SMART SURVEY REPORT

MARSABIT COUNTY
JULY 2017

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ACRONYMS

ANC:	Antenatal Care
ASAL	Arid and Semi-Arid Lands
BCG:	Bacillus Calmette – Guerin
BSFP	Blanket Supplementary Feeding Program
CHMT	County Health Management Team
C.I.:	Confidence Interval
CLTS	Community Led Total Sanitation
CSI	Coping Strategy Index
ENA:	Emergency Nutrition Assessment
FAO	Food and Agriculture Organization
FCS	Food consumption Score
FCS_N	Food consumption Score Nutrition
FHK	Food for Hungry-Kenya
GAM:	Global Acute Malnutrition
HDDS	Household Dietary Diversity Score
HiNi:	High Impact Nutrition Intervention
IDPs	Internally Displaced People
IFAs	Iron Folic Acid Supplementation
IMAM	Integrated Management of Acute Malnutrition
IP	Implementing Partners
IPC	Integrated Phase classification
MAM:	Moderate Acute Malnutrition
MDD_W	Minimum Dietary Diversity women
MNPs	Micronutrient Powder
MoH:	Ministry of Health
MoA:	Ministry of Agriculture
MUAC:	Mid-Upper Arm Circumference
NITWG	Nutrition Information Technical Working Group
SAM:	Severe Acute Malnutrition
SBCC	Social and Behavior Change Communication
SCHMT	Sub County Health Management Team
SFP	Supplementary Feeding Program
SMART:	Standardized Measurement of Relief and Transition
SPSS:	Statistical Package for Social Sciences
SRA	Short Rains Assessment
ODK	Open Data Kit
OTP	Outpatient Therapeutic Program
ORS	Oral Rehydration Salts
OPV	Oral Polio vaccine
UNICEF:	United Nations Children Fund
WASH	Water and Sanitation Hygiene
WDD_S	Women Dietary Diversity Score
WFA:	Weight for Age
WFH:	Weight for Height
WHO:	World Health Organization
WRA	Women of Reproductive Age
WVK	World Vision Kenya

EXECUTIVE SUMMARY

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

The survey findings indicated a GAM prevalence rate of 16.9% (14.5 – 19.7 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 27.7 % (24.8-30.8 95% C.I.) where 6.7 % (5.4 – 8.2 95% C.I.) were severely underweight. In terms of stunting prevalence, the survey findings indicated that 26.9 % (24.0 – 30.1 95% C.I.) of children in Marsabit County were stunted as where 6.6 % (5.2 – 8.4 95% C.I.) of the children were severely stunted.

Further analysis of the nutrition data showed that North Horr sub-county had the highest GAM rate prevalence of 31.0% which was extremely critical, followed by Laisamis with 24.8% which was in critical situation. Moyale and Saku sub-counties have a GAM rate prevalence of 5.4% and 7.5% respectively which indicate Alert situation.

The survey findings indicated that 34.8% of children aged 6-59 months in Marsabit County was reported to have been ill two weeks prior to survey. The most prevalent illness during this period was acute respiratory illnesses/ cough at 54.0%, fever with chills (39.9%) and watery diarrhea (28.1%). In term 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 41.8% which is way below the national target of 80%. In terms of zinc supplementation or oral rehydration salts (ORS), 52.1% had received the supplementation which is below the HiNi target of 80%. From the survey results, 94.9% of children were reported to have received BCG and confirmed by Scar while Measles vaccination coverage at 9 months verified by card was at 65.7%. In addition, 65.8% of children in Nairobi County sought Health assistance when their children were ill. In terms of the specific areas sought for the treatment, majority sought assistance from public (67.9%) clinics and private clinics (23.1%). The results of the survey showed that among the caregivers interviewed 16.9% reported practicing proper hand washing at the 4 critical times. For the household dietary diversity, analysis showed that only 23.5% of the households consumed less than 3 to 5 food groups while the minimum maternal dietary diversity showed that 63.9% of the women aged 15-49 years consumed less than 5 food groups. Lastly, the survey results showed that the total weighted coping strategy score was 18.2.

The survey was conducted through the partnership of the Ministry of Health, Food for the Hungry, World Vision and Concern Worldwide and was funded by UNICEF. The survey was conducted between 29th June and 8th July, 2017.

[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.

METHODOLOGY

The target geographical area was Marsabit County which targeted the 4 sub-counties of Moyale, Marsabit Central, North Horr and Laisamis. The survey adopted a 2 stage sampling technique. With the list of the villages, then the selection of the households to be included in the survey was selected using the simple random sampling which was the 1st stage sampling. Finally, with the sampled villages, a list of all households was drawn upon which 12-13 households was sampled using simple random sampling according to different sample sizes of different Sub Counties.

OBJECTIVES OF THE SURVEY

Main Objective

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

Specific Objectives

- To estimate the current prevalence of acute malnutrition in children aged 6 – 59 months
- To compare the overall nutritional changes with the previous GAM and SAM
- To determine the morbidity rates amongst children aged 6-59 months over a two week recall period.
- To estimate the immunization coverage of Measles, BCG and Oral polio vaccines (OPV1 and 3)
- To determine the coverage for deworming, zinc supplementation for diarrhea, MNP's supplementation and vitamin A supplementation among children 6-59 months.
- To estimate the nutritional status of women of reproductive age 15-49 years using MUAC measurements
- To collect information on household food security, water, sanitation, and hygiene practices

The following table presents the summary of the indicators

TABLE 1: SUMMARY FINDINGS

Anthropometric Indicators					
Indicators	North Horr July 2017	Moyale July 2017	Saku July 2017	Laisamis July 2017	COUNTY JULY 2017
Prevalence of global malnutrition	31.0% (25.4-37.1)	5.4% (3.2- 9.0)	7.5% (4.5-12.4)	24.8% (20.3-29.9)	16.9% (14.5 - 19.7)
Prevalence of severe malnutrition	5.0% (3.4- 7.5)	0.3% (0.0- 2.1)	0.0% (0.0- 0.0)	5.3% (3.4- 8.1)	2.9%(2.1 - 4.0)
Prevalence of global malnutrition by MUAC	7.4% (5.0-10.7)	2.5% (1.2- 5.1)	2.7% (1.4- 5.4)	8.3% (5.1-13.2)	5.6%(4.2-7.5)
Prevalence of severe malnutrition by MUAC	1.5% (0.5- 4.6)	0.3% (0.0- 2.1)	0.8% (0.2- 3.1)	2.0% (0.7- 5.1)	1.2%(0.7-2.2)
Global underweight	36.5% (31.2-42.3)	16.1% (11.5-22.1)	20.0% (14.6-26.8)	42.0% (36.1-48.1)	27.7%(24.8 - 30.8)
Severe Underweight	10.1% (7.1-14.2)	2.5% (1.5- 4.4)	2.7% (1.2- 6.4)	13.1% (10.0-16.9)	6.7%(5.4 - 8.2)
Global Stunting	25.9% (20.9-31.6)	21.0% (15.5-27.9)	26.9% (19.0-36.6)	37.9% (32.7-43.4)	26.9%(24.0 - 30.1)
Severe Stunting	5.4% (3.2- 9.1)	5.2% (3.4- 7.8)	5.2% (2.5-10.5)	11.2% (8.2-15.1)	6.6%(5.2 - 8.4)

Category	Indicator	n	N	%
Immunization /Vaccination and supplementation	Deworming (12-59 Months)	656	1285	55.1%
	Measles at 9 Months (Yes by Card)	906	1378	65.7%
	Measles at 9 Months (Yes by Recall)	368	1378	26.7%
	Measles at 18 Months (Yes by Card)	455	1083	42.0%
	Measles at 18 Months (Yes by Recall)	241	1083	22.3%
	BCG by Scar	1378	1452	94.9%
	OPV 1 (Yes by Card)	1035	1452	71.3%
	OPV 1 (Yes by Recall)	383	1452	26.4%
	OPV 3 (Yes by Card)	1007	1452	69.4%
	OPV 3 (Yes by Recall)	376	1452	25.9%
Supplementation	Zinc Supplementation	74	142	52.1%
	Vitamin A Supplementation (12-59 Months) - Once	965	1285	75.1%
	Vitamin A Supplementation (6-11 Months)- Once	116	167	69.5%
	Vitamin A Supplementation (6-11 Months)- Once verified by card	66	167	39.5%
	Vitamin A Supplementation (12-59 Months) - Twice	537	1285	41.8%
	Vitamin A Supplementation (12-59 Months) - Twice (Verified by Card)	489	1285	38.1%
	Vitamin A Supplementation (6-59 Months) - Once	1061	1452	73.1%
Morbidity	Prevalence of Fever	202	506	39.9%
	Prevalence of ARI	273	506	54.0%
	Prevalence of Watery Diarrhea	142	506	28.1%
	Prevalence of Bloody Diarrhea	8	506	1.6%
Health Seeking	Health Seeking Behavior	333	506	65.8%
Hygiene	Household Which wash Hands	1202	1682	71.5%
	After Toilet	869	1202	72.3%
	Before cooking	767	1202	63.8%
	Before Eating	1037	1202	86.3%
	After taking children to the toilet	354	1202	29.5%
	Hand washing by Soap and water	895	1202	74.5%
	hand washing 4 critical times	203	1202	16.9%
Total weighted Coping Strategy Score				18.2

CONCLUSIONS AND RECOMMENDATIONS

The survey concluded that the nutrition situation in Marsabit County is above emergency according to the World Health Organization classification of malnutrition. Further, according to the survey, the stunting rate in the county is classified as high according to the World Health Organization classification of stunting. The survey also noted that the maternal and child nutrition and health indicators ranged from poor to average and required more context specific interventions to address the multi-faceted causes of malnutrition e.g. continuous screening and mapping of malnutrition pockets to determine new outreach sites, full roll-out and scale-up of the IMAM surge approach, adoption of SBCC strategy approach to promote consumption if nutritious foods which also incorporates the training of health workers and extension workers. In addition, the household food security situation in the county was poor due to current drought and famine in the county which is also prevalent in other ASAL regions of the country. This calls for an integrated approach in the implementation of the nutrition, health and food security interventions to ensure optimal impact on the current situation. In addition the current interventions on food fortification and micronutrient powders supplementation need to be scaled up and utilize the existing community mobilization channels (e.g. community units) and innovate better ways to create more awareness of the nutritious products in the County. In terms of improving the poor WASH indicators and reduce the increased diarrheal cases, improve latrine coverage using CLTS, scale-up of continuous health education on water treatment, handwashing as distribution of water purification products is required.

This calls for concerted multi-stakeholder engagements in health and nutrition in Marsabit County to work in collaboration with the County Government to improve the overall health nutrition and food security situation in Marsabit County.

CHAPTER ONE: INTRODUCTION

1.0 CONTEXT ANALYSIS

Marsabit County is located in the former Eastern province of Kenya and covers an area of 70,961.3 Km2 and is ranked as the largest county in the country. The county border Ethiopia to the North, Lake Turkana to the West, Samburu County to the South West, Isiolo County to the South East and Wajir County to the North East. Marsabit County borders Isiolo County to the South West. Marsabit County consists of four sub-counties namely Laisamis, North Horr, Marsabit Central, and Moyale. The county has an estimated population of 341,091 from an estimated 65,906 households. Additionally, it is the least populated county in the country in terms people per km2 with a density of 4 people per km2. The county remains amongst the counties with the highest poverty index in the in Kenya and ranked position 44 out of 47 counties with a poverty rate of 83.2%. The county has three major livelihoods where the pastoral livelihood zone forms the bulk of the main livelihood zones at 81% and the other significant livelihood type is the agro-pastoral system which accounts for about 16% of the population. Other minor livelihood Zones at 3% include formal employment and fisher folk along Lake Turkana. The main source of income in the pastoral livelihood Zone is from the sale of livestock and livestock products, which accounts for about 85% of all county Income. In the Agro-pastoral livelihood Zone, livestock and food crop production account for 50% of all income.

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

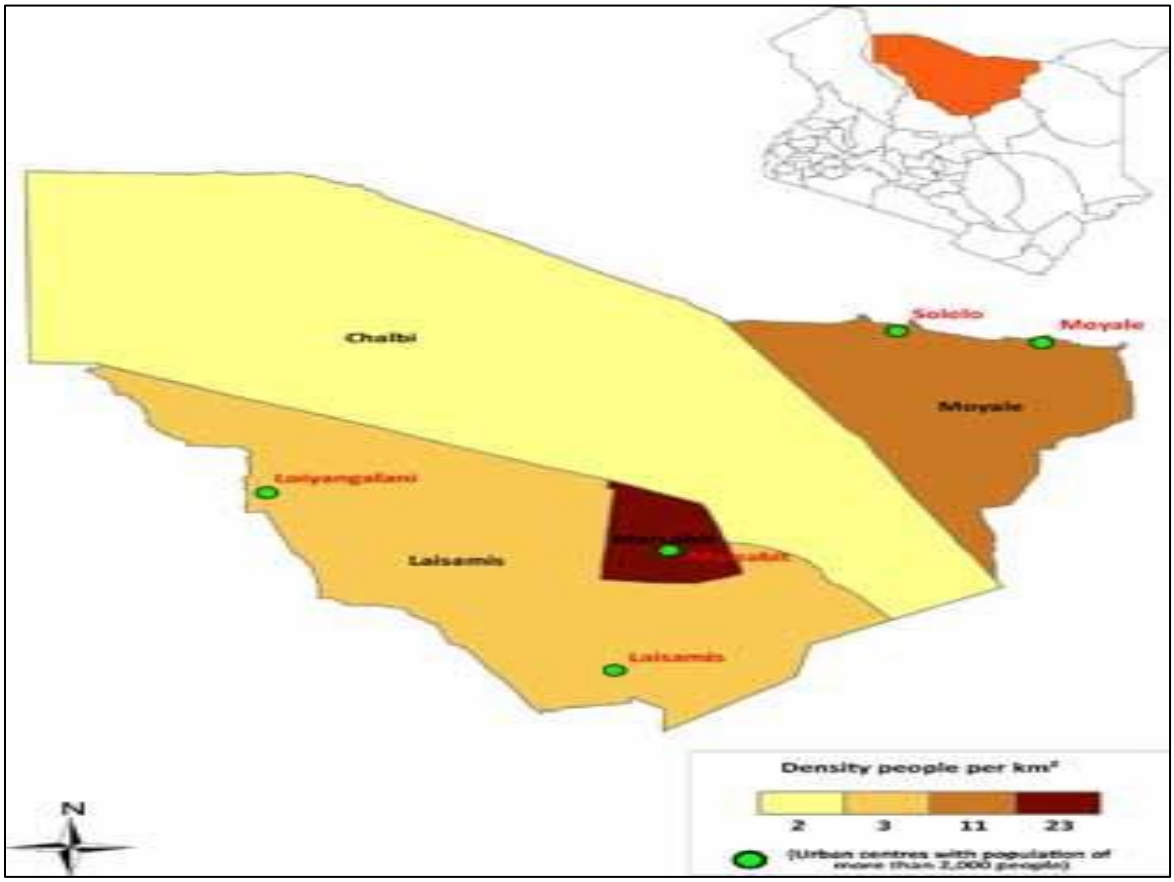

FIGURE 1: MAP OF MARSABIT COUNTY

1.1 RATIONALE OF SURVEY

According to the last SMART survey conducted in 2017 showed *extremely Critical* GAM rate of 31.5% (25.3-38.5) in North Horr and *critical* GAM rate of 24.7% (19.3-31.0) in Laisamis. For Moyale and Saku in 2016, the SMART surveys showed *poor* GAM rate of 7.5% (5.2-10.7) and 7.4% (4.8-11.3) respectively. According to April 2017 NDMA Early warning bulletin Marsabit County is in alarm phase with improving situation in pastoral and agro – pastoral livelihoods. Subsequently, according to SRA 2017 Marsabit county is classified as crisis (IPC phase 3) in the pastoral livelihood zones of North Horr, Laisamis and Moyale. The agro pastoral livelihood zones of Moyale and Marsabit central are classified as stressed (IPC phase 2).

Therefore, the nutrition survey will provide a progress update on the current nutrition status in Marsabit County as the findings will help to inform future programming form part of surveillance for the ongoing response. Additionally, the results will feed into Long rains assessment report of July/August 2017.

1.2 OBJECTIVES OF 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, MNP's supplementation and vitamin A supplementation among children 6-59 months.
- To estimate the nutritional status of women of reproductive age 15-49 years using MUAC measurements
- To collect information on household food security, water, sanitation, and hygiene practices

1.3 TIMING OF THE SURVEY

The survey was undertaken from 29th June, 2017. Training and piloting of the survey materials and standardization test were conducted from 29th June to 2nd July, 2017 and thereafter data collection from 3rd July, 2017. Data was collected using the Open Data Kit (ODK) hence reducing time which could be used for data entry. This survey was conducted in the middle of the long dry period as shown in the below seasonal calendar:

TABLE 2: SEASONAL CALENDAR

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

CHAPTER TWO: SURVEY METHODOLOGY

2.0 SURVEY AREA

The target geographical area was Marsabit County which targeted the 4 sub-counties of Moyale, Saku, North Horr and Laisamis.

2.1 SURVEY DESIGN

The survey adopted a 2 stage sampling technique. With the list of the villages and their population, probability proportion to size sampling method was used to select the villages which were the cluster and this was the 1st stage sampling. Finally, with the sampled villages, a list of all households was drawn upon for each village where12-13 households was sampled using simple random sampling; this was the 2nd stage sampling.

2.2 STUDY POPULATION

The target population for this survey will be the children aged 6 – 59 months and the mothers of the targeted children

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.

2.4 SAMPLE SIZE CALCULATION

TABLE 3: NORTH HORR AND LAISAMIS SAMPLE SIZE CALCULATION

	North Horr	Laisamis	Total	Rationale
Estimate (GAM)	31.5%	24.7%		From 2017 SMART survey
Precision	6.0%	5.0%		From SMART Global project
Design Effect	1.4	1.4		From 2017 SMART Survey to cater for heterogeneity
Estimated Number of Children	**418**	**436**	**854**	
Average HH Size	5.0	6.0		From DHIS
Non-Response Rate	3.0	3.0		Based on 2017 SMART Survey Experience
Proportion of Children Under 5	16.0%	16.8%		From DHIS
Estimated Number of Households	**502**	**495**	**997**	
Number of Households per Day	14	14		Based on 2017 SMART Survey Experience
Number of Cluster	36	36	72	Computed from the Number of HHs per Day
Number of children per Cluster	12	13		

Number of Teams	**6**	**6**	**12**	
Number of Days	6	6		Based on the Number of Teams to be Recruited

TABLE 4: MOYALE AND SAKU SAMPLE SIZE CALCULATION

	Moyale	**Saku**	**Total**	**Rationale**
Estimate (GAM)	5.2%	4.8%		From 2016 SMART survey
Precision	3.0%	3.0%		From SMART Global project
Design Effect	1.2	1.2		From 2016 SMART Survey to cater for heterogeneity
Estimated Number of Children	**275**	**255**	**576**	
Average HH Size	5.0	5.0		From DHIS
Non-Response Rate	3.0	3.0		Based on 2016 SMART Survey Experience
Proportion of Children Under 5	16.5%	16.5%		From DHIS
Estimated Number of Households	**382**	**354**	**719**	
Number of Households per Day	13	12		Based on 2016 SMART Survey Experience
Number of Cluster	30	30	60	Computed from the Number of HHs per Day
Number of children per Cluster	10	9		
Number of Teams	**5**	**5**	**10**	
Number of Days	6	6		Based on the Number of Teams to be Recruited

2.5 ORGANIZATION OF THE SURVEY

Coordination/Collaboration: before the survey was conducted meetings were held with key stakeholders and briefed them about the purpose, objectives and methods for the survey. This included validation of the methodology at the National Nutrition Information Working Group, briefing the County Nutrition Office, liaising with the Sub-County Health Management team.

Training of the Survey Team: the data collection teams were given 4-days training prior to field work, including a standardization test to ensure standardization of measurement and recording practice. All data collectors were trained on taking anthropometric measurements, completion of questionnaires and sampling methodology. The data collection forms and questionnaires were pilot tested in clusters not selected to be part of the larger survey, to ensure that the interviewers and respondents understand the questions and that interviewers follow correct protocols. The teams were also trained on the digital data collection methods as tablets were used during the survey.

Team work in the field: Twenty two teams each with four members who have experience in data collection were organized/ selected from the survey area with each team consisting of 1 team leader, interviewer and 2 measurers. In addition, officers from MoH, NDMA, MoA, UNICEF, FHK, WVK, Aphia Plus and Concern Worldwide closely supervised the team throughout the survey. In moving from one randomly selected household to another, the teams were guided by a village leader, or a community volunteer, depending on the village and who was available.

2.6 VARIABLES MEASURED

Age: The exact age of the child was recorded in months. Calendar of events, health or baptismal cards and birth certificates were used to determine age.
Weight: Children were measured using a digital weighing scale
Height: Recumbent length was taken for children less than 87 cm or less than 2 years of age while height measured for those greater or equal to 87 cm or more than 2 years of age.
MUAC: Mid Upper Arm Circumference (MUAC) was measured on the left arm, at the middle point between the elbow and the shoulder, while the arm was relaxed and hanging by the body's side. MUAC was measured to the nearest cm. MUAC measurements were taken for children 6-59 months of age and for women in the reproductive age (15-45 years of age).
Bilateral oedema: Assessed by the application of normal thumb pressure for at least 3 seconds to both feet/arms at the same time. The presence of a pit or depression on both feet/arms was recorded as oedema present and no pit or depression as oedema absent.
Morbidity: Information on two-week morbidity prevalence was collected by asking the mothers or caregivers if the index child had been ill in the two weeks preceding the survey and including the day of the survey. Illness was determined based on respondent's recall and was not verified by a clinician.
Immunization status: For all children 6-59 months, information on BCG, OPV1, OPV3 and measles vaccinations status was collected using health cards/mother-child booklets and recall from caregivers. When estimating measles coverage, only children 9 months of age or older were taken into consideration as they are the ones who were eligible for the vaccination.
Vitamin A supplementation status: For all children 6-59 months of age, information on Vitamin A supplementation in the 6 months prior to the survey date was collected using child health/Mother-Child booklets and immunization campaign cards and recall from caregivers.
Iron-Folic Acid supplementation: For all female caregivers, information was collected on IFA supplementation and number of days (period) they took IFA supplements in the pregnancy of the last birth that was within 24 months of this survey.
De-worming status: Information was solicited from the caregivers as to whether children 12-59 months of age had received de-worming tablets or not in the previous one year. This information was verified by health Card where available.
Food security status of the households: Food consumption score, Minimum dietary diversity score women source of predominant foods and coping strategies data was collected.
Household water consumption and utilization: The indicators used were main source of drinking and household water, time taken to water source and back, cost of water per 20-litre jerry-can and treatment given to drinking water.
Sanitation: Data on household access and ownership to a toilet/latrine, occasions when the respondents wash their hands were also obtained.
Mosquito nets ownership and utilization: Data on the household ownership of mosquito nets and their utilization was collected
Minimum dietary diversity score women (MDD-W): A 24 hour food consumption recall was administered to all women of reproductive Age (15-49 years).All foods consumed in the last 24 hours were enumerated for analysis. All food items were combined to form 10 defined food groups and all women consuming more at least five of the ten food groups were considered to meet the MDD-W.

Household food consumption score (FCS). Data on the frequency of consumption of different food groups consumed by a household during 7 days before the survey was collected.

2.7 DATA ANALYSIS

Data Analysis: the data downloading and analysis was done using ENA for SMART, Excel and SPSS Statistical software version 20. The Concern Worldwide Survey and Surveillance Officer and WVK Monitoring and Evaluation Officer were responsible for Data downloading, analysis and report writing. Results are presented using the new WHO reference levels.

***Preliminary Results and Final Report*:** the preliminary findings were presented to the CHMTs, stakeholders and the Nutrition Technical Information Working Group (NITWG) within two weeks of completion of the survey fieldwork. The survey results were validated by both the County and National NITWG level.

2.8 TECHNICAL SUPPORT

Concern Worldwide took the lead in developing the Survey Methodology which was validated by Nutrition Information Technical Working Group. During the data collection exercise, supervision, running of data analysis on daily basis was thoroughly done with the support of UNICEF Information Officer and Implementing partners in Marsabit County. Concern Worldwide Survey and Surveillance Officer was responsible for Data Analysis, presenting the findings to CHMTs, CSG, stakeholders and NITWG and writing the final report of the survey.

CHAPTER THREE: SURVEY RESULTS AND DISCUSSION

3.1 DEMOGRAPHIC RESULTS

3.1.1 CAREGIVERS' MARITAL STATUS

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

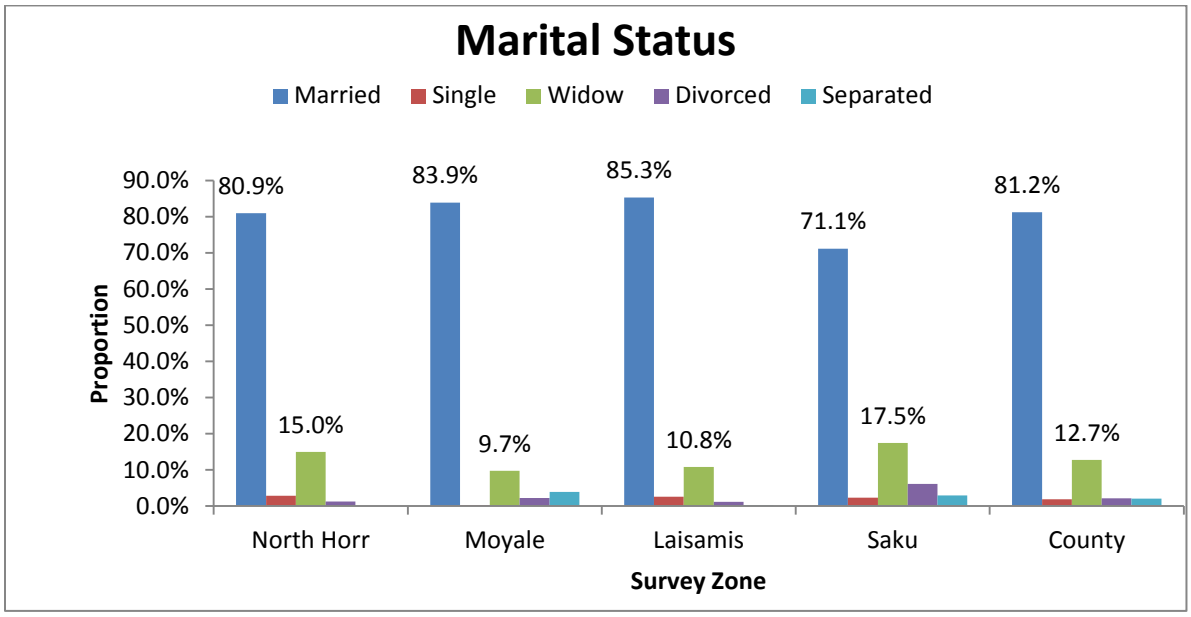

FIGURE 2: MARITAL STATUS

3.1.2 HIGHEST EDUCATION LEVEL

Illiteracy levels in Marsabit County were found to be high (69.5%).Both Laisamis and North Horr had the highest proportions of respondents with no education at 87.8% and 87.0% respectively. This is as shown in the graph below:

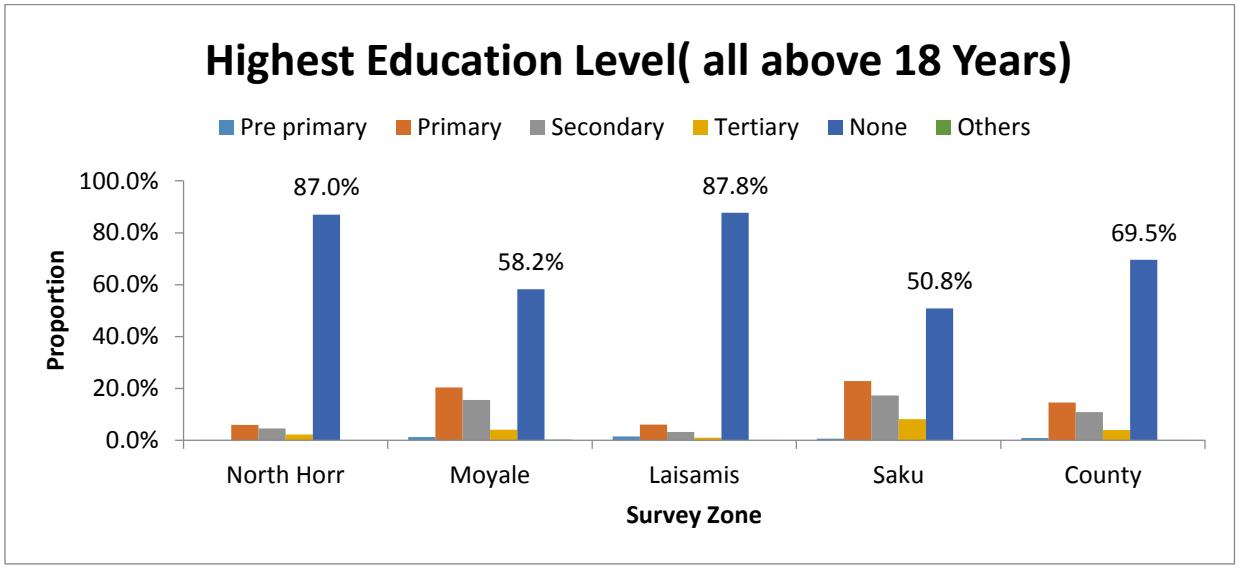

FIGURE 3: HIGHEST EDUCATION LEVEL

3.1.3 SCHOOL ENROLMENT

As shown in the figure below, nearly 70.3% of the respondents (3-18 year olds) in Marsabit County were enrolled in school. Further analysis showed the highest enrollment to be in Saku (83.6%) and Moyale (79.5) while lower in North Horr (53%) and Laisamis (54.6%) respectively. In Marsabit County, according to the County Steering Group, most children enroll to school after the attaining the age of 7 years hence low enrollment rate. This is as shown below.

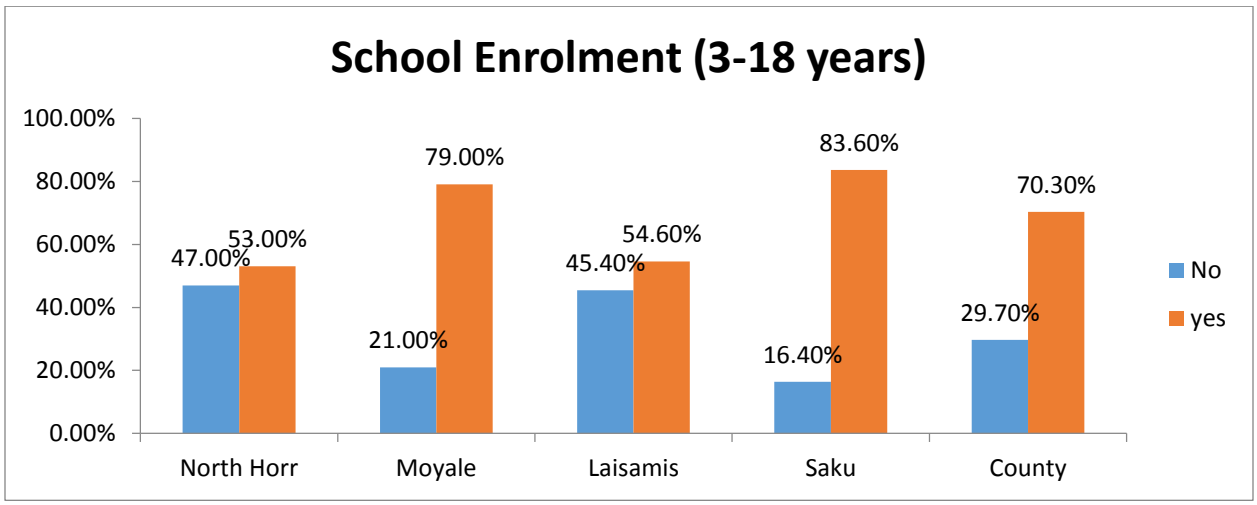

FIGURE 4: SCHOOL ENROLMENT

When the data was further analysed, it was found that for the respondents that were not enrolled in schools, majority (33.0%) were reported to be underage and drop-outs, while 19.2% were not enrolled due to family responsibilities. For North Horr, family labour responsibilities (38.4%) were

the main reason for poor school enrolment compared to Saku and Moyale where 74.0% and 72.8% were not enrolled due to other reasons (under-age and drop-outs). This is as summarized in the table below:

TABLE 5: REASON FOR NOT BEING AT SCHOOL

Reason For not Being at school (3-18 Years)	North Horr	Moyale	Laisamis	Saku	COUNTY
Chronic Sickness	0.2%	2.7%	0.8%	2.4%	1.1%
Family Labor responsibilities	38.4%	8.7%	1.2%	7.3%	19.2%
Too poor to buy school items	1.5%	5.4%	0.0%	0.0%	1.7%
Household doesn't see value of schooling	3.2%	3.3%	3.1%	0.0%	2.8%
No school nearby	12.2%	1.1%	8.8%	7.3%	8.7%
Working Outside Home	0.7%	1.6%	0.0%	1.6%	0.8%
Married	2.4%	2.2%	1.2%	0.0%	1.8%
Insecurity	0.2%	0.0%	0.4%	0.0%	0.2%
Other(Underage and Dropped Out)	36.2%	72.8%	35.8%	74.0%	33.0%
Migrated/moved from schools area	4.9%	1.6%	2.7%	0.8%	3.2%

3.1.4 HOUSEHOLDS' MAIN SOURCE OF INCOME AND LIVELIHOOD

The main occupation of the household head in Marsabit County, majority were livestock herders (50.9%) followed by casual labor (21.5%).
The current main source of income Marsabit County for the period of 30 days prior to the survey was petty trading reported by 22.5% of the households followed by sale of crops at 7.3%, remittance at 7.1% and casual labor at 6.7%. The majority of the respondents did not have any source of income (43.6%). This is as summarized in the table below:

TABLE 6: MAIN OCCUPATION AND MAIN SOURCE OF INCOME OF THE HOUSEHOLD HEAD

	North Horr	Moyale	Laisamis	Saku	COUNTY
Main Occupation Of the Household Head					
Livestock Herding	82.3%	16.1%	85.9%	19.2%	50.9%
Own Farm labor	0.0%	0.6%	0.0%	7.3%	1.4%
Employed	3.9%	10.8%	3.4%	13.1%	7.6%
Casual labor	6.8%	39.2%	3.8%	35.9%	21.5%
Petty trade	2.3%	8.3%	2.0%	9.9%	5.5%
Merchant/Trader	0.6%	6.1%	0.6%	4.1%	3.0%
Firewood/Charcoal	0.2%	6.4%	0.4%	2.9%	2.7%
Fishing	1.2%	0.0%	2.6%	0.0%	1.0%
Current Main Source of Income of the Household Head					

No income	81.3%	3.9%	81.1%	7.9%	43.6%
Sale of livestock	2.3%	8.1%	3.0%	12.5%	6.1%
Sale of livestock products	0.0%	0.6%	0.2%	6.7%	1.4%
Sale of crops	2.9%	13.1%	2.4%	10.2%	7.3%
Petty trading	6.8%	41.4%	5.0%	35.9%	22.5%
Casual labor	3.5%	10.0%	3.2%	10.2%	6.7%
Permanent Job	0.4%	3.1%	0.4%	3.5%	1.8%
Sale of Personnel assets	1.4%	2.8%	0.4%	1.5%	1.6%
Remittance	0.8%	12.5%	4.2%	10.5%	7.1%
Income earned by Children	2.7%	12.5%	1.4%	7.6%	6.4%

3.2 NUTRITION STATUS OF CHILDREN

3.2.1 PREVALENCE OF ACUTE MALNUTRITION (WEIGHT-FOR-HEIGHT Z-SCORE)

The survey managed to reach a total of 243, 358, 408 and 409 children aged between 6 to 59 months in Saku, Moyale, North Horr and Laisamis Sub Counties respectively whose anthropometric measurements were taken.

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

Malnutrition by Z-Score: WHO (2006) Standard

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

Malnutrition by MUAC

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

The survey findings indicated a GAM prevalence rate of 16.9% (14.5 – 19.7 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. This was slightly higher compared to July 2016 results which showed a GAM rate of 14.4 %(12.6-16.3). Further analysis showed that North Horr sub-county had the highest GAM rate of 31.0% with a design effect of 1.56, followed by Laisamis sub-county at 22.5% with a design effect of 1.19 and this are above the emergency GAM thresholds (15.0%) indicating a critical situation. Saku and Moyale Sub Counties recorded poor nutrition status with GAM rates of 7.5 % (4.5-12.4) and 5.4% (3.2-9.0) with design effect of 1.28 and 1.3 respectively. The findings showed no significant change from the previous survey results done in Jan 2017 in North Horr and Laisamis and in 2016 in Saku and Moyale sub Counties. There were no cases of edema that were reported.

TABLE 7: PREVALENCE OF ACUTE MALNUTRITION BY WHZ SCORE

	North Horr July 2016	North Horr July 2017	Moyale July 2016	Moyale July 2017	Saku July 2016	Saku July 2017	Laisamis July 2016	Laisamis July 2017	COUNTY JULY 2016	COUNTY JULY 20017
Prevalence of global malnutrition (<-2 z-score and/or oedema)	22.8% (17.8-28.7)	31.0% (25.4-37.1)	7.5% (5.2-10.7)	5.4% (3.2- 9.0)	7.4% (4.8-11.3)	7.5% (4.5-12.4)	22.5% (18.2-27.4)	24.8% (20.3-29.9)	14.4% (12.6 - 16.3)	16.9% (14.5 - 19.7)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	3.6% (1.8-6.9)	5.0% (3.4- 7.5)	0.5% (0.1- 2.1)	0.3% (0.0- 2.1)	1.4% (0.5- 3.6)	0.0% (0.0- 0.0)	4.7% (2.6- 8.3)	5.3% (3.4- 8.1)	2.30% (1.7 - 3.2)	2.9%(2.1 - 4.0)

Further analysis was done on children who were malnourished and in the program. The survey findings indicated that in North Horr that out of the 131 children in the program where 42 in the OTP and 69 in the SFP program only 58 were malnourished hence the actual program coverage being 47.2%.In Laisamis, 67 children were in program where with 12 in OTP and 55 in SFP program, only 34 were malnourished hence the actual program coverage being 34.3%. In Moyale, 12 children were in program where 1 in OTP and 11 in SFP but only 2 were malnourished hence the actual program coverage being 10.5%. In Saku, 9 children were in program with 2 in OTP and 7 in the SFP program and 6 were malnourished hence the actual program coverage being 31.6%.

TABLE 8: NUTRITION ESTIMATED PROGRAM COVERAGE

	North Horr	Laisamis	Moyale	Saku
Malnourished Children	123	99	19	19
Number in Program from the Total children in the Survey	131	67	12	9
Nutrition Program coverage	106.5%	67.7%	63.2%	47.4%
Number in Program from the Malnourished children	58	34	2	6
Actual Program Coverage	47.2%	34.3%	10.5%	31.6%
Number in OTP	42	12	1	2
Number In SFP	89	55	11	7
Number IN BSFP	349	9	0	6

Coverage for BSFP	85.5%	2.2%	0.0%	2.4%

3.2.2 PREVALENCE OF ACUTE MALNUTRITION BY MUAC

The nutrition situation was also assessed using the MUAC and in comparison with the GAM rates by the WFH scores. The overall prevalence of Acute Malnutrition by MUAC for Marsabit County was 5.6% with the worst affected sub-county being Laisamis which recorded the highest prevalence of 8.3% while North Horr, Moyale and Saku had 7.4%, 2.5% and 2.7% respectively.

TABLE 9: PREVALENCE OF ACUTE MALNUTRITION BY MUAC

	North Horr July 2016	North Horr July 2017	Moyale July 2016	Moyale July 2017	Saku July 2016	Saku July 2017	Laisamis July 2016	Laisamis July 2017	COUNTY JULY 2016	COUNTY JULY 20017
Prevalence of global malnutrition (< 125 mm and/or oedema)	3.8% (2.0- 7.2)	7.4% (5.0- 10.7)	3.4% (2.1- 5.4)	2.5% (1.2- 5.1)	3.3% (1.7- 6.3)	2.7% (1.4- 5.4)	5.7% (3.6- 9.1)	8.3% (5.1- 13.2)	4.2% (3.3- 5.3)	5.6%(4.2- 7.5)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	0.5% (0.1- 3.8)	1.5% (0.5- 4.6)	0.5% (0.1- 2.1)	0.3% (0.0- 2.1)	0.7% (0.2- 2.7)	0.8% (0.2- 3.1)	0.4% (0.1- 1.8)	2.0% (0.7- 5.1)	0.5% (0.3- 1.1)	1.2%(0.7- 2.2)

3.2.3 PREVALENCE OF UNDERWEIGHT

The prevalence of underweight is determined by low weight-for-age which arises from insufficient weight gain relative to age is a function of short stature, thinness or both. The measure of underweight gives a mixed reflection of both the current and past nutrition experience by a population and is very useful in growth monitoring. Children who are WFA Z score fell below -2 standard deviations of the WHO reference population are classified as underweight. Children who are WFA Z score fell below -3 standard deviation of the WHO reference population are classified as severe underweight.

TABLE 10: PREVALENCE OF UNDERWEIGHT

	North Horr July 2016	North Horr July 2017	Moyale July 2016	Moyale July 2017	Saku July 2016	Saku July 2017	Laisamis July 2016	Laisamis July 2017	COUNTY JULY 2016	COUNTY JULY 20017
Global	32.1%	36.5%	25.4%	16.1%	20.0%	20.0%	35.3%	42.0%	28.20%(2	27.7%(24.8 -

underweight	(26.1-38.9)	(31.2-42.3)	(19.4-32.4)	(11.5-22.1)	(14.4-27.1)	(14.6-26.8)	(30.1-40.8)	(36.1-48.1)	5.2 - 31.5	30.8)
Severe Underweight	8.5% (5.8-12.3)	10.1% (7.1-14.2)	3.9% (2.2-7.0)	2.5% (1.5- 4.4)	4.4% (2.5- 7.7)	2.7% (1.2- 6.4)	10.0% (7.0-14.2)	13.1% (10.0-16.9)		6.7%(5.4 - 8.2)

Underweight prevalence for Marsabit County was 27.7%(24.8-30.8) with Laisamis at 42.0% which was the highest while North Horr, Moyale and Saku reported 36.5%, 16.1% and 20.0% respectively. This prevalence of underweight was classified as high using the WHO classification of underweight[2].

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

3.2.4 PREVALENCE OF STUNTING

Height-for-age is another anthropometric indices commonly used as an indicator for malnutrition. Stunting (height-for-age) is an indicator of chronic (long-term) malnutrition arising from persistently poor food security situation, micronutrient deficiencies, recurrent illnesses and other factors which interrupt normal growth. Stunting in childhood leads to reduced adult size and reduced work capacity. This, in turn, has an impact on economic productivity at the national level. Unlike wasting, stunting is not affected by seasonality but rather related to the long-term effect of socio-economic development and long-standing food insecurity situation.

TABLE 11: PREVALENCE OF STUNTING

	North Horr July 2016	North Horr July 2017	Moyale July 2016	Moyale July 2017	Saku July 2016	Saku July 2017	Laisamis July 2016	Laisamis July 2017	COUNTY JULY 2016	COUNTY JULY 20017
Global Stunting	25.4% (20.6-30.8)	25.9% (20.9-31.6)	30.8% (24.6-37.6)	21.0% (15.5-27.9)	27.3% (20.7-35.2)	26.9% (19.0-36.6)	31.7% (26.1-37.8)	37.9% (32.7-43.4)	28.80%(26 .1 - 31.7)	26.9%(24.0 - 30.1)
Severe Stunting	5.7% (3.2-9.9)	5.4% (3.2- 9.1)	8.2% (5.3-12.5)	5.2% (3.4- 7.8)	6.9% (3.9-12.1)	5.2% (2.5-10.5)	10.8% (7.1-16.2)	11.2% (8.2-15.1)		6.6%(5.2 - 8.4)

In terms of stunting prevalence, the survey findings indicated that 26.9 % (24.0 – 30.1 95% C.I.) of children in Marsabit County were stunted as where 6.6 % (5.2 – 8.4 95% C.I.) of the children were

[2] WHO Classification of Underweight: Low - <10%, Medium – 10 – 19.9%, High – 20 – 29.9%, Alarming/Critical - >30%

severely stunted. The results of the survey show that the prevalence of stunting in Marsabit is categorized as high based on the WHO classification[3]. The high stunting levels in the County represent a loss of both mental and physical potential for the affected children.

The high stunting levels could be attributed to the poor dietary intake both in terms of quantity and quality as evidenced by the household dietary diversity score which showed that the survey population relied heavily on 5 major food groups (cereals, legumes, milk, fats & oils and sugars) which are predominantly high in energy but lack in the essential micronutrients required for proper growth and development mainly found in vegetables, fruits and protein-rich foods of animal sources e.g. meat, eggs, fish etc.

3.3 MATERNAL NUTRITION STATUS

Pregnancy 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 levels .

3.3.1 WOMEN PHYSIOLOGICAL STATUS

The figure below indicates that majority of the surveyed women of Reproductive age (15-49 years) in the county were lactating (51.8%) and 37.1% were not pregnant or lactating.

[3] WHO Classification: Low - <20%, Medium - 20 – 29.9% , High – 30 – 39.9%, Alarming/Critical - >40.0%

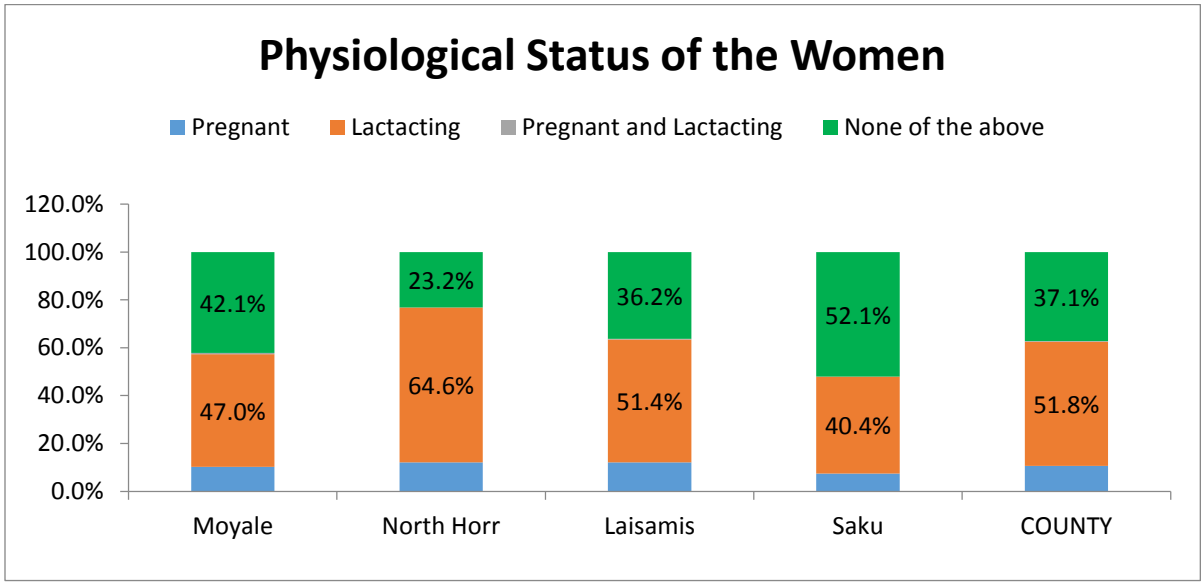

FIGURE 5: PHYSIOLOGICAL STATUS OF THE WOMEN

3.3.2 ACUTE MALNUTRITION

Maternal malnutrition is usually associated with high risk of low birth weights and it is recommended that before, during and after birth, the maternal nutrition status should be adequate. The following table below shows the maternal nutrition situation of the women of the reproductive age and pregnant and lactating women in the four sub-counties and for the Marsabit County.

TABLE 12: PREVALENCE OF MATERNAL ACUTE MALNUTRITION

	Moyale		North Horr		Laisamis		Saku		COUNTY	
	N	%	N	%	N	%	N	%	N	%
MUAC <210 mm for ALL Women(15-49 Years)	12	3.9%	53	13.4%	69	19.4%	12	5.00%	132	10.1%
MUAC 210 - <230 mm for ALL Women (15-49 Years	57	18.8%	122	30.8%	112	31.5%	34	14.20%	316	24.1%
Malnourished PLW (MUAC <210 mm)	6	3.4%	37	12.2%	49	21.6%	5	4.30%	86	10.4%

The maternal malnutrition was defined as women whose MUAC measurements were < 21.0cm while women whose MUAC measurements were between 21.0 <23.0cm were classified as at risk of malnutrition.
The proportion of malnourished pregnant and lactating women in Marsabit was 10.4% with Laisamis recording the highest proportion of pregnant and lactating women who were malnourished at 21.6% which was followed by North Horr at 12.2%. Saku and Moyale were at 4.3% and 3.4% respectively.

The Proportion of Malnourished women of reproductive age in Marsabit County was 10.1% with Laisamis recording the highest at 19.4%,followed by North Horr at 13.4%, Moyale and Saku were at 3.9% and 5.0% respectively.
The proportion of women of reproductive age at risk in Marsabit County was 24.1% with still Laisamis leading with 31.5% followed closely by North Horr at 30.8%.

3.3.3 IRON SUPPLEMENTATION

During pregnancy, women have increased need for additional iron to ensure they have sufficient iron stores to prevent iron deficiency. Iron supplementation is recommended in resource limited settings as strategy to prevent and correct iron deficiency and anemia among pregnant women WHO recommends daily consumption of 60mg elemental iron and 0.4mg folic acid throughout the pregnancy.[4]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 show that Marsabit county is yet to achieve the target for IFAS, Possibly due to operational shortfalls in the delivery of the product or health seeking behavior where mother seek ANC services late in their last trimester.

From the survey results, 77.1% (n=685) of caretakers with children aged 24 months and below were supplemented with Iron Folic acid in their last pregnancy. Further analysis showed that the % of caretakers with children aged 24 months and below who were supplemented with Iron Folic acid in their last pregnancy per sub-county was as follows: Laisamis 76.1% (153), North Horr 71.0% (156), Moyale 77.8% (126) and Saku 92.3% (84).

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: Laisamis 40.3, North Horr 33.6, Moyale 23.5 and Saku 33.8 respectively. This is as summarized in the table below:

TABLE 13: IFAS SUPPLEMENTATION

Zone	Moyale		North Horr		Laisamis		Saku	
IFAs Consumption in Days	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
< 90 Days	117	92.9%	136	86.6%	136	88.9%	77	91.7%
90≥180 Days	9	7.1%	21	13.4%	15	9.8%	7	8.3%
> 180 Days	0	0.0%	0	0.0%	2	1.3%	0	0.0%

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

3.4 CHILD HEALTH AND IMMUNIZATION.

3.4.1 MORBIDITY

The morbidity of the children in the survey area was determined within a two weeks recall period. The prevalence for Morbidity for Marsabit County 34.8% (506) of children aged 6-59 months in Marsabit County reported to have been ill two weeks prior to survey was 34.8% (506) with most cases of disease reported in Laisamis (42.1%) which was followed by Moyale at 40.8% and North Horr at 26.7%. Saku recorded the least at 23.0%.

The most prevalent illness during this period was acute respiratory illnesses/ cough at 54.0%, fever with chills (39.9%) and watery diarrhea (28.1%) as shown in the graph below:

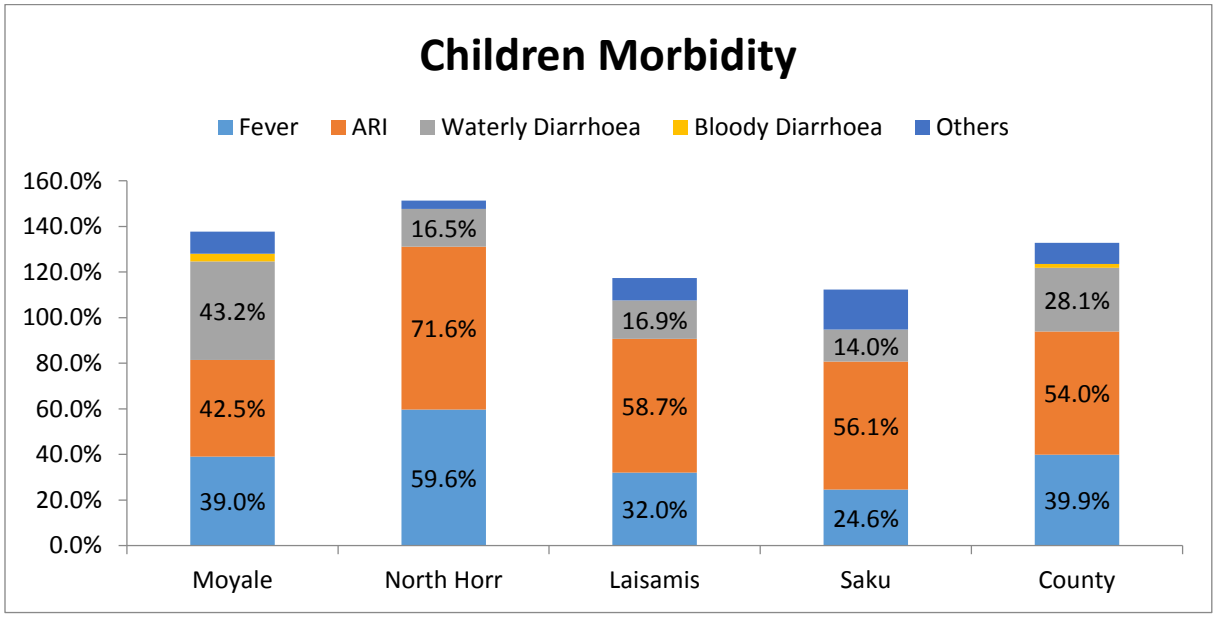

FIGURE 6: CHILDREN MORBIDITY

The high prevalence for acute respiratory infections could be as a result of the cold season which accompanies the long rains and hence most of the children < 5 years are prone to these diseases.
In Moyale the high prevalence for the diarrhoea cases could be as a result of poor hygiene and sanitation practices since most people in Moyale drink unsafe water since the main source of drinking water is surface water.
In North Horr the high prevalence of acute respiratory infections cases could be associated with high rate of malnutrition and Poverty since during the survey most household had no source of income.

Further analysis on the children who had diarrhea, the survey results showed that the prevalence of watery diarrhea was 28.1% (n=506). In terms of zinc supplementation or oral rehydration salts (ORS), 52.1% had received the supplementation which is below the HiNi target of 80%. This is as highlighted in the table below:

TABLE 14: ZINC /ORS SUPPLEMENTATION

	Moyale			North Horr			Laisamis			Saku			COUNTY		
	n	N	%	n	N	%	n	N	%	n	N	%	n	N	%
Prevalence of Watery Diarrhea	63	146	42.5 %	18	109	16.5 %	29	172	16.9 %	8	78	14.8 %	142	506	28.1 %
Zinc /ORS Supplementation	38	63	60.3 %	4	18	22.2 %	11	29	37.9 %	5	8	62.5 %	74	142	52.1 %

In terms of the health seeking behavior of the caregivers who had sick children within a period of two weeks before the survey, 65.8% (313) of children in Marsabit County sought Health assistance when their children were ill. Majority of caregivers in Saku and Moyale had sought medical assistance with 86.0% and 78.1% respectively of the caregivers reporting to have sought medical help. North Horr recorded the poorest health seeking behavior with only 32.1% of the caregivers reporting to have sought medical assistance which could be attributed to long distance to the nearest health facility and especially this time of the drought where most people have moved looking for pasture for their livestock.
In terms of the specific areas sought for the treatment, majority sought assistance from public clinics (67.9%) and private clinics (23.1%).). This is as shown in the table below.

TABLE 15: HEALTH SEEKING BEHAVIOUR

	Moyale	North Horr	Laisamis	Saku	COUNTY
Health Seeking Behavior	78.1%	32.1%	63.40%	86.0%	65.8%
Traditional Healer	1.8%	2.9%	0.9%	2.0%	1.8%
Community Health worker	0.9%	5.7%	0.9%	2.0%	1.5%
Mobile Clinic	0.9%	8.6%	0.9%	2.0%	1.8%
Private Clinic/Pharmacy	28.1%	2.9%	16.5%	32.7%	23.1%
Local herbs	0.0%	2.9%	2.8%	0.0%	0.9%
NGO/FBO	0.9%	0.0%	0.0%	0.0%	0.6%
Public Clinic	62.3%	80.0%	73.4%	67.3%	67.9%

3.4.2 IMMUNIZATIONS COVERAGE

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. This survey assessed the coverage of 4 vaccines namely, BCG, OPV1, OPV3, and measles at 9 and 18 months. The information on vaccination coverage was obtained from health cards and from mother's verbal reports. All mothers were asked to show the interviewer health cards used for the child's immunization.

The 1st measles immunizations coverage at 9 months by card was higher in Saku (78.5%) which was followed by Laisamis (73.9%) and lowest in Moyale at 57.9%. For the 2nd measles immunizations coverage at 18 months by card was low in two of the sub-counties where the survey was conducted which were Moyale at 30.1% and Laisamis at 29.3% .For BCG vaccination which was ascertained by scar, the coverage performed quite well in the four sub-counties with all of them attaining the 80% national coverage targets.

For the OPV1 by card Laisamis recorded highest at 84.1% followed by Saku at 80.2%. Moyale recorded the least at 63.7%. For OPV3 by card Saku recorded highest at 80.6% followed by Laisamis at 79.0%. Moyale recorded the least. This is as shown in the table below:

TABLE 16: MEASLES, OPV1 AND OPV3 COVERAGE

Indicator	Moyale	North Horr	Laisamis	Saku	COUNTY
Measles at 9 Months (Yes by Card)	57.9%	62.7%	73.98%	78.5%	65.7%
Measles at 9 Months (Yes by Recall)	37.1%	27.6%	15.05%	17.3%	26.7%
Measles at 18 Months (Yes by Card)	30.1%	54.7%	29.26%	67.9%	42.0%
Measles at 18 Months (Yes by Recall)	23.9%	31.9%	9.00%	20.3%	22.3%
OPV 1 (Yes by Card)	63.7%	66.2%	84.1%	80.2%	71.3%
OPV 1 (Yes by Recall)	35.5%	28.9%	13.7%	18.1%	26.4%
OPV 3 (Yes by Card)	63.1%	63.7%	79.0%	80.6%	69.4%
OPV 3 (Yes by Recall)	35.2%	27.7%	13.4%	18.1%	25.9%

3.4.3 VITAMIN A SUPPLEMENTATION AND DEWORMING COVERAGE (12-59 MONTHS)

Improving the vitamin A status of deficient children through supplementation enhances their resistance to disease and can reduce mortality from all causes by approximately 23 per cent[5]. Therefore, vitamin A supplementation is critical, not only for eliminating vitamin A deficiency as a public-health problem, but also as a central element for child survival.
Poor data management on vitamin A logistics, inadequate social mobilization to improve vitamin uptake and placement of vitamin A at lower level of priority among other interventions have been cited as major challenges in achieving the supplementation targets (MOH Vitamin A supplementation Operational Guidelines for Health Workers 2012).
To assess vitamin A supplementation, parents and caregivers were probed on whether children had been supplemented, for how many times and the place of supplementation (whether it was done in a health facility, outreach site or during mass campaigns) 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.

The results of the survey showed 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 41.5% which is way below the national target of 80%. However, for children aged 6-11 months, 69.5% had received Vitamin A once while for children aged 12-59 months, 75.1% had received Vitamin A once. Overall, for children aged 6-59 months, 73.1% had received vitamin A once. This is as shown in the graph below:

[5] Vitamin A Supplementation: A Decade of Progress, UNICEF 2007

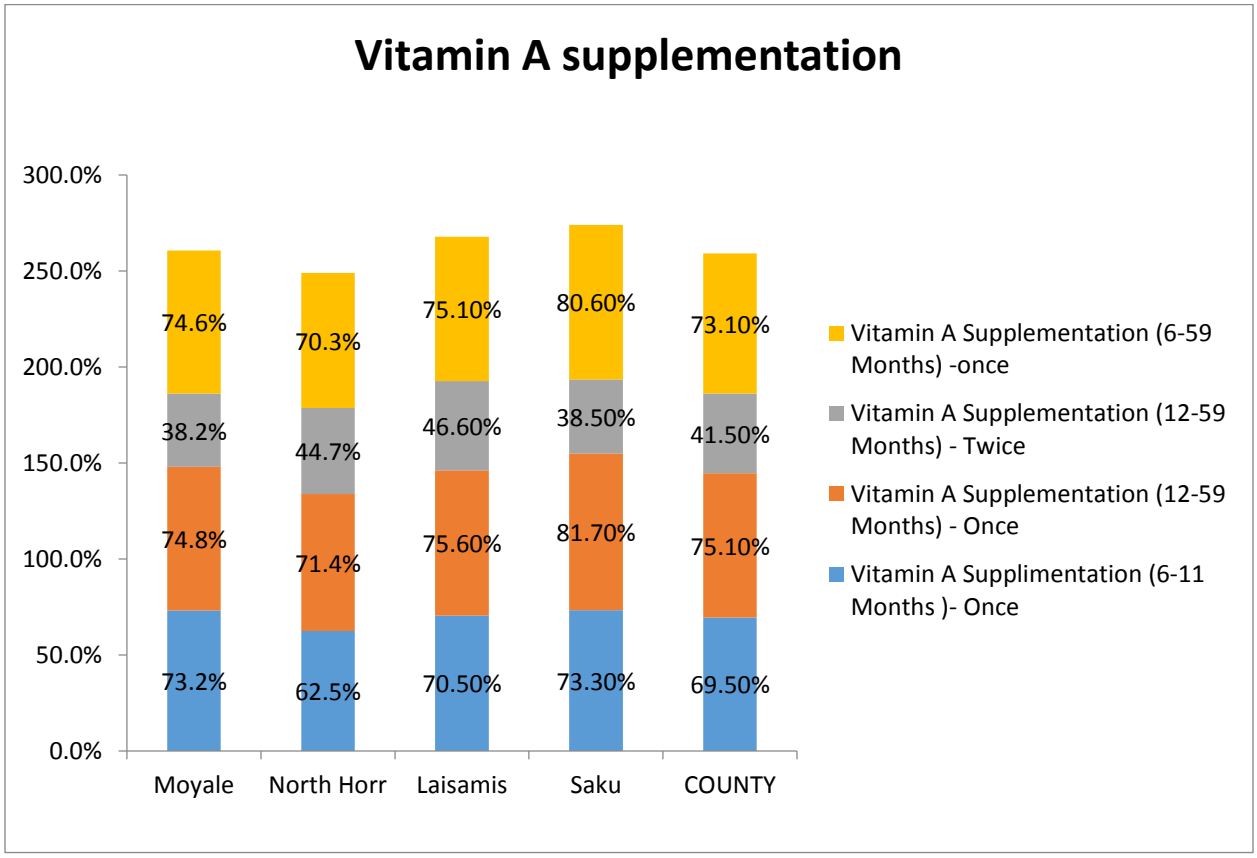

FIGURE 7: VITAMIN SUPPLEMENTATION

On deworming coverage, the results showed that the proportion of children dewormed was 44.5 %(141), 54.2 %(195), 45.2% (165) and 72.0 % (157) in Moyale, North Horr, Laisamis and Saku respectively.

3.5 WATER, SANITATION AND HYGIENE

International human rights consider access to water and sanitation as a human right.[6] This means that all individuals are entitled to have access to an essential amount of safe drinking water and to

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

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. Increasingly current evidence on poor WASH indicators is being linked to under nutrition and more so on High Stunting levels. Diarrhea, the leading killer of young children is closely linked to poor/inadequate WASH (Pruss-Ustun et al, 2014), which often causes undernutrition, which in turn reduces a child's resistance to subsequent infections, thus creating a vicious circle. An estimated 25% of stunting is attributable to five or more episodes of diarrhea before 24 months of age (Checkley et al, 2008).

3.5.1 MAIN SOURCE OF WATER

According to the survey, 21.8% of the households in Marsabit County have unprotected wells, boreholes (21.3%) and surface water (20.7%) as the main source of water. There was no significant difference between the sub-counties. A majority in Moyale get water from surface water at 36.9% while in North Horr most get water from unprotected wells at 33.1%. Majority in Saku reported to get water from water kiosk at 23.0% while majority in Laisamis get water public tap/stand pipe at 29.3%. This is as shown in the table below:

TABLE 17: MAIN SOURCE OF DRINKING WATER

Main Sources of Drinking Water	North Horr	Moyale	Laisamis	Saku	COUNTY
Piped into dwelling	0.0%	1.4%	0.2%	0.0%	0.5%
Piped to yard/plot	0.0%	0.3%	3.2%	0.3%	0.9%
Piped to Neighbor	0.6%	0.0%	1.0%	1.2%	0.6%
Public tap/standpipe	6.4%	0.3%	29.3%	11.7%	10.8%
Tube well/Borehole	14.6%	35.0%	13.1%	17.8%	21.3%
Protected well	17.5%	12.8%	7.6%	1.5%	10.8%
Unprotected well	33.1%	8.6%	26.7%	21.3%	21.8%
Protected Spring	0.2%	0.0%	0.4%	0.6%	0.2%
Unprotected spring	2.9%	0.0%	0.4%	0.0%	0.8%
Rain water	5.1%	2.5%	0.2%	2.3%	2.6%
Tanker truck	0.0%	0.3%	1.6%	13.4%	2.8%
Cart with small tank	0.0%	0.6%	0.0%	0.3%	0.2%
Water Kiosk	0.6%	0.3%	5.2%	23.0%	5.5%
Surface water	19.1%	36.9%	9.8%	5.8%	20.7%
Bottled Water	0.0%	0.3%	0.0%	0.3%	0.1%

3.5.2 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**.**

The survey results showed that 39.9% of the households in Marsabit County had a trekking distance of less than 500m or less than 15 minutes to get water, 33.5% trekked for 500m to 2km or 15 minutes to 1 hour to get water while 26.6% trekked for more than 2km. This is as shown in the graphs below:

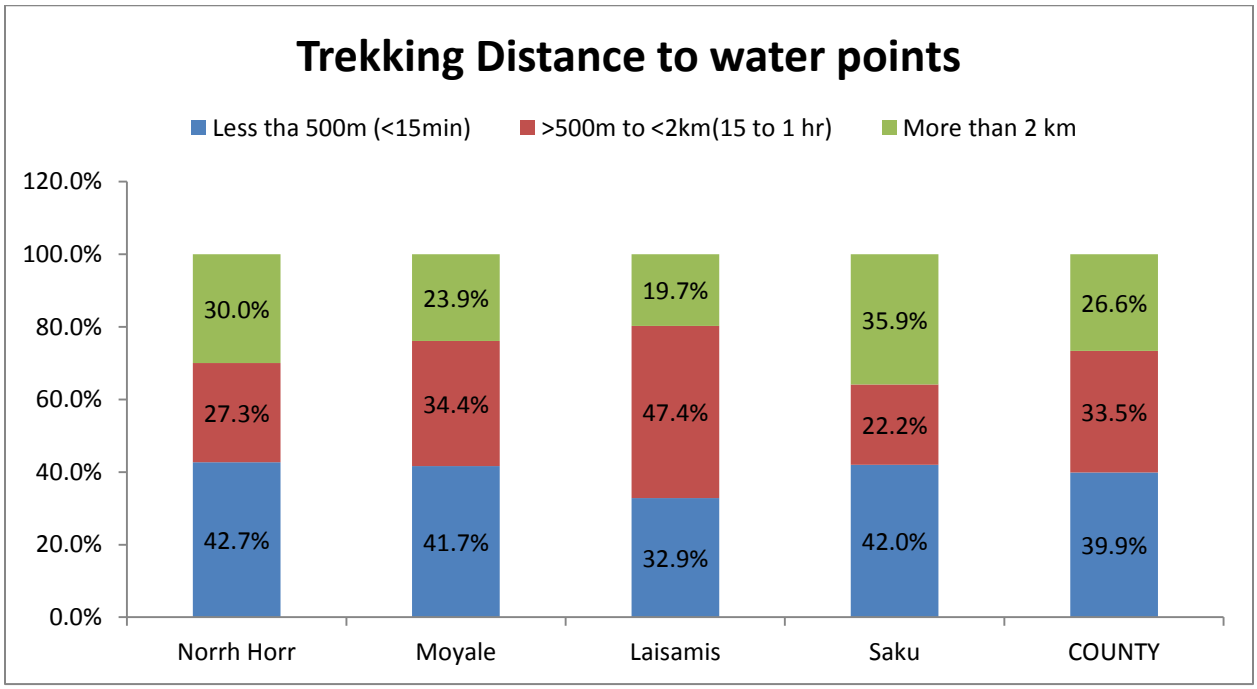

FIGURE 8: TREKKING DISTANCE TO WATER POINT

In terms of queuing at water points, the 36.2% indicated that the queued for less than 30 minutes, 34.0% queued for between 30 minutes to 1 hour and 29.8% queued for more than 1 hour. The queuing time at water point per the sub-counties is as shown in the graph below:

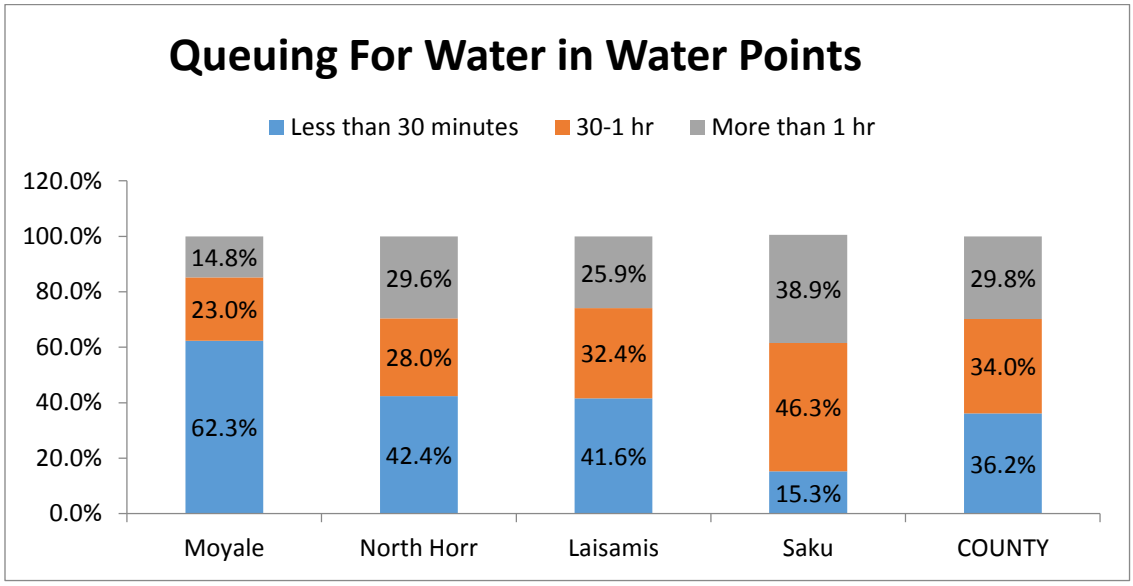

FIGURE 9: QUEUING FOR WATER IN WATER POINTS

3.5.3 WATER TREATMENT AND STORAGE

The results of the survey showed that 21.7% (365) of the households in Marsabit County reported to treat water with 64.7% of the households reported treating water with chemicals before drinking while 38.4% boiled water before drinking. Further analysis showed that a higher proportion of households in Moyale and North Horr use chemicals for water treatments at 86.7% and 64.8%% respectively compared to Laisamis and Saku whose respondents reported to prefer boiling water at 71.1% and 54.5% respectively. This is as summarized in the graph below:

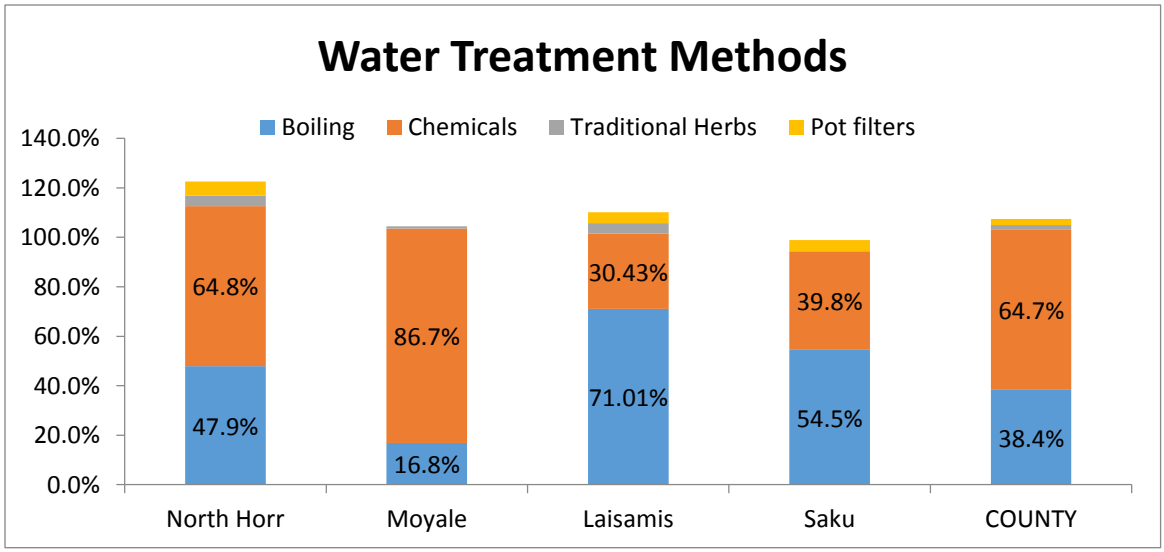

FIGURE 10: WATER TREATMENT METHODS

In terms of water storage, the majority, 85.2% of the respondents reported to store water on closed containers/ Jerri cans.

This is as summarized in the graph below:

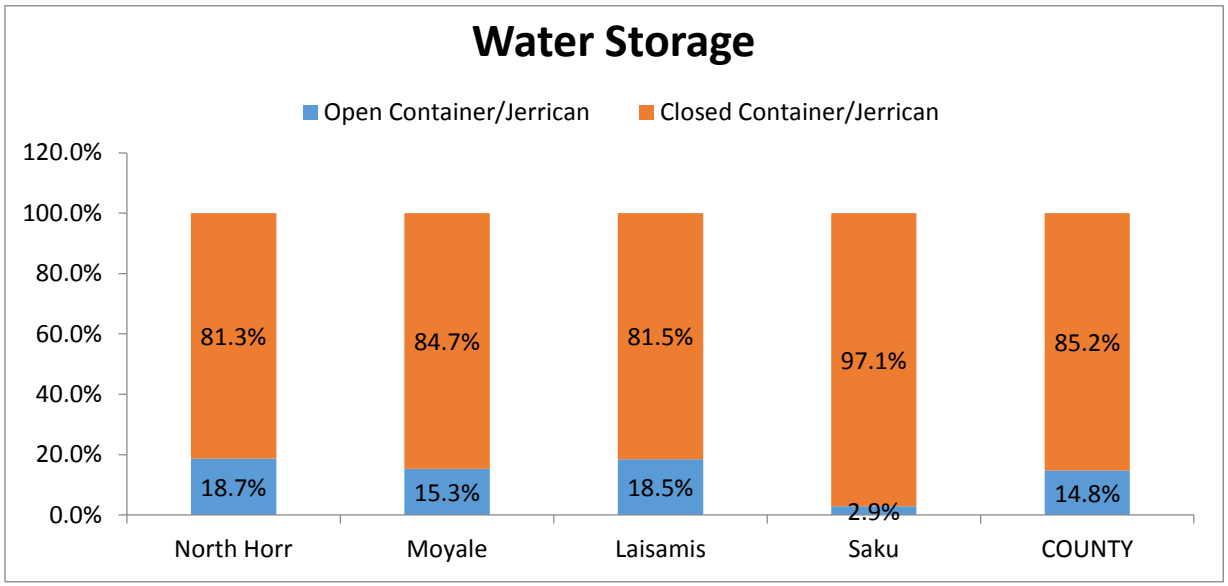

FIGURE 11: WATER STORAGE

3.5.4 WATER UTILIZATION AND PAYMENT

According to SPHERE handbook for minimum standards for WASH, the average water use for drinking, cooking and personal hygiene in any household should be at least 15 liters per person per day. Out of the sampled households only 22.0 % of the households used at least 15 liters of water per person per day which is the minimum per capita recommendation for drinking cooking and personal hygiene (SPHERE Hand book 2004). The table below shows the water utilization in Liters per person per day in all the survey zones in Marsabit County.

TABLE 18: WATER UTILIZATION

Sub County	<15 liters/pp/per day	Average Use of water per Household per Day
Saku	82.8%	9.67L
Laisamis	91.6%	7.04L
Moyale	52.2%	13.3L
North Horr	85.6%	9.12L
COUNTY	78.0%	9.8L

In the county 54.8 % of the surveyed households buy water for domestic use and 74.4% pay for water on monthly basis and 25.6% pay water per month. Saku was the highest proportion of Household who pay water per 20 liters Jerri can.71.6% of the Marsabit County pay more than 100Ksh per month for water and this could partially explain the fact that most of the households are not meeting the SPHERE standards on the average number of liters per person per day.

TABLE 19: WATER PAYMENT

Category	Indicator	North Horr		Moyale		Laisamis		Saku		County	
		n	%	n	%	n	%	n	%	n	%
Mode of Payment	Per 20L Jerri can	63	85.1%	216	76.1%	112	46.9%	251	90.6%	685	74.4%
	Per month	11	14.9%	68	23.9%	127	53.1%	26	9.4%	236	25.6%

3.5.5 HANDWASHING

Handwashing is important for good health. Effective washing can be practiced with alternatives to soap and using a variety of different hygienic facilities. Washing hands with soap reduces the risk of diarrheal diseases by 42–47%[7]. There are also indications that handwashing is an important preventive measure in the incidence of acute respiratory infections. Overall, interventions to promote handwashing might save a million lives a year. Each person should be able to wash hands with water and soap after toilet use, before food preparation, before eating and after cleaning babies.

The results of the survey showed that among the households interviewed 71.5% (n=1202) were aware of handwashing practices. Further analysis showed that 72.3% (n=869) of the households generally washed hands after visiting the toilets, 63.8% (767) before cooking, 86.3% (1037) before eating while 29.5% (n=354) washed their hands after taking the children to the toilet while 74.5% (895) washed their hands with soap and water. The four critical hand washing moments include; after visiting the toilet/latrine, before cooking, before eating and after taking children to the toilet/latrine. Of these, only 16.9% reported practicing proper hand washing at the 4 critical times. This is as summarized in the table below:

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

TABLE 20: HANDWASHING

	North Horr		Moyale		Saku		Laisamis		COUNTY	
Indicator	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Household Aware of Hand wash Practice	279	57.3%	321	89.2%	225	65.6%	340	67.7%	1202	71.5%
After Toilet	146	37.7%	297	92.5%	192	56.0%	157	31.3%%	869	72.3%
Before cooking	148	59.7%	225	70.1%	107	31.2%	251	50.0%	767	63.8%
Before Eating	222	78.8%	304	94.7%	201	58.6%	257	51.2%	1037	86.3%
After taking children to the toilet	63	12.2%	123	38.3%	40	11.7	96	19.1%%	354	29.5%
Hand washing by Soap and water	164	58.8%	280	87.2%	207	92.0%	184	54.1%	895	74.5%
Hand washing 4 critical times	**38**	**13.6%**	**82**	**25.5%**	**25**	**7.3%**	**40**	**8.0%**	**203**	**16.9%**

3.5.6 LATRINE UTILIZATION

Access to safe human waste disposal methods is crucial for the health and wellbeing of people. Lack of access to safe human waste disposal facilities, leads to higher costs to the community through pollution of rivers, ground water and higher incidence of air and water borne diseases. Other costs include reduced incomes as a result of disease and lower educational outcomes.

In terms of sanitation, majority of the households reported that they have no access to toilets where 49.9% reported to use bush (no facility) while 28.8% reported to have access to pit latrine with slab. 11.5% had pit latrine without slab while 9.1% had ventilated improved latrines. This is as summarized in the table below:

TABLE 21: LATRINE UTILIZATION

	North Horr	**Moyale**	**Laisamis**	**Saku**	**COUNTY**
Ventilated Improved Pit Latrine	15.6%	10.0%	0.6%	9.3%	9.1%
Pit latrine with slab	3.3%	50.0%	8.6%	56.6%	28.8%
Pit latrine without slab/open pit	2.3%	21.1%	7.2%	13.7%	11.5%
Composting toilet	0.2%	0.0%	0.0%	0.0%	0.1%
No facility /Bush/field	77.6%	18.6%	82.9%	20.1%	49.9%
Bucket	0.0%	0.3%	0.2%	0.0%	0.1%
Hanging toilet/Latrine	1.0%	0.0%	0.6%	0.3%	0.5%

3.6 FOOD SECURITY

3.6.1 WOMEN DIETARY DIVERSITY (24-HOUR RECALL)

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], 2004). 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; Lee et al. 2013).
MDD-W 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 ten defined food groups include ;1) Grains, white roots and tubers and plantains; 2) pulses (beans ,peas and lentils); 3) Nuts and seeds,4) Dairy; 5) Meat ,poultry and fish; 6) Eggs; 7) Dark green Leafy vegetables; 8) Other vitamin A rich fruits and vegetables; 9) Other vegetables; 10) Other fruits.

The survey results showed that majority of the women aged 15-49 years consumed starchy foods (87.9%), dairy products (86.7%). Legumes and pulses (79.6%), other vegetables (48.5%), vitamin A vegetables (34.5%) and flesh foods (33.4%). Other fruits, eggs and nuts were the least consumed with 8.2%, 12.1% and 1.2% respectively of the caregivers interviewed reporting to have consumed in the past 24 hours. This is as summarized in the table below:

TABLE 22: WOMEN DIETARY DIVERSITY (24 HOUR RECALL)

	Moyale	North Horr	Laisamis	Saku	COUNTY
Starch Food	99.7%	70.4%	82.3%	87.9%	87.9%
Dairy products (Milk)	87.5%	75.9%	93.6%	86.7%	86.7%
Vit A Rich Dark Green leafy vegetables	44.5%	6.1%	14.9%	34.5%	34.5%
legume/ pulses	70.0%	90.3%	90.2%	79.6%	79.6%
Other vegetables	78.0%	6.3%	22.7%	48.5%	48.5%
flesh foods	32.0%	24.1%	44.8%	33.4%	33.4%
Other Vitamin A rich Vegetables and Fruits	14.4%	4.7%	10.3%	12.7%	12.7%
eggs	16.3%	2.0%	12.0%	12.1%	12.1%
Other fruits	6.1%	1.6%	10.9%	8.2%	8.2%
nuts and seeds	0.4%	0.7%	1.6%	1.2%	1.2%

3.6.2 MINIMUM WOMEN DIETARY DIVERSITY SCORE.

MDD-W[8] is a dichotomous indicator of whether or not women 15-49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality. The indicator constitutes an important step towards filling the need for indicators for use in national and subnational assessments. It is a population-level indicator based on a recall period of a single day and night, so although data are collected from individual women, the indicator cannot be used to describe diet quality for an individual woman. This is because of normal day-to-day variability in individual intakes.

With regard to WDD_S the survey showed that 63.9% of the women aged 15-49 years consumed less than 5 food groups while 36.1% of the women consumed 5 and more food groups. The difference was highest in North Horr Sub-County at 94% vs 6.0% respectively.

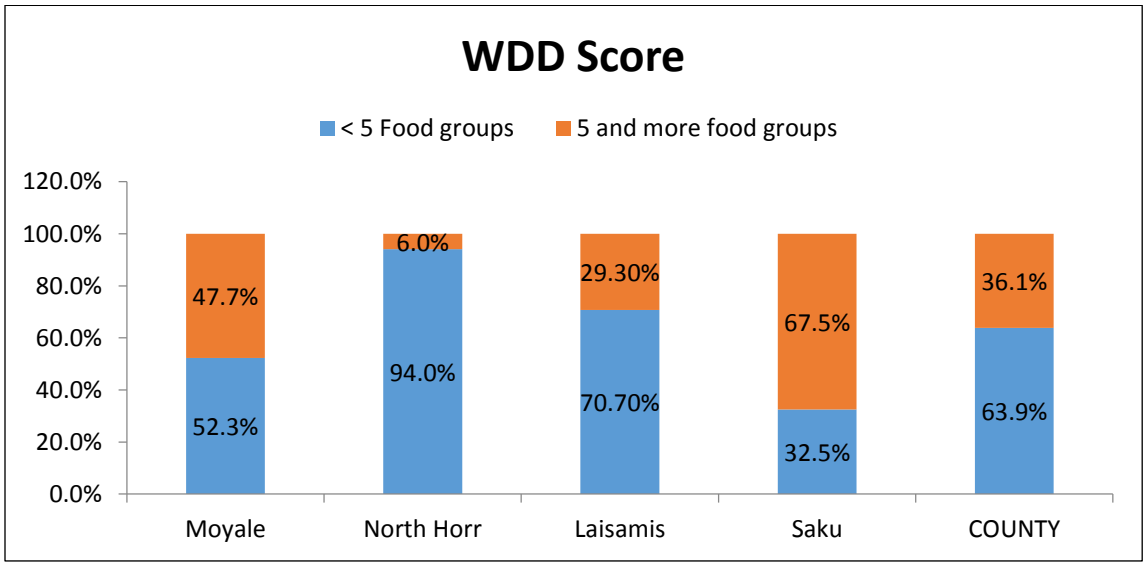

FIGURE 12: WOMEN DIETARY DIVERSITY SCORE

3.6.3 HOUSEHOLD DIETARY DIVERSITY (7 DAYS RECALL)

In assessing the nutritional quality and quantity of the food consumed by the survey population, a 1 week retrospective household dietary diversity questionnaire was administered that would also help to determine the households' economic capacity to consume various foods in the sub-counties.

Five main food groups were consumed and were consistent with the 4 sub-counties where the survey was conducted. This were cereals, legumes and pulses, milk and milk products, fats and oils

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

and sweets and sugars which were consumed by at least >80% of the population that was surveyed within the last 7 days. Iron rich foods, Vegetables, tubers and condiments was consumed by at least >35% of the surveyed population and was consistent for the 4 sub-counties except for Iron rich foods in North Horr sub County at 32.2%. The other foods that were consumed by the least number of people (<20% of the surveyed population) included: fruits, eggs and fish. This is as summarized in the table below:

TABLE 23: HOUSEHOLD DIETARY DIVERSITY (7 DAYS RECALL)

	North Horr	Moyale	Laisamis	Saku	COUNTY
Cereals and cereal Products	96.3%	98.9%	94.8%	98.8%	97.2%
vegetables	10.9%	89.2%	34.3%	92.4%	55.8%
Fruits	2.9%	26.7%	10.2%	37.6%	18.3%
Iron rich Foods/Flesh Foods	32.2%	50.3%	59.2%	70.8%	51.2%
Tubers	2.9%	67.2%	20.7%	49.3%	35.9%
eggs	1.2%	23.9%	10.2%	24.8%	14.7%
Fish	11.1%	0.6%	5.6%	1.2%	4.6%
Pulses and Legumes	84.0%	85.0%	89.6%	89.5%	86.6%
Milk and milk products	85.0%	94.2%	90.8%	98.5%	91.7%
Oils/fats	87.9%	95.8%	93.2%	99.4%	93.7%
Sweets	82.3%	92.5%	85.7%	97.7%	89.0%
Condiments	31.4%	74.7%	39.4%	45.8%	49.8%

The proportion of households consuming milk was high and could be attributed to milk availability among the pastoral communities although due to drought and most of livestock had moved most households reported buying milk which was a bit expensive but still had to buy because of children. The consumption of cereals, milk, sugar and oil at household level are a characteristic of the population and it is expected compared to the other food items.

3.6.4 MINIMUM HOUSEHOLD DIETARY DIVERSITY SCORE

Household dietary diversity Score (HDDS) is a qualitative measure of food consumption that reflects household access to a variety of foods.

Further analysis showed that 23.5% of the households consumed 3-5 food groups while the majority of the households, 73.4% consumed more than 5 food groups which most included cereals, Legumes, Milk, Sugars and Oils and fats. In North Horr Sub County nearly 50% of the household are consuming between 3 to 5 food groups with 8% consuming less than 3 food groups. In Moyale and Saku over 90% are consuming more than 5 food groups. This is as summarized in the graph below:

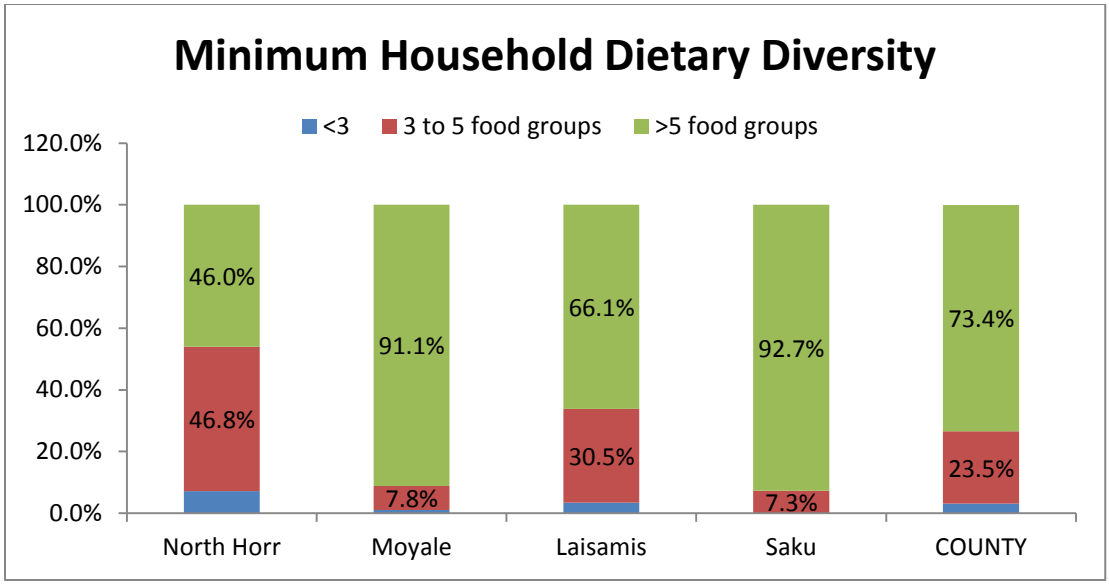

FIGURE 13 : MINIMUM HOUSEHOLD DIETARY DIVERSITY SCORE

3.6.5 HOUSEHOLD FOOD CONSUMPTION SCORE

The food consumption score is an acceptable proxy indicator to measure caloric intake and diet quality at household level, giving an indication of food security status of the household. It's a composite score based on dietary diversity, food frequency and relative nutritional importance of different food groups.

The survey results showed that majority of the households in Marsabit County (80.6%) had a good food consumption score while 11.8% were at the border food consumption score. There was no significant difference for food consumption scores between the sub-counties. This is as shown in the graph below:

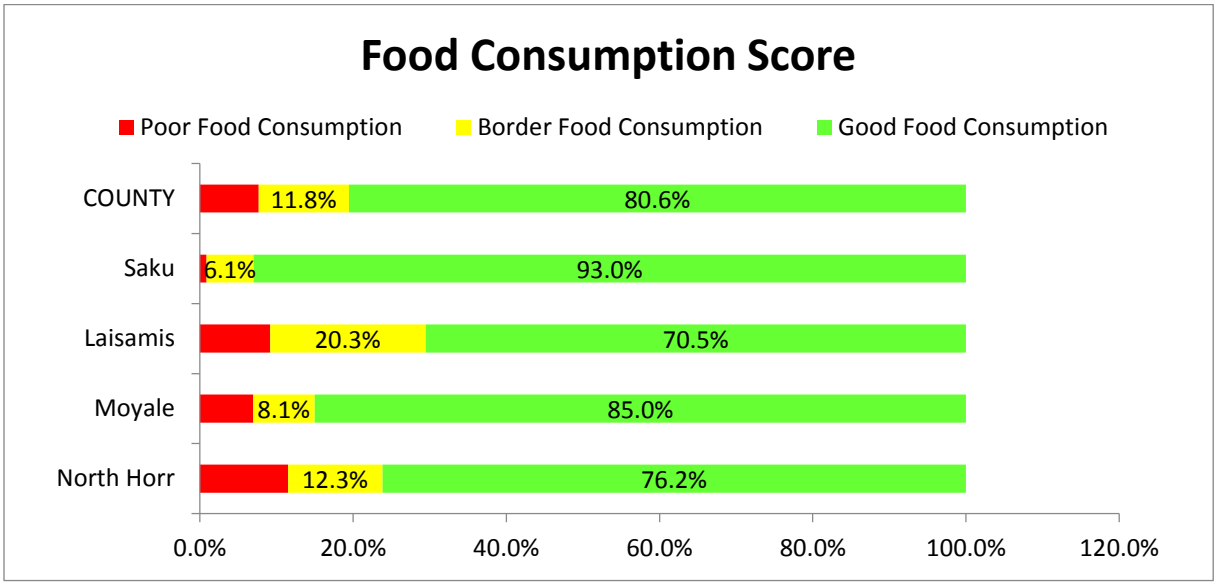

FIGURE 14: HOUSEHOLD FOOD CONSUMPTION SCORE

3.6.6 CONSUMPTION OF MICRONUTRIENT FOODS

Micronutrients are those nutrients we require in relatively small quantities. They are vitamins and minerals, and our good health requires them in milligram and microgram amounts. There are 13 vitamins, and you can get most of them by eating a variety of foods from each food group. Minerals can be electrolytes (minerals that are charged ions in your body fluids) which help you maintain fluid balance. Minerals are also part of some enzymes, work with your immune system, and play an invaluable role in the structural growth of your body. By ensuring food and nutrition security and by reducing the widespread problem of micronutrient malnutrition we may hope to achieve the targets set for the Millennium Development Goals.

With Regard to Household Consumption of micronutrient rich Foods, among the household surveyed in Marsabit County, 43.2% had consumed Fruits and Vegetables, 19.2% had consumed Iron rich Foods and 7.2% had consumed Vitamin A rich foods, 88.9 % had consumed protein rich foods and 59.3% had consumed staples for 7 days.
This is as shown in the graph below:

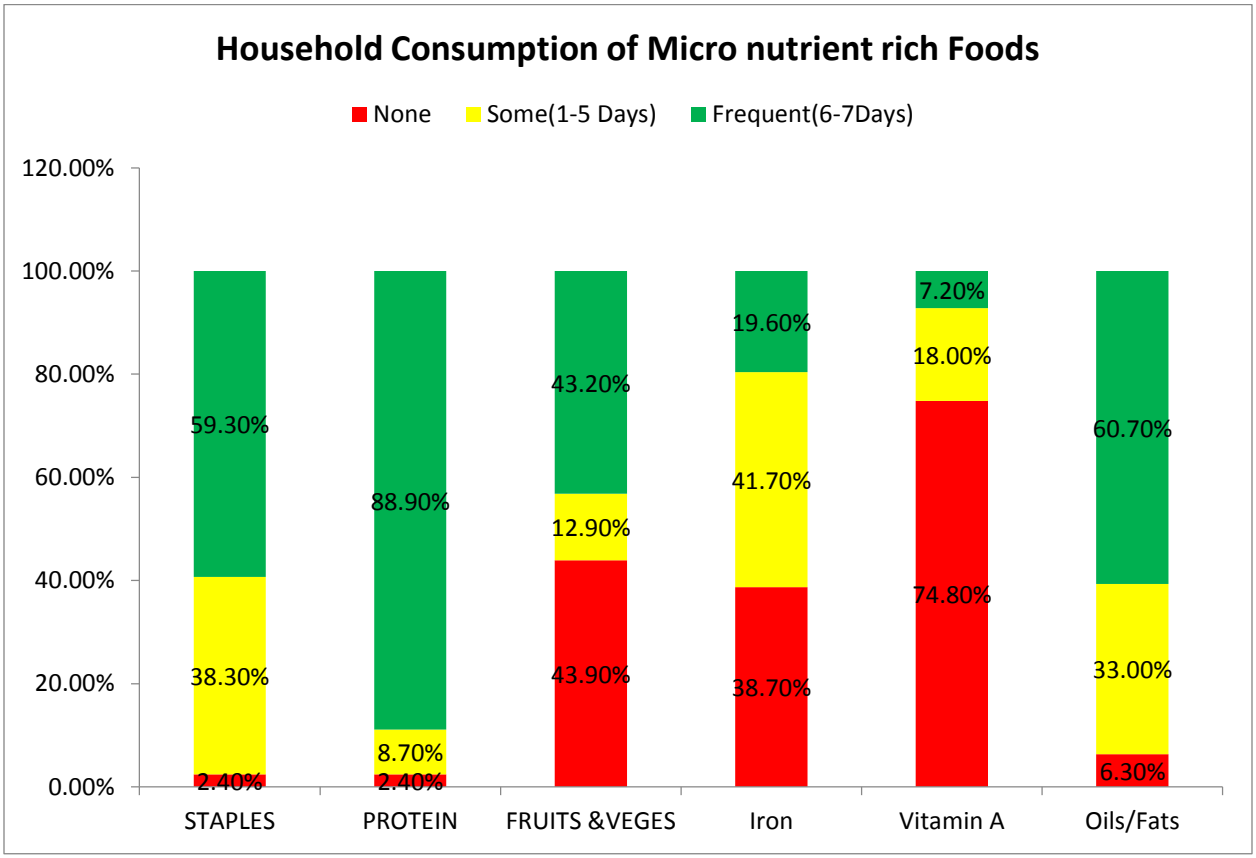

FIGURE 15: HOUSEHOLD CONSUMPTION OF MICRO NUTRIENT RICH FOODS

In addition, further analysis on the average day's food groups are consumed highlighting the consumption of micronutrients showed that proteins were consumed at an average of 6.5 days, staples (5.6 days) and oils and fats (5.4 days). Iron and vitamin A were the least consumed. In Saku and Moyale sub Counties most micronutrients were consumed for more than 5 days this could be attributed to ready market available for commodities in Marsabit and Moyale Town and also in terms of livelihood where most have income they are doing better compared to Laisamis and North Horr where most household had no income to buy food .This is as highlighted in the graph below:

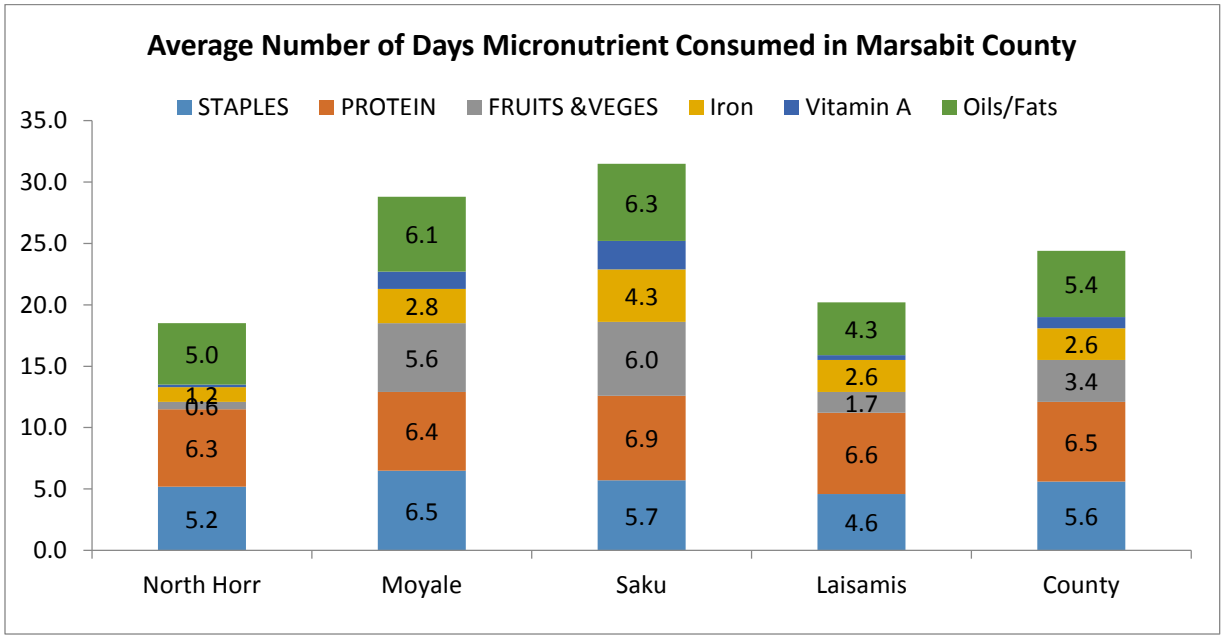

FIGURE 16: AVERAGE NUMBER OF DAYS MICRONUTRIENT WERE CONSUMED

3.6.7 FOOD CONSUMPTION SCORE NUTRITION

FCS-N attempts to improve the link between household food access/consumption and nutritional outcomes. FCS_N 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. Lack of Macronutrients like Protein which are good source of energy can quickly lead to acute Malnutrition and lack of micronutrients like Vitamin A and Iron over a long period of time will lead to chronic Malnutrition.

Further analysis of the food consumption score comparing the frequency of consumption of protein, Vitamin A and Iron- rich foods in the past 7 days. The survey results showed that the majority (86.7%) consumed protein rich foods for 7 days while vitamin A rich foods had 17.4% of the respondents while only 7.2% of the respondents consumed Hem iron-rich foods. This is as shown in the graph below:

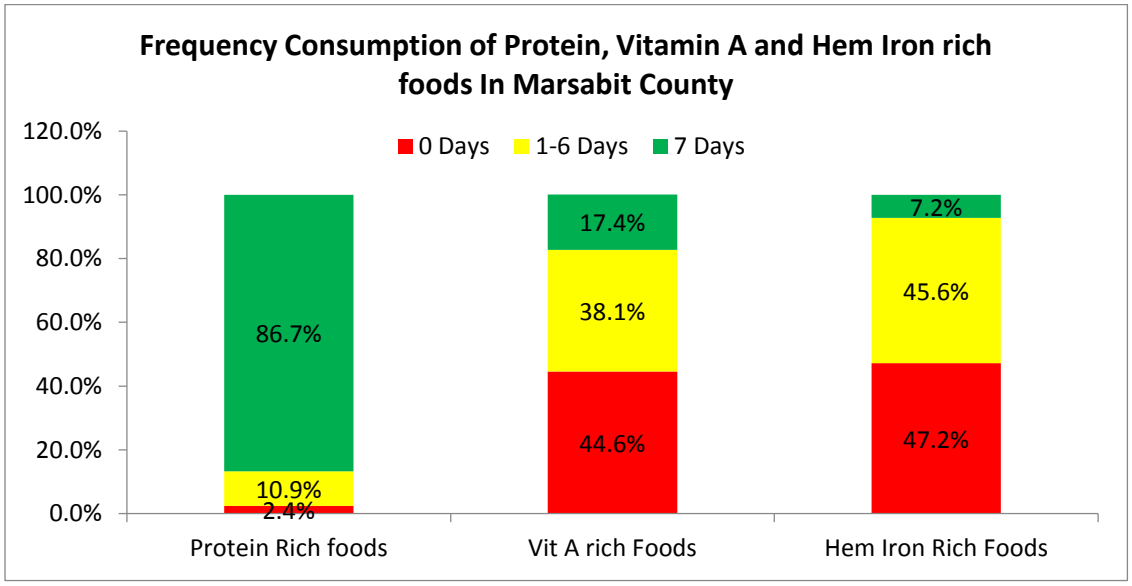

FIGURE 17: FREQUENCY CONSUMPTION OF PROTEIN, VITAMIN A AND HEM IRON RICH FOODS

3.7 LIVELIHOOD

3.7.1 COPING STRATEGY INDEX

The Coping Strategy Index (CSI), a tool developed by the World Food Programme, is commonly used as a proxy indicator for access to food.[9] It is a weighted score that allows one to measure the frequency and severity of coping strategies. Data is collected on the number of days in the last seven days a household used a specific coping strategy due to a shortage of food and/or income.

With regard to the survey, 46.5% (777) of the Household in Marsabit County applied a coping strategy in the last seven days with Saku registering the highest.

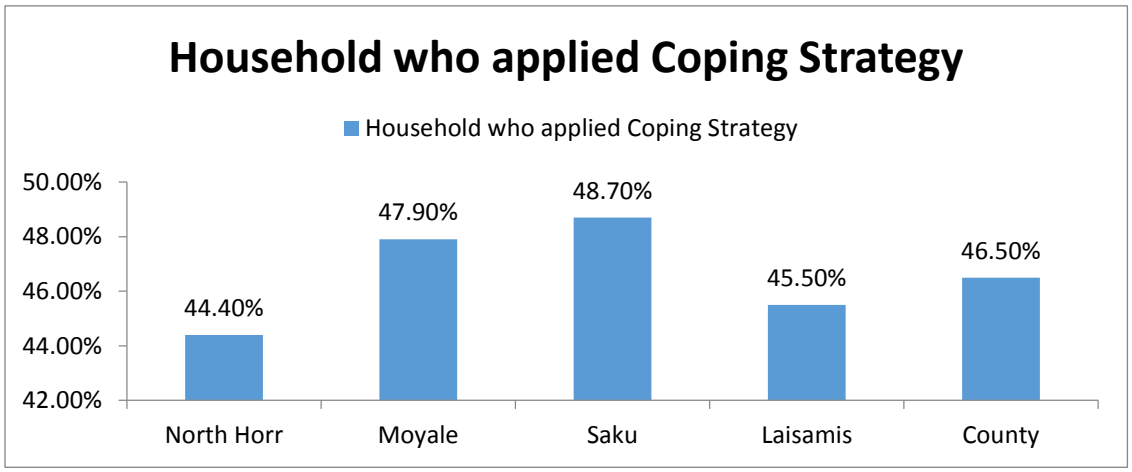

FIGURE 18: HOUSEHOLD WHO APPLIED COPING STRATEGY

The main adopted coping strategies in all the survey zones were; 1) Rely on less preferred and less expensive foods 2) Borrow food or rely on help from a friend or relative as illustrated in the diagram above.

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

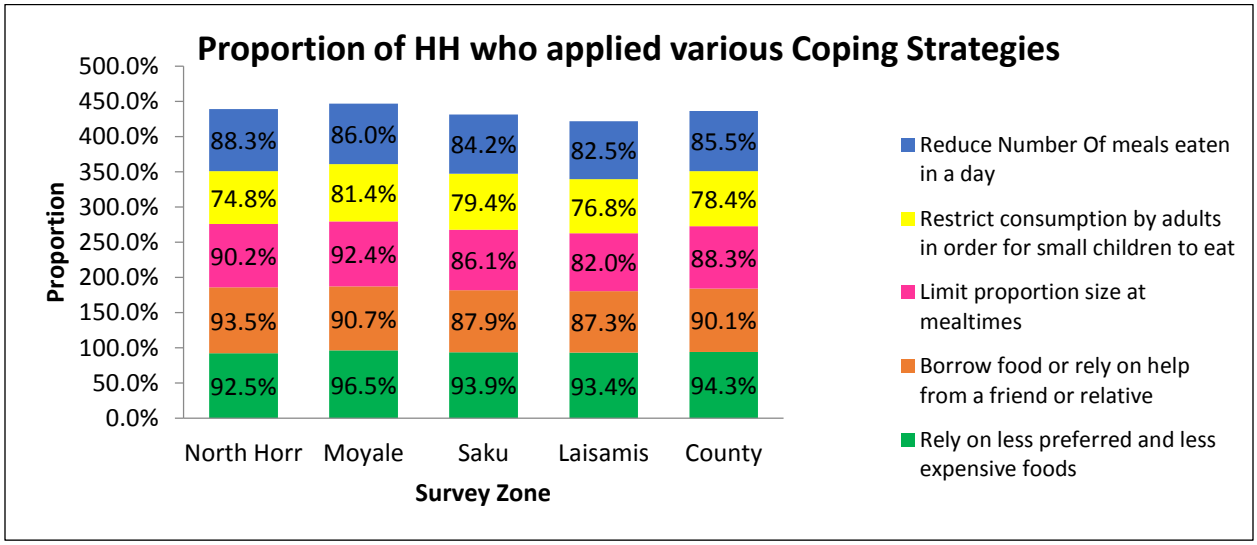

FIGURE 19: PROPORTION OF HH WHO APPLIED VARIOUS COPING STRATEGIES

The survey results showed that the total weighted coping strategy score was 18.22 which shows a significance increase compared to same period in 2016. Saku Sub County registering the highest followed by North Horr at 18.48.
This is as summarized in the graph below:

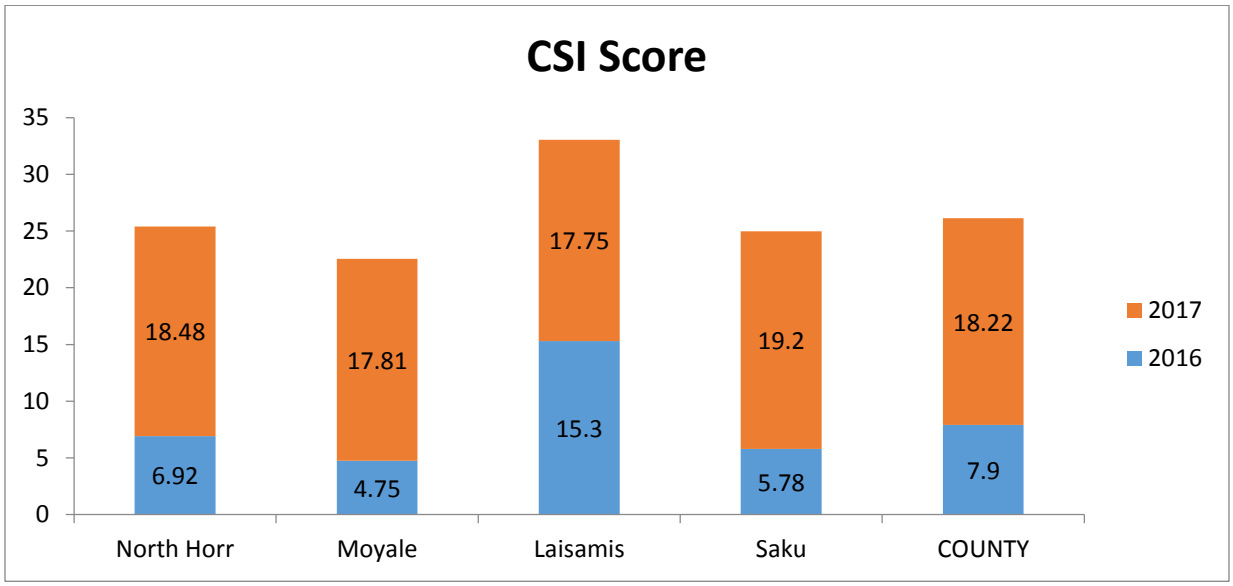

FIGURE 20: COPING STRATEGY INDEX SCORE

CHAPTER FOUR

4.1 CONCLUSIONS AND RECOMMENDATIONS

Results	Recommendation	By Whom	Timeline
High GAM rates in Laisamis and North Horr of 24.8% and 31.0% respectively.	• Continuous Mapping of Malnutrition Pockets in the area • Continuous Screening of all the Under five Children using Z score • Remapping of Outreaches to match the hotspot areas in the County. • There is need to promote the consumption of the least consumed food groups such as eggs, fish, fruits, and vegetables. Low consumption of eggs and fish has been attached to cultural practices and hence it's important to design a BCC approach to address the issues	CHMT and IM	Immediately
Over 80% of the Household In North Horr and Laisamis have no Income during the Survey Period	• The County Government needs to explore investing in value addition technology that can promote sale of livestock and fisheries products since sale of livestock and livestock products is the major income for the community.	County	Immediately
High Food Consumption Score of Food	• Knowledge Attitude and Practice together with a 24 Hour Recall is recommended to determine if the quantity of food being consumed is meeting the required nutrients for the body.	CHMT and IM	Sept 2017
Few health facilities have implementing IMAM surge Approach	• Full role out of IMAM surge Approach and Continuous updating of the dashboards to show how is the situation without waiting for a population Survey	MoH and IPS	Ongoing

	to in all the health facilities		
Poor food access: since the major source of income for majority of the households is livestock sales and at the time of the survey, majority of the animals had moved far in search of pasture and water which limited the food accessibility.	• There is need to always whenever there is a change in food basket to do a sensitization to the community on the preparation of the food items.	MoH	Immediately
Poor mobilization in hygiene and sanitation related issues	• Raising awareness around WASH through community based forums and schools • Provision of NFIs to the household and water tracking to the Health facilities and Community so as to access water.	MoH and IPS	Underway

APPENDICIES

APPENDIX 1: PLAUSIBILITY RESULTS

Indicator	Acceptable values/range	North Horr	Laisamis	Moyale	Saku
Flagged data (% of out of range subjects)	<7.5	0 (0.8 %)	0 (2.4 %)	0 (1.4 %)	0 (1.6 %)
Overall sex ratio (significant CHI square)	>0.001	4(p=0.038)	0(p=0.587)	0(p=0.290)	0(p=0.119)
Age ratio (6-29vs 30-59) Significant CHI square	>0.001	0(p=0.179)	0(p=0.231)	4(p=0.013)	0(p=0.375)
Dig. prevalence score-weight	<20	0 (5)	0 (5)	0 (5)	0 (5)
Dig. prevalence score-height	<20	0 (7)	0 (5)	2 (8)	2 (10)
Dig. prevalence score-MUAC	<20	0 (5)	0 (6)	0 (5)	0 (5)
Standard Dev. Height WHZ	>0.80	0 (0.97)	0 (0.94)	0 (0.96)	0 (1.02)
Skewness WHZ	<±0.6	0 (0.04)	0 (-0.02)	1 (0.26)	0 (0.17)
Kurtosis WHZ	<±0.6	0 (0.05)	0 (0.04)	0 (-0.08)	1 (-0.37)
Poisson WHZ -2	>0.001	0 (p=0.218)	0(p=0.529)	0(p=0.166)	0(p=0.166)
OVERALL	<24	4% (Excellent)	0 % (Excellent)	7 % (Excellent)	3% (Excellent)

APPENDIX 2: CALENDAR OF LOCAL EVENTS

LOCAL CALENDER OF EVENTS: North Horr							
MONTH	**Seasons**	**2012 Arbaa**	**2013 Kamis**	**2014 Gumat**	**2015 Sabdi**	**2016 Ahaad**	**2017Alsinin**
JANUARY	New year celebrations		53 New year celebrations	41 New year celebrations	29 New year celebrations	17 New year celebrations	5 Faite
FEBRUARY	End of short day season		52	40	28	16 ALMADO	4 Jiboor 1
MARCH	start of long day season		51 Election	39 SOM	27	15 ALMADO	3 Jiboor 2
APRIL	Short rain		50	38	26 SOM	14	2 Somder 1
MAY			49	37	25 1st Somder	13 SOM	1 Somder 1
JUNE			48	36 outbreak Kalanzar	24 2nd Somder	12	0 SOM
JULY:		59	47	35	23 SOM	11 Idd Mubarak	
AUGUST:	Long drought	58	46 Kalacha Festival 1	34 SOM	22	10 Eid -ul fitri Kalacha medical	
SEPTEMBER		57 Sorio	45 Sorio	33 Laisamis West gate Sorio	21 Sorio	9 Ka;acha Festival 3	
OCTOBER		56 Mashujaa	44 Mashujaa	32 Mashujaa	20 Mashujaa	8 Mashujaa	
NOVEMBER	short rain	55	43	31 Yaqaa	19	7 Yaqa	
DECEMBER		54 Chrismas Jamhuri day	42 Chrismas Jamhuri day	30 Chrismas Jamhuri day	18 Chrismas Jamhuri day	6 Chrismas/Jamhuri	

LOCAL CALENDER OF EVENTS: Moyale							
MONTH	**Seasons**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
JANUARY	New year celebration		53 New year celebration Mass voter registration	41 New year celebration Drought Bor	29 New year celebration	17 New year celebration Mass voter registration	5
FEBRUARY	Drought		52 Drought Famine	40 Bon (Drought) Famine	28 Drought (Bon) Famine	16 Drought	4
MARCH	Long rains (Agay) Gan		51 General elections	39 Return of IDPS	27	15	3
APRIL	long rains (Agay) gaan		50 Violence	38 Easter long rains	26 Easter Long rains, Garrisa Attack	14 Easter	2
MAY	Chamsa gaara (End of long		49 Labour day	37 Labour day	25 Labour day	13 Labour day	1
JUNE	End of long rains		48 Madaraka	36 Madaraka	24 Madaraka	12 Madaraka, Ramadhan	0
JULY:	Chamsa gaara (End of long	59	47 Ramadhan, Eid filtr	35 End of tribal clashes	23 Obama home coming Kenya	11 Ramadhan, Eid Filtr , Previous survey	
AUGUST:	Bon Agaya	58	46 eid filtr	34	22 Ramadhan, Eid Hajji	10 Eid Adha	
SEPTEMBER	short rains	57 open of schools	45	33 Ramadhan, Eid Hajji	21 IDD celebrations, open of schools	9 onset of short rains	
OCTOBER	short rains	56 Mashujaa day Eid Hajji	44 Mashujaa day Ramadhan	32 Mashujaa day	20 Mashujaa day	8 Mashujaa day Idd adha	
NOVEMBER	Short rains	55 Idd-Adha, Idd-ul-Hajj	43	31 Short rains	19 Idd Adha KCPE	7 KCPE	
DECEMBER		54 Christmas,	42 Christmas,	30 Christmas,	18 Christmas, Jamhuri,	6 Christmas,	

		Jamhuri	Jamhuri	Jamhuri	cross border agreement	Jamhuri	

LOCAL CALENDER OF EVENTS: Saku							
MONTH	**Seasons**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
JANUARY	New year celebration		53 New year celebration	41 New year celebration	29 New year celebration	17 New year celebration	5 voter registration
FEBRUARY	start of long dry season			40	28	16	4 voter registration
MARCH	End of long dry season		51 General elections	39	27	15	3
APRIL	Long rain		50 Easter	38 Easter long rains	26 Easter Long rains, School opening	14 Easter	2 Jubilee nominations
MAY			49 Labour day	37 Labour day	25 Labour day	13 Labour day Loiyangalani cultural Festival	1 Party nomination
JUNE			48 Madaraka	36 Madaraka	24 Madaraka	12 Madaraka Ramadhan	0 Ramadhan Eid
JULY:		59	47	35	23	11 Eid Celebrations	
AUGUST:	Long drought	58	46	34	22 Ramadhan, close of schools	10	
SEPTEMBER	Dry spell	57 Opening of Schools	45	33 Ramadhan	21 IDD celebrations, open of schools	9 onset of short rains	
OCTOBER		56 Mashujaa day	44 Mashujaa day Ramadhan	32 Mashujaa day IDD	20 Mashujaa day	8 Mashujaa day	
NOVEMBER	Short rains	55 Short rains	43 IDD Short rains	31 Short rains	19 long rains	7	

DECEMBER		54 Christmas, Jamhuri	42 Christmas, Jamhuri	30 Christmas, Jamhuri	18 Christmas, Jamhuri	6 Christmas, Jamhuri	

LOCAL CALENDER OF EVENTS: Laisamis							
MONTH	**Seasons**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
JANUARY	New year celebrations		53 New year celebrations	41 New year celebrations	29 New year celebrations	17 New year celebrations	5
FEBRUARY	start of long dry season		52	40	28	16	4
MARCH	End of long dry season		51 Election	39	27 Sarima Clashes	15	3
APRIL	Long rain		50 Nahgan Clashes	38 Safaricom booster	26 sorio	14	2
MAY			49 Labour/Sorio Lake Turkana Fest	37 Labour Sorio	25 Labour/Sorio Lalema -windpower	13 Sorio, Lake Turkana Festival	1
JUNE			48 Madaraka	36 Lake Turkana Festival Mabaraka	24 Lake Turkana Festival Madaraka	12 Madaraka	0
JULY:		59	47	35	23 Start of constrution of wind power Road	11 Idd Mubarak	
AUGUST:	Long drought	58	46	34	22	10 Eid -ul fitri / Sorio	
SEPTEMBER		57 Sorio	45 Sorio	33 Laisamis West gate attack /	21 Sorio	9 Sorio	
OCTOBER	short rain	56 Mashujaa / Sorio, Pesa ya Computer	44 Mashujaa / Sorio	32 Mashujaa / Sorio	20 Mashujaa Sorio	8 Mashujaa / Sorio	
NOVEMBER		55	43	31	19	7 Lmatotho	
DECEMBER		54 Chrismas Jamhuri day	42 Chrismas Jamhuri day	30 Chrismas Jamhuri day	18 Chrismas Jamhuri day	6 Chrismas/Jamhuri Migration of	

APPENDIX 3: CLUSTERS VISITED

Village_Saku	Cluster	Village_Moyale	Cluster	Village_North Horr	Cluster	Village_Laisamis	Cluster
GALM GOLOMPO	1	Gadamoji	1	Gamura	1	kula pesa	1
SHUKRI HUKA	2	Dub Jldesha	2	Barambate	2	komote	2
AL-HIDAYA	3	Gedho Guyo	3	Normadic/boji/boqe	3	Lolkujita	3
LOWER SEGEL	4	Chief's	4	Rage centre	4	Lmagur	4
qabicha abdalla	5	Diid Qotos	5	Elboji	5	Banachap	5
CENTRE 1	6	Dadach Iya	6	Shankera	6	Eisimthurolo	6
KARATINA 1	7	Sora Guyo	7	Balesa/Ali Boru	7	jalle	7
LMANARIE	8	Molu Waqu	8	Woyam	8	gargulle	8
NAMBAA	9	Diba Galgalo	9	Mathare	9	Kurungu	9
HASSAN SHALLE 1	10	Masjid	10	Roba umuro	10	Lapikutuk	10
TULICHA/HUSSEIN BERE	11	Sororo	11	Antonto	11	Manyatta taleyo	11
ADAN TEGO	12	Dubo	12	Mamo elema	12	Kitachoni	12
AJAA TISA	13	Watiti	13	Nangolei	16	Sokotei	13
DOKATA ALI 1	14	Yabalo Godha	14	Ilgele	17	Ndikir	14
GODANA ABDI	15	Abdi Kala	15	Ilolo	18	Merille Center 2	15
GALCHA DIDA	16	Gina Koje	16	El-maasich	19	Manyatta Ngamia	16
LOCHE DULA	17	Hirbo Woche	17	Kancharo	20	Lowa mara	17
UPPER LEYAI	18	Galgalo Guyo	18	Gallas	21	goob dokhe	18
TARI ADHI	19	Dabaso Chiri	19	Barambate	22	galdeyllan eysimarboy	19
ISAKO UMURO IDP	20	Mohamed Hassan	20	El-besso	23	don bosco centre	20
GALM GALGALLO	21	Kulow Abdiraw	21	Qorqa	24	dubsahay galimogle	21
ILMAN LIBAN-BADASA	22	Wako Guyo Jillo	22	Bura	25	rongumo eysimgobanay	22
QALICH JATTANI	23	Araft Diba	23	Qabdo	26	saale segelan	23
WARIO DADACHA	24	Adan Mala	24	Fila	27	tubcha luhmorogo	24
JARSO GALGALLO	27	Ibrahim Ali	25	Centre	28	uroween ogoom	25
HUKA ADI	28	Wako Huqa	26	Kubi athi	29	nebey eysimbasete	26
GUYO ARERO	29	Abdikadir Ibrahim	27	Taka ballo	30	dubsahay adiyakhiche	27
ILMAN DAMBI	30	Gurumesa 2	28	Elyibo	31	ongeli	28
ILMAN HARSAMA	25,26	K.W.S Quarter	29	Balesa town	34	sukuroi	29
LOILEI	RC	Manyatta	30	Bule Warobesa	35	Dupshai Namarei	30
MOLU GURACHA	RC	Rach Hlakhe	RC	Marime	36	lengima	31
ROB DABASSO	RC	Shauri Yako	RC	Illeret town	13,14,15	Munanda	32
LTURUYA 1	RC	Mama Adeo	RC	Bales saru	32,33	Nalangari	33
		Olla Ali Jillo	RC	Elguracha/Arerite	RC	marti	34
				Bone Dido	RC	lolola/ Ilbarok	35
				Sesa raha	RC	ongeli	36
				Ilma kolkole	RC	nakwamekwi	RC
						Esimfecha	RC
						nahasan	RC
						Manyatta kula pesa	RC

APPENDIX 4: QUESTIONNAIRES

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	**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							

								13=others (specify)…… ……..			
< 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	**2.14. What is the residency status of the household**?

	3. = Widowed 4. = separated 5. = Divorced. |____|	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/childr en 1=Mother 2=Father 3=Sibling 4=Grandmot her 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 question s 3.2	If yes to questio n J. which nutrition progra m? 1.OTP 2.SFP 3.BSFP Other Specify _____	Has your child (NAME) been ill in the past two weeks? 1.Yes 2. No If No, skip to 3.4	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	If the child **had watery diarrhoea** in the last TWO (2) WEEKS, did the child get: 1. ORS 2. Zinc supplementatio n? *Show sample and probe further for this component* *check the remaining drugs(confirm from mother child booklet)*

														6. Mobile clinic 7. Relative or friend 8. Local herbs 9.NGO/FBO	
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	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**	Has child received the second measles vaccination (18 to 59 months) *(On the upper right shoulder)?* **1=Yes, Card** **2=Yes, Recall** **3 = No**

					worms in the past year? *(show Sample)*				**know**	**4 = Do not know**
01										
02										
03										
04										

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

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

Child 2						
Child 3						
Child 4						

MATERNAL NUTRITION FOR WOMEN OF REPRODUCTIVE AGE (15-49 YEARS)*(Please insert appropriate number in the box)*									
3.7	**3.8**	**3.9**	**3.10**			**3.11**			
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 2. Closed container / Jerrican |____|	**4.5 How much water did your household use YESTERDAY (excluding for animals)?** *(Ask the question in the number of 20 liter Jerrican and convert to liters & write down the total quantity used in liters)* |____|	
4.6	**Do you pay for water?** 1. Yes 2. No **(If No skip to Question 4.7.1**) |____|	**4.6.1 If yes, how much per 20 liters jerrican** _____ **KSh/20ltrs**	**4.6.2 If paid per month how much** |____|

4.7.1a	We would like to learn about where members of this household wash their hands. Can you please show me where members of your household most often wash their hands? *Record result and observation.* **OBSERVED** FIXED FACILITY OBSERVED (SINK / TAP) IN DWELLING .....1 IN YARD /PLOT.....2 MOBILE OBJECT OBSERVED (BUCKET / JUG / KETTLE) ..... 3 NOT OBSERVED NO HANDWASHING PLACE IN DWELLING / YARD / PLOT ..... 4 NO PERMISSION TO SEE 5	4.7.1b Is soap or detergent or ash/mud/sand present at the place for handwashing? YES, PRESENT .....1 NO, NOT PRESENT **2**

4.7.1	**Yesterday (within last 24 hours) at what instances did you wash your hands? (MULTIPLE RESPONSE-** (Use 1 if "Yes" and 2 if "No") 1. After toilet…… 2. Before cooking…….. |____| 3. Before eating…… |____| 4. After taking children to the toilet…… |____| 5. Others…… |____|	
4.7.2	**If the caregiver washes her hands, then probe further; what did you use to wash your hands?** 1. Only water 2. Soap and water	**4.8 What kind of toilet facility do members of your household usually use?**

	3. Soap when I can afford it 4. traditional herb 5. Any other specify |____|	**If 'Flush' or 'Pour flush', probe:** **Where does it flush to?** |____| **If not possible to determine, ask permission to observe the facility.** **flush / pour flush** **flush to piped sewer system 11** **flush to septic tank 12** **flush to pit latrine 13** **flush to open drain 14** **flush to DK where 18** **pit latrine** **ventilated improved pit latrine 21** **pit latrine with slab 22** **pit latrine without slab / open pit 23** **composting toilet 31** **bucket 41** **hanging toilet / hanging latrine 51** **no facility / bush / field 95** 1. **OTHER (specify) 96**

5.0: Food frequency and Household Dietary Diversity

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

5.3. White tubers and roots: White potatoes, white yams, cassava, or foods made from roots														
5.4 Dark green leafy vegetables: Dark green leafy vegetables, including wild ones + locally available vitamin A rich leaves such as cassava leaves etc.														
5.5 Other vegetables *(e.g., tomatoes, egg plant, onions)?*														
5.6. Vitamin A rich fruits: + other locally available vitamin A rich fruits														
5.7 Other fruits														
5.8 Organ meat (iron rich): Liver, kidney, heart or other organ meats or blood based foods														
5.9. Flesh meats and offals: Meat, poultry, offal *(e.g. goat/camel meat, beef; chicken/poultry)?*														
5.10 Eggs?														
5.11 Fish: Fresh or dries fish or shellfish														
5.12 Pulses/legumes, nuts *(e.g. beans, lentils, green grams, cowpeas)*?														
5.13 Milk and milk products *(e.g. goat/camel/ fermented*														

milk, milk powder)?														
5.14 Oils/fats *(e.g. cooking fat or oil, butter, ghee, margarine)?*														
5.15 Sweets: Sugar, honey, sweetened soda or sugary foods such as chocolates, sweets or candies														
5.16 Condiments, spices and beverages:														

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

	4.1 FOOD FORTIFICATION (FF)/- *Please ask the respondent and indicate the appropriate number in the space provided*
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	|_____| |_____| |_____| |_____| |_____| |_____|