TURKANA SMART NUTRITION SURVEY REPORT

January 2018

ACKNOWLEDGEMENT

Turkana County January 2018 SMART survey was successfully concluded with support from various partners under the stewardship of the County Department of Health (CDH). The results of the survey provide vital information about the health, nutrition and food security status of the population in the County. The generated evidence will be integral in informing and evaluating programming in nutrition specific and sensitive sectors at the county and national levels.

Therefore, the Directorate of Family Health would like to take this early opportunity to acknowledge effort and support of all those individuals and organizations that supported and participated in the survey. Specifically, I would like to thank UNICEF Kenya, GIZ, Save the Children, International Rescue Committee, Afya Timiza, World Vision, WHH, World Food Programme, and KRCS for their financial, in-kind and technical support.

Special appreciation goes to our County Executive Committee Member for Health- Hon. Jane Ajele, Chief Officer of Health services and Sanitation- Moses Natome for providing leadership and an enabling environment. I acknowledge Mr. Wycliffe Machani, County Nutrition Coordinator for his tireless commitment and leadership in spearheading, the SMART survey technical team and members of County and Sub county health management teams for their valuable contribution.

I also extend my special thanks to the parents and caretakers for providing credible information during the interviews and countenancing for their children to be measured. Lastly, I thank all the survey teams (coordinators, team leaders, enumerators) and all those who gave their valuable time and worked tirelessly to ensure credible and timely results.

Mrs. Alice Akalapatan
Deputy Director, Family Health Directorate
Turkana County Department of Health

List of abbreviation

1	ARI	Acute Respiratory Infections
2	ASAL	Arid and Semi-Arid Lands
3	CHWs	Community Health Workers
4	CI	Confidence interval
5	CMAM	Community Management of acute Malnutrition
6	CMR	Crude Mortality Rate
7	CSB	Corn Soy Blend
8	DD	Dietary Diversity
9	DHMT	District Health Management Team
10	DMB	Drought Management Bulletin
11	SCNO	Sub County Nutrition Officer
12	DoL	Diocese of Lodwar
13	ENA	Emergency Nutrition Assessment
14	EPI	Expanded Program on Immunizations
15	EWS	Early Warning System
16	FEWSNET	Famine Early Warning Systems Network
17	FCS	Food Consumption Score
18	FFA	Food For Asset
19	GFD	General Food Distribution
20	GoK	Government of Kenya
21	HH	Household
22	HiNi	High Impact Nutrition Interventions
23	HNDU	Human Nutrition and Dietetics Unit
24	IMAM	Integrated Management of Acute Malnutrition
25	IPC	Integrated Food Security Phase Classification
26	KEPI	Kenya Expanded Programme of Immunisation
27	KFSSG	Kenya Food Security Steering Group
28	MUAC	Mid Upper Arm Circumference
29	NDMA	National Drought Management Authority
30	OJT	On The Job Training
31	OPV	Oral polio Vaccine
32	ORS	Oral Rehydration Solution
33	OTP	Outpatient Therapeutic Programme
34	PLW	Pregnant and Lactating Women
35	PPS	Probability proportional to size
36	SFP	Supplementary Feeding Programme
37	SMART	Standardized Monitoring and Assessment of Relief and Transitions
38	U5	Under Five Years Old

39	UMR	Under-five Mortality Rate
40	UNICEF	United Nations Children's Fund
41	WFP	World Food Programme
42	WHO-GS	World Health Organisation Growth Standards
43	WFH	Weight for Height

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EXECUTIVE SUMMARY

Turkana County Department of Health in collaboration with nutrition partners (UNICEF, Save the Children International, IRC, Afya Timiza, WHH, KRCS, WVK and World Food Programme for their financial and technical support) successfully conducted Four independent SMART surveys concurrently in February 2018 covering the entire county. This ensured all the livelihood zones in the county (pastoral, agro-pastoral and formal employment/business/petty trade) were covered. The survey zones included Turkana Central (Central and Loima sub counties), Turkana North (North and Kibish sub counties), Turkana South (South and East sub counties) and Turkana West (West Sub County).

The main goal of the survey was to determine the prevalence of malnutrition among the children aged 6-59 months old and women of reproductive age (WRA) in Turkana County.

The specific objectives of the survey were to;

1. To determine the prevalence of acute malnutrition among under five-year-old children, women of reproductive age.
2. To determine the immunization coverage for measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months;
3. To estimate coverage of iron / folic acid supplementation during pregnancy in women of reproductive age
4. To determine de-worming coverage for children aged 12 to 59 months;
5. To determine the prevalence of common illnesses among Children under five ;
6. To collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices.
7. To collect photos for facial recognition of malnutrition (MERON study).

Standardized Monitoring Assessment for Relief and Transition Method (SMART) was used to conduct the surveys. The methodology is a cross-sectional design. A three-stage sampling process was used in this survey. The first stage involved sampling of sub locations (clusters) from a sampling frame using ENA for SMART software (July 9, 2015 version). The second stage sampling involved segmentation of the sampled sub locations to identify the villages to be sampled. In the third stage, households were selected randomly upon getting the updated list of households in the village. Household was used as the basic sampling unit. Standard SMART questionnaire in Open Data Kit (ODK) collect installed in android tablets was used to collect data. The data was uploaded in ODK aggregate servers (courtesy of World Visio Kenya) from the tablets and downloaded daily for plausibility checks and at the end of the survey for data analysis. The data collection teams were provided with daily feedback on the quality of data collected the previous day.

CHAPTER ONE: BACKGROUND INFORMATION

1.0 OVERVIEW OF TURKANA COUNTY

Turkana County is situated in the arid North-western region of the country. It shares international borders with Ethiopia, Sudan and Uganda and locally with Baringo, West Pokot and Samburu counties. The County has an estimated total population of 855,399[1] and cover an area of 77,000km^2. The County is divided into seven sub counties namely; Turkana Central, Loima, South, East, North, Kibish and West

According to National Drought Management Authority (NDMA), the County has four main livelihood zones. Nearly 60% of the population is considered pastoral, 20% agro pastoral, 12% fisher folks and 8% are in the urban/peri-urban formal and informal employments. The county has poverty index of 94% which contributes 3.13% on national poverty index. Turkana is constrained by the harsh environment, remoteness coupled with the poor infrastructure and low access to essential services in addition to other underlying causes of poverty that are experienced elsewhere in Kenya. It is classified among the Arid and semi-arid lands (ASAL).

Being an ASAL county, Turkana is a drought prone area that experiences frequent, successive and prolonged drought and cattle rustling which leads to heavy losses of lives and livestock.

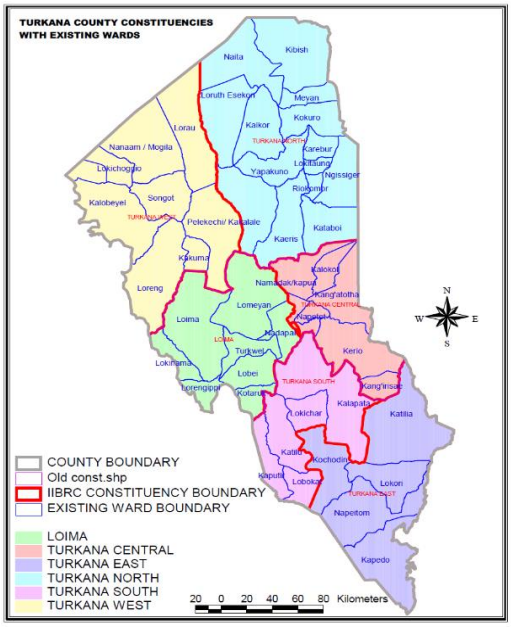


Figure 1 Map of Turkana County

1.1 Food and nutrition security situation

According to 2017 LRA Turkana County was classified as extremely critical Nutrition Situation (IPC Phase 5; GAM of 30.1 percent).Turkana West (GAM-23.4%), showed significant deterioration (critical Nutrition Situation IPC Phase 4).) as reported in June 2017. This means that **ONE** in every **THRE**E or 31,225 children in Turkana County are currently suffering from acute malnutrition and is at increased risk of dying. Acute malnutrition among women remained high at 9.4% compared to 10% in 2016.

The report showed that the main occupation of Households has significantly shifted especially in the North – Livestock herding reduced to 51.3% from 71% in 2016. Most households are depending on petty trading through selling firewood and charcoal burning to compensate for loss of livelihoods in all survey zones.

Overall, the key drivers of poor nutrition status include; Chronic food insecurity, High prevalence of childhood illness, Inadequate dietary diversity, Poor access to safe water, Poor hygiene practices (High rates of open defecation), Inadequate incomes and assets for the households, High maternal workload such as fetching wood, water and cooking and Social issues including alcoholism among caregivers in localized areas.

[1]Kenya National Bureau of Statistics (KNBS) 2009 Census Report

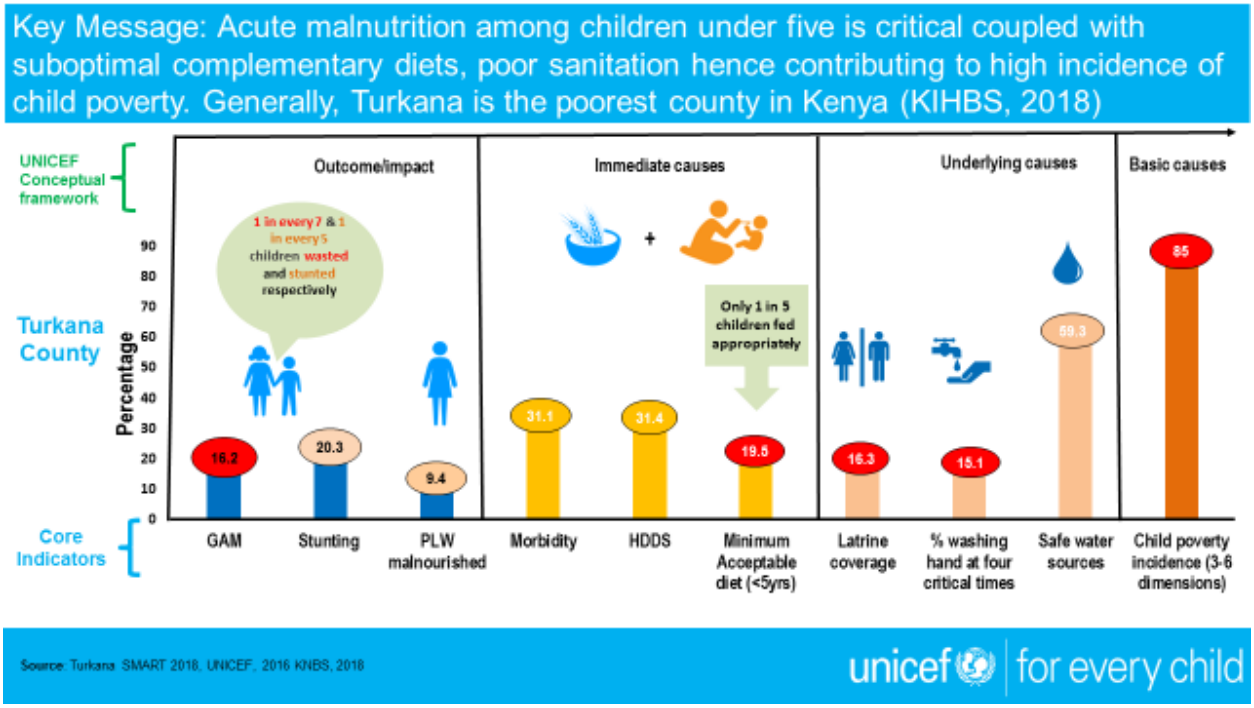


Figure 2: Key Determinants of Nutrition Outcomes In Turkana County-Feb 2018

The county's VCI was 69 as at 27th December 2017 which is above normal ranges across all sub counties resulting to improved milk production. The County in collaboration with partners has been implementing life-saving health, nutrition & food security interventions since Feb 2017. This nutrition survey report provides a progress update of health, nutrition & food security situation in the County to inform further response actions and programme adjustments. The results will feed into short rains assessment report of Jan/Feb 2018.

1.2 Humanitarian and Development partners

Many agencies, UN and NGOs are working in collaboration with the Ministry of Health (MoH) in child survival interventions. The main responsibility of MoH is quality assurance of the nutrition and health- related activities through the coordination of all activities in Turkana County. The NGOs implementing health and nutrition programs include: Save the Children International (SCI), IRC, Afya Timiza, KRCS, WVK, WHH and World Food Programme.

1. UNICEF supports Nutrition, Health, WASH, Communication for Development and Child Protection programs
2. World Food Programme (WFP) provides Food for Assets (FFA) and SFP food commodities.
3. Child fund, OXFAM and Turkana Relief program implement FFA and Cash transfer.
4. Kenya Red Cross support emergency response including Nutrition, WASH and livelihood project
5. Other agencies implementing resilience and livelihood projects are FAO, DoL

1.3 Main SMART Survey Objective

The overall goal of the survey was to determine the prevalence of malnutrition among the children aged 6- 59 months old and women of reproductive age in Turkana County.

1.3.1 Specific Objectives

The specific objectives of the survey were to;

1. To determine the prevalence of acute malnutrition among under five-year-old children, women of reproductive age.
2. To determine the immunization coverage for measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months;
3. To estimate coverage of iron / folic acid supplementation during pregnancy in women of reproductive age.To determine de-worming coverage for children aged 12 to 59 months;
4. To determine the prevalence of common illnesses among Children under five
5. To collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices.
6. To collect photos for facial recognition of malnutrition (MERON study).

1.4 Timing of Turkana SMART surveys

The survey will be conducted towards the end of the short rains, in the month of Jan/Feb 2018.

Table 1: Survey calendar

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

1.5 Survey Area

Four independent surveys were conducted to cover all the livelihood zones (pastoral, agro-pastoral and formal employment/business/petty trade) and administrative boundaries of Turkana County. The survey zones are summarised in table 4 below;

Table 2: Turkana county survey zones

No	Survey Zone	Administrative Sub counties
1	Turkana Central	Central and Loima
2	Turkana North	North and Kibish
3	Turkana West	West
4	Turkana South	South and East

CHAPTER TWO: METHODOLOGY

2.0 INTRODUCTION

The SMART Methodology was used to conduct the survey in planning, training, data collection, entry and analysis. Other data sets collected concurrently included data on Water Sanitation and Hygiene (WASH) and Food security and livelihood (FSL). The entire exercise was done in consideration with all guidelines as stipulated by the MoH at county and national level. The survey methodology was presented to the County Steering Group (CSG) and National Nutrition Information Working Group (NIWG) for validation before commencement of data collection.

2.1 Sample size calculation

The Sample size was determined using ENA for SMART software (9thJuly 2015). The table below outlines factors considered when determining the sample size calculation

Table 3:Sample size calculation

	Turkana Central	Turkana North	Turkana West	Turkana South	Rationale
Estimate (GAM)	31.4%	34.1%	23.4%	37.0%	Point previous 2017 SMART survey, no expected sig change
Precision	5.0%	5.0%	5.0%	5.0%	From SMART Global project (Rule of thumb)
Design Effect	1.19	1.15	1.81	1.36	From 2017 SMART Survey to cater for heterogeneity
Estimated Number of Children	429	432	543	530	
Average HH Size	6	6	6	6	From the previous 2017 Survey
Non-Response Rate	2	2	2	2	Based on 2017 SMART Survey Experience
Proportion of Children Under 5	15.2%	15.2%	15.2%	15.2%	From DHIS
Estimated Number of Households	533	537	675	659	
Number of Households per Day	15	15	15	15	Based on 2017 SMART Survey Experience
Number of Cluster	**36**	**36**	**43**	**44**	Computed from the Number of HHs per Day
Number of Teams	6	6	7	8	

2.2 Sampling method

A three stage sampling process was used in this survey. The first stage involved sampling of sub locations (clusters) from a sampling frame using ENA for SMART software (9thJuly 2015 version).The second stage sampling involved segmentation of the sampled sub locations using the estimated populations provided by the chief/sub chief to identify the villages to be sampled. In the third stage, households were selected randomly upon getting the updated list of households in the village provided by the village elder. Taking into account the time spent on travelling to each household, introductions and breaks, 16 households were sampled per cluster.Table6 shows a summary of the actual number of sampled clusters, households and children per survey zone

Table 4: Sampled number of clusters, households and children

Survey Zone	Number of Clusters	No. of Households	No. of children sampled
Turkana Central	36	533	429
Turkana North	36	537	432
Turkana South	44	659	543
Turkana West	43	675	530

2.2.1 Selection of the households

The definition of a household was a shelter or more whose residents ate from the same "cooking pot". Households to be surveyed were selected randomly using the updated list of households in the selected village/segment.

2.2.2 Selection of children for anthropometry

All children between 6-59months of age staying in the selected household were included in the sample. The respondent was the primary care giver of the index child/children. If a child and/or the caregiver were temporarily absent, then the survey team re-visited the household to collect the data at an appropriate time.

2.3 Survey team

There was one overall survey coordinator for all the zones, and 8 survey zone coordinators. In total, there were 27 teams with each survey zone having 6 or 7 teams. The number of teams per zone depend on the number of clusters. Twenty seven (27) teams of 3 members each was selected to include two Measurers, one Enumerator/Team Leader. KIMETRICA officers worked with the 8 zone coordinators to conduct MERON back checks and collection of qualitative data in 10% of the households.

2.3.1 Team Selection

The coordinators and team leaders were selected from MOH and partner staff. The enumerators were selected based on past performance and experience in SMART survey.

2.4 Survey team training

2.4.1 Supervisors training

The survey core team [from Health Management Team (HMT) and nutrition partners) was sensitized on supervisor's module for SMART for a day. The training was supported by 1 UNICEF technical advisor and representatives from nutrition implementing partners.

2.4.2 Enumerator training

A comprehensive training of the survey teams was carried out for four and half days at a central point (2 halls). The training entailed sampling methods; anthropometric measurements; interviewing techniques; and completion of questionnaires & taking of photos by use of tablets. Training for Zone coordinators took place on the MERON qualitative questions. Standardization tests and pilot test was part of the training which included each enumerator completing two questionnaires and all pre-tested questionnaires was entered on computer to test the practicability of data entry. The pre-test exercise was discussed and necessary changes on the questionnaire will be done accordingly.

2.5 Data collection

Quantitative data collection method was used to collect the survey data through ODK collect; the following data will be collected:

a) Anthropometry (weight, height, edema, MUAC, age, sex) for children and MUAC for mothers.
b) Prevalence of childhood illnesses in the last 2 weeks prior to the survey.
c) Water and Sanitation and Food security.

Facial photos of the children after consent is sought by the survey team: the photo was used in the MERON study. Ethical approval sought from the AMREF ERC. The standard survey questionnaire developed by the NITWG modified to the context will be used. A separate 'small' questionnaire was used to collect photo information: This allowed daily uploading of anthropometry data as photos were too large … given the poor network coverage in the county. Ten percent of the households were revisited by supervisors for MERON study quality assurance (back-checks and to collect qualitative data).

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 87cm or less than 2 years of age while height measured for those greater or equal to 87cmormorethan2 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 6-59months of age and for women in the reproductive age (1545yearsof age).

Bilateral oedema: Assessed by the application of normal thumb pressure for at least 3 seconds to both feet at the same time. The presence of a pit or depression on both feet 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 allchildren6-59months, information on BCG, OPV1, OPV3 and measles vaccinations status was collected using health cards 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 children6-59monthsofage, information on Vitamin A supplementation in the 6 months prior to the survey date was collected using child health 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.

De-worming status: Information was solicited from the caregivers as towhetherchildren12-59 months of age had received de-worming tablets or not in the previous one year, .This information was verified by health care 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-litrejerry-canand 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 utilisation 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. The Table below shows WFP corporate thresholds for FCS used to analyse the data.

Table 5: WFP corporate FCS thresholds

Food Consumption Score	Profile
<21	Poor
21.5-35	Borderline
>35	Acceptable

Coping strategy index (CSI):

Data on the frequency of the five reduced CSI individual coping behaviours was collected. The five standard coping strategies and their severity weightings used in the calculation of Coping Strategy Index are:

- Eating less-preferred foods (1.0),
- Borrowing food/money from friends and relatives (2.0),
- Limiting portions at mealtime (1.0),
- Limiting adult intake (3.0), and
- Reducing the number of meals per day (1.0)

CSI index per household was calculated by summing the product of each coping strategy weight and the frequency of its use in a week (no of days).

2.7 Nutrition Indicators

Nutrition indices analysed include WfH(wasting), WfA (underweight), HfA (stunting) And MUAC (wasting).

2.7.1 Nutritional Indicators for children 6-59 months of age

The following nutrition indicators were used to determine the nutritional status children under five years

Weight for Height (WfH)

Table 6: Definitions of acute malnutrition using WFH and/or edema in children aged 6–59 months

Acute malnutrition	WFH Z-Score	Oedema
Severe	<-3 Z Score	Yes/No
	>-3 Z Score	Yes
Moderate	<-2 Z Scores to ≥ -3 Z scores	No
Global	<-2 Z scores	Yes/No

Adapted from SMART Manual, Version 1, April 2006

Mid Upper Arm Circumference (MUAC)

Guidelines for the results expressed as follows:

i. Severe malnutrition is defined by measurements <115mm
ii. Moderate malnutrition is defined by measurements >=115mm to <125mm
iii. At risk is defined by measurements >=125mm to <135mm
iv. Normal >=135mm

MUAC cut off points for the women for pregnant and lactating women: Cut off <21 cm was used for under nutrition

2.8 Data analysis

During supervision in the field, and at the end of each day, supervisors manually checked the tablet questionnaires for completeness, consistency and accuracy. This check was also used to provide feedback to the teams to improve data collection as the survey progressed. At the end of each day, and once supervisors had completed their checks, the tablets were each synchronized to the server and the data collected was uploaded, therefore there was no need for any further data entry. The SMART plausibility report was generated daily in order to identify any problems with anthropometric data collection such as flags and digit preference for age, height and weight, to improve the quality of the anthropometric data collected as the survey was on-going.

Feedback was given to the teams every morning before the teams left for the field. All data files were cleaned before analysis, although use of tablet reduced the amount of cleaning needed, as a number of restrictions were programmed in order to reduce data entry errors. Anthropometric data for children 6-59 months and Mortality data was cleaned and analysed using ENA for SMART software (9thJuly2015). The nutritional indices were cleaned using SMART flags in the ENA for SMART software. Weighting of the survey zone results was done in order to obtain county data. Table 9 summarises other criterion that was used for exclusion. Other data sets were analyzed by use of SPSS 20.0 and Microsoft Excel. Weighting of the sub county results was done to obtain the County baseline data

Table 7: Definition of boundaries for exclusion

1. If sex is missing the observation was excluded from analysis.
2. If Weight is missing, no WHZ and WAZ were calculated, and the programme derived only HAZ.
3. If Height is missing, no WHZ and HAZ were calculated, and the programme derived only WAZ.
5. For any child records with missing age (age in months) only WHZ was calculated.
6. If a child has oedema only his/her HAZ was calculated.

Additional data for children aged 6-59 months, women aged 15-49 years, WASH, and food security indicators were cleaned and analysed using SPSS and Microsoft excel.

2.9 Survey Limitations

a) There were inherent difficulties in determining the exact age of some children (even with use of the local calendar of events), as some health cards had erroneous information. This may have led to inaccuracies when analysing chronic malnutrition. Although verification of age was done by use of health cards, in some cases no exact date of birth was recorded on the card other than the date a child was first seen at the health facility or just the month of birth. Recall bias may link to wrong age which then leads to wrong weight for age and height for age indices.

b) There was poor recording of vitamin A supplementation and de-worming in the health cards. Some of the mothers indicated that their children had received Vitamin A and de-worming while it was not recorded in the health cards.

2.10 Ethical considerations

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

CHAPTER THREE: RESULTS AND DISCUSSIONS

3.0 HOUSE HOLD DEMOGRAPHICS AND SOCIO ECONOMIC INDICATORS

3.1 Household demographic characteristics

3.1.1 Number of households surveyed and average household size.

A total of 2,388 households were surveyed across the county. As opposed to June 2017, this time round the non-response rate was0% in all survey zones except for Turkana south survey zone where the non-response rate of 0.94%, a reduction from 1.4% reported in June 2017. All the sampled clusters were visited due to the peace and tranquillity that prevailed. The non-response rates were within the 2% threshold factored in sample size calculation protocol.
The average household size remained unchanged at 4.96% in Jan 2018 when compared to June 2017. However, the proportion of children umber five was 28.9% compared to 22.6% as recorded in June 2017, *see table 8 below*

Table 8: Number of clusters, households and children reached

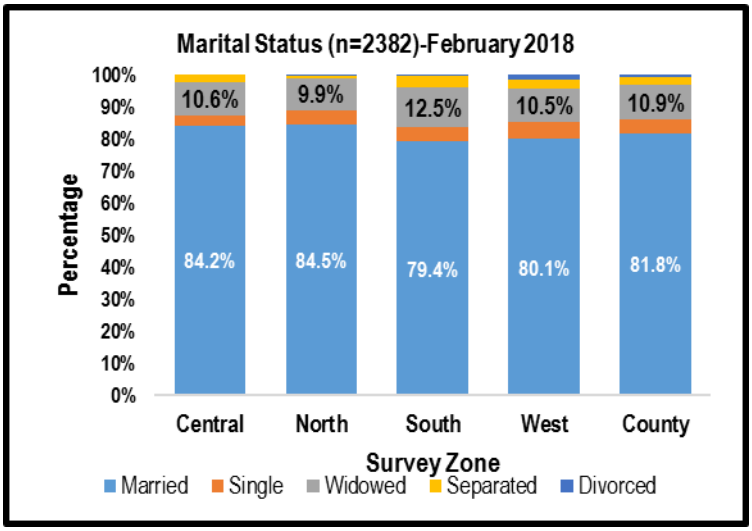
	Target per the survey plan			Actual No Reached			
Survey Zone	No. of HH	No. of Children	Number of Clusters	No. of HH questionnaires filled	No. of Children	Number of clusters	Average household size
TC	533	429	36	539 (101.1%)	660(153.8%)	**36(100%)**	**5.43**(2929)
TN	537	432	36	535 (99.6%)	490(113.4%)	**36(100%)**	**4.42**(2367)
TW	675	543	45	678 (100.4%)	690(127.1%)	**45(100%)**	**5.43**(3086)
TS	659	530	44	636 (96.5%)	725(136.8%)	**44(100%)**	**4.55**(3424)
County	2404	1505	161	2388 (99.3%)	2565 (170.4%)	**161(100.0%)**	**4.96**(8877)

3.1.2 Residency and marital Status

As for previous surveys, majority (99.1%) of the respondents were resident in the county. The IDP population reduced to 0.9% possibly as a result of the return or re-integration of former Uganda IDP population from Uganda as reported in June 2017. The highest number of IDP households continue to reside in Todonyang area.

Table 9: Residency of households surveyed

Residency status of household	Survey zone				T. County.
	T. Central	T. North	T. South	T. West	
IDP	2 (0.4%)	16(3.0%)	0(0%)	3(0.4%)	21(0.9%)
Refugee	1(0.2%)	0(0.0%)	0(0%)	0(0%)	1(0.01%)
Resident	536 (99.4%)	519 (97.0%)	630 (100%)	675 (99.6%)	2360 (99.1%)



Majority of the caregivers are married, which is consistent with previous survey findings. Among the respondents surveyed in June 2017, 80 % of them were married while 12.2% widowed; Turkana central had the highest proportion of the widowed population at 16.3%.

Figure 3: Marital status of caregivers-Turkana County

3.1.3 Displacement of Children in the households

Vulnerability among children is further compromised when children lose their security as provided for in traditional social fabric through displacement as a result of abuse, drought, floods or related hazards and risks. The survey sought to find out if and why children are not living with and in their family members or homes. The burden of displacement was found to be prevalent in Turkana south and least in Turkana west survey zones. Majority of the displaced children were said to have suffered from food insecurity (35.6%) of the death of primary caregiver (25.8%,) which is consistent to the results of last year, *see table 10 below.*

The overall proportion of households reporting children displaced in the county was unchanged though at 9.8% this year compared to 9.6% last year.

Table 10: Number and proportion of children displaced from their homes/families and reasons why(n= 233)

		Survey zone				County
		Central	North	South	West	
Proportion of children displaced		42(7.8%)	52(9.7%)	105(16.7%)	34(5.0%)	233(9.8%)
Reason for children coming to living away from home/family	Did not have access to food	9 (21.4%)	37 (71.2%)	28 (26.7%)	9 (26.5%)	83(35.6%)
	Father and Mother left home	5 (11.9%)	2 (3.8%)	18 (17.1%)	3(8.8%)	28 (12.0%)
	Child was living on the street,	0 (0%)	0 (0%)	1(1.0%)	0 (0%)	1(1.0%)
	Care giver died	17 (40.5%)	9 (17.3%)	21(20.0%)	10 (29.4%)	57(24.5%)
	School	8(19.0%)	3(5.8%)	25(23.8%)	9(26.5%)	45(19.3%)
	Other reasons	3(7.1%)	1(1.9%)	12(11.4%)	3(8.8%)	19(8.2%)

3.2 . Socio-economic characteristics of households

3.2.1 Highest Education level attained by head of household

Overall, literacy levels remain very high at 84.6% compared to 83.3% last year. Of those with formal education, only 5.5% and 2.6% had primary and secondary education respectively and just 1.8% of the sampled population had tertiary education. Results show little progress in attaining improved literacy among caregivers which is a major hindrance to improved care practices, capacity for knowledge and technology transfer at community level and ultimately improved income and livelihood security for optimal nutrition and health outcomes.

Table 11: Highest level of education attained by household heads and caregivers (n=2375)

Education level	Survey zone				County
	Central	North	South	West	
Pre primary	7.6%	0.7%	10.5%	1.8%	5.2%
Primary	7.6%	1.5%	6.8%	5.6%	5.5%
Secondary	4.7%	0.6%	3.3%	1.8%	2.6%
Tertiary	2.4%	0.4%	2.4%	1.8%	1.8%
None	76.7%	96.8%	76.3%	89.1%	84.6%

3.2.2 Occupation of the household head

Turkana County has four main livelihood zones: Pastoral (60%), agro pastoral (20%), fisher folks (12%) and urban/ peri-urban formal and informal employment (8%). However, too frequent hazards coupled with years of underinvestment have resulted in alarming shifts in livelihoods -especially in the Turkana North/Kibish where Livestock herding reduced to 61.9% and 51.3% in the 2018 and 2017 SMART survey results, down from 71% in 2016. Overall, results show that barely a third (35.3%) of households rely on pastoral economy as main occupation with charcoal and firewood compensating for the changing fortunes at 24.1% and petty trade (20.2%). In Turkana west there is an eminent danger of environmental degradation with Kakuma refugee camp fueling a booming charcoal and fire wood trade for almost half (42.9%) of the households.

Table 12: Main source of livelihood for households in Turkana (N=2382)

Main occupation of Household Head	Survey zone				Total
	Central	North	South	West	County
Livestock herding	193(35.8%)	331(61.9%)	154(24.4%)	163(24.0%)	841(35.3%)
Own farm labour	8(1.5%)	4(0.4%)	76(12.1%)	19(2.8%)	107(4.5%)
Employed (salaried)	14(2.6%)	4(0.7%)	16(2.5%)	12(1.8%)	46(1.9%)
Waged labour (casual)	71(13.2%)	27(5.0%)	60(9.5%)	50(7.4%)	208(8.7%)
Petty trade	102(18.9%)	98(18.3%)	167(26.5%)	113(16.7%)	480(20.2%)
Merchant/trader	10(1.9%)	4(0.7%)	21(3.3%)	4(0.6%)	39(1.6%)
Firewood/charcoal	116(21.5%)	51(9.5%)	115(18.3%)	291(42.9%)	573(24.1%)
Fishing	20(2.7%)	9(1.7%)	1(0.2%)	0(0%)	30(1.3%)
Others	5(0.9%)	7(1.3%)	20(3.2%)	26(3.8%)	58(2.4%)

Despite the livestock herding being the main occupation of households provider it was not the leading current income source for the household`s, thus the need for further study to understand the contributing factors. This is a consistent

SMART survey finding for the last three years. It is therefore important to reviews resilience programming in line with this reality.

Table 13: Main source of income for households in Turkana(n=2382)

Main current source of income	Survey zone				Total
	Central	North	South	West	County
Sale of livestock	11.3%	32.5%	6.8%	2.2%	12.3%
Sale of livestock products	0.2%	1.1%	6.5%	0.3%	2.1%
Sale of crops	1.7%	0.2%	5.1%	2.8%	2.6%
Petty trading	69.0%	55.0%	63.0%	69.9%	64.5%
Casual labour	10.0%	5.2%	10.3%	8.6%	8.6%
Permanent job	1.5%	0.2%	1.7%	0.7%	1.0%
Sale of personal assets	0.2%	0.0%	0.2%	0.1%	0.1%
Remittance	0.0%	0.9%	0.3%	0.3%	0.4%
Income earned by children	0.2%	0.6%	0.6%	1.5%	0.8%
No income	5.0%	4.3%	4.3%	12.8%	6.9%
Others	0.9%	0.0%	1.1%	0.7%	0.7%

3.2.3 Enrolment in Social safety net programmes in Turkana County.

It was estimated that a total 71,185 households are receiving cash transfer in Turkana n 2017[2]. Additionally, WFP also rolled out the *linda lishe bora* social safety net programme for all children in the county reaching a total of 27,000 beneficiaries,[3] This survey sought to find out the coverage of all social safety net [programmes in the county noting that the lancet series proposes the roll out such high impact nutrition sensitive programmes especially during times of crisis. The results of this survey showed that only about a quarter (23.6%) of the households assessed were enrolled in at least one cash transfer programme. The main CT programme was the DFID funded and NDMA managed HSNP.

[2] NDMA HSNP database

[3] WFP progress report for *Linda lishe bora* project

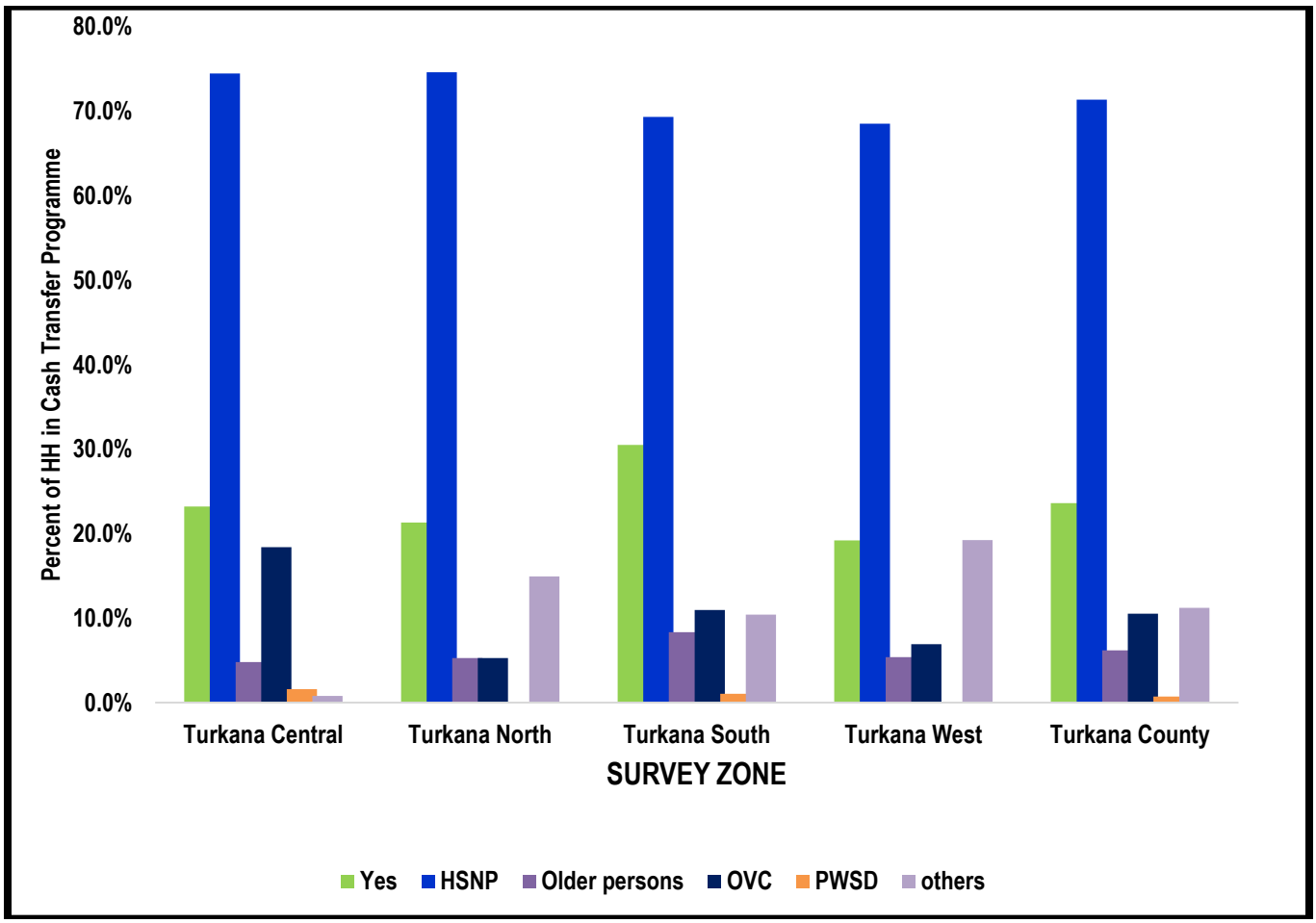


Figure 4; Percent Enrolment in Cash Transfer Program (n=561)

4.0 MATERNAL, CHILD HEALTH AND NUTRITION

4.1 Anthropometry

Out of all sampled children in the County, 75.1% of them had a health card, 0.8% birth certificate while 0.4% baptism card and these were used to verify their age. Age determination for 23.8% of the children was based on recall, hence prone to bias. Turkana West (70.2%) and North (59.1%) had the least proportion of children with a health card, birth certificate/notification or baptism card. This might have affected indices with age as a key variable such as for stunting and underweight estimation.

Table 14: Children's age verification options per survey zone (N=2559).

Age Verification modality	Survey zone				T. County
	T. Central	T. North	T. South	T. West	
n	659	489	723	688	2559
Health Card	79.1% (521)	59.1% (289)	86.9% (628)	70.2% (483)	75.1% (1921)
Birth Certificate	1.5% (10)	0.8% (4)	0.3% (2)	0.6% (4)	0.8% (20)
Baptism card	0.6% (4)	0.6% (3)	0.3% (2)	0.0%	0.4% (9)
Recall	18.8% (124)	39.5% (193)	12.6% (91)	29.2% (201)	23.8% (609)

4.1.1 Prevalence of Acute Malnutrition

Results of this February 2018 SMART survey show that there has been a significant reduction in the levels of acute malnutrition across the four survey zones as compared to the SMART survey results for January 2017. The results show that nutrition status of children under five in Turkana is **critical** but on the borderline at 16.1% (***IPC Phase 4*- GAM 15-30% percent**). This further means that **ONE** in every **SIX** or **31,225** children in Turkana County are currently suffering from acute malnutrition and is at increased risk of dying.

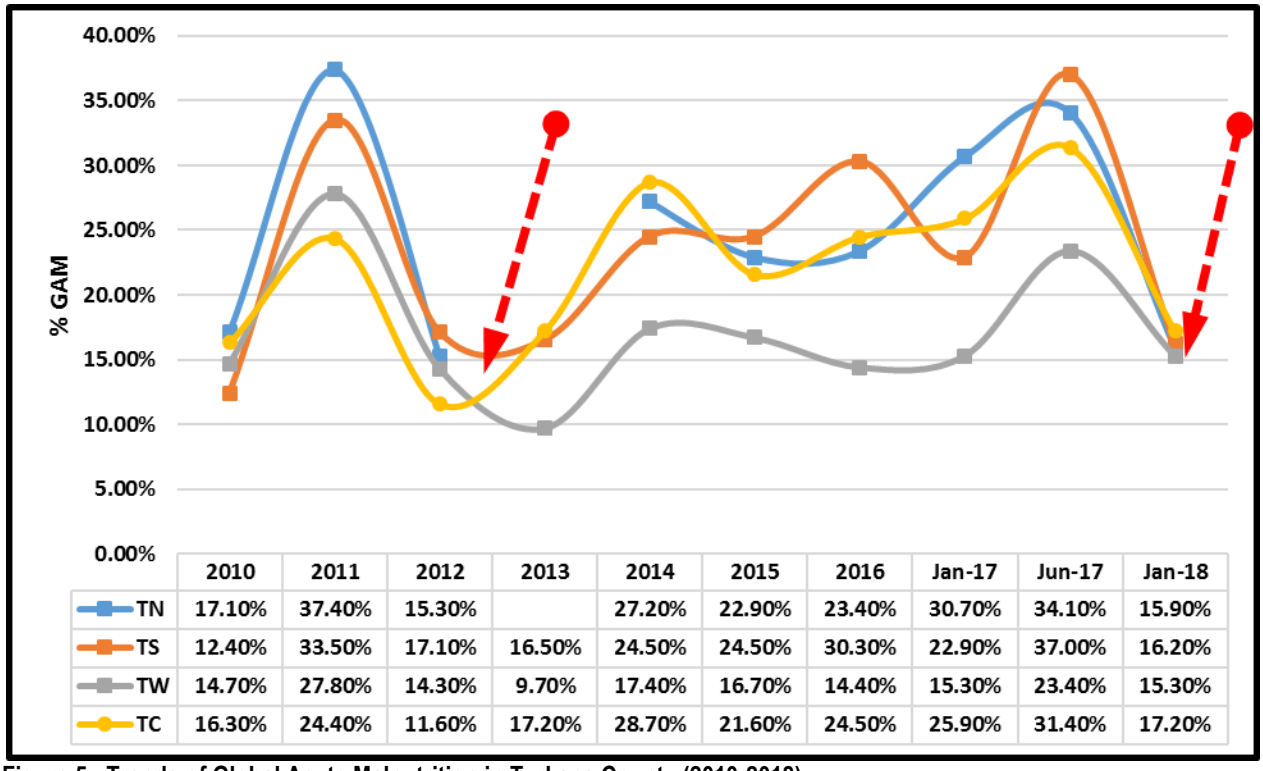
Turkana North posted a bigger reduction from 30.7% (**Very critical**) to 15.9% (**Above emergency level (WHO classification)**, Turkana West zone remained at 15.3%. The weighted Global Acute Malnutrition (GAM) levels for Turkana County reduced from 23.1% in January 2017 to 16.2% in Jan/Feb 2018 SMART survey. For the first time in 5 years (**since 2013**), the level of acute malnutrition has reduced significantly from as high as 1 in every 3 children as recorded in Jan/June 2017 to as low as 1 in every 6 children now classified as acutely malnourished. Largest reduction recorded in Central, North and South survey Zones.

Table 15: Prevalence of malnutrition weight-for-height z-scores(WHO Standards 2006)-n=2571

Wasting (WHO 2006)	T. Central	T. North	T. South	T. West	Turkana County
	N=647	N=479	N=717	N=679	N=2571
Global Acute Malnutrition (GAM) -Jan 2018	17.2% (13.8-21.1 95% CI)	15.9% (11.7-21.1 95% CI)	16.2% (13.3-19.5 95% CI)	15.3% (12.4-18.7 95% CI)	16.20% (14.4-18.1 95% CI)
Global Acute Malnutrition (GAM)-Jan 2017)	25.9% (21.7-30.6 95% CI)	30.7% (26.6-35.1 95% CI)	22.9% (18.4-28.0 95% CI)	15.3% (11.5-20.2 95% CI)	23.1%(20.9 - 25.4 95% CI)
Severe Acute Malnutrition (SAM)-Jan 2018	2.5% (1.6- 3.9 95% CI)	1.9% (0.9-3.9 95% CI)	2.1% (1.1- 3.8 95% CI)	2.2% (1.3- 3.6 95% CI)	2.2% (1.7- 2.9 95% CI)
Severe Acute Malnutrition (SAM) –Jan 2017	6.4% (4.4- 9.2 95% CI)	8.1% (6.0-10.7 95% CI)	5.7% (3.7- 8.7 95% CI)	3.1% (1.6- 5.9 95% CI)	5.7% (4.6 - 7.1 95% CI)

The reduction in acute malnutrition was largely contributed by a robust multi-sector and interagency emergency response strategy launched in response to a drought emergency. This included the integrated outreaches, blanket supplementary feeding (BSFP), hunger/social safety net programmes (HSNP, *Linda lishe Bora* programme, OVC etc), WASH interventions, general food distribution (GFD) by County and National Government and KRCS, WASH interventions including distribution of WASH NFIs, water tinkering, rehabilitation of broken down water systems, hygiene promotion and many other interventions using existing structures ad programmes. The situation was further boosted by a better performance of the Short rains season late last year which contributed to improved bio-physical indicators that impact positively of food and nutrition security at household level[4].

This is also a significant reduction by more than half from **31.6%** (**an extremely critical Nutrition Situation (IPC Phase 5)** recorded in June 2017 which was triggered by an extreme drought emergency on a scale of the 2011 Horn of Africa emergency. In figure 3 below, the prevalence of acute malnutrition has taken a similar trend to 2011/2012 scenario. It is therefore necessary that lessons learnt in the Horn of Africa Emergency and recovery/resilience building should be implemented to avoid another steady rise in poor nutrition status.



	2010	2011	2012	2013	2014	2015	2016	Jan-17	Jun-17	Jan-18
TN	17.10%	37.40%	15.30%		27.20%	22.90%	23.40%	30.70%	34.10%	15.90%
TS	12.40%	33.50%	17.10%	16.50%	24.50%	24.50%	30.30%	22.90%	37.00%	16.20%
TW	14.70%	27.80%	14.30%	9.70%	17.40%	16.70%	14.40%	15.30%	23.40%	15.30%
TC	16.30%	24.40%	11.60%	17.20%	28.70%	21.60%	24.50%	25.90%	31.40%	17.20%

Figure 5: Trends of Global Acute Malnutrition in Turkana County (2010-2018)

The SRA report of 2018 attempted to compare the trend in milk availability at household level with the nutrition outcome (GAM) and results of this preliminary analysis further reinforced the hypothesis that milk availability at household level is inversely proportional to nutrition status and outcomes*, see figure 4 below*. This means that nutrition status of children under-five in pastoral communities can be positively improved should measures to improve milk consumption and availability at household level are enhanced.

[4] NDMA Bulletins for November 2017 to February 2018

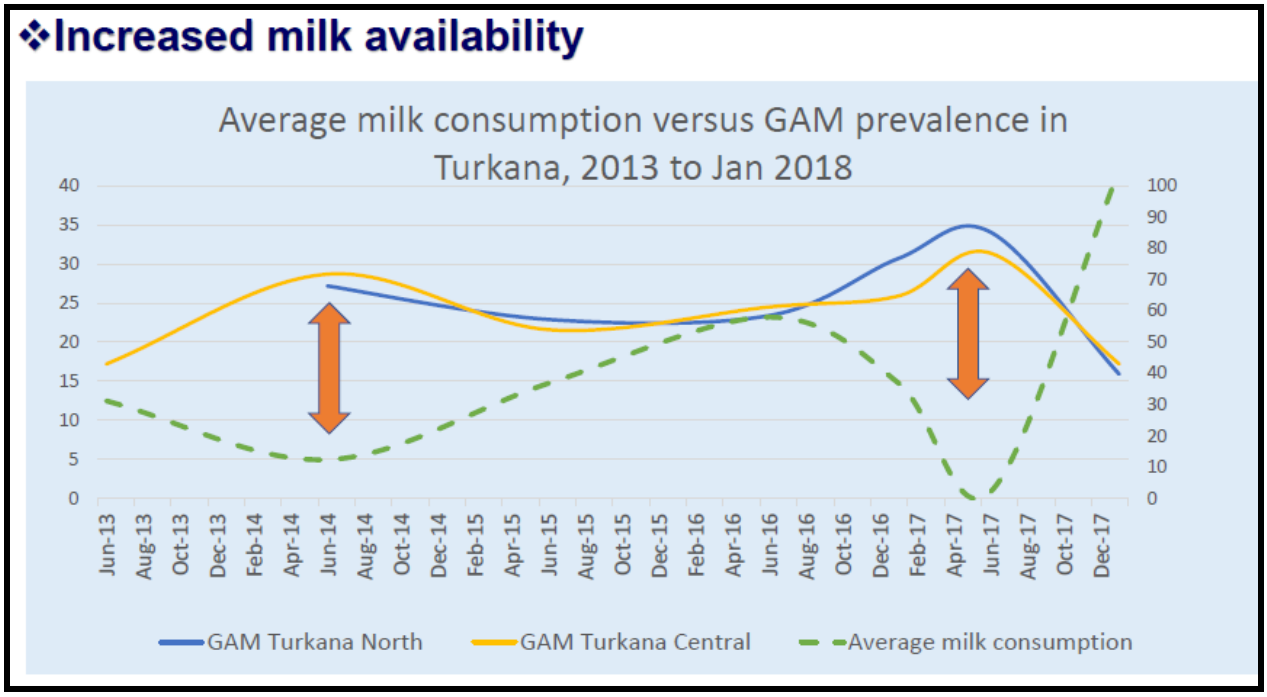


Figure 6: Relationship between average milk consumption and GAM prevalence in Turkana North and Central sub counties

4.1.2 Prevalence of acute malnutrition based on MUAC

Compared to weight for height Z-scores, the mid-upper arm circumference (MUAC) is not a very sensitive indicator of acute malnutrition and tends to underestimate acute malnutrition for children below one year of age. It is, however, used as a rapid screening tool for admission into nutrition intervention programmes. Generally, MUAC usually tends to indicate lower GAM levels compared to WFH z-scores. The prevalence of malnutrition using MUAC is significantly lower compared to using Weight for Height Z-scores. This could be associated with the physiology of this population in Turkana, similar to the Somali and South Sudanese, with a high cormic index[5].This means, overall significantly lower cases of malnourished children are identified using MUAC when compared to weight for height. Turkana West had the highest GAM rate (7.1%) followed by Turkana North (6.7%) while there was significant drop in SAM rates with all the four survey zones recording below 1%. The table 16 below summarizes prevalence of malnutrition by MUAC.

[5]The most common bivariate index of shape is the Cormic index, sitting height/ total height (SH/S). It is a measure of the relative length of the trunks or legs and varies between individuals and groups. If sitting height is held constant and leg length varied it produce a range of ratios from 0.48 to 0.55 within and between populations. This demonstrates that variations in SH/S found in or between different population groups may be associated with variations in BMI of some 5kg/m^2, with weight and composition being kept constant. The mean SH/S for European and Indo-Mediterranean populations is about 0.52. Africans have proportionally longer legs, in general, with ratios around 0.51 most notable Somali, Sudanese and Turkana populations with even higher ratios. Asian and Far Eastern populations have proportionally shorter legs and means of 0.53-0.54. However, there is considerable variation within populations and within these major groupings

Table 16: Prevalence of Malnutrition based on MUAC per survey zone

Prevalence of Acute malnutrition MUAC	T. Central	T. North	T. South	T. West	Turkana County
2018 (n)	n=659	n=723	n=489	n=688	n=2559
2017(n)	n=814	n=430	n=726	n=492	n=2462
Severe under nutrition (< 115 mm) -Jan 2018)	0.6% (0.2- 2.0 95% CI)	0.8% (0.3- 2.0 95% CI)	0.6% (0.2- 1.9 95% CI)	0.6% (0.2- 1.5 95% CI)	0.6% (0.4- 1.1 95% CI)
Severe under nutrition (< 115 mm) -Jan 2017)	0.9% (0.3- 2.1 95% CI)	1.9% (0.9- 3.8 95% CI)	1.1% (0.5- 2.5 95% CI)	0.6% (0.2- 1.9 95% CI)	0.6% (0.2-1.9)
Moderate undernutrition (≥115–<125 mm)-Jan 2018)	4.2% (2.8- 6.5 95% CI)	5.0% (3.4- 7.2 95% CI)	6.1% (4.2- 8.8 95% CI)	6.5% (4.2- 10.0 95% CI)	5.5% (4.4- 6.9 95% CI)
Moderate undernutrition (≥115–<125 mm)-Jan 2017)	6.3% (3.9-10.0 95% CI)	7.0% (4.5- 10.7 95% CI)	9.2% (6.4- 13.2 95% CI)	5.5% (3.4- 8.7 95% CI)	5.5% (3.4-8.7)
Global Acute Malnutrition (≤125 mm)-Jan 2018)	4.9% (3.3- 7.2 95% CI)	5.8% (4.2- 8.1 95% CI)	6.7% (4.7- 9.6 95% CI)	7.1% (4.7- 10.7 95% CI)	6.2% (5.0- 7.6 95% CI)
Global Acute Malnutrition (≤125 mm)-Jan 2017)	7.1% (4.6-10.8 95% CI)	8.8% (5.9- 13.1 95% CI)	10.3% (7.2- 14.6 95% CI)	6.1% (3.8- 9.6 95% CI)	6.1% (3.8-9.6)

4.1.3 Prevalence of Underweight

The weight-for-age (WFA) index provides a composite measure of wasting and stunting and is commonly used to monitor the growth of individual children in Mother-child booklet since it enables mothers to easily visualise the trend of their children's increase in weight against age. A low WFA is referred to as underweight .In comparison to same time last year there was a decrease in the prevalence of underweight in the county. Turkana South had the highest prevalence of underweight (27.0%) followed by Turkana North (25.3%) and Turkana Central (24.2%) respectively, as illustrated in the table below. There is a significant drop in the prevalence of underweight in Jan 2018 compared to Jan 2017 in all the surveys zones.

Table 17: Prevalence of underweight

Underweight (WHO 2006)	T. Central	T. North	T. South	T. West	Turkana County
2018	n=650	n=482	n=718	n=686	n=2587
2017	n=801	n=719	n=425	n=489	n=2285
Prevalence of global underweight-Jan 2017)	33.1% (28.7- 37.8 95% CI)	35.0% (29.4- 41.2 95% CI	34.8% (30.1- 39.9 95% CI)	23.3% (19.1- 28.2 95% CI)	31.2% (29.1 - 33.4)
Prevalence of global underweight-Jan 2018)	24.2% (20.6- 28.1 95% CI)	25.3% (20.7- 30.6 95% CI)	27.0% (23.6- 30.7 95% CI)	20.3% (17.0- 23.9 95% CI)	24.0 % (22.1 - 26.0 95% C.I.)
Prevalence of severe underweight-Jan 2017)	9.7% (7.5-12.6 95% CI)	9.9% (7.4-13.1 95% CI	10.4% (7.8-13.6 95% CI)	6.7% (4.4- 10.3 95% CI	9.1%(7.8 - 10.6)
Prevalence of severe underweight(Jan 2018)	4.8% (3.3- 6.8 95% CI)	4.4% (2.7- 7.0 95% CI)	7.4% (5.4- 9.9 95% CI)	3.5% (2.3- 5.4 95% C	5.1% (4.4- 5.9 95% CI)

4.1.4 Prevalence of stunting

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

Global stunting was highest in Turkana South (23.9%) followed by Turkana central (20.8%).There is a slight decline in the prevalence of stunting compared to same time last year in the county.

Table 18: Prevalence of Stunting

Stunting (WHO 2006)	T. Central	T. North	T. South	T. West	Turkana County
2018	n=635	n=474	n=409	n=672	n=3005
2017	**n=772**	**n=677**	**n=683**	**n=477**	**n=2514**
Prevalence of global stunting (<-2 z-score) Jan 2017	22.8% (19.7-26.3 95% CI)	23.3% (18.9-28.4 95% CI)	27.4% (22.2-33.3 95% CI)	20.1% (16.4-24.5 95% CI)	22.4% (20.0-25.0 95% CI)
Prevalence of global stunting (<-2 z-score) Jan 2018	20.8% (17.8-24.2 95% CI)	18.6% (15.2-22.4 95% CI)	23.9% (20.4-27.7 95% CI	17.3% (14.5-20.4 95% CI)	20.3% (18.5- 22.1 95% CI)
Prevalence of severe stunting (<-3 z-score)-Jan 2017	5.3% (3.9- 7.2 95% CI)	7.2% (5.0-10.3 95% CI)	7.3% (5.5- 9.8 95% CI	3.4% (2.2- 5.4 95% CI)	5.4% (4.3-6.7 95% CI)
Prevalence of severe stunting (<-3 z-score)-Jan 2018	5.0% (3.7- 6.8 95% CI)	4.9% (3.3- 7.1 95% CI)	5.6% (3.8- 8.0 95% CI)	3.4% (2.2- 5.4 95% CI)	4.7% (3.8- 5.7 95% CI)

4.2 Children's Morbidity and Health Seeking Behavior

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

4.2.1 Child morbidity

To assess child morbidity, mothers/caregivers of children aged 6 to 59 months were asked to recall whether their children had been sick in the past 2 weeks. Those who gave an affirmative answer to this question were further probed on the type of illness that affected their children and whether and where they sought any assistance when their child/children were ill. Those who indicated that their child/children suffered from watery diarrhea were further probed on the kind of treatment that was given to them.

The survey results showed that only 31.1% of the children 6-59 months surveyed were reported to have been ill within the past two weeks. In comparison to 2017, there was no significant change in child morbidity. Of the ill children, Acute Respiratory Infections remained the most common ailment, accounting for 60.8% of all cases while fever-like malaria was the second most common illness at 40.7%. Turkana South had the highest number of ARI cases while Turkana North was most affected by fever-like malaria at 68.2% and 65.7% respectively. The table below shows a comparison on prevalence of morbidity between January 2017 and January/February 2018 survey periods.

Table 19: Prevalence of child morbidity 2 weeks prior to the survey (N= 2559)

	T. Central		T. North		T. South		T. West		Turkana County	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
n	**251**	**194**	**153**	**70**	**140**	**242**	**211**	**290**	**755**	**796**
Fever-malaria	142	74	56	46	60	85	127	119	355	324
	56.67%	38.10%	36.60 %	65.70 %	42.86 %	35.10 %	60.19 %	41.00 %	51.0 %	40.7 %
ARI-Cough	183	126	92	29	104	165	86	164	465	484
	72.91%	64.90%	60.13 %	41.40 %	74.29 %	68.20 %	40.76 %	56.60 %	61.6 %	60.8 %
Watery diarrhoea	35	36	18	6	36	42	35	41	124	125
	13.94%	18.60%	11.76 %	8.60%	25.71 %	17.40 %	16.15 %	14.10 %	16.4 %	15.7 %
Bloody diarrhoea	3	0	1	0	0	0	0	4	4	4
	1.20%	0.00%	0.65%	0.00%	0.00%	0.00%	0.00%	1.40%	1.0%	0.5%
Other specify	17	15	3	0	6	0	10	31	36	49
	6.77%	7.70%	1.96%	0.00%	4.29%	0.00%	4.74%	10.70 %	4.8%	6.2%

4.2.1.1 Therapeutic Zinc Supplementation during Watery Diarrhoea Episodes

Based on compelling evidence from efficacy studies that zinc supplementation reduces the duration and severity of diarrhea, in 2004 WHO and UNICEF recommended incorporating zinc supplementation (20 mg/day for 10-14 days for children 6 months and older, 10 mg/day for children under 6 months of age) as an adjunct treatment to low osmolality oral rehydration salts (ORS), and continuing child feeding for managing acute diarrhea. Kenya has adopted these recommendations and enshrined this in the Kenyan policy guideline on control and management of diarrheal diseases in children below five years where all under-fives with diarrhea should be given zinc supplements as soon as possible. The survey sought to establish the number of children who suffered from watery diarrhea and supplemented with zinc. Results showed that out of the 125 children who had diarrhea, 109(87.2%) were supplemented with Zinc with Turkana central and Turkana south and Turkana West regions the most affected for the last two years. These are the counties with an active Cholera outbreak having affected a total of 750 people, most of whom have been children.

Table 20: Therapeutic Zinc Supplementation during Watery Diarrhoea Episodes

Given Therapeutic Zinc Supplementation	Central		North		South		West		County	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
n	36	35	6	18	42	36	41	35	125	124
Yes	31 (86.1%)	22 (62.9%)	6 (100.0%)	13 (72.2%)	40 (95.2%)	30 (83.3%)	32 (78.0%)	25 (71.4%)	109 (87.2%)	90 (72.6%)
No	5 (13.9%)	13 (37.1%)	0 (0.0%)	5 (27.8%)	2 (4.8%)	6 (16.7%)	8 (19.5%)	10 (28.6%)	15 (12.0%)	34 (27.4%)
Do not Know	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (2.4%)	0 (0%)	1 (0.8%)	0 (0.0%)

4.2.2 . Health Seeking Behaviour

The proportion of caretakers who reported that their children had been ill during the past two weeks were asked if they sought any health assistance. Results showed that in Turkana county, 702 (88.2%) of them reported to have sought assistance. Mothers and caregivers whose children were sick in the past 2 weeks and had sought assistance were further asked where they had first sought the assistance from. Majority (93.4%) of the caretakers reported to have sought care form pubic clinics. It is worth noting that a slight variation among the survey zones were noted where Turkana North had a significant proportion of health services provided by FBO/NGO, largely by the Catholic Church, private clinics in Turkana west and CHW IN Turkana south. There was no significant proportion that sought assistance form mobile clinics; this is in consistent with previous survey findings, *see figure 7 below*.

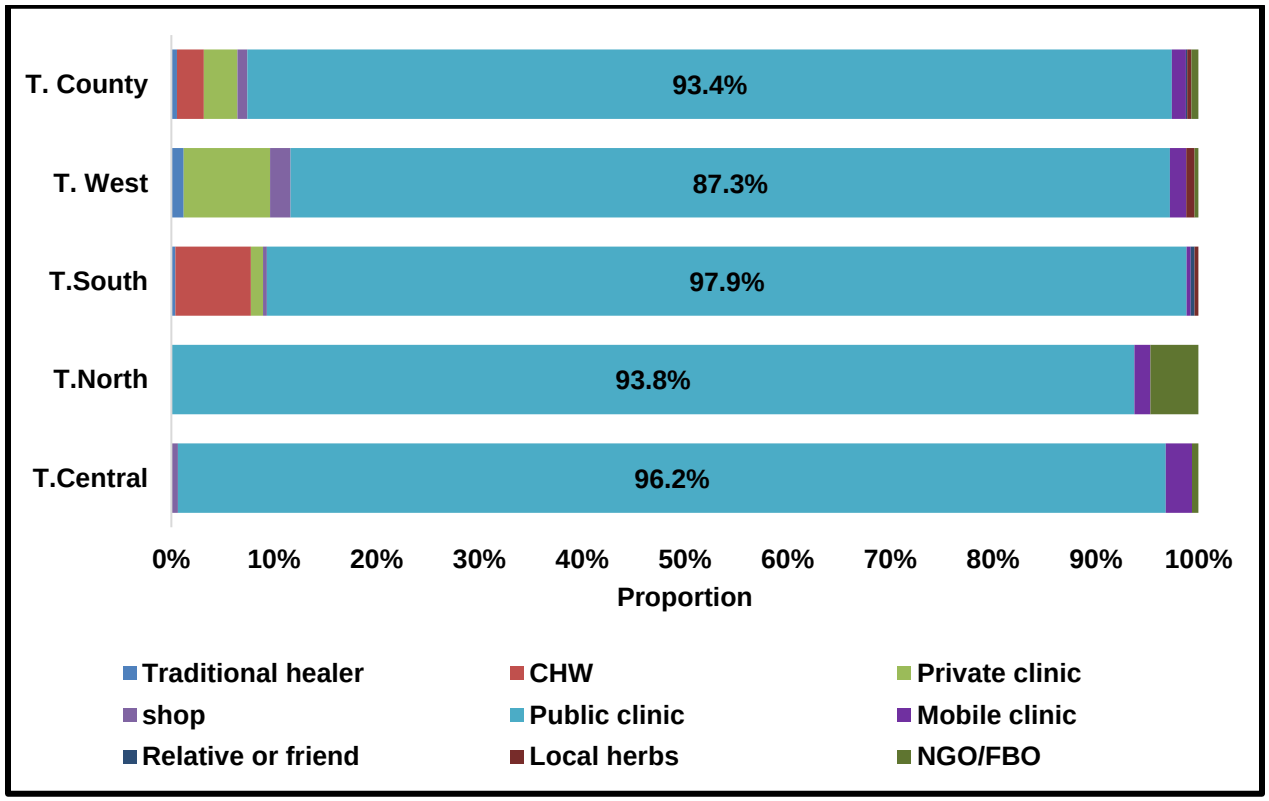


Figure 7: Health seeking behavior of caregivers (n= 702)

4.3 Childhood Immunization, Vitamin A Supplementation and Deworming

4.3.1 . Childhood Immunization

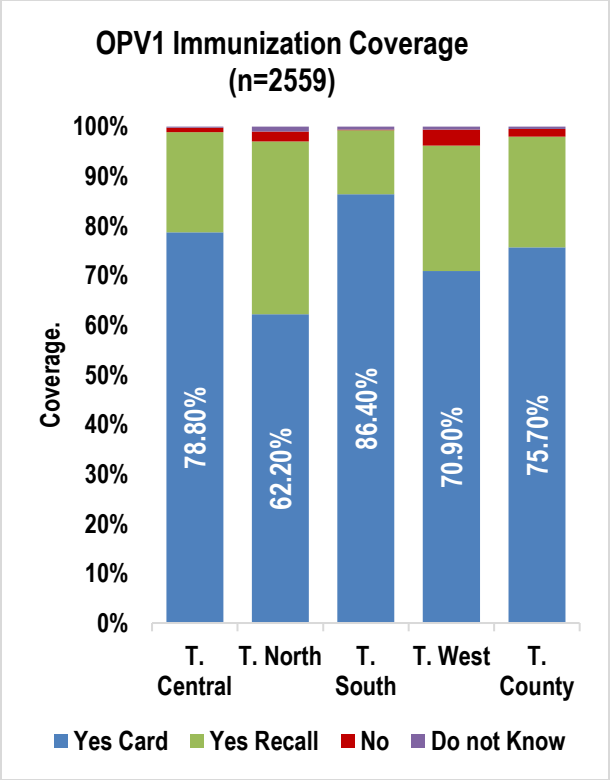
Kenya aims to achieve 90% under one immunization coverage by the end of second medium term plan (2013- 2017). The Kenya guideline on immunization defines a fully immunized child as one who has received all the prescribed antigens ***and at least one Vitamin A dose*** under the national immunization schedule before the first birthday. This survey assessed the coverage of 4 vaccines namely, BCG, OPV1, OPV3, and measles at 9 and 18 months. The BCG vaccine has variable efficacy or protection against tuberculosis (TB) ranging from 60-80% for a period ranging from 10-15 years. It is known to be effective in reducing the likelihood and severity of military TB and TB meningitis especially in infants and young children. This is especially important in Kenya where TB is highly prevalent, and the chances of an infant or young child being exposed to an infectious case are high.

From the assessment, 97.8% of children were confirmed by scar to have been immunized by BCG which was similar to January 2017 survey that showed a coverage of 98.9%, *see table 21 below*. However, results still show that evidence by card for children immunized for Measles, and oral polio among others immunizable diseases remains low remains low.

Table 21: BCG immunization coverage

	T. Central		T. North		T. South		T. West		Turkana County	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
Scar	98.0%	98.6%	99.4%	97.8%	99.3%	98.9%	99.1%	95.9%	98.9%	97.8%
No Scar	2.0%	1.4%	0.6%	2.2%	0.7%	1.1%	0.9%	4.1%	1.1%	2.2%

Those who were immunized (based on card and recall) by OPV1 were 94. 1% and 98.0% in 2017 and 2018 respectively while for OPV3 they improved from 87.4 % in 2017 to 92.4 % in 2018 largely due to improved access from outreach programmes launched as part of emergency response. These results for OPV1 and OPV3 further signify the improved capacity of health care system by way of measuring access and utilization of services by communities in Turkana.



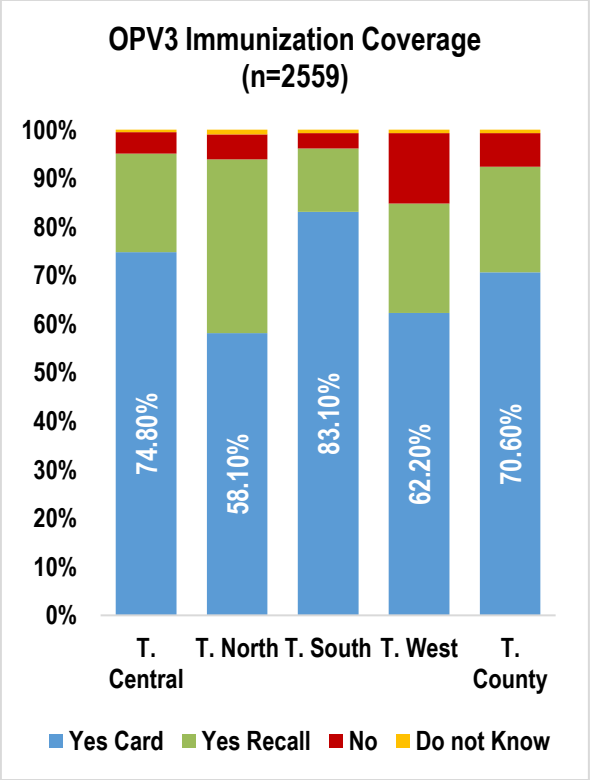


Figure 8: OPV Immunization Coverage (n=2559)

However, when we assessed immunization for measles at 9 months and at 18 months, only 44.3% of children had been immunized (by card and recall) with the second dose of measles antigen at 18 months by January 2018 compared to 56.9% in January 2017. This represents a dropout rate of 37% and 47% respectively, *see table 22 and 23 below.*

Table 20: Measles Vaccination at 9 Months (n= 2503)

		T. Central		T. North		T. South		T. West		County	
		2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
	n	610	620	465	601	688	539	633	493	2396	2253
Yes Card	Count	429	417	254	419	541	387	397	175	1621	1398
	%	70.3%	67.30%	54.6%	69.7%	78.6%	71.80%	62.7%	35.50%	67.7%	62.10%
Yes Recall	Count	120	114	168	99	104	83	159	191	551	487
	%	19.7%	18.40%	36.1%	16.5%	15.1%	15.40%	25.1%	38.70%	23.0%	21.60%
No	Count	60	82	39	57	40	64	72	125	211	328
	%	9.8%	13.20%	8.4%	9.50%	5.8%	11.90%	11.4%	25.40%	8.8%	14.60%
DNK	Count	1	7	4	26	3	5	5	2	13	40
	%	.2%	1.10%	.9%	4.30%	.4%	0.90%	.8%	0.40%	.5%	1.80%

Table 21: Measles Vaccination at 18 months

		T. Central		T. North		T. South		T. West		County	
2018	**n**	**478**		**374**		**575**		**484**		**1911**	
2017	**n**	**485**		**468**		**422**		**393**		**1768**	
		2018	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**	**2018**	**2017**
Yes Card	Count	193	485	144	468	252	422	172	393	761	1768
	%	40.4%	35.30%	38.5%	36.50%	43.8%	26.80%	35.5%	18.60%	39.8%	29.90%
Yes Recall	Count	66	171	120	171	76	73	65	528	327	
	%	13.8%	12.40%	32.1%	7.90%	13.2%	8.30%	13.4%	26.70%	17.1%	13.40%
No	Count	209	239	98	228	240	265	236	211	783	943
	%	43.7%	49.30%	26.2%	48.70%	41.7%	62.80%	48.8%	53.7	41.0%	53.30%
DNK	Count	10	15	12	32	7	9	11	4	40	60
	%	2.1%	3.10%	3.2%	6.80%	1.2%	2.10%	2.3%	1%	2.1%	3.40%

4.3.2 Vitamin A supplementation

Over 140 million children are at greater risk of illness, hearing loss, blindness and even death if urgent action is not taken to provide them with life-saving vitamin A supplements. Two doses of vitamin A every year can save thousands of children's lives. According to the new UNICEF report; "***Coverage at a crossroads: New directions for vitamin A supplementation programmes***"[6], global coverage of vitamin A supplementation (VAS) has dropped to a six-year low, leaving more than one third of children unprotected from the devastating impacts of vitamin A deficiency.

Currently, the future of VAS hangs in the balance and more work is needed to make programmes sustainable. As the world mobilizes towards the 2030 Agenda for Sustainable Development – and particularly the target of ending preventable deaths in children under age 5 – there has never been a more urgent time to reprioritize this safe, cost-effective and evidence-based intervention.

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

To assess vitamin A supplementation, parents and caregivers were probed on whether children had been supplemented, for how many times in the past one year. Reference was made to the child health card and in case the card was not available recall method was applied. According to the survey, 54.5% of the children aged 6- 11 months were supplemented with vitamin A at least once, and only 72.4% children aged 12 to 59 months who had been at least supplemented once. In comparison to the ministry of health target of 80%, Performance in Vitamin A supplementation

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

among children 12 – 59 months among remained poor with only 37.6% receiving twice a year as recommended by MOH policy. This was a further drop from 40.5% in 2017.

Figure 9 below compares Turkana County vitamin A supplementation coverage by age group between 2017 and 2018.

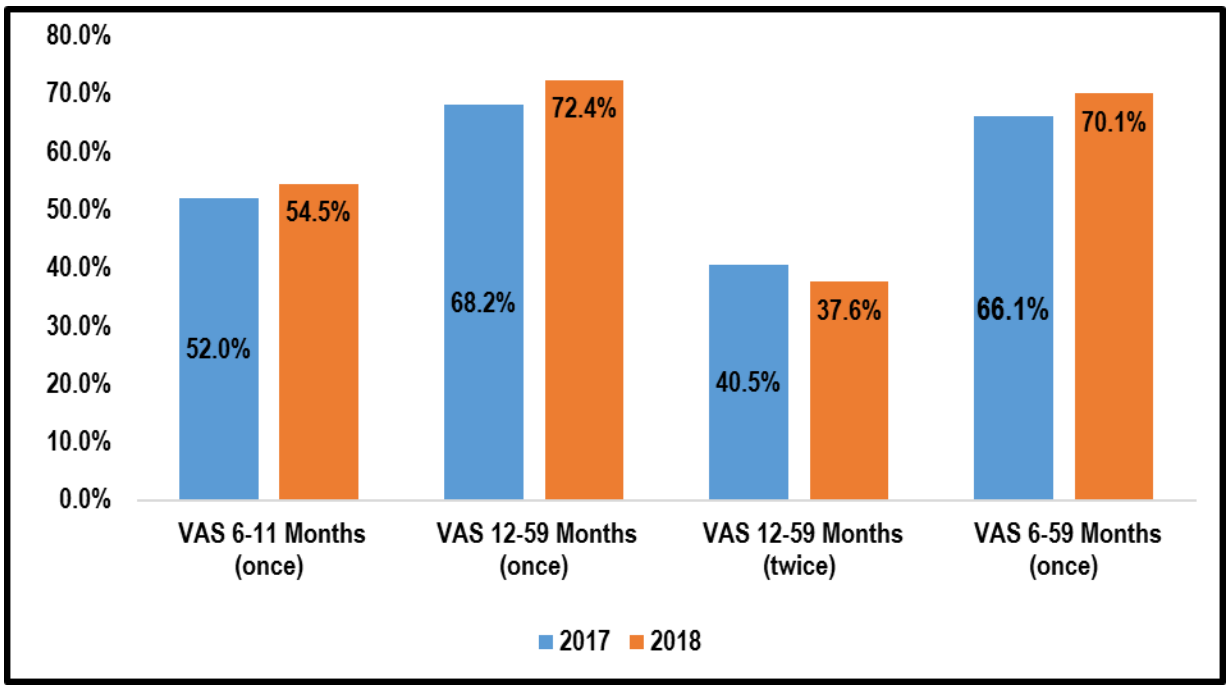


Figure 9: Vitamin A Supplementation- Turkana County (n=2559)

4.3.3 De-worming

De-worming is an essential intervention in controlling parasites including helminthes, schistosomiasis (bilharzias) and prevention of anemia. WHO recommends that children in developing countries exposed to poor sanitation and poor availability of clean safe water to be de-wormed once every 6 months. In this survey, de-worming was assessed for children aged 12-59 months old. Based on the findings, only 27.6% of children 12-59 months of age were dewormed twice in the county by January 2018, no change was noted in comparison to January 2017 where just 22.5% had been dewormed. The table below shows the coverage per survey zone with Turkana south showing the best improvement although it's still below the 80%coverage.

Table 22: Deworming 12-59 months (n= 2231)

Survey zone	Not dewormed		Dewormed once		Dewormed twice	
	2017	2018	2017	2018	2017	2018
T. Central	38.9%	60.6%	25.4%	31.1%	35.70%	8.4%
T. North	39.7%	35.0%	38.2%	35.6%	22.10%	29.4%
T. South	48.2%	17.1%	36.0%	36.4%	15.7%	46.4%
T. West	38.5%	26.2%	54.8%	49.5%	6.70%	24.3%
Turkana County	40.7%	34.1%	36.8%	38.3%	22.50%	27.6%

4.4 Net ownership and use

Just about half of the entire household population interviewed owned a mosquito net. Of the households that owned mosquito nets, about 86.2% of children under five and 89.3% of the women were using them. This was a substantial improvement from 2017 where just 25.3% of sampled households owned mosquito nets, and 19.8 % and 10.1% of the household's children under five and WRA respectively had slept under the net the previous night before the survey. Turkana is largely not a malaria endemic county except for Loima and parts Turkana West Sub Counties. However, partners and the governments had stepped up the programme of net distribution as part of emergency response activities. Never the less Turkana North Zone has the list access and utilization rate of the mosquito nets.

Table 23: Net ownership and use (n=2382).

Category	T. Central	T. North	T. South	T. West	County
% of HH Own LLITNS	**n= 539**	**n= 535**	**n= 630**	**n= 678**	**n= 2382**
	68.5%	43.0%	55.4%	55.6%	55.6%
% U5 that slept under LLITNS in HH that own	**n=468**	**n=226**	**n=451**	**n=420**	**n=1565**
	89.5%	68.2%	91.1%	89.8%	86.2%
% of PLWs that slept under LLITNs in HH that own	**n=244**	**n=135**	**n=222**	**n=248**	**n=849**
	89.8%	68.9%	97.3%	92.7%	89.3%

4.5 Maternal Nutrition

Evidence shows that the current total deaths in children younger than five years can be reduced by 15% if populations can access ten evidence-based interventions when implemented at scale with a coverage of 90% (Bhutta, et.al. 2013). One of these strategies, has a positive effect on child survival during 'the window of opportunity' which is also referred to as the 1st 1000 days (from conception to two years of age). One of them is optimal maternal nutrition during pregnancy, an enhanced nutrition package for the infant and young child focusing on promotion of exclusive breastfeeding. Pregnancy and lactation imposes a big nutrient-need load on mothers, which in the absence of adequate extra nutrients leads to utilization of body nutrient reserves leading to malnutrition. Gestational malnutrition leads to low birth weights and may ultimately culminate in poor child growth and development, thus there is an urgent need to address high rates of malnutrition among pregnant women. Household food insecurity is a key indicator/determinant for poor adult nutritional status. A high number of malnourished PLWs increase the risk of growth retardation of the fetus and consequently an increase in low birth weight and malnutrition burden spreads to both U5 children and caretakers from the same household faced with food insecurity and related vulnerabilities, a common scenario during nutrition emergency episodes. .

4.5.1 Women physiological status

In the table below the proportion pregnant and lactating women of Reproductive age (15-49 years) surveyed remained unchanged in comparison to 2017at the same period. Lactating women was 52.9% in 2018 compared to 51.5% in 2017 and 34.4% compared to 38.1% for those who were neither pregnant nor lactating respectively. These results show that

caregivers/mothers are still in active reproductive age thus MNCH programmes should be alive to the needs for ANC, PNC, PMTCT and Family programme needs.

Table 24: Women Physiological Status (n=2061)

	T. Central		T. North		T. South		T. West		Turkana County	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Pregnant	12.0%	8.8%	14.3%	11.6%	10.4%	8.4%	11.9%	9.9%	12.0%	9.7%
Lactating	53.2%	47.9%	52.3%	55.6%	50.0%	52.6%	55.9%	51.3%	52.9%	51.5%
Pregnant& Lactating	0.6%	0.7%	0.5%	1.1%	0.9%	0.2%	0.3%	0.2%	0.6%	0.6%
None of above	34.2%	42.5%	32.9%	31.6%	38.7%	38.9%	31.9%	38.6%	34.4%	38.1%

4.5.2 Iron and Folic Acid Supplementation (IFAS)

During pregnancy, women have increased need for additional iron to ensure they have sufficient iron stores to prevent iron deficiency. Iron supplementation is recommended in resource limited settings as strategy to prevent and correct iron deficiency and anemia among pregnant women

WHO recommends daily consumption of 60mg elemental iron and 0.4mg folic acid throughout the pregnancy[7].These recommendations have since been adopted by Kenya government in its 2013 policy guidelines on supplementation of iron folic acid supplementation (IFAS) during pregnancy. During the survey, iron folic supplementation was assessed by asking mothers of children below 2 years if they consumed iron folate in their most recent pregnancy. Results showed that barely a third of the women had used the IFAS for the recommended minimum of 90-180 days. However, the access to IFAS was pretty impressive at 92.8%, a significant improvement form 60.1% at the same time in 2017. While access has been improved, the main challenge is now on utilization, an indication of poor health seeking behavior where mother seek ANC services late in their last trimester of pregnancy and limited counselling and peer support to encourage continued intake of IFAS.

Table 25: Iron Folic Acid supplementation (IFAS) coverage (N=1196)

Categories of IFAS Consumption in days	T. Central (n=323)	T. North (n=171)	T. South (n=319)	T. West (n=383)	Turkana County (n=1196)
Proportion given IFAS	93.5%	81.3%	94.0%	96.3%	92.8%
<90 days	71.9%	91.4%	49.5%	72.4%	68.4%
90 days to 180	28.1%	8.6%	44.5%	27.6%	29.9%
>180 days	0%	0%	6.0%	0%	1.6%

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

4.5.3 Maternal Nutrition

Maternal nutrition was assessed by measuring MUAC of all women of reproductive age (15 to 49) in all sampled households. Analysis was further focused on pregnant and lactating women. The survey findings as shown in table 28 below reflect a marginal increase in GAM by MUAC from 8.8% in 2017 to 9.5% in 2018 for women of reproductive age and 9.1% to 9.45 for Pregnant and Lactating women during the same period. This is a serious nutrition status which can be attributed to the effect drought emergency of 2016/2017.

Table 26: Nutrition status of Women of Reproductive age and Nutrition status of pregnant and lactating women (n= 2061)

MUAC Category	Year	T. central	T. North	T. South	T. West	Turkana County
MUAC <21 CM for PLW	2018 (n=1351)	12.6%	11.4%	9.1%	5.5%	9.4%
	2017 (n=1184)	10.6%	11.5%	7.3%	5.6%	9.1%
MUAC <21 CM for All WRA	2018 (n=2061)	12.0%	11.9%	9.3%	5.6%	9.5%
	2017 (n=2105)	9.7%	10.7%	8.1%	6.1%	8.8%

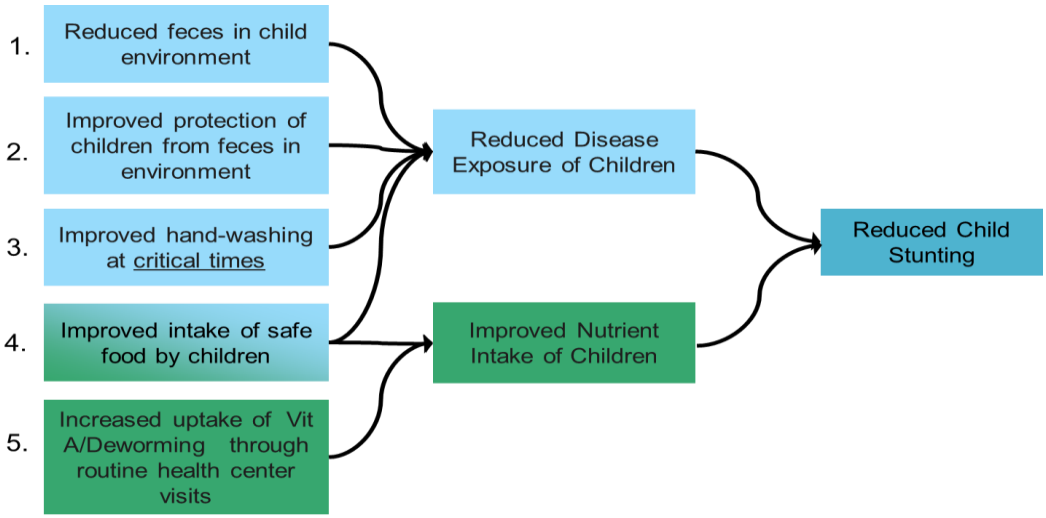
5.0 WATER SANITATION& HYGIENE

International human rights consider access to water and sanitation as a human right.[8] This means that all individuals are entitled to have access to an essential amount of safe drinking water and to basic sanitation facilities. The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use. Water and sanitation are deeply interrelated. Sanitation is essential for the conservation and sustainable use of water resources, while access to water is required for sanitation and hygiene practices.

Furthermore, the realization of other human rights, such as the right to the highest attainable standard of health, the right to food, right to education and the right to adequate housing, depends very substantially upon the implementation of the right to water and sanitation.

Research has shown that poor WASH indicators are linked to under nutrition and more so on High Stunting levels. Diarrhea, the leading killer of young children is closely linked to poor/inadequate WASH (Pruss-Ustun et al, 2014), which often causes under nutrition, which in turn reduces a child's resistance to subsequent infections, thus creating a vicious circle. An estimated 25% of stunting is attributable to five or more episodes of diarrhea before 24 months of age (Checkley et al, 2008). Below is a pathway to reduce stunting among children 0-2years of age showing the prominence of WASH interventions.

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



**Conceptual framework is non-exhaustive and focused for this particular intervention.*

Figure 10: Pathway to reduction of stunting

5.1 Water access and utilization

5.1.1 Main Source of Water

The 2 main sources of water in the county was boreholes and piped water. Overall 35.4% (n=843) of households obtained water from boreholes while 23.9% (n=570) had access to piped water; these sources are considered relatively safe sources since they are protected. Other unprotected water sources were dug wells (22.8%- n=543), water kiosks (7.9%- n=187), surface water (7.4% n= 177) and water tankering (1.3% n=31). The main sources of water in Turkana Central was borehole (46.4% n=250) and dug wells (28.0% n=151). In Turkana North, the main sources was bore hole (64.9% n= 347) and dug well (27.7% n=148). For Turkana South, the sources of water were piped water (34.4% n=217) and bore holes (18.7% n=118). In Turkana West the main sources of water was piped water and unprotected wells at 29.9% (n=203) and 24.9% (n=169) respectively. It worthwhile to note that Turkana South (14.6%) and West (10.2%) had the highest proportions of populations relying on surface water sources (dams, ponds, stream) which were mostly co-shared with the livestock further increasing chances of contamination.

Due the high proportion of the population relying on unsafe water sources, there is eminent need to sensitize the community on water treatment while at the same time ensure access to water treatment chemicals. Table 48 below, summarizes main sources of water per survey zone.

Table 27: Main current sources of water (n= 2382)

	T. Central	T. North	T. South	T. West	County
n	**539**	**535**	**630**	**678**	**2382**
Piped water system	125 (23.2%)	25(4.7%)	217(34.4%)	203(29.9%)	570(23.9%)
Tube well / borehole	250 (46.4%)	347(64.9%)	118 (18.7%)	128 (18.9%)	843(35.4%)
Dug well	151 (28.0%)	148(27.7%)	75(11.9%)	169(24.9%)	543(22.8%)
Spring	3 (0.6%)	0(0.0%)	0 (0.0%)	15(2.2%)	18(0.8%)
Rainwater	1 (0.2%)	0(0.0%)	2(0.3%)	1(0.1%)	4(0.2%)
Tanker-truck	0 (0.0%)	0*(0.0%)	28(4.4%)	3(0.4%)	31(1.3%)
Cart with small tank	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
Water kiosk	6 (1.1%)	0(0.0%)	94(14.9%)	87(12.8%)	187 (7.9%)
Surface water (river, dam, lake, pond, stream, canal, irrigation channel)	1 (0.2%)	15(2.8%)	92(14.6%)	69(10.2%)	177(7.4%)
other	2(0.4%)	0(0.0%)	4 (0.6%)	3(0.4%)	9(0.4%)

5.1.1.1 Type of Piped water

The households whose main water source was piped water were further asked to define the type of piped water they were using. In summary 45.7% of those, using piped water it was a public tap shared by several households. Turkana central had the highest proportion of household with piped water into their dwelling indicating that these households had ease in access to water facility.

Table 28: Type of piped water

	T. Central		T. North		T. South		T. West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	153		110		220		101		584	
Piped into dwelling	59	38.6%	2	1.8%	27	12.3%	9	8.9%	97	16.6%
Piped to yard / plot	26	17.0%	4	3.6%	39	17.7%	2	2.0%	71	12.2%
Piped to neighbour	29	19.0%	9	8.2%	66	30.0%	40	39.6%	144	24.7%
Public tap / standpipe	34	22.2%	95	86.4%	88	40.0%	50	49.5%	267	45.7%
other	5	3.3%	0	0.00%	0	0.00%	0	0.00%	5	.9%

5.1.1.2 Type of Dug Well Used

Out of those that used water from dug water well in the county, 98.2% (n=533) of them were relying on unprotected wells with only 1.8% (n=10) of them using protected well which was presumed to be less exposed to contamination.

Table 29: Type of dug well used (n= 543)

	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	151	100	148	100	75	100	169	100	543	100
Protected well	2	1.3	7	4.7	1	1.3	0	0	10	1.8
Unprotected well	149	98.7	141	95.3	74	98.7	169	100	533	98.2

5.1.2 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.

5.1.2.1 Distance to water sources

On the distances to water sources, over half (58.5% - n=1394) of the households interviewed obtained their water from sources less than500m (less than 15 minutes walking distance), 33.3% (n=793) took between 15 min to 1 hour (approximately 500m to 2km) while the rest (8.2% n= 195)) walked as far as more than 2Km (1- 2hrs) to their water sources. Figure 10 below shows distance to water sources per survey zone in Turkana County

Table 30: Distance to water sources (n=2382)

	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	539		535		630		678		2382	
Less than 500m (Less than 15 minutes)	327	60.7	236	44.1	369	58.6	462	68.1	1394	58.5
More than 500m to less than 2km (15 to 1 hour)	154	28.6	270	50.5	241	38.3	128	18.9	793	33.3
More than 2 km (1 – 2 hrs)	58	10.8	29	5.4	20	3.2	73	10.8	180	7.6
others	0	0	0	0	0	0	15	2.2	15	0.6

5.1.2.2 Queuing time to water sources

On the proportion of household queuing for water; Over half (57.6%- n= 1373)) of the households were not queuing for water which indicates an improved access to water for households. Turkana west recorded the highest proportion of households (52.1% n=1009) queuing for water.

Table 31: Proportion of Households Queuing for water (n=2382)

Do you queue for water	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	**539**		**535**		**630**		**678**		**2382**	
Queues for water	179	33.2	220	41.1	257	40.8	353	52.1	1009	42.4
Does not	360	66.8	315	58.9	373	59.2	325	47.9	1373	57.6

Table 32: Queuing time at water source (n=2382)

Queuing Time	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	539		535		630		678		2382	
Less than 30 minutes	298	55.3	134	25.0	309	49.0	426	62.9	1167	49.0
30-60 minutes	196	36.3	350	65.5	270	42.8	192	28.3	1008	42.0
More than 1 hour	45	8.4	51	9.5	51	8.2	60	8.8	207	9.0

Out of those that were queuing for water in the county ,almost half (49% n=1167) of the respondents were waiting for less than 30 minutes while 42% (n=1008) of the households were queuing for 30 and 60 minutes as indicated in the table above.

5.1.3 Methods of treatment and storage of drinking water

5.1.3.1 Household water treatment

Despite most of the households obtaining water from unsafe sources, only 10.2% (n=243) of households sampled were treating their water before drinking. Turkana Central (6.1% n=33) had the least proportion of the population that treated water as indicated in the table below.

Table 33: Drinking Water treatment (n=2382)

Anything done to water before drinking	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	539		535		630		678		2382	
Treated.	33	6.1%	47	8.8%	78	12.4%	85	12.5%	243	10.2%
Not	506	93.9%	488	91.2%	552	87.6%	593	87.5%	2139	89.8%

Table 34: Methods used for treating drinking water

Treatment method	T. Central	T. North	T. South	T. West	T. County
Boiling	15(45.5%)	10 (21.3%)	48(61.5%)	22(25.9%)	95(39.1%)
Chemicals	18(54.5%)	41 (87.2%	43(55.1%)	63 (74.1%	165 (67.9%)
Traditional herbs	0 (0.0%)	0 (0.0%)	6(7.7%	1(1.2%	7 (2.9%
Pot filters	0 (0.0%)	0 (0.0%)	2(2.6%	3 (3.5%	5 (2.1%
Other	0 (0.0%)	0 (0.0%)	0 (0.0%)	1(1.2%	1 (0.4%

Even though just 1 in 10 households treated water for drinking, use of chemicals such as PUR or aqua tabs were the dominant method used since the county government and WASH partners have invested heavily in supply of water purifying chemicals during this emergency response.

5.1.3.2 Storage of Drinking water

Out of the sampled households across the county only 60.8% (n=1448) were storing their drinking water in a closed container preventing it from contamination.

Table 35: Storage of drinking water (n=2382)

Domestic water storage facility	Central		North		South		West		County	
	No.	%	No.	%	No.	No.	%	No.	%	No.
n	**539**		**535**		**630**		**678**		**2382**	
Open container / Jerrican	194	36.0	270	50.5	226	35.9	244	36.0	934	39.2
Closed container / Jerrican	345	64.0	265	49.5	404	64.1	434	64.0	1448	60.8

5.1.3.3 Cost of Water-Jan 2018

Results of the survey showed that at least 41% (977) of households in the county pay for water compared to 37.5% last year.

Table 36: Payment for water(n=2383)

Do you pay for water	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	539		535		630		678		2382	
Yes	210	39.0%	210	39.3%	288	45.7%	269	39.7%	977	41.0%
No	329	61.0%	325	60.7%	342	54.3%	409	60.3%	1405	59.0%

Of those who pay for water, only 1/3(33.6%) pay per 20l jerrican and the rest on a monthly basis with Turkana North having the highest proportion that was paying for water on a monthly basis in comparisons to the other three survey zones. Half of the households from Turkana West were paying for water per a 20 L jerrican. Figure 9 and 10 Show that a substantial number of households were paying for less than Ksh.10 per 20 Jerrican Of water or < 100 Ksh per month. The results showed that water in Turkana west was seemingly expensive compared to other survey zones.

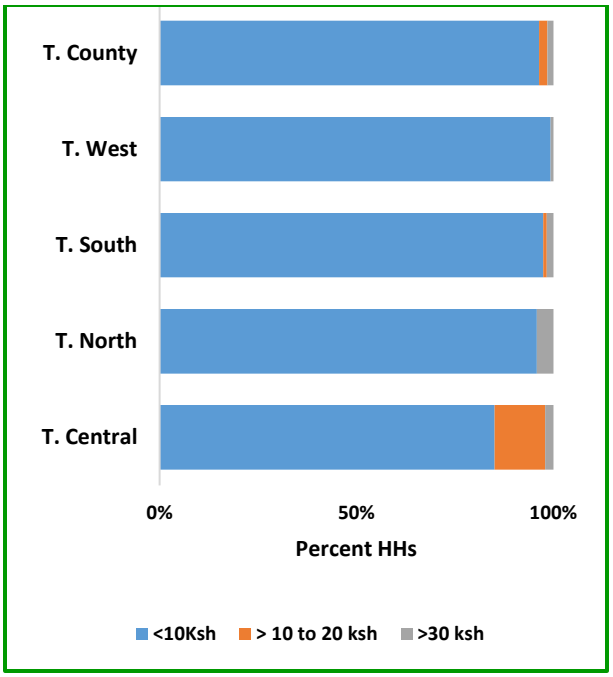


Figure 11 Cost of Water on a monthly basis (n=649)

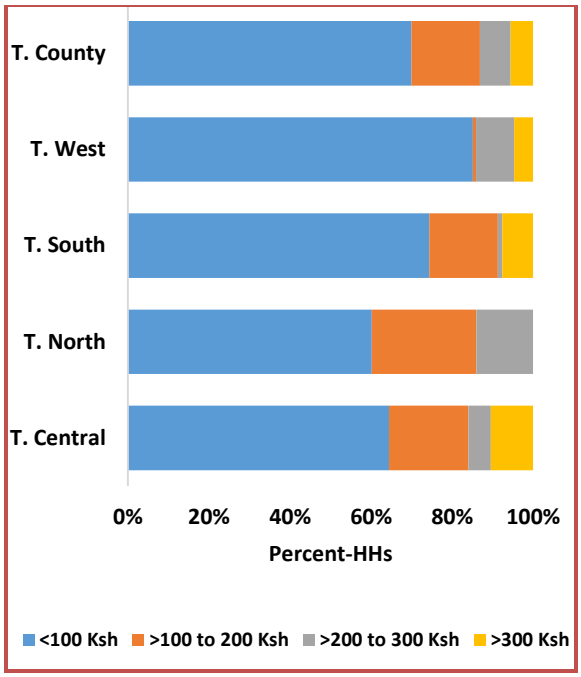


Figure 12 Cost of water per 20l-jerican basis (n= 328)

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5.1.3.4 Water consumption at household level

According to the sphere standards a household members is required to consume at least 15 liters per day[9]. A closer analysis of the amount of water consumed in Household of Turkana county show that barely 22.1% of them access adequate water. Turkana south is leading at just 30.3%. This could be attributed to improved access through corporate responsibility of Tullow Company as well as investment by County government and other development partners. There is however, no significant improvement compared to January 2017, see table below.

Table 37: Average HH Water Consumption/Person/Day (n= 2382)

	T. Central		T. North		T. South		T. West		Turkana County	
	2018	2017	**2018**	2017	**2018**	2017	**2018**	2017	**2018**	2017
n	**539**	702	**535**	622	**630**	416	**678**	484	**2382**	2224
% of HH consuming less than 15 liters per/person/day	**85.7%**	82.6%	**78.9%**	67.2%	**69.7%**	63.5%	**78.6%**	63.2%	**77.9%**	70.5%
% of HH consuming equal or more than 15 liters/ person/day	**14.3%**	17.4%	**21.1%**	32.8%	**30.3%**	36.5%	**21.4%**	36.8%	**22.1%**	29.5%

[9] SPHERE hand book

5.2 Hygiene and sanitation

5.2.1 Hand washing

Hand washing with soap is the single most cost-effective intervention in preventing diarrhea diseases (Borghi, Guinness, Ouedraogo, & Curtis, 2002).The four critical hand washing moments include; after visiting the toilet/latrine, before cooking, before eating and after taking children to the toilet/latrine. As illustrated in the table below 77.5% (n=750) of the caretakers were aware of the hand washing practices. Turkana Central (11.8% n=29) had the least proportion of the households that were aware of hand washing practices as compared to the rest of the survey zones.

Table 38: Awareness of hand washing practices (n=1769)

Awareness of handwashing	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	**245**		**186**		**244**		**293**		**968**	
Yes	159	64.9%	133	71.5%	201	82.4%	257	87.7%	750	77.5%
No	57	23.3%	50	26.9%	33	13.5%	35	11.9%	175	18.1%
Do not Know	29	11.8%	3	1.6%	10	4.1%	1	0.3%	43	4.4%

Assessment of hand washing in the 4 critical times in Turkana County indicated that most of the households were practicing hand washing before eating (89.2%), 71.6% after visiting the toilet, 64.7% before cooking and only 32.1% after taking the baby toilet. It is worthwhile to take note of the low proportions practicing hand washing after fecal matter disposal, which predisposes the households to contamination.

Table 39: Hand washing at critical times (n=1769)

Survey zone	After visiting the toilet	Cooking	Eating	After taking baby toilet	Other moments	AT all 4 critical times	
						2018	2017
T. Central	80.3%	85.8%	82.9%	41.4%	.3%	14.10%	4.40%
T. North	66.4%	59.0%	93.4%	40.5%		14.00%	9.00%
T. South	69.8%	64.0%	93.6%	20.7%	1.4%	10.60%	14.40%
T. West	71.0%	56.4%	86.8%	30.9%	1.5%	20.90%	16.30%
T. County	71.60%	64.70%	89.20%	32.10%	1.00%	15.10%	10.20%

5.2.2 Hand washing at all four critical times

When hand washing with soap is carried out properly at the four critical times, it breaks key contamination routes. This includes contact with an object or food that eventually goes into one's mouth. Contamination refers to the transmission of disease-causing germs from one human to another or via contact with human or animal faeces. (A single gram of human faeces can contain up to one trillion germs, (Franks et.al. 1998) Adults and children who practice proper hand washing will enjoy direct health benefits and other benefits. Aspects of hand washing at particular times show hand washing before eating was the most common habit while the least practiced was hand washing before feeding a child and after taking the baby's toilet as shown in table above.

Results show that only 15.1% of the respondents reported washing hands at all the four critical times (before eating, before cooking, after visiting the toilet, after changing the baby diaper),this indicates that a large proportion of the community is exposed to contamination by diarrheal causing germs. However, there is noted improvement in hand washing practices, see table 39 above.

5.2.3 Hand washing with soap

Hand washing with soap is one of the most effective and inexpensive interventions for preventing diarrheal diseases and pneumonia, which together account for 3.5 million child deaths annually worldwide (Cairncross & Valdmanis, 2006). The survey indicated that only 46.3% of the households were using soap and water for hand washing, with majority 43.4% using only water*, see figure 11 below.* Hand washing without soap does not offer effective protection against germs.

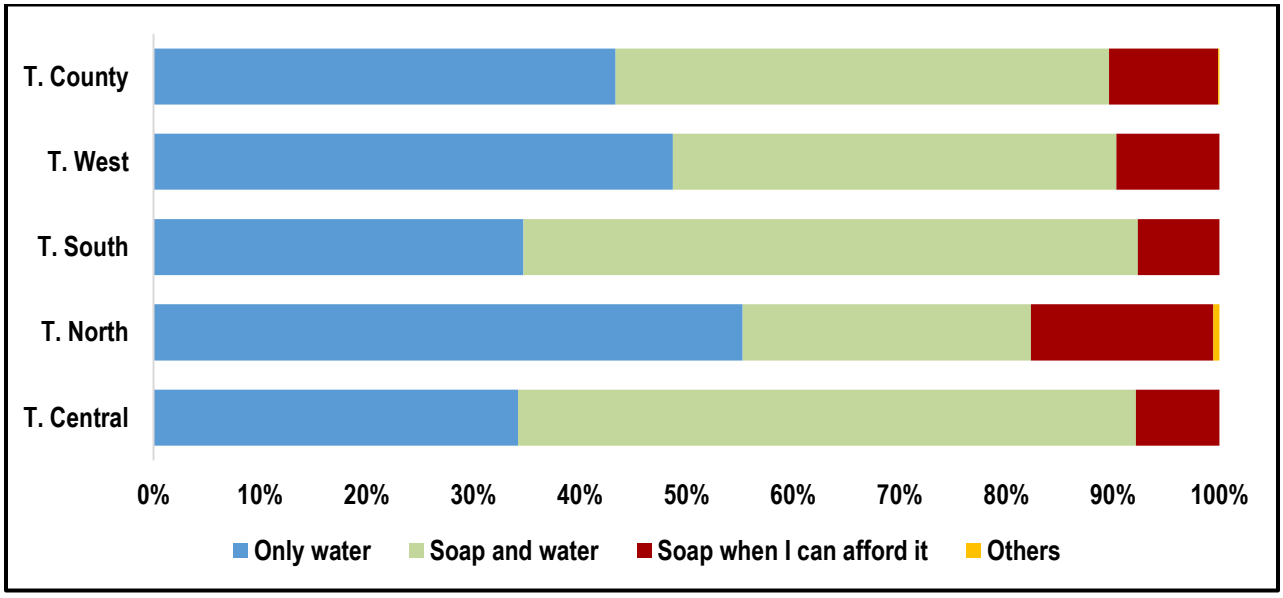


Figure 13: What is used for hand washing (n=1769)

5.2.4 Latrine Utilization

Overall, the proportion of households reported relieving themselves in the bushes (open defecation) remains unacceptably high. Compared to January 2017, the proportion of households practicing open defecation decreased from 88.0% to 83.7% while the rest use own latrine, neighbors or shared traditional pit/improved latrines).

Turkana North (94.0%) and West (83.8%) recorded the highest Open defecation rate with Turkana Central (82.6%) and south (75.7%) having the lowest but poor rate. Table 40 below shows latrine ownership and utilization per survey zone.

Table 40: Latrine ownership and utilization

Relieving point	Central		North		South		West		County	
	No.	%	No.	%	No.	%	No.	%	No.	%
n	539		535		630		678		2382	
Pit latrine	86	16.0%	26	4.9%	149	23.7%	102	15.0%	363	15.2%
Composting toilet	2	0.4%	0	0.0	1	0.2%	1	0.1%	4	0.2%
Hanging toilet / hanging latrine	6	1.1%	6	1.1%	3	0.5%	6	0.9%	21	0.9%
No facility / bush / field	445	82.6%	503	94.0%	477	75.7%	568	83.8%	1993	83.7%

6.0 FOOD SECURITY

Food and nutrition security refers to a situation where all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Currently over 10 million people in Kenya suffer from chronic food insecurity and poor nutrition, and between two and four million people require emergency food assistance at any given time. Nearly 30% of Kenya's children are classified as undernourished, and micronutrient deficiencies are widespread (GOK, 2011). Turkana County is one of the most food secure counties in Kenya.

6.1 Food access and consumption

As earlier observed, household food access and utilization in Turkana is facing a serious challenge due to poor and unreliable decent sources of income coupled with compromised in-county food production opportunities. Findings of the Value Chain Analysis of Priority Commodities for Food and Nutrition Security in Turkana County, 2017 revealed that Turkana County is largely a net importer of food but has a potential for improvement (WFP, TCG & FAO, 2018). The table below shows that the county can hardly meet its per-capita food need.

Table 41: 2016 Food Production & Consumption Trends in Turkana County

Crop	Area (Ha)	Production (MT)	Consumption (MT)
Maize	2,447	2,070	83,145
Sorghum	2,485	2,309	20,825
Millet	836	940	2,000
Cow Peas	20	7	13,000
Cattle	1.95 million	671,028	9,000
Goats	6.17 million	10,600	2,500
Poultry	0.2 million	3.8	300

6.1.1 Dominant foods and food groups consumed by households and women

In the entire county the four main foods consumed 24 hours prior to the survey were starches (68.9%), oil (55.7%), pulses and legume (49.4%), vegetables and fruits (27.4%), meat (22.5%) and milk (24.7%) was purchase. However, there was a significant shift in the type of food consumed by household members in Jan 2018 compared to January 2017 where starches reduced from 77.4%, pulses and legume from 83.2%), vegetables and fruits from 67.3% and milk from 61.3% this is a reflection of the severe drought that affected food availability and access even from the main supplying counties of Trans Nzoia and Uasin Gishu earlier this year.

Table 42: Food Groups Consumed by Households in Turkana county (n= 2388)

	Cereals	Vegetables	Fruits	Meat	Eggs	Fish	Pulses & Legumes	Milk	Oil	Sweets	Condiments
2018 (n= 2388)	68.9%	27.4%	5.0%	22.5%	1.5%	2.3%	49.4%	24.7%	55.7%	39.7%	19.4%
2017 (n= 2075)	81.9%	13.5%	6.20%	25.20%	1.70%	6.40%	54.40%	16.00%	63.30%	39.90%	22.20%

The type of food consumed by women was not significantly different as shown by *figure below*. It is recommended for pregnant and lactating women to increase their energy intake by at least 500 Kcal over and above the average per-capita energy requirement of the normal household member.

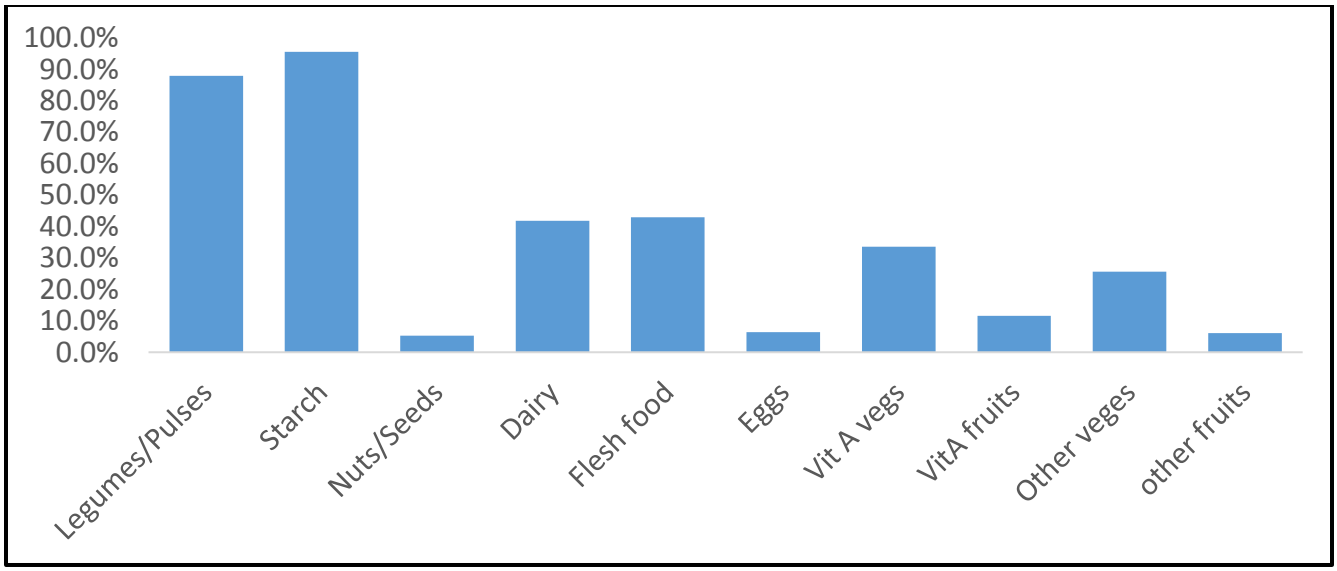


Figure 14 Food Groups consumed by women

6.2 Household Dietary Diversity (HDD)

Household dietary diversity score (HDDS) qualitatively measures food consumption which reflect household access to a variety of foods. It is not meant to be used in accessing dietary diversity at individual level (FAO, 2010). In accessing the quality and quantity of food consumed by the Turkana County population, a 24hr recall questionnaire was used. During data collection 16 food groups were used. These were later combined during analysis to 12 food groups. Three food groups had high consumption rate. These were cereals, tuber and sugars.,

Compared to the same period in 2017, there is general improvement by the study population on diversified diet consumption. Approximately one third (31.4%) consumed more than 5 food groups classified as high dietary diversity compared to one fifth (18.2%) in 2017. A considerable proportion of the surveyed households (21.4%) consumed less than 3 food groups classified as low dietary diversity while 47.2% consumed 4 to 5 food groups classified as medium dietary diversity.

All the study areas showed a considerable improvement with Turkana South having the highest improvement in proportion of household consuming more than 5 food groups. Slightly more than a fifth of households in all survey areas except in Turkana South were consuming less than 3 food groups (low dietary diversified diets) despite the improvement in dietary diversity in the county as illustrated in the figure 13 and 14 below.

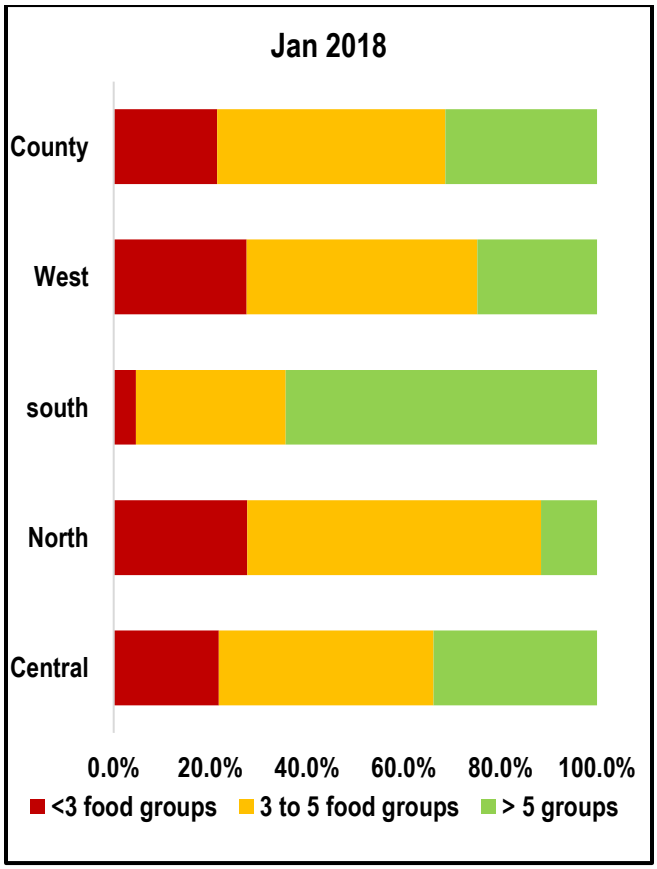


Figure 15 Household Dietary Diversity Score based on 24 hours recall (n=2388)

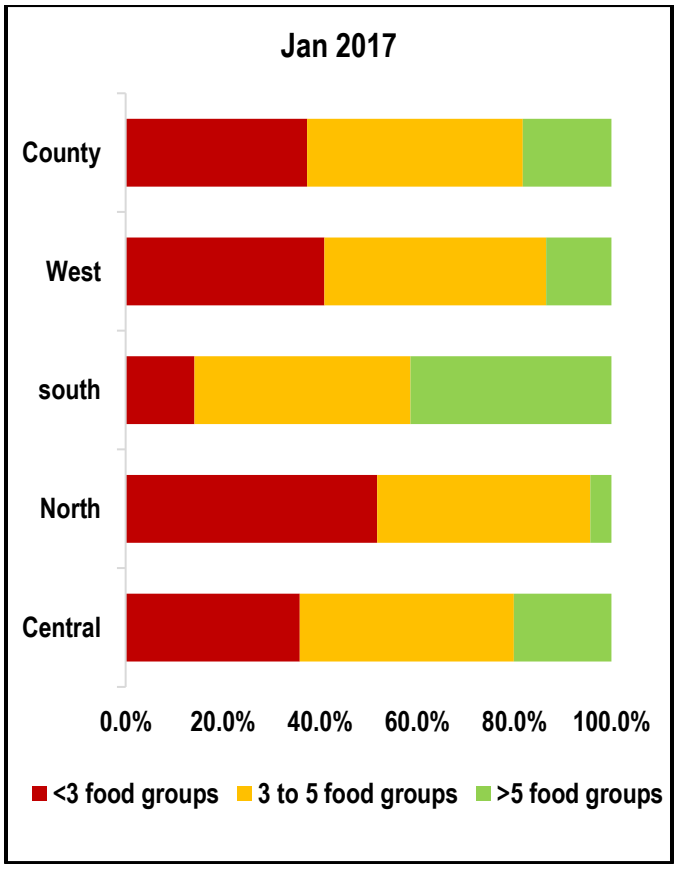


Figure 16 Household Dietary Diversity Score based on 24 hours recall (n=2075)

An analysis of micronutrient intake showed a serious deficit in meeting the recommended daily allowances as shown in figure 15 below. The intake of fruits and vegetables was very poor, which is expected at this time of the year when the lean season is at its peak.

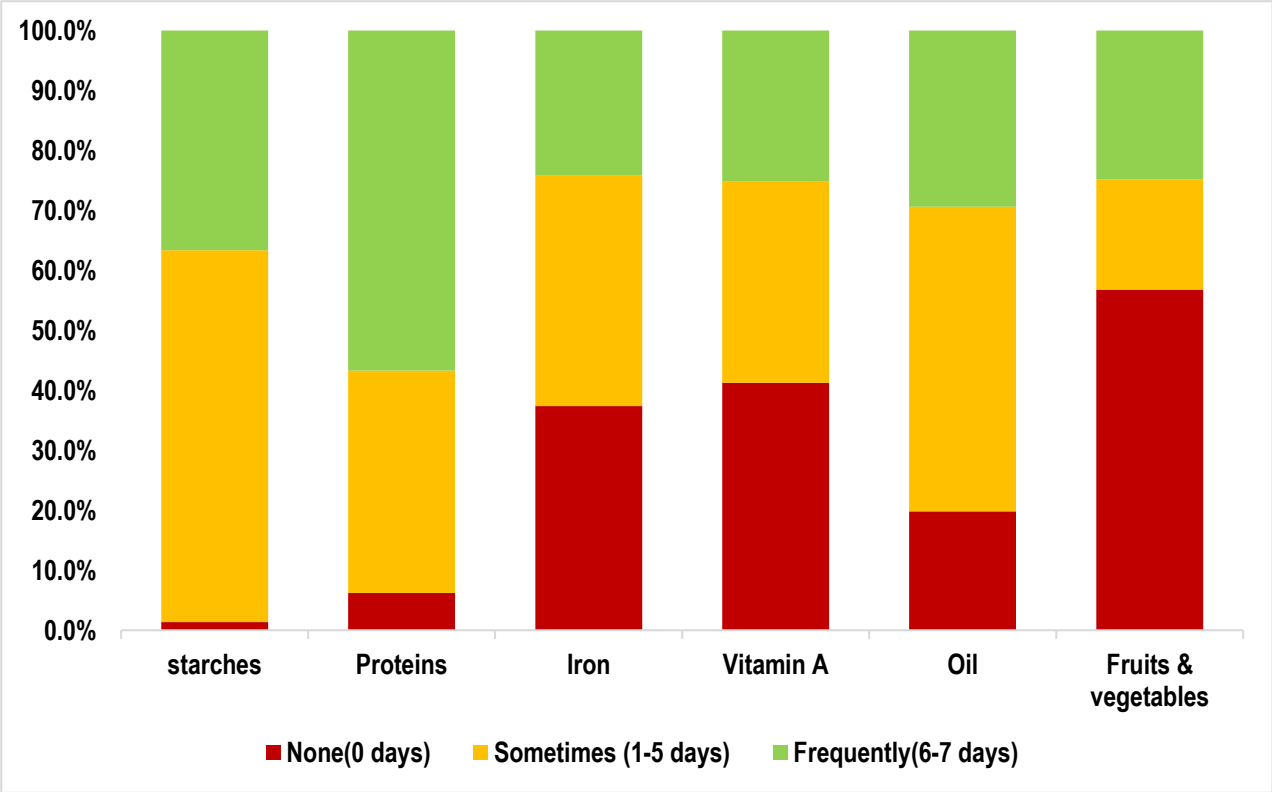


Figure 17: Micronutrient Consumption from Household Dietary Diversity (n=2388)

6.2.1 Women Dietary diversity score

As for women's diversity in dietary intake, results showed that about three quarters of women consumed from just five food groups county-wide with Turkana north as the most affected. This is a major risk factor and contributor to poor maternal nutrition status and pregnancy outcomes. Women of reproductive age (WRA) are often nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Requirements for most nutrients are higher for pregnant and lactating women than for adult men (National Research Council, 2006), World Health Organization [WHO]/ Food and Agriculture Organization of the United Nations (FAO, 2016). Outside of pregnancy and lactation, other than for iron, requirements for WRA may be similar to or lower than those of adult men, but because women may be smaller and eat less (fewer calories), they require a more nutrient-dense diet (Torheim and Arimond, 2013). Insufficient nutrient intakes before and during pregnancy and lactation can affect both women and their infants. Yet in many resource-poor environments, diet quality for WRA is very poor, and there are gaps between intakes and requirements for a range of micronutrients (Arimond et al., 2010; Kavle, 2017).

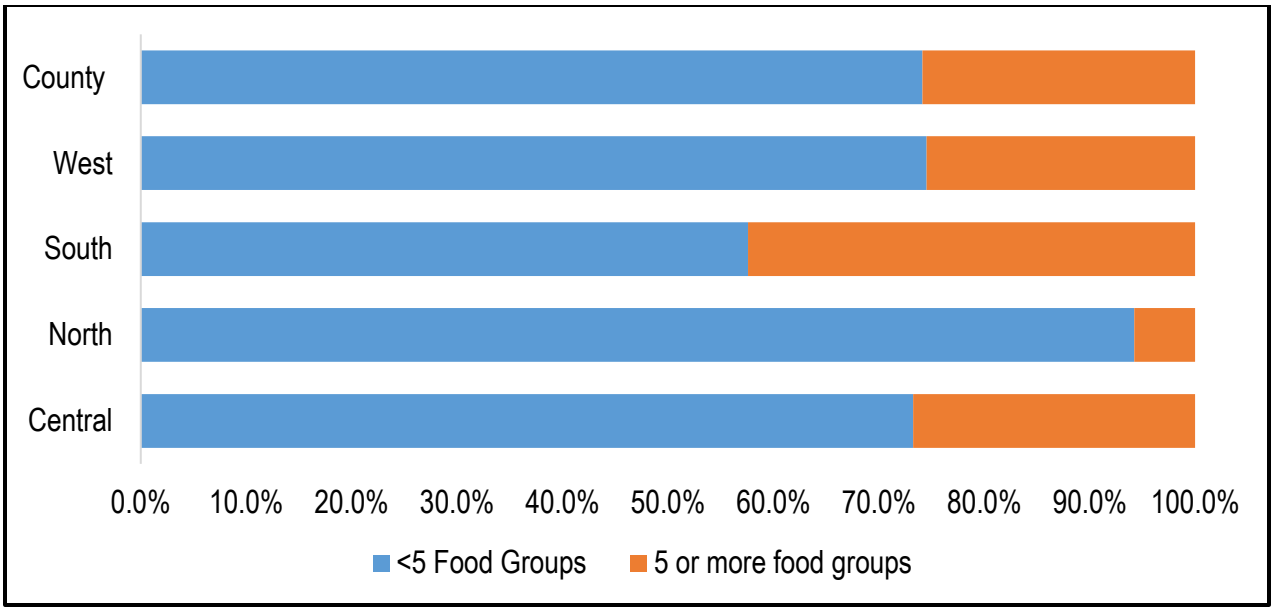


Figure 18: Minimum WDD Jan 2018

6.2.2 Food Consumption Score Classification

Food Consumption Score (FCS) is a proxy for household food security and is designed to reflect the quality of population's diet. The FCS is considered as an outcome measure of household food security. Food consumption score classifies households in to 3 categories namely, poor, borderline and acceptable (FAO 2010). As shown in the figure below there is an improvement in FCS in January 2018 compared with the same period in 2017 in all sub-counties except in Turkana North and Turkana West where there was deterioration and the population with poor FCS increased to 54.1% and 24.7% respectively, *see figure 16 and 17 below.*

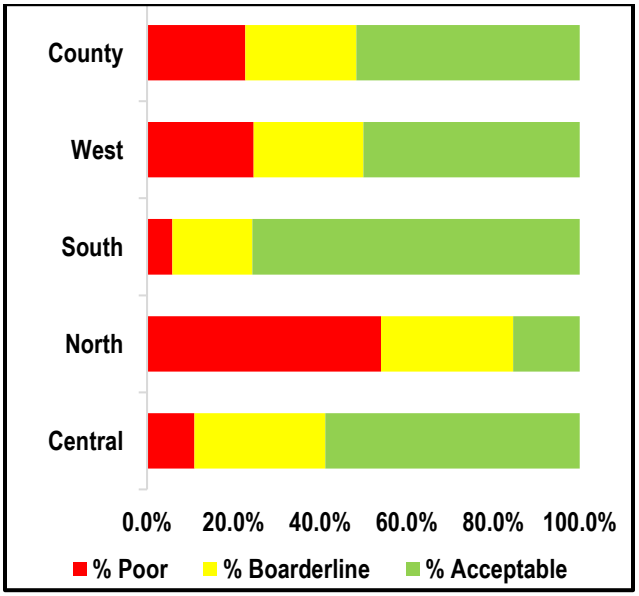


Figure 19 Jan 2018 Food Consumption Score (n=2189)

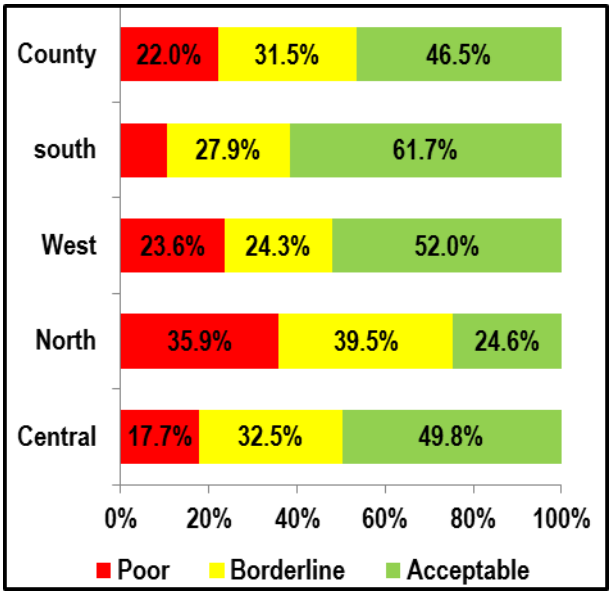


Figure 20: Jan 2017 Food Consumption Score (n=1980

6.2.3 Consumption of micronutrients (iron, protein and vitamin A rich foods in relation to Food consumption score

Analysis done on diet quality based on vitamin A rich, iron rich and protein rich diets as illustrated in figure below shows majority of households which were classified under poor and borderline categories consumed none of vitamin A (54.8%) and iron rich foods 57.&%). Majority of these households (72.8%) consumed sometimes protein rich foods.

Among the households that were categorized as having acceptable Food consumption score, 100% frequently or sometimes consumed protein rich foods while 88.7% and 81.8% consumed the same for iron rich and vitamin A rich foods respectively. General intake of iron-rich foods and vitamins was found to have very low, a major pointer to micronutrient deficiencies and resulting impact such as low birth-weight, anemia among other complications.

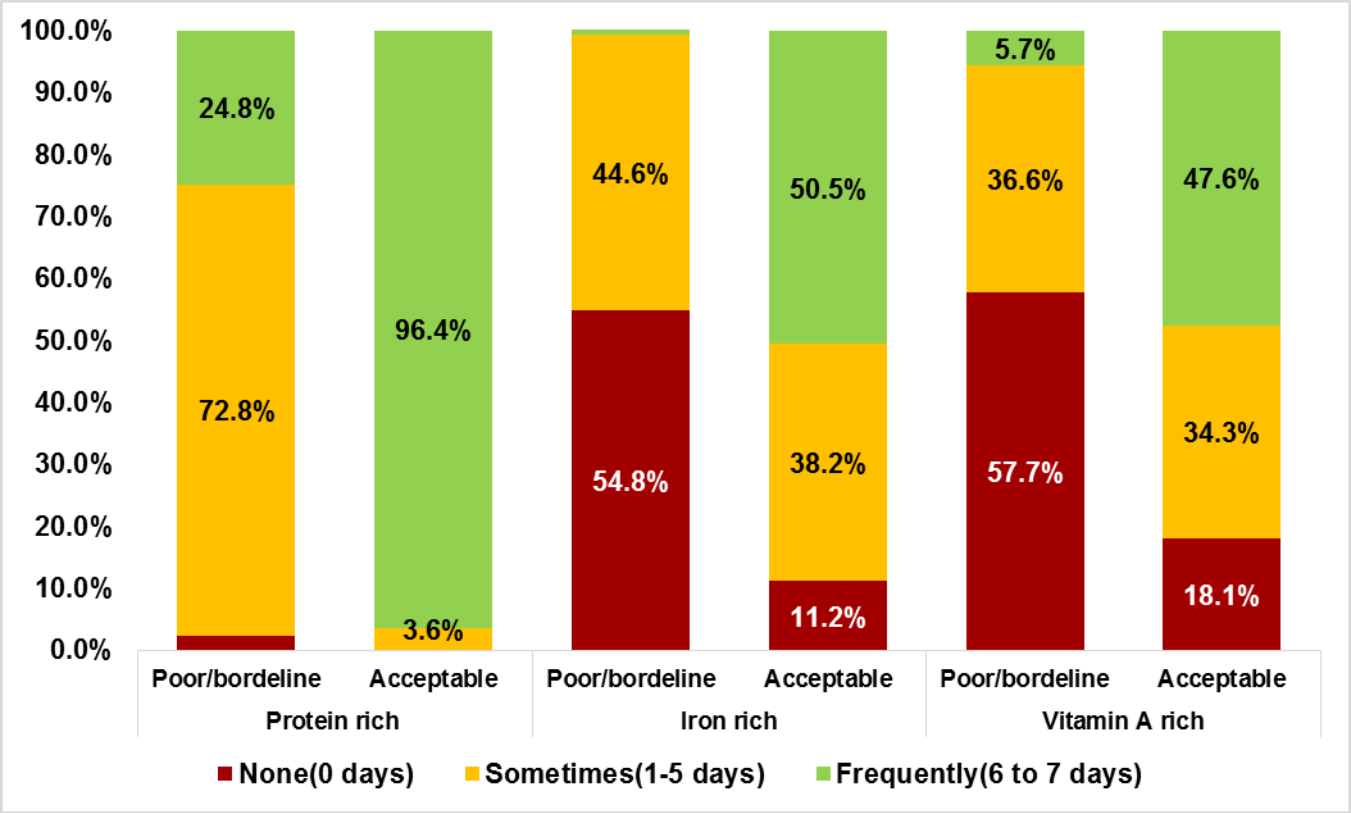


Figure 21: Consumption of Protein, Vitamin A & Hem rich food groups by FCS categories (n=2189)

As shown in the figure below, protein rich foods and staples were the most consumed food groups in the study population followed by oils while fruits and vegetables was the least consumed food group. These results explain the deficiency in dietary micronutrient intake among households.

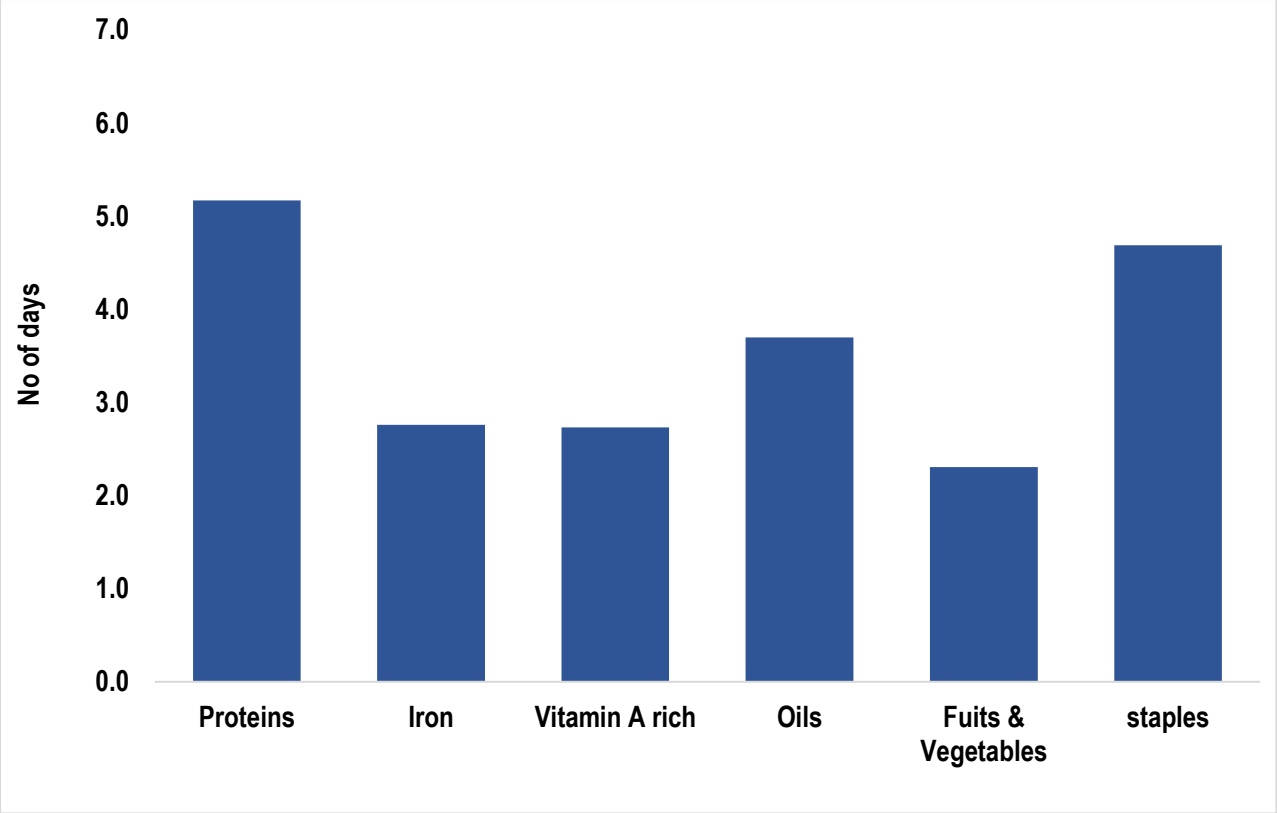


Figure 22: Average days food groups are consumed showing consumption of micronutrients (n= 2189)

Food fortification and nutrient supplementation have been strategies being used to fill the micronutrient gaps in the household diets. However, an analysis of the level of knowledge and awareness among caregivers/household heads on the types of foods fortified with essential micronutrients was found to be of great concern with just 185 households(7.8%) having heard of food fortification. The sources of information on fortification were seen to be scarce and inadequate to reach all caregivers, see *table 43 below.*

Table 43:Food fortification Knowledge, awareness and information source (n=185)

Awareness of Food fortification	Source of information on food fortification.						County Total
	Food fortification radio	Food fortification road show	Food fortification training	Food fortification TV show	Food fortification health talk	Food fortification from other	
n	31	2	17	9	139	20	185
Percentage	16.8%	1.1%	9.2%	4.9%	75.1%	10.8%	

6.3 Coping Strategy Index (CSI)

The Coping Strategies Index (CSI) is a simple and easy-to-use indicator of household stress due to a lack of food or money to buy food. It is considered an outcome of household food insecurity. This indicator assesses whether there has been a change in the consumption patterns of a given household. For each coping strategy, the frequency score (0 to 7) is multiplied by the universal severity weight. The weighted frequency scores are summed up into one final score (WFP, 2015). The calculation is per the number of days a household had to rely on the various coping strategies in the past seven days. The average CSI for Turkana was 23.73, an indication the sampled households were food insecure and still engaging in different survival tactics. However the CSI was a

reduction from last year's CSI of 32.3. This is an indication of improved household food security compared to the same period last year. The table below is a summary of the coping strategies adopted by the households in such instances.

Table 44: Coping strategy index

Coping strategy	Proportion of HHs (n= 1779)	Frequency score (0-7)	Severity score (1-3)	Weighted score =Freq*weight	
				Previous year (2017)_	Current year (2018)
Rely on less preferred & less expensive food	1742 (97.9%)	3.6	1	4.5	3.6
Borrow food	1460 (82.1%)	2.28	2	6.6	4.56
Limit portion sizes	1687 (94.8%)	3.04	1	4.1	3.04
Restrict consumption of food by adults for young children to eat	1546 (86.9%)	3.01	3	12.3	9.03
Reduced number of meals	1733 (97.4%)	3.5	1	4.7	3.5
Total weighted Coping Strategy Score				32.3	23.73

7.0 CONCLUSION

According to the current Integrated Phase Classification (IPC) for acute malnutrition among children U5, Turkana is ranked at borderline **critical** phase (***IPC Phase 4- GAM 15-30% percent***). Nutrition status of Children has significantly improved in a similar trend witnessed in 2011/2012 based on a similar response package.This reduction is more than half (from **extremely critical** Nutrition Situation **(*IPC Phase 5*)** recorded in June 2017. This means that **ONE** in every **SIX** or **31,225** children in Turkana County are currently suffering from ACUTE malnutrition and is at increased risk of dying. Acute malnutrition among women has remained high at **9.4%** compared to **10%** in 2017.The Main occupation of Households has significantly shifted especially in the North – Livestock herding reduced to 51.3% from 71% in 2016. The main source of income in most households is petty trading of selling firewood and charcoal burning compensating for loss of livelihoods in all survey zones, especially as evidenced by the reducing livelihoods in pastoral economy.

A key population of concern was identified as the IDP community in Lowarengak where results also showed poor food security, WASH, health and nutrition outcomes. Further, Low access and Utilization of a variety of health and nutrition services i.e. immunization, Micronutrient supplementation, health and nutrition care practices remain a major a concern. WASH indicators (Access and sustainability to safe drinking water, Hand Washing and Sanitation) remain suboptimal. The Household food security situation (Dietary diversity, FCS, Micronutrient intake and CSI) has largely remained unchanged.

It can be concluded therefore that the key drivers of poor nutrition status include; Chronic food insecurity, High prevalence of childhood illness, Inadequate dietary diversity, Poor access to safe water, Poor hygiene practices (High rates of open defecation), Inadequate incomes and assets for the households

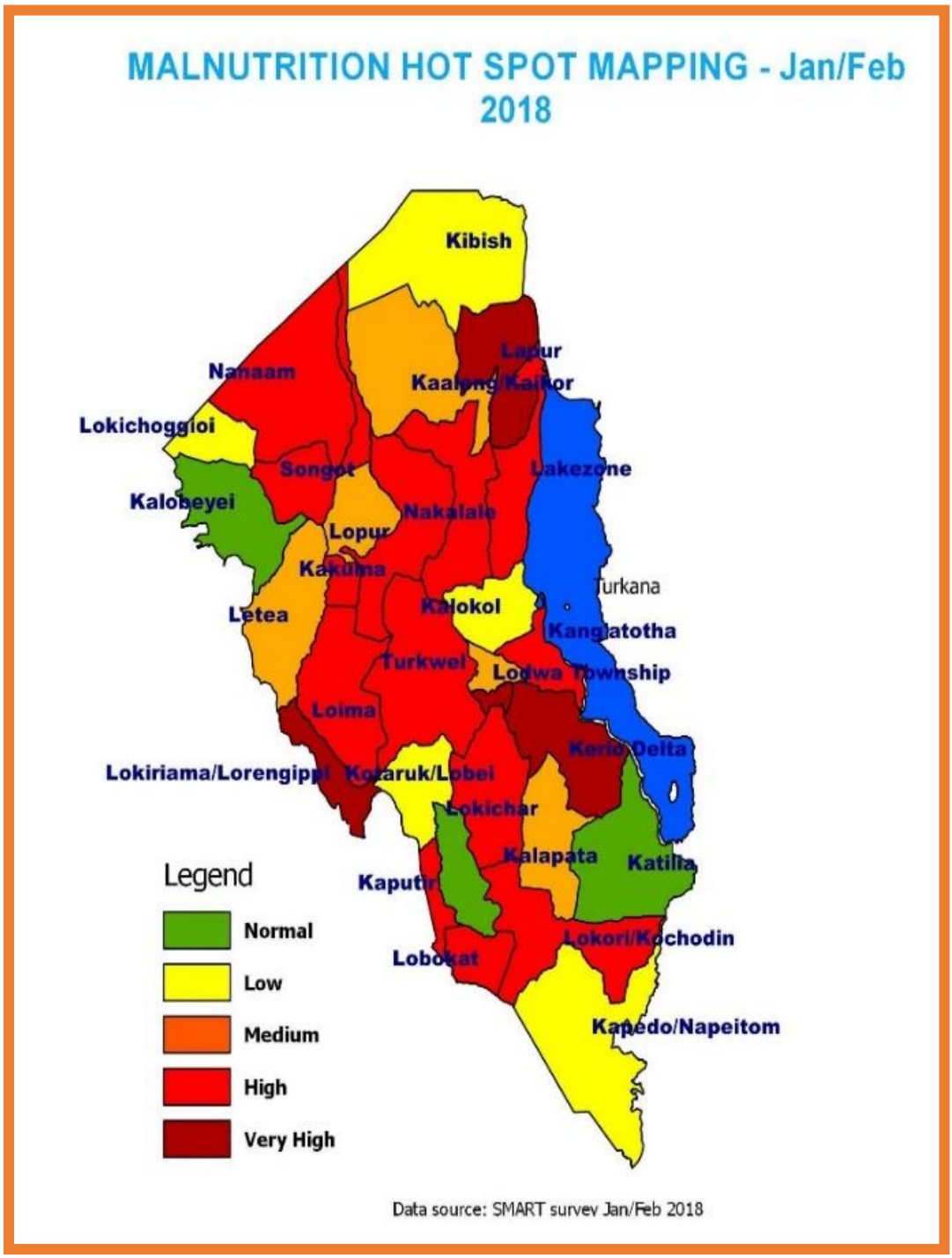
8.0 RECOMMENDATIONS:

	Action	By whom	By when	Status
1	Scale up service delivery to communities in Turkana west to cater for the influx from Uganda	MoH, NDMA and nutrition partners	Immediately	ongoing
2	Put strategies in place to address poor indicators performance in Loima and Turkana Central sub-counties	MoH and nutrition partners	immediately	ongoing
3	Design a sustainable strategy for integrated outreaches in hard to reach areas	MoH and nutrition partners	Immediately	Ongoing
4	Continue with creation of linkages for acutely malnourished children and women to existing social safety net programs	MoH, NDMA, Help Age International and nutrition partners	Immediately	Ongoing
5	Scale up of WASH services in areas that are most affected by drought	MoH, MoW, Oxfam, DOL, UNICEF and nutrition partners	Immediately	Ongoing

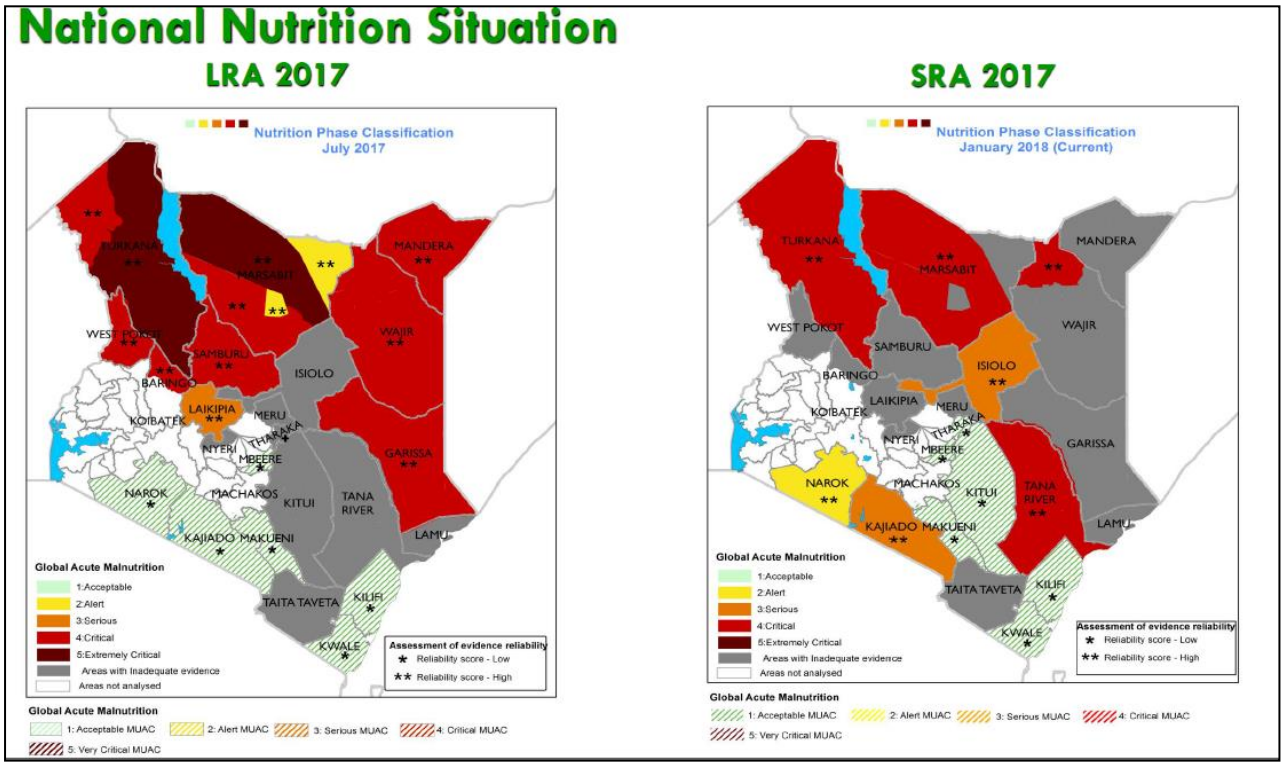
6	**Continues with nutrition and health surveillance to monitor the situational trends for timely action**	**MoH and nutrition partners**	**Continuous**	**ongoing**
7	Scale up rollout of IMAM surge/BFCI/cIMCI to sustain gains made in addressing malnutrition and access to care	MoH (public health) and nutrition partners	Continuous	Ongoing
8	Manage and strengthen supply chain to ensure appropriate nutrition commodities are consistently available at health facility level	MoH (nutrition& public health), UNICEF-KEMSA, WFP and nutrition partners	Continuous	Ongoing
9	Promote multi-sectoral engagement and collaboration to ensure coordinated efforts and synergy to address acute malnutrition	MoH/UNICEF/WFP, GIZ and other partners	Quarterly	Ongoing
10	Ensure active follow up of implementation of emergency response plans and adjust based on evidence and learning	MoH, NDMA, UNICEF and nutrition partners	Monthly	Ongoing

9.0 APPENDIX

9.1 Appendix 1: Mapped out hotspots- January/February 2018



9.2 Appendix 2: Nutrition situation as per SRA report-February 2018



9.3 Appendix iii. Summary of plausibility report

	Indicator	Acceptable values/range	CENTRAL	SOUTH	NORTH	WEST
1	Flagged data (% of out of range subjects)	<7.5	0 (1.5 % Excel)	0 (0.6 % Excel)	0 (2.0 % Excel)	0 (1.3 % Excel)
2	Overall sex ratio (significant CHI square)	>0.001	0 (p=0.149 Excel)	2 (p=0.94 Good)	0 (p=0.892 Excel)	2 (p=0.093 Good)
3	Age ratio (6-29vs 30-59) Significant CHI square	>0.001	4(p=0.005 Accep)	0 (p=0.20 Excel)	4 (p=0.001 Accep)	10 (p=0.000 Prob)
4	Dig. prevalence score-weight	<20	0(4 Excel)	0 (5 Excel)	0 (3 Excel)	0 (4 Excel)
5	Dig. prevalence score-height	<20	0 (6 Excel)	0 (7 Excel)	0 (6 Excel)	0 (5 Excel)
6	Dig. prevalence score-MUAC	<20	0 (4 Excel)	0 (5 Excel)	0 (6 Excel)	0 (4 Excel)
7	Standard Dev..height WHZ	>0.80	0 (0.95 Excel)	0 (0.96 Excel)	0 (0.93 Excel)	0 (0.97 Excel)
8	Skewness WHZ	<±0.6	0 (0.07 Excel)	0 (0.07 Excel)	0 (0.03 Excel)	0 (-0.04 Excel)
9	Kurtosis WHZ	<±0.6	0 (-0.04 Excel)	0 (0.01 Excel)	0 (0.10 Excel)	0 (0.00 Excel)
10	Poisson WHZ -2	>0.001	0 (p=0.201 Excel)	1 (p=0.025 Good)	5 (p=0.000 Prob)	0 (p=0.175 Excel)
11	OVERALL	<24	4% Excellent	3% Excellent	9% Excellent	12% Good

9.4 Appendix 4:Movemnet plan with sampled clusters-South South and East Movement Plan

Day/Date		Team	Location	Sub location	Pop size	Geographical unit	Cluster
29/1/2018	Day 1	Team 1	Lokori	Lokori	1091	ELELEA	1
		Team 2	Lokori	Lokori	909	NGIKOROPUA	2
		Team 3	Lokori	Kangitit	360	NAKWAKUNYUK	3
		Team 4	Kochodin	Kochodin	1427	NAKUKULAS	8
		Team 5	Lokori	Lotubae	1436	LOTUBAE DISPENSARY	5
		Team 6	Lokori	Lotubae	812	NAKWAKIRU	6
		Team 7	Lokori	Lotubae	520	NAWOYATIRA	7
		Team 8	Lokori	Lotubae	708	ARUMRUM	4
30/1/2018	Day 2	Team 1	Katilia	Katilia	457	LOKORKOR	10
		Team 2	Katilia	Parkati	9329	PARAKATI	11
		Team 3	Lochakula	Lochakula	352	KAGISAJA	13
		Team 4	Katilia	Parkati	9329	PARAKATI	12
		Team 5	Lochakula	Lokwamosing	2919	LOKWAMOSING	14
		Team 6	Kochodin	Lopii	624	LOTURERE REI	9
		Team 7	Napeitiom	Napeitom	4203	NAPEITOM	15
		Team 8	Napeitiom	Napeitom	2102	ECHWA	16
31/1/2018	Day 3	Team 1	Lokichar	Kapese	2530	LOMOKAMAR	20
		Team 2	Lokichar	Lokichar	2021	LOKORDOYO	18
		Team 3	Katilu	Kalemngerok	1734	KAPELO	42
		Team 4	Lokichar	Kapese	3805	KAPESE CENTRE	19
		Team 5	Lochwaa ngikamatak	Naposumuru	2526	KAEKORISOGOL	30
		Team 6	Lochwaa ngikamatak	Naposumuru	2205	NAPUSMORU	31
		Team 7	Lokichar	Lokichar	5093	LOKICHAR CENTRE	17
		Team 8	Lokichar	Kapese	2854	NALEMSEKON	21
1/2/2018	Day 4	Team 1	Kaptir	Nakwamoru	4677	NAWOYERAGAE	34
		Team 2	Katilu	Kanaodon	757	KANAODON	43

		Team 3	Katilu	Kanaodon	691	LOTONGONA	44
		Team 4	Kalapata	Nakalale	1756	NAKABOSAN	25
		Team 5	Kalapata	Loperot	4427	LOPEROT	23
		Team 6	Kalapata	Loperot	1795	LOMELEKU	24
		Team 7	Kalapata	Nakalale	3512	NAKAALEI	26
		Team 8	Kalapata	Kalapata	2820	KATIIR	22
2/2/2018	**Day 5**	Team 1	Katilu	Lokapel	3029	LOKAPEL	40
		Team 2	Kaptir	Lorogon	2405	LOROGON	35
		Team 3	Kaptir	Nakwamoru	1518	LOMERIMUDANG	33
		Team 4	Katilu	Katilu	3291	LOPUR BETHLEHEM	38
		Team 5	Kaptir	Kalomwae	1174	JULUK	32
		Team 6	Katilu	Katilu	4343	ANGARAPAT	36
		Team 7	Katilu	Katilu	3080	LOPUR SHANTY	39
		Team 8	Katilu	Lokapel	2643	NAPEROBEI	41
3/2/2018	**Day 6**	Team 1	Katilu	Katilu	4823	KATILU CENTRE	37
		Team 2	Lochwaa ngikamatak	Lochwaa ngikamatak	4948	LOCHWAA	29
		Team 3	Lochwaa ngikamatak	Lochwaa ngikamatak	5419	LOCHEREMOIT	27
		Team 4	Lochwaa ngikamatak	Lochwaa ngikamatak	5419	LOCHEREMOIT	28

9.5 Appendix 5: Movement plan Turkana west Jan /Feb 2018

DATE	DAY	TEAM	Location	Sub location	Geographical unit	Pop size	Cluster
		1	Lokichoggio	Lokichoggio	JERUSALEM	2070	30
		2	Lokichoggio	Lokichoggio	KABANGAKENY	5768	31
		3	Lokichoggio	Lokariwom	LOCHERAKAL	6459	32
		4	Lokichoggio	Lokariwom	LOCHERAKAL	6459	33
		5	Lokichoggio	Lokariwom	NGIGOLOKI	1531	34
		6	Songot	Lokundule	LOCHOR ERENG	725	35
		7	Mogila	Mogila	KANYANGANGIRO	2488	39
29-Jan	**1**	8	Mogila	Mogila	KAPETADIE	4689	40
		1	Nanam	Nanam	Lomeyan	9447	44
30-Jan	**2**	2	Nanam	Nanam	NALAMACHA	1533	42

		3	Nanam	Nanam	Lomeyan	9447	43
		4	Mogila	Lopiding	LOTOOM 2	1867	41
		5	Loteteleit	Loteteleit	RUKRUK	882	45
		6	Kalobeyyei	Songot	KIILOROE	258	12
		7	Kalobeyyei	Lonyuduk	NAKOYO	2033	11
		8	Kalobeyyei	Oropoi	KIMUKOE	1418	10
		1	Letea	Loito	LOITO	5388	8
		2	Kalobeyyei	Nalapatui	NALAPATUI	4016	9
		3	Letea	Lokipoto	LOKIPOTO	15437	7
		4	Loreng	Namor-Kirionok	Namor-Kirionok	2491	13
		5	Letea	Lokipoto	LOKIPOTO	15437	5
		6	Letea	Lokipoto	LOKIPOTO	15437	6
		7	Letea	Tulubalany	Tulubalany	4202	3
31-Jan	**3**	8	Letea	Katelemot	KATELEMOT	4007	4
		1	Letea	Loritit	LORENG	956	1
		2	Kakuma	Lopur	NALEMSEKON	16214	19
		3	Kakuma	Lopur	Lopur	21997	14
		4	Kakuma	Lopur	Lopur	21997	15
		5	Kakuma	Lopur	Lopur	21997	16
		6	Kakuma	Lopur	NALEMSEKON	16214	17
		7	Kakuma	Lopur	NALEMSEKON	16214	18
1-Feb	**4**	8	Letea	Loritit	ESANYANAIT	978	2
		1	Kakuma	Lopur	NALEMSEKON	16214	20
		2	Kakuma	Nadapal	ATIRAE	1439	21
		3	Kakuma	Nadapal	NADAPAL	1034	22
		4	Kakuma	Nadapal	NGIKWAKAIS	1574	23
		5	Kakuma	Namorungole	EJORE	989	24
		6	Lorao	Lokangae	LOKANGAE A	3608	36
		7	Lorao	Lokangae	LOKANGAE B	5838	37
2/2/2018	**5**	8	Lorao	Lotikipi	NASINYONO	3600	38
		1	Nakalale	Losajait	NGAKARE ARENGAK	519	29
		2	Nakalale	Nakalale	Nakalale	3886	28
		3	Pekelech	Lokore	NAKITOIKIRON	138	26
		4	Pekelech	Lopusiki	LOBANGA	133	27
3/2/2018	**6**	5	kakuma	Namorungole	LOMUNYENPUS	708	25

9.6 Appendix 6.Turkana North/Kibish Movement Plan

Day/Date		Team	Location	Sublocation	Geographical unit	Pop size	Cluster
29/1/2018	Day 1	Team 1	Kataboi	Kataboi	KAITEKAPEL	341	3
		Team 2	Kataboi	Katiko	LOCHORANGIDOMO	453	4
		Team 3	Kataboi	Lomekwi	LOTIRMOE	1380	5
		Team 4	Ngissinger	Nachukui	KAMBI MITI	1421	9
		Team 5	Ngissinger	Nachukui	RUKRUK	1781	10
		Team 6	Ngissinger	Kanamukuny	KARE-EDOME	2167	8
30/1/2018	Day 2	Team 1	Lokitaung	Nakalale	MLANGO PESA	114	1
		Team 2	Lokitaung	Kachoda	MANA LONGORIA	375	2
		Team 3	Yapakuno	Kakelae	RUKRUK	474	29
		Team 4	Riakomor	Riakomor	LOKWAKIPI	1070	6
		Team 5	Riakomor	Riakomor	TURAMOE	1026	7
		Team 6	Kokuro	Todonyang	TODONYANG PLAIN	2786	15
31/1/2018	Day 3	Team 1	Meyan	Napeikar	NAOYAWOI	57	13
		Team 2	Meyan	Lewan	LEWAN	2798	12
		Team 3	Kaikor	Nalita	EKOOPUS	713	23
		Team 4	Yapakuno	Kaalem	MORUERIS	514	28
		Team 5	Kokuro	Kokuro	NGIKUI	846	14
		Team 6	KAREBUR	Nabulukok	LOTORONGORUK	622	11
2/1/2018	Day 4	Team 1	Natapar	Natapar	KAMBI SAFI	860	18
		Team 2	Natapar	Kaitede	NAPAK CENTRE	1758	20
		Team 3	Kibish	Lokomarinyang	NATODOMERI MOBILE	1951	17
		Team 4	Loruth	Karach	KARACH	1465	31
		Team 5	Natapar	Kaitede	NGINYAMAKIDIOKO	996	21
		Team 6	Natapar	Karach(1)	KARACH	2444	19
2/2/2018	Day 5	Team 1	Kaikor	Lokolio	NAKWAMEKWI	951	26
		Team 2	Kaikor	Lokolio	MAENDELEO	1185	25
		Team 3	Loruth	Katome	AKOROS	503	30
		Team 4	Kaikor	Loitanit	NAKULULUNG	1271	22
		Team 5	Kaikor	Lokolio	AKILODET	671	24
		Team 6	Kibish	Kibish	NGIKERIDAK	692	16
2/3/2018	Day 6	Team 1	Yapakuno	Milima tatu	LOWOYAKASIWAN	601	27
		Team 2	Kaeris	Kangakipur	KANGAKIPUR TOWN	706	36
		Team 3	Kaeris	Kaeris	KALAPATA	1866	33
		Team 4	Kaeris	Nadunga	LOCHIPUA	661	35
		Team 5	Kaeris	Kaeris	NGIPIDINGA	823	34
		Team 6	Kaeris	Kanakurudio	NAROLE	587	32

9.7 Appendix 7. Central/Loima Mouvement Plan

Day/Date	Team	Location	Sub location		Pop size	Cluster
DAY 1	Team 1	Lodwar Township	Lodwar Township	LODWAR TOWN (KAMPI MAWE)	1457	1
29/1/2018	Team 2	Lodwar Township	Nakwamekwi	NGASAJA	3848	2
	Team 3	Lodwar Township	Napetet	NATAMBUSIO	1970	3
	Team 4	Lodwar Township	Napetet	NATOTOL	6546	4
	Team 5/6	Kanamkemer	Kanamkemer	HEWAN	10319	5,6
DAY 2	Team 1	Kanamkemer	Nawaitorong	LOKADWARAN	1642	7
30/1/2018	Team 2	Kerio	Kerio	NAKWAPOO	2213	8
	Team 3	Kerio	Nakurio	LOUWAE	2620	9
	Team 4	Kerio	Nadoto	KURA	3925	10
	Team 5	Kangirisae	Kangirisae	KANGIRISAE	2923	11
		Kangirisae	Nakoret	NAKORET	2442	RC
	Team 6	Lorengelup	Kakimat	KOSIKIRIA	840	12
DAY 3	Team 1	Kalokol	Kalokol	LOWOIANGIKENY	3484	13
31/1/2018		Kalokol	Kapua	KAATAMAT	1500	RC
	Team 2	Kalokol	Namadak	NGIKALALIO - ALORU	1923	14
	Team 3	Namukuse	Namukuse	AKWAMEKWI	2500	15
	Team 4	Kangatosa	Eliye	KAACHUNA	1116	16
	Team 5	Kangatosa	NAOROS	NAMERESIAE	2628	17
	Team 6	Loima	Lochor Ekunyen	KOSPIR	410	18
DAY 4	Team 1	Loima	Puch	KALELAKOL	1849	19
1/2/2018	Team 2	Loima	Puch	PUCH	2246	20
	Team 3	Lorengippi	Lorengippi	LORENGIPPI CENTRE	2459	21
	Team 4	Lorengippi	Loya	LOYA	1501	22
	Team 5	Lokiriama	Lochor Lomala	LOCHOR-ALOMALA	5839	23
	Team 6	Lokiriama	Atala Kamusio	NGIKORKIPI	1448	24
DAY 5	Team 1	Turkwel	Turkwel	KALOMEGUR	2466	25

2/2/2018	Team 2	Turkwel	Turkwel	TURKWEL	1996	26
	Team 3	Turkwel	Kalemnyang	KANGALITA	2918	27
	Team 4	Turkwel	Lobei	LOBEI CENTRE	2151	28
	Team 5	Nadapal	Tiya	KAITESE	1963	29
	Team 6	Nadapal	Napeikar	NAOYAWOI	3235	30
DAY 6	Team 1`	Lomeyan	Lomeyan	NAMEYANA	772	31
3/2/2018	Team 2	Lomeyan	Nachuro	KANGATARUK	3176	32
	Team 3	Lomeyan	Kaapus	LOKATUL	1267	33
	Team 4/5	Kotaruk	Kotaruk	KOTARUK	9878	34,35
	Team 6	Kotaruk	Lokipetot Arengani	KAKALEL	982	36

9.8 Appendix 8:Weight for Height Z scores ± SD-Malnutrition hot spots- January/February 2018

Survey Zone	Sub County	Ward	Sub Location	Cluster No.	Cluster Name	SAM	GAM
North	Turkana North	Lapur	Lokitaung	2	MANA LONGORIA	9.10%	45.50%
North	Turkana North	Lake Zone	Kataboi	5	LOTIRMOE	5.90%	47.10%
North	Turkana North	Lake Zone	Ngissinger	8	KARE-EDOME	5.90%	41.20%
North	Kibish	Lapur	KAREBUR	11	LOTORONGORUK	12.50%	25.00%
North	Kibish	Lapur	Meyan	13	NAOYAWOI	5.30%	31.60%
North	Kibish	Lapur	Kokuro	15	TODONYANG PLAIN	13.30%	33.30%
North	Turkana North	Kaaleng/ Kaikor	Kaikor	23	EKOOPUS	0.00%	25.00%
North	Turkana North	Kaaleng/ Kaikor	Kaikor	24	AKILODET	0.00%	25.00%
North	Turkana North	Kaaleng/ Kaikor	Kaikor	26	NAKWAMEKWI	0.00%	25.00%
South	Turkana East	Lokori/ Kochodin	Lokori	1	ELELEA	0.00%	27.30%
South	Turkana East	Lokori/ Kochodin	Lokori	2	NGIKOROPUA	13.30%	26.70%
South	Turkana East	Lokori/ Kochodin	Lotubae	5	LOTUBAE DISPENSARY	0.00%	23.10%
South	Turkana East	Kapedo/ Napeitom	Lokwamosing	14	LOKWAMOSING	0.00%	35.00%
South	Turkana South	Lokichar	Kapese	19	KAPESE CENTRE	5.00%	25.00%
South	Turkana South	Lokichar	Kapese	21	NALEMSEKON	6.30%	37.50%
South	Turkana South	Kalapata	Loperot	23	LOPEROT	4.50%	27.30%
South	Turkana South	Kalapata	Nakalale	25	NAKABOSAN	0.00%	31.30%

South	Turkana South	Lokichar	Lochwaa ngikamatak	28	LOCHEREMOIT	15.00%	25.00%
South	Turkana South	Lokichar	Lochwaa ngikamatak	29	LOCHWAA	0.00%	25.00%
South	Turkana South	Lokichar	Naposumuru	31	NAPUSMORU	0.00%	20.00%
South	Turkana South	Kaputir	Nakwamoru	34	NAWOYERAGAE	0.00%	31.30%
South	Turkana South	Katilu	Katilu	36	ANGARAPAT	0.00%	27.30%
Central	Turkana Central	Lodwar Township	Lodwar Township	4	NATOTOL	0.00%	33.30%
Central	Turkana Central	Kanamkemer	Kanamkemer	5	LOKADWARAN	4.50%	27.30%
Central	Turkana Central	Kerio Delta	Kerio	7	LOUWAE	0.00%	35.30%
Central	Turkana Central	Kerio Delta	Kerio	8	KURA	0.00%	27.30%
Central	Turkana Central	Kerio Delta	Lorengelup	10	KOSIKIRIA	7.10%	28.60%
Central	Turkana Central	Kalokol	Namukuse	13	AKWAMEKWI	0.00%	22.20%
Central	Loima	Loima	Loima/ Puch	16	KOSPIR	7.70%	23.10%
Central	Loima	Loima	Loima/ Puch	17	KALELAKOL	0.00%	24.00%
Central	Loima	Loima	Loima/ Puch	18	PUCH	0.00%	38.10%
Central	Loima	Lokiriama/ Lorengippi	Lorengippi	19	LORENGIPPI CENTRE	7.10%	28.60%
Central	Loima	Lokiriama/ Lorengippi	Lokiriama	22	NGIKORKIPI	0.00%	25.00%
Central	Loima	Turkwel	Turkwel	25	KANGALITA	6.30%	31.30%
Central	Turkana Central	Kanamkemer	Kanamkemer	34	HEWAN	7.10%	35.70%
Central	Turkana Central	Kerio Delta	Kangirisae	35	NAKORET	4.30%	30.40%
West	Turkana West	Letea	Letea	6	LOKIPOTO	0.00%	25.00%
West	Turkana West	Letea	Letea	8	LOITO	8.30%	25.00%
West	Turkana West	Kakuma	Kakuma	15	Lopur	0.00%	28.60%
West	Turkana West	Kakuma	Kakuma	17	NALEMSEKON	0.00%	29.40%
West	Turkana West	Kakuma	Kakuma	22	NADAPAL	15.40%	38.50%
West	Turkana West	Kakuma	Kakuma	23	NGIKWAKAIS	5.60%	33.30%
West	Turkana West	Kakuma	Kakuma	24	EJORE	0.00%	33.30%
West	Turkana West	Kakuma	kakuma	25	LOMUNYENPUS	5.90%	23.50%
West	Turkana West	Nakalale	Nakalale	29	NGAKARE ARENGAK	5.30%	26.30%
West	Turkana West	Lokichoggio	Lokichoggio	30	JERUSALEM	0.00%	23.10%
West	Turkana West	Songot	Lorao	37	LOKANGAE B	5.60%	27.80%
West	Turkana West	Nanam	Mogila	39	KANYANGANGIRO	0.00%	23.10%
West	Turkana West	Nanam	Nanam	42	NALAMACHA	10.50%	26.30%
West	Turkana West	Nanam	Loteteleit	45	RUKRUK	7.70%	30.80%

9.9 Appendix 9: Revised January 2018 SMART survey questionnaire version April 2017

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

		2. Household Demographics									
2.1	**2.2a**	**2.2b**	**2.3**		**2.4**	**2.5**	**2.6**	**2.7a**	**2.7b**	**2.8**	**2.10**
Age Group	**Please give me the names of the persons who usually live in your household.**	**Please indicate the household head (write HH on the member's column)**	**Age (Record age in MONTHS for children <5yrs and YEARS for those ≥ 5 years's)**		**Childs age verified by** 1=Health card 2=Birth certificate / notification 3=Baptism card 4=Recall 5. other _____ specify	**Sex** 1= Male 2= Female	**If between 3 and 18 years old, Is the child attending school?** 1 = Yes 2 = No (If yes go to 2.8; If no go t o 2.7)	**Main reason for not attending school (Enter one code from list)** 1=Chronic Sickness 2=Weather (rain, floods, storms) 3=Family labour responsibilities 4=Working outside home 5=Teacher absenteeism/lack of teachers 6= Fees or costs 7=Household doesn't see value of schooling 8 =No food in the schools 9 = Migrated/ moved from school area (including displacements) 10=Insecurity/ violence 11-No school Near by 12=Married 13. Pregnant/ taking care of her own child 13=others (specify)…… ……..	**2.7a, What is the child doing when not in school?** **1**=Working on family farm 2=Herding Livestock 3=Working for payment away from home 4=Left home for elsewhere 5=Child living on the street 6: Other specify _____	**What is the highest level of education attained?(level completed) From 5 yrs and above** 1 =Pre primary 2= Primary 3=Secondary 4=Tertiary 5= None 6=others(specify) Go to question to 2.9 ↓	**If the household owns mosquito net/s, who slept under the mosquito net last night? (***Probe- enter all responses mentioned (Use 1 if "Yes" 2 if "No and 3 if not applicable) go to question 2.11*
			Years	Months							
< 5 YRS	1										
	2										
	3										
	4										
>5 TO <18 YRS	5										
	6										
	7										
	8										

	9										
	10										
	11										
	12										
ADULT (18 years and above)	13										
	14)										
	15										
	16										

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

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

3.	4.	5. CHILD HEALTH AND NUTRITION (ONLY FOR CHILDREN 6-59 MONTHS OF AGE; IF N/A SKIP TO SECTION 3.6) **Instructions:** *The caregiver of the child should be the main respondent for this section* ***3.1 CHILD ANTHROPOMETRY 3.2 and 3.3 CHILD MORBIDITY*** *(**Please** fill in **ALL REQUIRED** details below. Maintain the same child number as part 2)*													
A Child No.	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**3.2 a**	**3.2 b**	**3.3 a**	**3.3 b**	**3.3 c**
	what is the relationship of the respondent with the child/children 1=Mother 2=Father 3=Sibling 4=Grandmother 5=Other (specify)	SEX Female ……F Male ……..M	Exact Birth Date	Age in months	Weight (KG) XX.X	Height (CM) XX.X	Oedema Y= Yes N= No	MUAC (cm) XX.X	Is the child in any nutrition program 1. Yes 2. No If no skip to questions 3.2	If yes to question J. which nutrition program? 1.OTP 2.SFP 3.BSFP Other Specify _____	Has your child (NAME) been ill in the past two weeks? 1.Yes 2. No <u>If No, skip to 3.4</u>	If YES, which illness (multiple responses possible) 1 = Fever with chills like malaria 2 = ARI /Cough 3 = Watery diarrhoea 4 = Bloody diarrhoea 5 = Other (specify) *See case definitions above*	**When the child was sick did you seek assistance?** 1.Yes 2. No	**If the response is yes to question # 3.2 where did you seek assistance? (More than one response possible-** 1. Traditional healer 2.Community health worker 3. Private clinic/ pharmacy 4. Shop/kiosk 5.Public clinic 6. Mobile clinic 7. Relative or friend 8. Local herbs 9.NGO/FBO	If the child **<u>had watery diarrhoea</u>** in the last TWO (2) WEEKS, did the child get: 1. ORS 2. Zinc supplementation? *Show sample and probe further for this component* *check the remaining drugs(confirm from mother child booklet)*
01															
02															
03															

	3.4 Maintain the same child number as part 2 and 3.1 above									
	A1	**A2**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Child No.	How many times has child received Vitamin A in the past year? (show sample)	Has the child received vitamin A supplement in the past 6 months?	How many times did the child receive vitamin A capsules from the facility or out reach	If Vitamin A received how many times in the past one year did the child receive verified by **Card?**	**FOR CHILDREN 12-59 MONTHS** How many times has child received drugs for worms in the past year? *(show Sample)*	Has the child received BCG vaccination? Check for BCG scar. **1 = scar** **2=No scar**	Has child received OPV1 vaccination **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received OPV3 vaccination? **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received measles vaccination at 9 months *(On the upper right shoulder)?* **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**	Has child received the second measles vaccination (18 to 59 months) *(On the upper right shoulder)?* **1=Yes, Card** **2=Yes, Recall** **3 = No** **4 = Do not know**
01										
02										
03										
04										

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

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