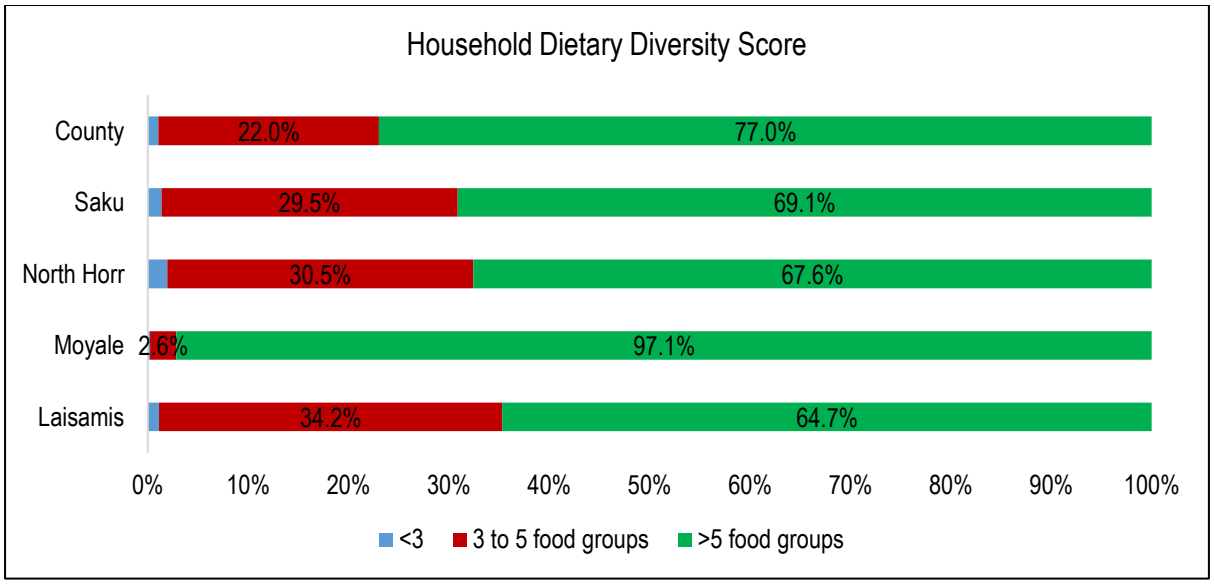


Figure 17: Household Dietary Diversity

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.

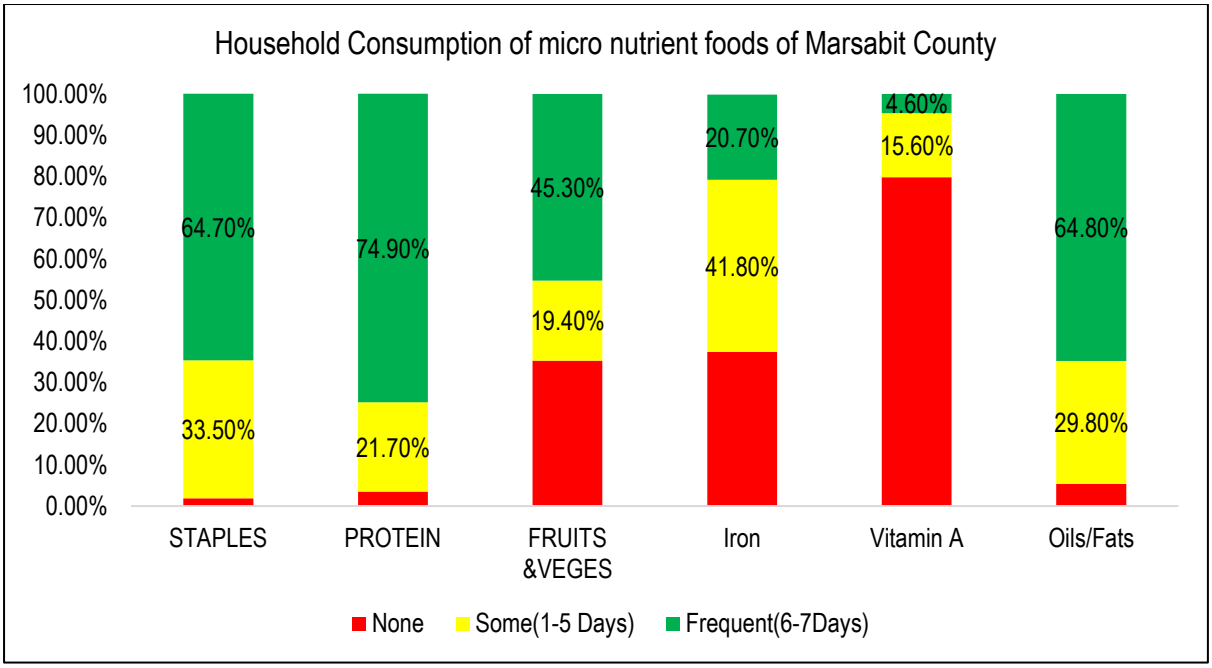


Figure 18: Household Consumption of micro nutrient foods of Marsabit County

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-W17 is a dichotomous indicator of whether or not women 15-49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality. The indicator constitutes an important step towards filling the need for indicators for use in national and subnational assessments. It is a population-level indicator based on a recall period of a single day and night, so although data are collected from individual women, the indicator cannot be used to describe diet quality for an individual woman. This is because of normal day-to-day variability in individual intakes. At the County only 28% of the WRA are taking 5 or more food groups with Laisamis reported the lowest at 13.9% followed by North Horr and Saku at 21.7%. Moyale Sub County reported the highest at 44.9%.

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

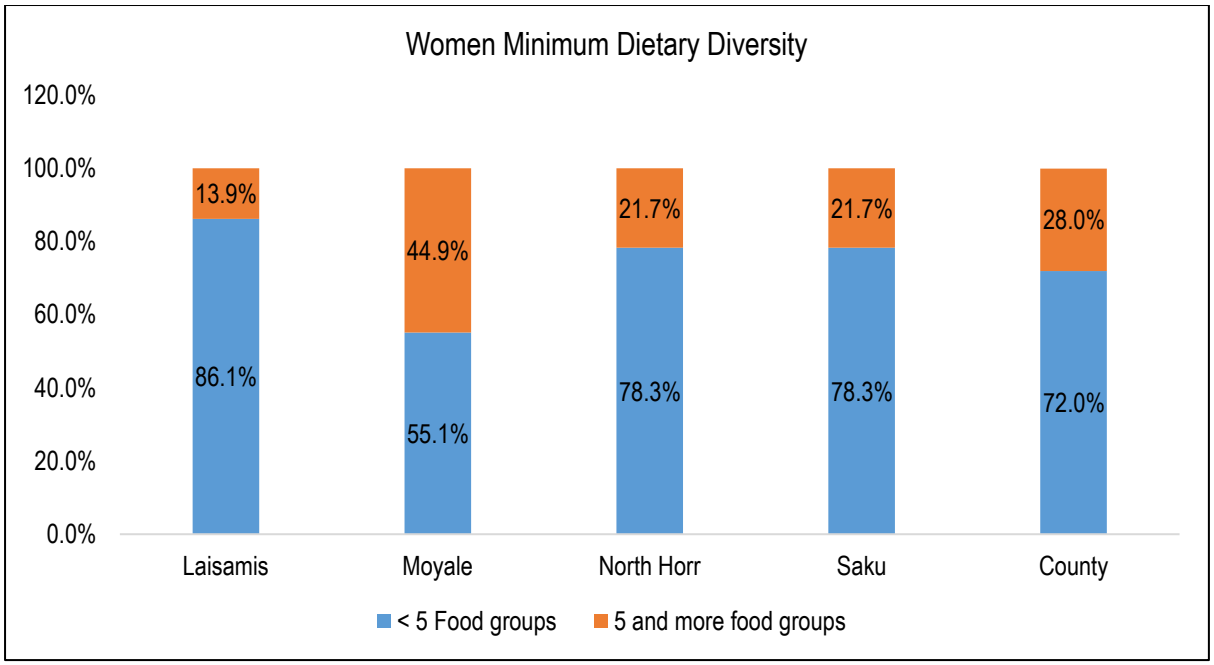


Figure 19: Women Minimum Dietary Diversity

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, 65.5% of the household surveyed had acceptable food consumption Score, 24.1% had Borderline and 10.4% 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 51.7percent, 40.4percent and 7.9percent respectively. Likewise, proportion of households in the pastoral livelihood zone that were within the acceptable, borderline and poor food consumption scores were 42.8percent, 55.1percent and 2.1percent respectively. With the progression of the long dry spell, food consumption score will likely deteriorate and majority of the households will still remain fall in the borderline food consumption band.

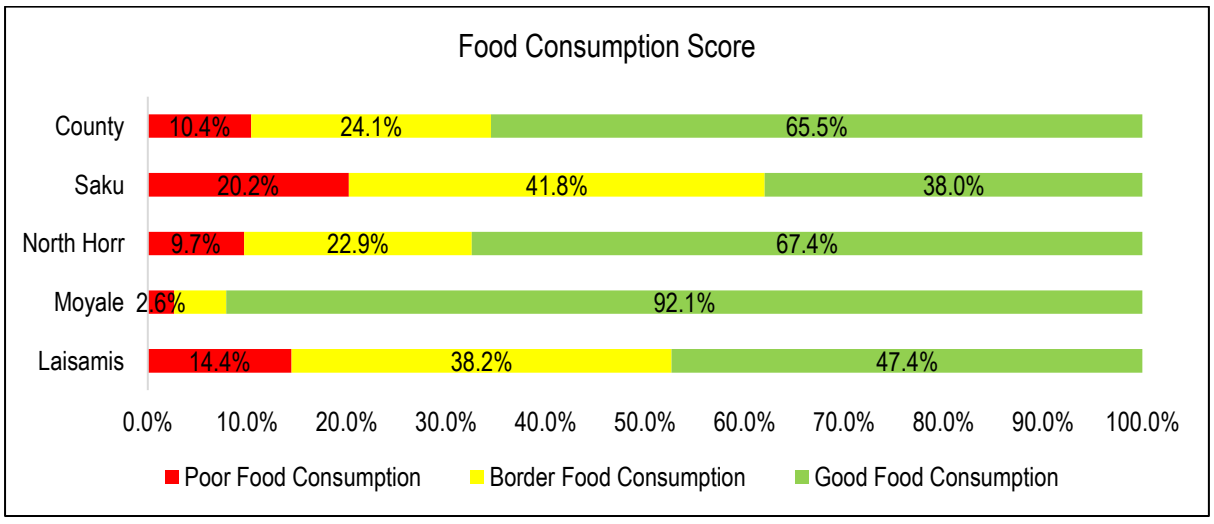


Figure 20: Household food Consumption Score

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, 70.6% consumed protein Rich foods, 16.7% consumed Vitamin A rich foods and 7.7% consumed Hem Iron rich foods for 7 days. 3.5% of the household surveyed consumed Vitamin A and 47.3% consumed Hem Iron Foods for 0 days.

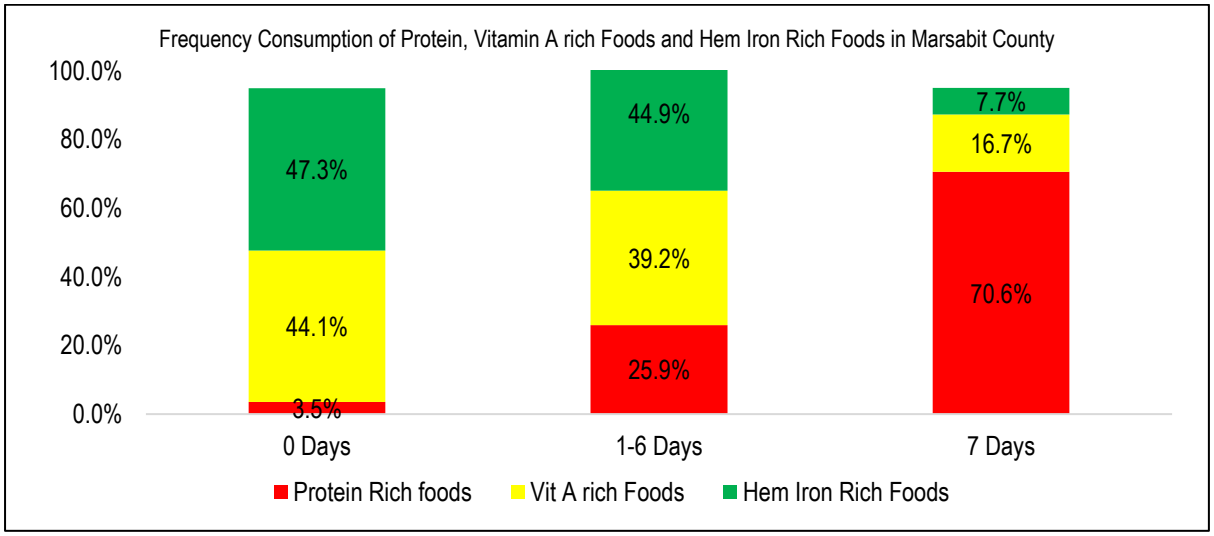


Figure 21: Frequency Consumption of protein, Vitamin A rich foods and Hem Iron Rich Foods

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.

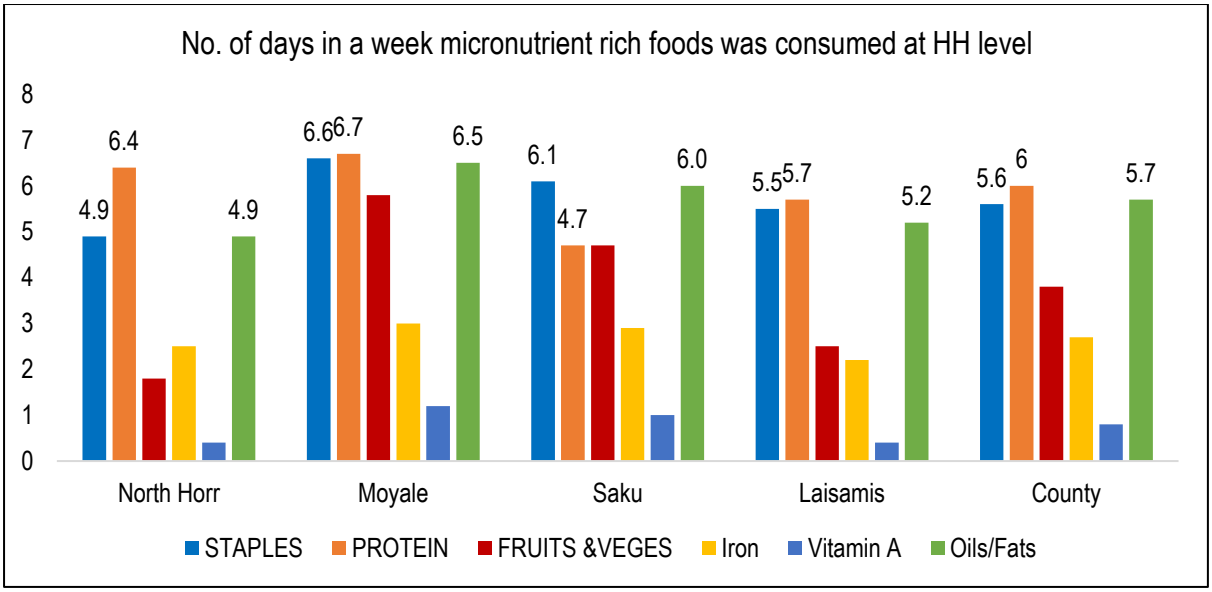
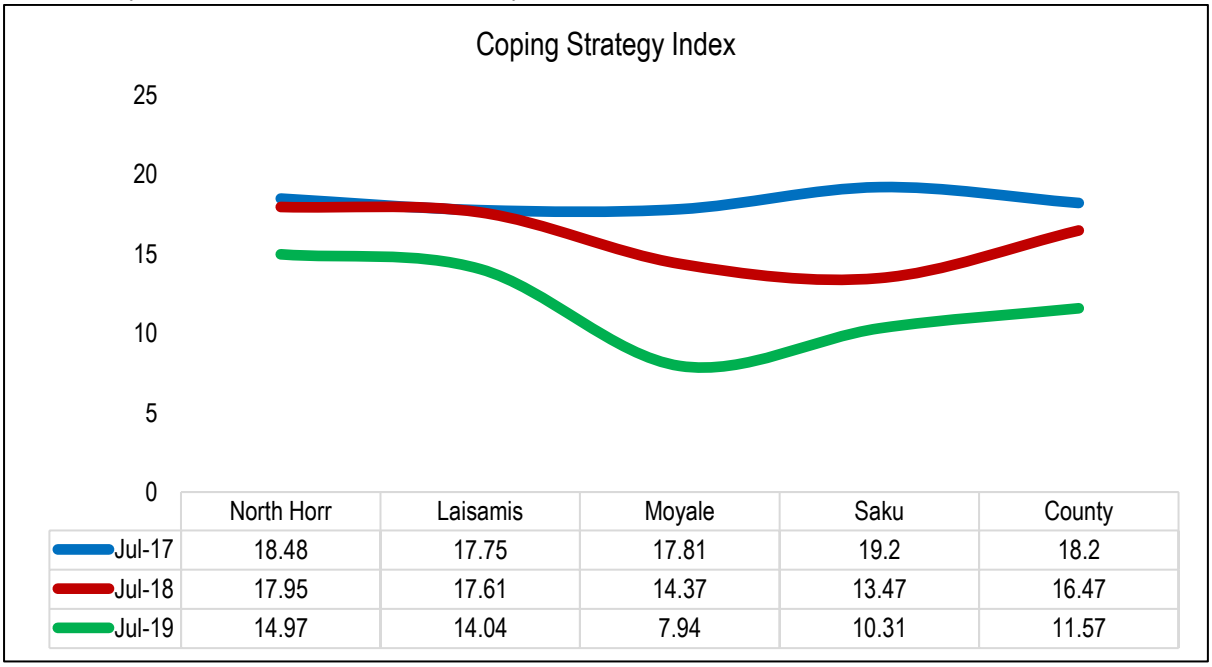


Figure 22: Number of days in a week micronutrient rich foods was consumed

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[18] 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 11.57 an indication the sampled households were food insecure and still engaging in different survival tactics. However compared to July 2018 coping index has reduced. This is an indication of improved household food security compared to the same period last year.



	North Horr	Laisamis	Moyale	Saku	County
Jul-17	18.48	17.75	17.81	19.2	18.2
Jul-18	17.95	17.61	14.37	13.47	16.47
Jul-19	14.97	14.04	7.94	10.31	11.57

Figure 23: Coping Strategy Index

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

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 anaemia
- 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.[19] 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.[20] Undernutrition and nutrient deficiency is estimated globally to cause between 3 and 5 million deaths per year.

With regard to the survey, only 14.3% (295)) of the households in Marsabit County had heard/learn about food fortification with most hearing through health talks (36.3%) followed by in a training session attended at 34.9%. With regard to sign of fortification, 64.4% (195/295) knew about it.

3.12 Household Hunger Score

The Household Hunger score is an individual indicator, it is a household food deprivation scale based on the ideas that the experience of household food deprivation causes predictable reactions that can be captured by a survey and summarized in a scale. Laisamis Sub County reported the highest number of Household at Severe at 5.8% followed closely by North Horr at 5.5%. Laisamis Sub County, also reported the least number of households in little at 52.3% followed by North Horr at 70.5%.

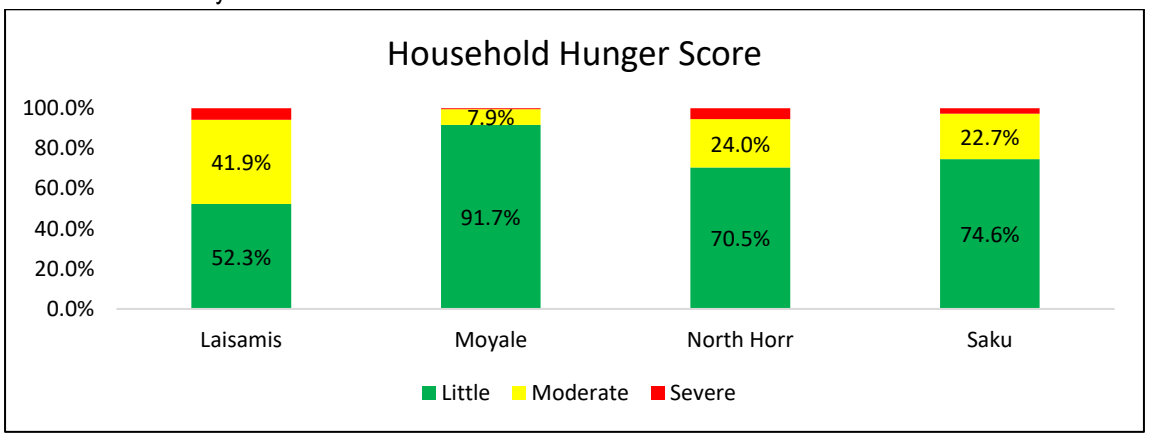


Figure 24: Household Hunger Score

19 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].
20 Micronutrient Fortification of Food: Technology and Quality Control Archived 2 September 2016 at the Wayback Machine

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 critical phase (IPC Phase 4- GAM 15-29.9% percent). Nutrition status of Children has deteriorated significantly with no change in underweight and stunting compared to same period last year. Acute malnutrition among women has remained high at 10.0% compared to 11.3% in 2018.

In term of illness two weeks prior to the survey, there was a slight increase from 20.5% in 2018 to 29.0% in 2019. On Zinc supplementation on children with watery diarrhoea increased from 46.4% in 2018 to 73.0% in 2019. In terms of health seeking behaviour, more population is depending on Community Health Volunteers especially in Saku Sub County. On Vitamin A supplementation for the children aged 6-59 month supplemented once the County is above the National target of 80%.Over 80% of Women with children under two reported to have received IFAS with 73.7% consuming for less than 90 days in Marsabit County.

The main source of water for drinking for the population at the County is Tube well/borehole which is an improved water source compared to 2018 where the main source was surface water. The average litres consumed per person per day has reduced drastically from 59.5% in 2018 to 32% in 2019 and also the population buying water is on rise in Marsabit County hence reducing the household budget for either food or education. The household treating water as reduced from 30.5% in 2018 to 22.0% in 2019. Handwashing at the County level is still low with Hand washing at 4 critical times reporting no improvement at 26.7% in 2019 compared to 26.3% in 2018. On part of sanitation, latrine coverage as increased to 58.1% in 2019 from 52.0% in 2019 although more sensitization need to be done on importance of a sanitation facility at the County especially Laisamis Sub County were latrine coverage is 24.9%.

In the household, the major food groups that they are relying on are cereal and cereal products, Pulses and Legumes, Oils/fats. Sweets and Condiments which nutrition value is so low hence high malnutrition rates. Women of reproductive age dietary diversity is very low at the County where most women rely only on all starchy staple food, Beans and peas and milk hence being nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Household food consumption score, there was a decrease on household at the acceptable food consumption from 70.6% in 2018 to 65.5% in 2019 with the household at the borderline increasing from 18.6% in 2018 to 24.1% in 2019. In terms of coping strategy, at the County it's at 11.57 which is decreasing over the years showing that the community is becoming resilient.

4.2 Recommendations

Table 23: Recommendations

Findings	Recommendation	Actor By Who	Timelines
• Low indirect IMAM coverage for OTP and SFP and need for current data in Illeret where SMART 2019 was not conducted due to insecurity	• Mobilization of resources and conduct mass screening in Illeret, Laisamis, Saku and Moyale	County Department of Health and Implementing partners.	Immediately
• Inadequate access and response outreaches	• Remapping of both access and response outreaches and updating the mapping template • Increase investment in outreach services by the	County Department of Health and Implementing partners.	Immediate and continuously

	county department and implementing partners. • Activation of access and response first and second priority outreaches across the county.		
• High malnutrition rates in Laisamis and North Horr with a GAM of 30.7% and 25.1% respectively.	• Immediate Mass screening and treatment in all four Sub Counties. • Resource mobilization and implementation for BSFP in Laisamis and north Horr. • Lobby and resource mobilize for Cash transfers to households with SAM and MAM cases. • Strengthen sector and multisector response coordination • Fund raise and conduct coverage survey in Laisamis and North Horr Sub County to determine the IMAM Program Coverage.	County Department of Health and Implementing partners.	Immediately
• Lack of investment for nutrition program based	• Lobby for government investment in nutrition specific program based budget.	County Department of Health and Implementing partners.	Continuous
• Need for Drought, food and nutrition insecurity response coordination	• Strengthen multisector forum for food and nutrition security(FNS policy implementation)	County Department of Health and Implementing partners.	Immediately
• High Food Insecurity at the County especially Laisamis and Saku Sub counties.	• Advocate for Food distribution for households in need of food assistance • Promote agri-nutrition and food utilization by working with department of MoA/LF through behaviour Change communication strategies	County Department of Health and Implementing partners.	Immediate and continuous
• Low/poor WASH indicators i.e. Use of Protected Water sources, Water treatment,	• Conduct a more detailed assessment on WASH mainly to assess practice.	County Department of Health and Implementing partners.	Continuous

Handwashing – Countywide.	• Scale up CLTS across the county and sensitize the community. • Incorporation of Nutrition messaging with CLTs		

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 (1.0%)	0 (1.0 %)	0 (0.2 %)	0 (1.9 %)
Overall sex ratio (significant CHI square)	>0.001	2 (p=0.088)	0 (p=0.755)	0(p=0.654)	0 (p=0.891)
Age ratio (6-29vs 30-59) Significant CHI square	>0.001	0 (p=0.683)	0 (p=0.538)	0(p=0.854)	0 (p=0.201)
Dig. prevalence score-weight	<20	0 (5)	0 (5)	0 (4)	0 (7)
Dig. prevalence score-height	<20	0 (6)	0 (5)	0 (7)	2 (9)
Dig. prevalence score-MUAC	<20	0 (5)	0 (3)	0 (6)	2 (9)
Standard Dev. Height WHZ	>0.80	0 (0.99)	0 (0.99)	0 (1.02)	0 (1.06)
Skewness WHZ	<±0.6	0 (0.18)	0 (0.07)	0 (0.02)	0 (-0.01)
Kurtosis WHZ	<±0.6	1 (-0.27)	0 (-0.15)	0 (-0.01)	0 (-0.12)
Poisson WHZ -2	>0.001	1 (p=0.015)	1 (p=0.016)	1(p=0.048)	5 (p=0.000)
OVERALL	**<25**	**4%(Excellent)**	**1%(Excellent)**	**1%(Excellent)**	**9% (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 Group	**Please give me the names of the persons who usually live in your household.**	**Please indicate the household head (write HH on the member's column)**	**Age (Record age in MONTHS for children <5yrs and YEARS for those ≥ 5 years's)**		**Childs age verified by** 1=Health card 2=Birth certificate / notification 3=Baptism card 4=Recall 5. other _____ specify	**Sex** 1= Male 2= Female	**If between 3 and 18 years old, Is the child attending school?** 1 = Yes 2 = No (If yes go to 2.8; If no go t o 2.7)	**Main reason for not attending school (Enter one code from list)** 1=Chronic Sickness 2=Weather (rain, floods, storms) 3=Family labour responsibilities 4=Working outside home 5=Teacher absenteeism/lack of teachers 6= Fees or costs 7=Household doesn't see value of schooling 8 =No food in the schools 9 = Migrated/ moved from school area (including displacements) 10=Insecurity/ violence 11-No school Near by 12=Married 13. Pregnant/ taking care of her own child 13=others (specify)…… ……..	**2.7a, What is the child doing when not in school?** **1**=Working on family farm 2=Herding Livestock 3=Working for payment away from home 4=Left home for elsewhere 5=Child living on the street 6: Other specify _____	**What is the highest level of education attained?(level completed) From 5 yrs and above** 1 =Pre primary 2= Primary 3=Secondary 4=Tertiary 5= None 6=others(specify) Go to question to 2.9 ↓	**If the household owns mosquito net/s, who slept under the mosquito net last night? (***Probe- enter all responses mentioned (Use 1 if "Yes" 2 if "No and 3 if not applicable) go to question 2.11*
			Years	Months							
< 5 YRS	1										
	2										
	3										
	4										

>5 TO <18 YRS	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										
ADULT (18 years and above)	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						

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**			
Woman ID. **(all women in the HH aged 15-49 years from the household demographics – section 2)**	What is the mother's / caretaker's physiological status **1. Pregnant** **2. Lactating** **3. not pregnant and not lactating** **4. Pregnant and lactating**	Mother/ caretaker's MUAC reading: ____.__**cm**	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

4.5 How much water did your household use YESTERDAY (excluding for animals)?

	2. Closed container / Jerrican |____|	*(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)**	**<u>WOMEN DIETARY DIVERSITY</u>** **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*		
1.1	**Have you heard about food fortification?** 1. Yes 2. No 3. Don't know	
1.1.1	**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
Wario Guyo	1	Choqorsa	1	Luka Dima(mathare)	1	Manyatta sambamba	1
Mammo Sarbesa	2	Gaya	2	Guyo Roba	2	Manyatta secondary	2
M. Chunfa	3	Dub Jaldesa	3	Barambate	3	Sidaimurt	3
Hussein Bore	4	Gufu	4	Chile	4	Tirigamo	4
Weido geldo	5	Haro	5	Rage centre	5	Ndikir	5
somo anno	6	Malich Umuro	6	Laga Balal	6	Weltei	6
Town A	7	Guyu Boru	7	Bori	7	Merille Center 1 A& B	7
Nasirai	8	Shauri Yako	8	Shankera	8	Manyatta Ngamia/ Kapana	8
Lakartnya	9	Masjid	9	Balesa/Ali Boru	9	Lowa mara/Salapani/Loroko/Amabara	9
Scheme center	10	Dubo	10	Yaagara new	10	goob galboran	10
Chief Center	11	Chabicha	11	koronder	11	galdeyllan eleemo	11
Lkuume	12	Garse	12	Qatamura	12	naabo C	12
GUYO GONJOBO	13	Yabalo Godha 2	13	Mudhe	13	dubsahay noolaso	13
Manyatta Jillo Centre	14	Qonqom R	14	Kosicha/kambi	14	ongeli kapina/Chere	14
Halkano Gura	15	Ali Sora	15	Tuye kale/galgallo sharama	15	saale sanget	15
Ilman dida	16	Bagaja	16	Ilma Malgis	16	mataarbah fecha	16
Dirib 2	17	Sole Dime	17	Shurr	17	nebey 1-Nkidam	17
Kara	18	Joseph Sode	18	Baulo	18	Nahgan Kolotho	18
Gombo/Balozi	19	Sake Wache	19	El-bokoch	19	Lmongoi	19
sora miyo	20	Hirbo Malko	20	Nangolei	20	lukumai/ Lekuchula	20
Galgallo Banchalle rob bonaya bakaye Barako	21	Mohames Kosi	21	Ilgele	21	ongeli & Ongeli mago	21

Baraqo Katelo	22	Mohamed Jillo	22	Ilolo	22	sukuroi	22
Said shiko	23	Adan tulicha	23	Telegaye	23	Lorukushu	23
Nagele village	24	Gurumesa 1	24	Malabot	24	town Center/Lturuya	24
Mio Waqo	25	Gurumesa 3	25	Gallas	25	Lekiricha/Kari /Ltorobo	25
Dalachi Qiti	26	Olla Ali Jillo	26	Barambate	26	manyatta chief	26
Godana Abdi	27	Araft Diba	27	Elboru Magado	27	Small Kamboe	27
Dub Abudo	28	Mohamed Sobiti	28	El-besso	28	Ilbarok 2	28
Boru Galma	29	Haban	29	Sora bonaya	29	Serima	29
Molu Guyp	30	Diba Karayu	30	Daramu dima	30	nawapa	30
		Abagaro tari	31	Hori gudha	31	kiwanja	31
		Guyo Adele	32	Centre	32	Lorus	32
		Adi Haro	33	Dadacha kundi	33	Gatab chini/juu	33
		Mohamed Qalla	34	Kubi athi	34	Losikiriachi	34
		Mohamed Galgallo	35	Huqa gompe	35	Lorukoibor	35
		Nuno Galma	36	Elyibo	36	Nkororoi centre	36
				Bales saru	37	Itirim	37
				Bales saru	38	Urowen	38
				Bule Warobesa	39	othola	39
				Yaalgana	40	Bagasi	40
				Tumticha	41	Nkairere	41
				Arkol	42	Gorle	42
				Lalasalama	RC		
				Qurqur	RC		
				Mathare	RC		
				Qorqa Gudha	RC		
				Isacko malla	RC		