



TURKANA COUNTY SMART NUTRITION SURVEYS

JUNE 2019 REPORT



ACKNOWLEDGEMENT

Turkana County June 2019 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, World Vision Kenya, Concern World Wide, Save the Children, International Rescue Committee, WHH, World Relief, 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- Dr. Roberts Abok 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, NIWG representatives 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	ANC	Ante Natal Care
2	ARI	Acute Respiratory Infections
3	ASAL	Arid and Semi-Arid Lands
4	BCG	Bacille Calmette Guerin
5	BFCI	Baby Friendly Community Initiative
6	CDH	County Director of Health
7	CECM	County Executive Committee Member
8	CHMT	County Health Management Team
9	CHS	Community Health Services
10	CHV	Community Health Volunteer
11	CHWs	Community Health Workers
12	CI	Confidence interval
13	CIDP	County Integrated Development Plan
14	cIMCI	community Integrated Management of Childhood Illnesses
15	CL	Cluster
16	CLTS	Community led Total Sanitation
17	cm	Centimetre
18	CMAM	Community Management of acute Malnutrition
19	CMR	Crude Mortality Rate
20	CNC	County Nutrition Coordinator
21	CO	Chief Officer
22	CSB	Corn Soy Blend
23	CSG	County Steering Group
24	CSI	Coping strategy index
25	CWW	Concern World Wide
26	DD	Dietary Diversity
27	DoL	Diocese of Lodwar
28	ENA	Emergency Nutrition Assessment
29	EPI	Expanded Program on Immunizations
30	EWS	Early Warning System
31	FANC	Focused ante natal care
32	FAO	United Nations Food and Agriculture Organization
33	FBO	Faith based Organization
34	FCS	Food Consumption Score
35	FEWSNET	Famine Early Warning Systems Network
36	FFA	Food For Asset
37	FSL	Food security and livelihood
38	GAM	Global Acute Malnutrition
39	GFD	General Food Distribution
40	GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit

41	GoK	Government of Kenya
42	HAZ	Height for Age -Z score
43	HDD	Household Dietary Diversity
44	HH	Household
45	HiNi	High Impact Nutrition Interventions
46	HNDU	Human Nutrition and Dietetics Unit
47	HSNP	Hunger Safety Net Program
48	IDP	Internally Displace Persons
49	IFA	Iron and Folic Acid
50	IFAS	Iron and Folic Acid Supplements
51	IMAM	Integrated Management of Acute Malnutrition
52	IPC	Integrated Food Security Phase Classification
53	IRC	International Rescue Committee
54	KEMSA	Kenya Medical Supplies Agency
55	KEPI	Kenya Expanded Programme of Immunisation
56	KFSSG	Kenya Food Security Steering Group
57	KHIS	Kenya Health Information System
58	KIHBS	Kenya Integrated Household and Budget Survey
59	KNBS	Kenya National Bureau of statistics
60	KRCS	Kenya Red Cross Society
61	LMIS	Logistics Management Information System
62	LRA	Long Rains Assessment
63	MAM	Moderate Acute malnutrition
64	MCH	Mother Child Booklet
65	MDD	Minimum Dietary Diversity
66	MDD-W	Minimum Dietary Diversity for Women
67	MOH	Ministry of Health
68	MOW	Ministry of Water
69	MSP	Multi Stake Holder Forum
70	MUAC	Mid Upper Arm Circumference
71	NDMA	National Drought Management Authority
72	NGO	Non-governmental Organization
73	NICHE	Nutrition Improvement Through Cash and Health Education
74	NIWG	Nutrition Information Working Group
75	ODK	Open Data Kit
76	OJT	On The Job Training
77	OPV	Oral polio Vaccine
78	ORS	Oral Rehydration Solution
79	OTP	Outpatient Therapeutic Programme
80	PLW	Pregnant and Lactating Women
81	PPS	Probability proportional to size
82	RC	Reserve cluster

83	RUSF	Ready To use Supplementary food
84	RUTF	Ready To Use Therapeutic Food
85	SAM	Severe Acute Malnutrition
86	SANNUT	Sanitation and Nutrition Program
87	SCHMT	Sub-County Health Management Team
88	SCI	Save the Children International
89	SCNO	Sub County Nutrition Officer
90	SD	Standard Deviation
91	SFP	Supplementary Feeding Programme
92	SMART	Standardized Monitoring and Assessment of Relief and Transitions
93	SPSS	Statistical package for Social Sciences
94	TV	Television
95	U5	Under Five Years Old
96	UMR	Under-five Mortality Rate
97	UN	United Nations
98	UNICEF	United Nations Children's Fund
99	WASH	Water Sanitation and Hygiene
100	WAZ	Weight for Age -Z score
101	WFP	World Food Programme
102	WHH	Welt Hunger Hilfe
103	WHO	World Health Organization
104	WHO-GS	World Health Organisation Growth Standards
105	WHZ	Weight for Height -Z score
106	WR	World Relief
107	WRA	Women of Reproductive Age
108	WVK	World Vision Kenya

TABLE OF CONTENT

Acknowledgement.....	i
List of abbreviation.....	ii
Table of content.....	v
List of Tables.....	viii
List of figures	x
Excutive summary	xi
Introduction.....	xi
1.0 CHAPTER 1	1
1.1 Background information	1
1.2 Survey Justification	1
1.3 Humanitarian and Development partners.....	2
1.4 Main Objective.....	2
1.4.1 Specific Objectives	2
1.5 Timing of Turkana SMART survey	2
1.6 Survey Area	2
2.0 CHAPTER TWO	4
2.1 METHODOLOGY	4
2.1.1 Sample size calculation.....	4
2.1.2 Sampling method	5
2.1.3 Selection of children for anthropometry	5
2.1.4 Selection of women for determination of nutritional status.....	5
2.1.5 Survey team composition.....	5
2.1.6 Survey team training	5
2.1.7 Data collection	5
2.1.8 Variables Measured	6
2.2 Nutrition Indicators	7
2.2.1 Nutritional Indicators for children 6-59 months of age.....	7
2.2.2 MUAC.....	8
2.3 Data analysis.....	8
2.4 Survey Limitations	8
2.5 Ethical considerations	9
3.0 CHAPTER THREE: RESULTS AND DISCUSSIONS	10
3.1 House hold demographics and socio economic indicators	10
3.1.1 Household demographic characteristics.....	10
3.1.2 Residency and marital Status	11
3.1.3 Immigrant Children in the households.....	11
3.1.4 Reasons for Children migration	12
3.1.5 Caretakers’ marital status.....	12

3.1.6 Occupation of the household main provider	13
3.1.7 Main current source of income of the Household head	14
3.1.8 Education	14
3.1.9 Reason for not attending school.....	15
4.0 CHILD hEALTH & nUTRITION.....	17
4.1 Anthropometry	17
4.1.1 Age and sex distribution of the sampled children.....	17
4.1.2 Prevalence of Acute Malnutrition	17
4.1.3 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or edema) and by sex	20
4.1.4 Prevalence of acute malnutrition (wasting) by age based on weight-for-height Z-scores and or edema (WHO Standards 2006).....	20
4.1.5 Prevalence of acute malnutrition based on MUAC.....	21
4.1.6 Prevalence of underweight.....	22
4.1.7 Prevalence of stunting.....	23
4.1.8 Indirect Coverage of Integrated Management of acute Malnutrition programme	24
4.2 Children’s Morbidity and Health Seeking Behaviour	24
4.2.1 Child morbidity	25
4.2.2 Therapeutic Zinc Supplementation during Watery Diarrhea Episodes.....	26
4.2.3 Health Seeking Behavior	26
4.3 Childhood Immunization, Vitamin A Supplementation and Deworming	27
4.3.1 Childhood Immunization	27
4.3.2 Vitamin A supplementation	29
3.7.3 De-worming	30
5.0 MATERNAL NUTRITION.....	31
5.1.1 Women physiological status	31
5.2 Acute Malnutrition	31
5.2.1 Nutrition status of women of reproductive age.....	31
5.2.2 Nutrition status of pregnant and lactating women	32
5.3 Iron and Folic Acid Supplementation (IFAS).....	32
5.4 Mosquito Nets Ownership and Utilization.....	33
5.4.1 Mosquito nets ownership	33
5.4.2 Mosquito nets utilization.....	34
6.0 WATER SANITATION& HYGIENE.....	35
6.1 Main Source of Water	35
6.1.1 Type of Piped water	36
6.1.2 Type of Dug Well Used	36

6.2 Distance to Water Source and Queuing Time	36
6.2.1 Distance to water sources.....	36
6.2.2 Queuing time to water sources.....	37
6.3 Methods of drinking water treatment and storage.....	38
6.3.1 Household water treatment	38
6.3.2 Storage of Drinking water.....	39
6.4 Water Payment	39
6.5 Household water consumption.....	40
6.6 Hand washing.....	41
6.6.1 Hand washing at all four critical times	41
6.6.2 Hand washing with soap	42
6.7 Latrine Utilization.....	43
7.0 Food security.....	44
7.1 Cash transfer.....	44
7.2 Food access and consumption.....	45
7.2.1 Dominant foods and food groups consumed by households and women	45
7.2.2 Household Dietary Diversity (HDD)	45
7.2.3 Women Dietary diversity score.....	46
7.2.4 Food Consumption Score Classification.....	47
7.2.5 Consumption of micronutrients (iron, protein and vitamin A rich foods in relation to Food consumption score	48
7.2.6 Food fortification	49
7.2.7 Coping Strategy Index (CSI).....	51
8.0 CONCLUSION	52
9.0 Recommendations	53
10.0 APPENDIX	55
10.1 Appendix 1: Mapped out hotspots- June 2019	55
10.2 Appendix ii. Summary of plausibility report.....	56
10.3 Appendix iii: Movement plan with sampled clusters-South (South and East)	1
10.4 Appendix vi: Movement Plan with sampled clusters Turkana Central and Loima.....	2
10.5 Appendix iv: Movement Plan with sampled clusters Turkana west	1
10.6 Appendix v: Movement Plan with sampled clusters Turkana North and Kibish	2
10.7 Appendix vii: Weight for Height Z scores \pm SD-Malnutrition hot spots- June 2019	3
10.8 Appendix viii: Revised June 2018 SMART survey questionnaire	7
11.0 REFERENCES:	24

LIST OF TABLES

TABLE 1: SUMMARY OF THE FINDINGS	XI
TABLE 2: SEASONAL CALENDAR	2
TABLE 3: TURKANA COUNTY SURVEY ZONES.....	3
TABLE 4: SAMPLE SIZE CALCULATION	4
TABLE 5: WFP/FAO CORPORATE FCS THRESHOLDS	7
TABLE 6: DEFINITIONS OF ACUTE MALNUTRITION USING WFH AND/OR EDEMA IN CHILDREN AGED 6–59 MONTHS	7
TABLE 7: DEFINITION OF BOUNDARIES FOR EXCLUSION.....	8
TABLE 8: NUMBER OF HOUSEHOLDS SURVEYED	10
TABLE 9: AVERAGE HOUSEHOLD SIZE	10
TABLE 10: AGE COHORT DISTRIBUTION	10
TABLE 11: SEX DISTRIBUTION FOR THE VARIOUS AGE COHORTS	11
TABLE 12: RESIDENCY	11
TABLE 13: CHILDREN MIGRATION	12
TABLE 14: REASONS FOR CHILDREN MIGRATION	12
TABLE 15: SUMMARY OF HOUSEHOLD’S MAIN PROVIDER OCCUPATION	13
TABLE 16: MAIN CURRENT SOURCE OF INCOME OF THE HOUSEHOLD HEAD.....	14
TABLE 17: EDUCATION LEVELS	14
TABLE 18: SCHOOL ENROLMENT FOR AGE GROUP 3 YEARS TO 18 YEARS.....	15
TABLE 19: REASONS FOR NOT ATTENDING SCHOOL.....	15
TABLE 20: SUMMARY OF CHILDREN AGE VERIFICATION MEANS.....	17
TABLE 21: DISTRIBUTION OF AGE AND SEX OF SAMPLE	17
TABLE 22: MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS – TURKANA NORTH SURVEY ZONE.....	18
TABLE 23: MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS – TURKANA WEST SURVEY ZONE.....	18
TABLE 24: MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS – TURKANA SOUTH SURVEY ZONE	18
TABLE 25: MEAN Z-SCORES, DESIGN EFFECTS AND EXCLUDED SUBJECTS – TURKANA CENTRAL SURVEY ZONE	18
TABLE 26: PREVALENCE OF MALNUTRITION WEIGHT-FOR-HEIGHT Z-SCORES (WHO STANDARDS 2006).....	19
TABLE 27: PREVALENCE OF ACUTE MALNUTRITION BASED ON WEIGHT-FOR-HEIGHT Z-SCORES (AND/OR EDEMA) AND BY SEX(95% CONFIDENCE INTERVAL)	20
TABLE 28: PREVALENCE OF ACUTE MALNUTRITION BY AGE, BASED ON WEIGHT-FOR-HEIGHT Z-SCORES AND/OR OEDEMA	20
TABLE 29: DISTRIBUTION OF SEVERE ACUTE MALNUTRITION AND OEDEMA BASED ON WEIGHT-FOR-HEIGHT Z-SCORE	21
TABLE 30: PREVALENCE OF MALNUTRITION BASED ON MUAC PER SURVEY	22
TABLE 31: PREVALENCE OF UNDERWEIGHT	23
TABLE 32: PREVALENCE OF STUNTING	23
TABLE 33: INDIRECT COVERAGE OF IMAM PROGRAMME.....	24
TABLE 34: CHILDREN ILL	25
TABLE 35: THERAPEUTIC ZINC SUPPLEMENTATION	26
TABLE 36: THOSE WHO SOUGHT HEALTH ASSISTANCE	26
TABLE 37: FIRST POINT OF SEEKING HEALTH ASSISTANCE	27
TABLE 38: CHILD BCG IMMUNIZATION COVERAGE	27
TABLE 39: DE-WORMING COVERAGE AMONG CHILDREN 12-59 MONTHS OLD.....	30
TABLE 40: DE-WORMING COVERAGE INSTANCE AMONG CHILDREN 12-59 MONTHS OLD	30
TABLE 41: WOMEN PHYSIOLOGICAL STATUS.....	31
TABLE 42: NUTRITION STATUS OF WOMEN OF REPRODUCTIVE AGE.....	31
TABLE 43: NUTRITION STATUS OF PREGNANT AND LACTATING WOMEN.....	32
TABLE 44: CARETAKERS WITH CHILDREN AGED 24 MONTHS AND BELOW WHO WERE SUPPLEMENTED WITH IRON FOLIC ACID IN THEIR LAST PREGNANCY	33

TABLE 45: NUMBER OF DAYS CARETAKERS WITH CHILDREN AGED 24 MONTHS AND BELOW CONSUMED IFAS IN THEIR LAST PREGNANCY	33
TABLE 46: MOSQUITO NETS OWNERSHIP	33
TABLE 47: MOSQUITO NETS UTILIZATION	34
TABLE 48: MAIN CURRENT SOURCES OF WATER	35
TABLE 49: TYPE OF PIPED WATER.....	36
TABLE 50: TYPE OF DUG WELL USED	36
TABLE 51: PROPORTION OF HOUSEHOLDS QUEUING FOR WATER.....	37
TABLE 52: DRINKING WATER TREATMENT	38
TABLE 53: METHODS USED FOR TREATING DRINKING WATER.....	38
TABLE 54: STORAGE OF DRINKING WATER	39
TABLE 55: PAYMENT FOR WATER.....	39
TABLE 56: DOMESTIC WATER PAYMENT MODE	39
TABLE 57: COST OF WATER PER 20 LITER JERRICAN	40
TABLE 58: COST OF WATER PER MONTH	40
TABLE 59: HOUSEHOLD WATER CONSUMPTION PER DAY PER SURVEY ZONE	40
TABLE 60: AWARENESS OF HAND WASHING PRACTICES	41
TABLE 61: HAND WASHING AT CRITICAL TIMES	41
TABLE 62: HAND WASHING AT ALL THE FOUR CRITICAL TIMES	42
TABLE 63: WHAT IS USED FOR HAND WASHING	42
TABLE 64: HAND WASHING IN HH WITH CHILDREN 0-23 MONTHS.....	43
TABLE 65: LATRINE OWNERSHIP AND UTILIZATION	43
TABLE 66: HOUSEHOLD ENROLLED WHICH CASH TRANSFER PROGRAMME	44
TABLE 67 : FOOD GROUPS CONSUMED BY RESPONDENTS IN THE LAST 24 HOURS.....	45
TABLE 68: TABLE 7069: MINIMUM MDD-W JUN 2018	47
TABLE 70: FOOD FORTIFICATION KNOWLEDGE AND AWARENESS.....	50
TABLE 71: SOURCE OF FORTIFICATION MESSAGE	50
TABLE 72: RESPONDENT’S KNOWLEDGE ON THE FOOD FORTIFICATION LOGO	50
TABLE 73: MAIN CURRENT SOURCE OF MAIZE FLOUR FOR THE HOUSEHOLD	51
TABLE 74: COPING STRATEGY INDEX.....	51
TABLE 75: RECOMMENDATION	53

LIST OF FIGURES

FIGURE 1: TURKANA COUNTY MAP.....	1
FIGURE 2: SUMMARY OF CARETAKERS' MARITAL STATUS	13
FIGURE 3: TRENDS OF GLOBAL ACUTE MALNUTRITION IN TURKANA COUNTY (2010-2019)	19
FIGURE 4: PREVALENCE OF CHILD MORBIDITY 2 WEEKS PRIOR TO THE SURVEY.....	25
FIGURE 5: CHILD OPV 1 AND 3 COVERAGE.....	28
FIGURE 6: CHILD MEASLES VACCINATION COVERAGE AT 9 MONTHS AND AT 18 MONTHS	28
FIGURE 7: VITAMIN A SUPPLEMENTATION COVERAGE	29
FIGURE 8: DISTANCE TO WATER SOURCES.....	37
FIGURE 9: QUEUING TIME AT WATER SOURCE	38
FIGURE 10: HOUSEHOLD DIETARY DIVERSITY SCORE BASED ON 24 HOURS RECALL FOR JUNE 2018.....	46
FIGURE 11: FOOD GROUPS CONSUMED (WOMEN)	47
FIGURE 12: FOOD CONSUMPTION SCORE FOR JUNE 2018 AND 2019.....	48
FIGURE 13: CONSUMPTION OF PROTEIN, VITAMIN A AND HEM IRON RICH FOODS PER FOOD GROUPS (N=1999).....	49
FIGURE 14: NUMBER OF DAYS FOOD WAS CONSUMED SHOWING MICRONUTRIENT CONSUMPTION	49

EXECUTIVE SUMMARY

Introduction

Turkana County Department of Health in collaboration with nutrition partners (UNICEF, World Vision Kenya (WVK), Concern World Wide (CWW), Save the Children International (SCI), IRC, WHH, KRCS, and World Relief (WR) successfully conducted four independent SMART surveys in June 2019 covering the entire county. This was to ensure all the livelihood zones in the county (pastoral, agro-pastoral, Fisher forks 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 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), and determine morbidity rate in Turkana County. Specific objectives of the survey were to determine the prevalence of acute malnutrition among under five year old children and women of reproductive age, to determine the immunization coverage for measles, Oral Polio Vaccines (OPV 1 and 3), and Vitamin A supplementation in children aged 6-59 months, 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, to determine the prevalence of common illnesses among Children under five and lastly to collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices.

Methodology

Standardized Monitoring Assessment for Relief and Transition Method (SMART) was used to conduct these surveys. The methodology is a cross-sectional design that is, a descriptive study which aims to provide data on the entire population under study.

A two stage sampling process was used in this survey. The first stage involved sampling of villages (clusters) from a sampling frame (villages identified by information from KNBS estimated populations with contributions from the chiefs/sub chiefs and community health program) using ENA for SMART software (9th July 2015 version). In the second stage, households were selected randomly upon getting the updated list of households in the village/Cluster provided by the village elder. Taking into account the time spent on travelling to each household, introductions and breaks, 15 households were sampled per cluster per day for interview. The data was uploaded in ODK aggregate servers (hosted by World Vision 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 before they started data collection for the new day. This formed the bases for supervisors work for the day.

Anthropometric data processing was done using ENA software version 9th July 2015. The ENA software generated weight-for-height, height-for-age and weight-for-age Z scores to classify them into various nutritional status categories using the new WHO malnutrition cut-offs. All the other quantitative data were analysed in the SPSS (Version 20) and Microsoft Excel 2010 computer packages.

Table 1: Summary of the findings

S/No	Indicator	Acceptable values/range	Central	South	North	West	County
1	Overall plausibility score	<24	7% Excellent	5% Excellent	7% Excellent	0% Excellent	

Anthropometric results (% (With 95% CI))							
	Indicator		Central	South	North	West	County
2	N	MUAC	365	504	544	693	2106
3	Global < 125mm		7.40%	8.90%	11.40%	11.40%	11.4% (8.6- 15.0 95% CI)
4	Severe under nutrition <115mm		(4.9-11.0 95% CI)	(6.4-12.4 95% CI)	(8.1-15.8 95% CI)	(8.6-15.0 95% CI)	3.0% (1.7-5.3 95% CI)
5	N	Underweight	365	503	538	688	2009
6	Global underweight		32.1% (27.0-37.5)	39.2% (32.6-46.2)	34.9% (30.3-39.9)	35.0% (30.6-39.7)	34.00% (31.9 - 36.2)
7	Severe underweight		9.6% (6.3-14.4)	10.1% (7.3-13.9)	8.0% (5.6-11.3)	11.3% (8.6-14.8)	9.30% (8.2 - 10.6)
8	N	Stunting	363	497	514	680	2054
8	Global Stunting		18.2% (14.1-23.2)	22.1% (17.2-28.0)	20.2% (17.1-23.7)	25.7% (22.1-29.8)	23.3%(20.8 - 25.9)
9	Severe Stunting		6.1% (3.7- 9.7)	4.6% (3.1- 6.9)	2.5% (1.4- 4.4)	7.2% (5.0-10.3)	4.8% (3.6 - 6.4)
10	N	Wasting	362	503	539	683	2003
11	Global Acute Malnutrition (GAM)		20.2% (15.1-26.4)	30.8% (25.0-37.4)	30.2% (24.8-36.4)	23.0% (19.5-26.8)	25.6%(23.4 - 28.0)
12	Severe Acute Malnutrition (SAM)		2.8% (1.3- 5.7)	7.8% (5.2-11.4)	7.4% (4.6-11.7)	5.7% (3.7- 8.7)	5.90% (4.9 - 7.1)
Child morbidity (last two weeks)							
	Indicator	Type of illness	Central	South	North	West	County
13	Ill	yes	39.8%	39.0%	26.1%	55.8%	41.4%
14	Type of illness	Fever with chills	37.0%	44.4%	39.0%	33.4%	37.0%
15		ARI	40.9%	31.0%	40.8%	44.0%	40.5%

16		Watery diarrhea	18.8%	18.4%	14.1%	18.6%	17.9%
17		Boody diarrhea	0.0%	0.0%	0.5%	0.6%	0.4%
18		Other types of illnesses	3.3%	6.1%	5.6%	3.3%	4.3%
19	Sought Assistance	Yes	88.4%	91.8%	83.8%	82.2%	85.6%
20	Zinc supplementation	yes	97.1%	93.8%	86.7%	85.4%	
Vitamin A supplementation and deworming							
	Indicator	No. of times	Central	South	North	West	County
21	Vitamin A Supplementation (6- 11m)	Once	97.3%	82.7%	93.3%	93.3%	91.2%
22	Vitamin A Supplementation 12- 59m)	Once	79.4%	50.1%	76.1%	37.4%	55.6%
23	Vitamin A supplementation 12 to 59 m)	Twice	20.6%	49.9%	23.9%	62.6%	44.4%
24	Vitamin A supplementation 6- 59 months	Once	81.9%	54.0%	78.3%	43.1%	59.8%
25	Deworming (12- 59 m)	Once	43%	81%	67%	64%	60%
26	Deworming (12- 59 m)	Twice	57%	19%	33%	36%	40%
IMMUNISATION							
	Antigen	Means of Verification	Central	South	North	West	County
27	BCG	Presence of Scar	99.5%	98.6%	97.4%	96.7%	97.8%
28	OPV1	Card and Recall	98.3%	98.6%	91.9%	95.2%	95.8%
29	OPV3	Card and	95.9%	95.4%	89.0%	89.2%	91.8%

		Recall					
30	Measles at 9 months	Card and Recall	90.2%	94.6%	88.0%	86.8%	89.6%
32	Measles at 18 months	Card and Recall	66.3%	75.2%	73.9%	64.5%	69.8%
MATERNAL NUTRITION							
	Indicator	Description	Central	South	North	West	County
33	MUAC < 21.0 cm	Women of reproductive age	8.40%	10.20%	9.10%	8.50%	9.10%
34	Women supplemented with FeFo	Mothers of children less than 2 years	96.50%	92.80%	96.90%	95.90%	95.60%
35	Pregnant women consuming FeFo	270 days	0%	0%	0%	0%	0%
36	Pregnant women consuming FeFo	90 days and above	37.10%	64.80%	27.30%	57.10%	47.10%
WATER HYGIENE AND SANITATION							
	Indicator	Description	Central	South	North	West	County
37	Households obtaining water from sources less than 500 m		53.60%	61.70%	58.00%	80.40%	64.40%
38	Household treating their drinking water		12.80%	12.60%	32.70%	14.90%	18.40%
39	Hand washing in the 4 critical times		36.50%	9.00%	44.80%	26.50%	28.60%
HOUSEHOLD AND WOMEN DIETARY DIVERSITY							
	Indicator	Description	Central	South	North	West	County
40	Households consuming more than 5 food groups		32.40%	26.80%	6.10%	15.20%	19.50%
41	Women consuming more		32.40%	26.80%	6.10%	15.20%	19.50%

	than 5 food groups (MDD-W)						
FOOD CONSUMPTION SCORE AND COPING STRATEGY INDEX							
	Indicator	Description	Central	South	North	West	County
42	Households with acceptable FCS		73.20%	66.10%	34.50%	58.60%	
43	Coping Strategy Index	Index is given as a number not Percentage					21.06

Conclusion

There was a general deterioration of both children and women nutritional compared to the same period in 2018. According to the current SMART survey results and using the new WHO malnutrition cut-offs, the county nutritional status was classified as VERY HIGH (IPC Phase 4) with weighted global acute malnutrition (GAM) of 25.6%. There was a general deterioration of nutrition status across the four survey zones with Turkana South and North zones having a significant change in GAM compared to June 2018 SMART results. The same was seen in children underweight where there was a general deterioration with Turkana North survey zone showing a significant deterioration. The same deterioration was seen with MUAC and stunting though none was significant.

Slightly lower proportion (41.4%) of children was reported to be sick in the county than the same time last year (43.4%). All survey zones had a decrease in the proportion of children who had been sick in the last two weeks preceding the survey except Turkana Central where there was an increase. ARI/Cough was the leading cause of morbidity in all survey zones except in South unlike in 2018 where Fever like malaria was the leading cause of morbidity. Major illnesses affecting children in the County were, ARI/Cough (40.5%) fever like malaria (37.0%), and watery diarrhea 17.9%. Morbidity can be linked with high wasting in the County. High number of diarrhea cases in the county can be attributed to poor performance in WASH indicators. Majority of the sick (85.6%) sought assistance when sick a slight decline from (87.6%) in 2018. A bigger proportion of the sick (78.8%) sought assistance from public health facilities.

About half of the surveyed households obtained their drinking water from unsafe water sources. Turkana South survey zone led with households who got their drinking water from safe sources (71.5 %) while Turkana West had only 32.4% of their household getting water from safe sources. Majority of the households was getting their water from a distance less than 500m from their dwelling with only ¼ queuing for water. The proportion of households practicing open defecation was 75% an improvement from 78.5 % the same period last year. Only a fifth (18.4%) of the households were treating their water however 81.5% had good water storage containers. Majority of care givers reported to be washing their hands (82.4%) though few (28.6%) of them washed their hands in the 4 critical moments. Like last year Turkana North led with proportion of care givers washing hands during the 4 critical moments at 44.8% an improvement from 38% while Turkana West had the least

at 26.5% though an improvement from 11%. Care giver of children less than 2 year had a higher proportion washing hands at four critical times.

There was a general improvement in vitamin A supplementation and deworming where 6 to 11 months category improved from 61% in 2018 to 91.2%, while 12 to 59 months category improved from 33.4% twice a year to 44.4% in June 2019 through below the 80% target. Only 29.8% of the eligible children were reported to have been deworming of which 40% met the recommendation of twice a year. This calls for innovations to reach the 80% target for the county. Generally immunization coverage was good for all antigens with the lowest coverage in BCG being 97%. However coverage decreased with the age of the child with measles at 18 months coverage being 69.8% which was an improvement from 52.3%. Improvement cut across all survey zones. The same as last year, Turkana South was doing well in availability of MCH cards while Turkana North was poorest. Majority of diarrhoea cases were supplemented with zinc with lowest being Turkana West at 85.4%.

Maternal nutrition status was based on MUAC measurement among women of reproductive age as well as iron and folic acid consumption among mothers of children below two years. The prevalence of malnutrition among pregnant and lactating women increased from 6.6% to 9.0%. Overall, 9.1% of women of reproductive age were having a MUAC of <21cm an improvement from 13.0% in June 2018. Almost all the women (95.6%) were supplemented with iron and folic acid (an improvement from 94.4% in 2018) during their immediate previous pregnancy, the proportion that consumed iron and folic acid for the recommended duration remained quite low. None of them consumed the supplements for the recommended 270 days and 47.1% consumed the supplements for 180 days and above an improvement from 31.9%.

Unlike last year there was a notable deterioration of food security indicator in the County. The number of households consuming more than 5 food groups decreased drastically compared to June 2018. The effects of the current year drought eroded the efforts made in last year's recovery.

In conclusion it can be noted that the key drivers of poor nutrition status still remains the same, that is; Chronic food insecurity, High prevalence of childhood illness, Inadequate dietary diversity, Poor access to safe water, Poor hygiene practices, Inadequate incomes and assets for the households.

Recommendations

Based on the survey findings the following actions were recommended:

- Scale up health and nutrition service delivery in hard to reach areas in the county in addition to the ongoing integrated outreaches
- Remap and design a sustainable strategy for integrated outreaches in hard to reach areas
- Continue with creation of linkages for acutely malnourished children and women to existing social safety net programs
- Manage and strengthen supply chain to ensure appropriate nutrition commodities are consistently available at health facility level especially for MAM supplies
- Scale up of WASH services in areas that are most affected by drought and poor sanitation practices
- Continue with nutrition and health surveillance to monitor the situational trends for timely action
- Scale up rollout of IMAM surge/BFCI/cIMCI to sustain gains made in addressing malnutrition and access to care
- Conduct IMAM programme coverage survey

- Promote multi-sectoral engagement and collaboration to ensure coordinated efforts and synergy to address acute malnutrition
- Ensure active follow up of implementation of emergency response plans and adjust based on evidence and learning

1.0 CHAPTER 1

1.1 Background information

Turkana County is situated in the arid North-western region of the country. It has three international borders, with Ethiopia, Sudan and Uganda. Internally it borders Baringo, West Pokot and Samburu counties.

The County has an estimated total population of 855,399 (1,200,572 pop. of <5s 156,598. Estimate 2019) and cover an area of 77,000 km² (KNBS 2009). The county is divided into seven sub counties and seventeen administrative divisions.

According to 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.

According to KIHBS report 2018, Turkana County is classified as poorest county in Kenya at 79.4% compared to a national average of 31.6%.

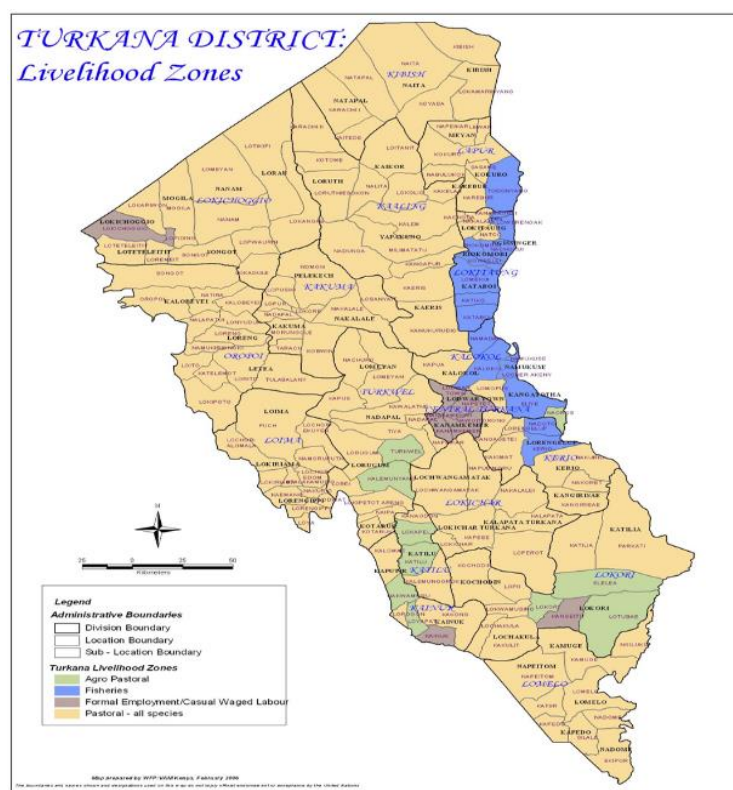


Figure 1: Turkana county map

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

1.2 Survey Justification

According to the February 2019 Integrated Phase Classification (IPC) for acute malnutrition among children U5, Turkana was ranked as VERY HIGH (IPC Phase 4- GAM 15-30%). While as per the June 2018 SMART survey, acute malnutrition levels remained above emergency level in the four Turkana survey zones. That is Turkana Central 17.5%, Turkana North 15.9%, Turkana South 19.5% and Turkana West 19.1%. The newly revised WHO thresholds for acute and chronic malnutrition required re-estimation of the actual caseloads for the county. The February 2019 SRA assessment report classified the County as “Crisis” (IPC Phase 3) showing a dire food insecurity situation. The county’s EWS classification for April 2019 indicated that the County was at ALARM phase and Stable. The County in collaboration with partners had been implementing lifesaving health nutrition & food security interventions over a decade and from March 2019 for the current response. The nutrition survey provided a progress update of health, nutrition & food security situation in the County to inform further response actions and programme adjustments. The results fed into Long rains assessment report of July 2019.

1.3 Humanitarian and Development partners

Many agencies, UN and NGOs are working in collaboration with the County Department of Health (CDH), Decentralized Public Administration, and Disaster Response in child survival interventions. The main responsibility of County is coordination, resource mobilization and quality assurance of the integrated health, nutrition, food security and WASH response in the county.

1.4 Main Objective

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), and determine morbidity rate in Turkana County.

1.4.1 Specific Objectives

1. To determine the prevalence of acute malnutrition among under five year old children and 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.

1.5 Timing of Turkana SMART survey

The survey was conducted towards the end of the long rains, in the month of June 2019. The results of the survey were to feed into the LRA in July 2019. This is the usual time the county conducts the same survey every year and will make it easy to compare different years.

Table 2: Seasonal calendar

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

1.6 Survey Area

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

Table 3: Turkana County survey zones

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

2.0 CHAPTER TWO

2.1 METHODOLOGY

The SMART Method was used to conduct this survey in planning, training, data entry and analysis. Other data sets collected concurrently included data on Water Sanitation and Hygiene (WASH) and Food security and livelihood (FSL), Morbidity and Causes. 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.

2.1.1 Sample size calculation

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

Table 4: Sample size calculation

	Turkana Central	Turkana North	Turkana West	Turkana South	Rationale
Estimate (GAM)	20.9 %	20.3%	23.7%	23.8%	Upper CI used across all the survey zones due to worsened situation. Compared to June 2018 SMART survey.
Precision	5.0%	5.0%	5.0%	5.0%	From SMART Global project (Rule of thumb)
Design Effect	1.19	1.5	1.5	1.36	From 2018 June SMART Survey to cater for heterogeneity
Estimated Number of Children	329	406	454	413	
Average HH Size	6	6	6	6	From the previous 2018 Survey
Non-Response Rate	2	2	2	2	Based on 2018 SMART Survey Experience
Proportion of Children Under 5	15.2%	15.2%	15.2%	15.2%	From KHIS
Estimated Number of Households	409	505	564	513	
Number of Households per Day	15	15	15	15	Based on 2018 SMART Survey Experience
Number of Cluster	28	34	38	35	Computed from the Number of HHs per Day
Number of Teams	5	6	7	6	

2.1.2 Sampling method

A two stage sampling process was used in this survey. The first stage involved sampling of villages (clusters) from a sampling frame (villages identified by information from KNBS estimated populations with contributions from the chiefs/sub chiefs and community health program) using ENA for SMART software (9th July 2015 version), in the second stage households were selected randomly upon getting the updated list of households in the village/Cluster provided by the village elder. Taking into account the time spent on travelling to each household, introductions and breaks, 15 households were sampled per cluster for interview. Table 6 above shows a summary of the actual number of sampled clusters, households and children per survey zone

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

2.1.3 Selection of children for anthropometry

All children between 6-59 months of age staying in the selected household were included in the sample. The respondent was the primary caregiver 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.

2.1.4 Selection of women for determination of nutritional status

The mother of the index child within the reproductive age (15-49years) in the identified households and any other household member within the age bracket was enlisted in the study and their MUAC measurements taken.

2.1.5 Survey team composition

The survey was coordinated by the County Nutrition Coordinator and supervised by seven Sub County Nutrition Officers. The team was also supported by officers from implementing partners, the Human Nutrition and Dietetics Unit-National MoH), UNICEF and a representative of NIWG. Each survey team comprised of two enumerators and one team leader guided by the area/village cluster guide.

2.1.6 Survey team training

A four-days training was conducted before the commencement of the survey. The training focused on the objectives of the survey, survey questionnaire, interviewing techniques, anthropometric measurements, cluster and household selection. Role-plays on how to administer the questionnaire and record responses were conducted. Demonstrations on how to take anthropometric measurements were also conducted. This was followed by practice to standardize anthropometric measurements.

A half day of the training was allocated to pre-testing of the tablet questionnaire (in areas that had not been selected for inclusion in the survey) and reviewing of the data collection tools based on the feedback from the field. The anthropometric measurements from pre-testing were entered into the ENA for SMART software and a plausibility report developed for each team and this information was used to correct the teams’ mistakes/Errors

2.1.7 Data collection

Data collection took place concurrently in all the four survey zones. The data collection took 5 -6 days. Survey zones coordinators with support from implementing partners’ officers supervised the

teams throughout the data collection period. Teams administered the standardized questionnaire to the mother or primary caregiver. Each survey team explained the purpose of the survey and issues of confidentiality and obtained verbal consent before proceeding with the interview. The teams used ODK questionnaire in tablets to record the responses. The data was uploaded to World Vision servers at the end of each day. Anthropometry data was downloaded daily, reviewed/analyzed for plausibility and feedback provided to the teams. Feedback was provided through use of daily customized scorecards.

2.1.8 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 87cm or more than 2 years of age.

MUAC: Mid Upper Arm Circumference (MUAC) was measured on the left arm, at the middle point between the elbow and the shoulder, while the arm was relaxed and hanging by the body's side. MUAC was measured to the nearest cm. MUAC measurements were taken for children 6-59months of age and for women in the reproductive age (15-49 years of 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 all children 6-59months, 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 were the ones who were eligible for the vaccination.

Vitamin A supplementation status: For all children 6-59 months of age, information on Vitamin A supplementation in the 6 months prior to the survey date was collected using child health and immunization cards or 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 to whether children 12-59 months of age had received de-worming tablets or not in the previous one year. This information was verified by child health and Immunization card where available.

Food security status of the households: Food consumption score, Minimum Dietary Diversity score Women source of predominant foods and coping strategies data was collected.

Household water consumption and utilization: The indicators used were main source of drinking and household water, time taken to water source and back, cost of water per 20-litre jerry-can and treatment given to drinking water.

Sanitation: Data on household access and ownership to a toilet/latrine, occasions when the respondents wash their hands were also obtained.

Mosquito nets ownership and utilization: Data on the household ownership of mosquito nets and their 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 or 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/FAO 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:

1. Eating less-preferred foods (1.0)
2. Borrowing food/money from friends and relatives (2.0)
3. Limiting portions at meal time (1.0)
4. Limiting adult intake (3.0)
5. 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).

2.2 Nutrition Indicators

2.2.1 Nutritional Indicators for children 6-59 months of age

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

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 \geq -3 Z scores	No
Global	<-2 Z scores	Yes/No

Adapted from SMART Manual, Version 1, April 2006

2.2.2 MUAC

Guidelines for the results expressed as follows:

1. Severe malnutrition is defined by measurements <115mm
2. Moderate malnutrition is defined by measurements \geq 115mm to <125mm
3. At risk is defined by measurements \geq 125mm to <135mm
4. Normal \geq 135mm

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

2.3 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 was cleaned and analysed using ENA for SMART software (9th July, 2015). 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. The table below summarises other criterion that was used for exclusion.

Table 7: Definition of boundaries for exclusion

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

2.4 Survey Limitations

1. There were inherent difficulties in determining the exact age of some children (even with use of the local calendar of events), this may have led to inaccuracies when analysing chronic malnutrition. Although verification of age was done by use of health cards or birth notification, in some instances, documentation of the child's birth date in the birth notifications differed from the mother child booklets hence making it difficult to get the right date of birth for the

child. Recall bias may link to wrong age which then leads to wrong weight for age and height for age indices.

2. There was poor recording of Vitamin A and deworming in the mother child booklets and hence most children are supplemented with vitamin A basing on recall by the mother.
3. Migration of people from some clusters
4. One cluster in Turkana Central (Akatorong'ot village) could not be accessed due to flooding.

2.5 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 withdraw was respected. Privacy and confidentiality of survey respondent and data was protected.

3.0 CHAPTER THREE: RESULTS AND DISCUSSIONS

3.1 House hold demographics and socio economic indicators

3.1.1 Household demographic characteristics

3.1.1.1 Number of households surveyed

In summary 1999 households were surveyed across Turkana County. None of the surveyed households declined to be interviewed, giving a non-response rate of 0%. One cluster Akatorong'ot in Turkana Central survey zone was not surveyed due to inaccessibility caused by flooding. All clusters in the other survey zones were surveyed as per the approved methodology.

Table 8: Number of households surveyed

	Central	North	South	West	County
	Count	Count	Count	Count	Count
Households sampled	405	505	524	565	1999
Number of children reached	365	544	693	504	2106
Non response rate	0%	0%	0%	0%	0%

3.1.1.2 Average household size, Age cohort and Sex distribution of the members in the sampled households

Table 9: Average household size

Survey zone	Central	North	South	West	County
Total Number of HH	405	505	524	565	1999
Total number of persons in the interviewed HH	3196	2114	1727	2397	9434
Average HH size	7.89	4.19	3.30	4.24	4.72

The average household size in the county was 4.72 and the mean number of children under five years per household was 1.229. The proportion of under-fives children surveyed out of the entire household members in the survey was 24.9% as illustrated in the table below.

Table 10: Age cohort distribution

	Central		North		South		West		County	
	Count	%	Count	%	Count	%	Count	%	Count	%
N	3196		2114		1727		2397		9434	
Less than 5 years	778	24.3%	616	29.1%	397	23.0%	554	23.1%	2345	24.9%
5 years to less than 18 years	1144	35.8%	713	33.7%	582	33.7%	867	36.2%	3306	35.0%
18 years and above (Adult)	1274	39.9%	785	37.1%	748	43.3%	976	40.7%	3783	40.1%

Table 11: Sex distribution for the various age cohorts

		Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
		Count	%	Count	%	Count	%	Count	%	Count	%
Male	n	1513		894		805		1060		4272	
	Less than 5 Yaers	391	25.8%	287	32.1%	196	24.3%	276	26.0%	1150	26.9%
	5 to less than 18 years	590	39.0%	364	40.7%	311	38.6%	410	38.7%	1675	39.2%
	18 Years and above	532	35.2%	243	27.2%	298	37.0%	374	35.3%	1447	33.9%
Female	n	1683		1220		922		1337		5162	
	Less than 5 Yaers	387	23.0%	329	27.0%	201	21.8%	278	20.8%	1195	23.1%
	5 to less than 18 years	554	32.9%	349	28.6%	271	29.4%	457	34.2%	1631	31.6%
	18 Years and above	742	44.1%	542	44.4%	450	48.8%	602	45.0%	2336	45.3%
Total	n	3196		2114		1727		2397		9434	
	Less than 5 Yaers	778	24.3%	616	29.1%	397	23.0%	554	23.1%	2345	24.9%
	5 to less than 18 years	1144	35.8%	713	33.7%	582	33.7%	867	36.2%	3306	35.0%
	18 Years and above	1274	39.9%	785	37.1%	748	43.3%	976	40.7%	3783	40.1%

3.1.2 Residency and marital Status

Majority (96.7%) of the surveyed respondents were resident a reduction from (99.7%) in June 2018 whereas 3.1% had IDP residency and 0.2% had refugee status in the county. Turkana South survey zone led in respondents with IDP status.

Table 12: Residency

	Central		North		South		West		County	
	Count	%	Count	%	Count	%	Count	%	Count	%
IDP	1	0.20%	14	2.80%	32	6.10%	14	2.50%	61	3.10%
Refugee	0	0.00%	1	0.20%	2	0.40%	0	0.00%	3	0.20%
Resident	406	99.80%	490	97.00%	488	93.50%	551	97.50%	1935	96.80%
Total	407	100.00%	505	100.00%	522	100.00%	565	100.00%	1999	100.00%

3.1.3 Immigrant Children in the households

This survey sought to find out if there were children who had immigrated into the households and the reason behind their migration. Only 11.7% of the sampled household reported to be hosting children who had in migrated, a reduction from 14.2% the same time in 2018. Turkana Central survey zone led with the number and proportion of the in migrated children.

Table 13: Children migration

Are there children who have come to live with you	Central		North		South		West		County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	407		505		522		565		1999	
yes	80	19.70%	45	8.90%	65	12.50%	44	7.80%	234	11.70%
No	327	87.50%	460	91.10%	457	87.50%	521	92.20%	1765	88.30%

3.1.4 Reasons for Children migration

Main reasons for children migration were lack of access to food 28.6% a reduction from last year of 35.8% and death of caregiver (26.5%); other reasons were school 17.1%, an increase from (15.7%) in June 2018 and abandonment by caregivers (Father/Mother). Children living on the streets increased from 1% to 1.7%.

Table 14: Reasons for Children migration

	Central		North		South		West		County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	80		45		65		44		234	
Did not having access to food	12	15.0%	11	24.4%	22	33.8%	22	50.0%	67	28.6%
Father and Mother Left home	6	7.5%	17	37.8%	12	18.5%	2	4.5%	37	15.8%
Child was living on the street	3	3.8%	1	2.2%	0	0.0%	0	0.0%	4	1.7%
Care giver died	35	43.8%	5	11.1%	13	20.0%	9	20.5%	62	26.5%
school	16	20.0%	2	4.4%	15	23.1%	7	15.9%	40	17.1%
other	8	10.0%	9	20.0%	3	4.6%	4	9.1%	24	10.3%

3.1.5 Caretakers' marital status

Marital status is linked to child caring behaviour hence the reasons for its analysis in this survey. There was a marked reduction of the proportion of respondents who were married compared to the same period last year. Among the respondents surveyed, 76.7% were married compared to 81.7% in June 2018. 16.5% of the respondents were widowed compared to 11.5%. Turkana North had the highest proportion of the widowed population at 20.0% compared to 12.6% last year. Turkana West had the lowest proportion of widowed.

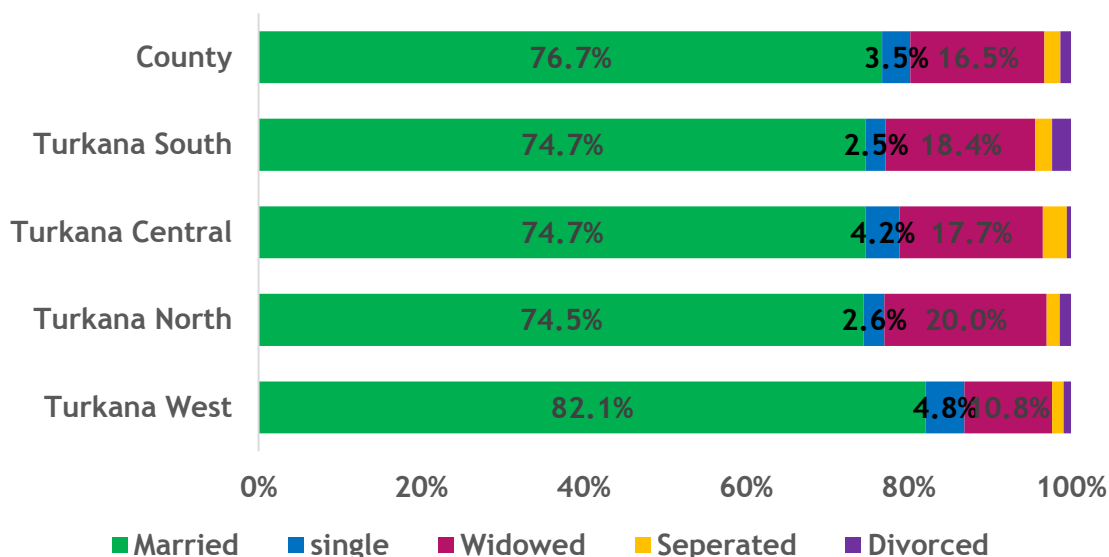


Figure 2: Summary of caretakers' marital status

3.1.6 Occupation of the household main provider

The main occupation of the household's main provider for all survey zones except Turkana Central was livestock herding (25.4.%), a reduction from 32.0% last year, petty trade (23.0%), charcoal and sell of firewood (21.4%). The main occupation of the household head for Turkana Central survey zone was charcoal/firewood selling. Livestock herding was on the decline while petty trade and firewood/charcoal burning was on the increase. Despite the livestock herding being the main occupation of households main providers it was not the leading current income source for the households. This has been the trend for the two surveys.

Table 15: Summary of household's main provider occupation

		Livestock herding	Own farm labour	Employed (salaried)	Waged labour (Casual)	Petty trade	Merchant	Firewood	Fishing	others
							/trader	/charcoal		
Central	Count	61	9	15	70	85	8	116	28	15
	%	15.00%	2.20%	2.70%	17.20%	20.90%	2.00%	28.50%	6.90%	3.70%
North	Count	150	2	8	33	136	16	126	14	20
	%	29.70%	0.40%	1.60%	6.50%	26.90%	3.20%	25.00%	2.80%	4.00%
South	Count	134	98	13	89	91	13	75	1	8
	%	25.70%	18.80%	2.50%	17.00%	17.40%	2.50%	14.40%	0.20%	1.50%
West	Count	162	13	15	90	148	3	111	0	23
	%	28.70%	2.30%	2.70%	15.90%	26.20%	0.50%	19.60%	0.00%	4.10%
County	Count	507	122	51	282	460	40	428	43	66
	%	25.40%	6.10%	2.60%	14.10%	23.00%	2.00%	21.40%	2.20%	3.30%

3.1.7 Main current source of income of the Household head

The dominant source of income for the household for all survey zones was petty trading followed by casual labour indicating majority of household have no stable sources of income. Among the major petty trade were firewood/ charcoal selling which is destructive for of livelihoods.

Table 16: Main current source of income of the Household head

		Sale of Livestock	Cash transfer (HSNP)	Sale of livestock products	Sale of crops	Petty trading e.g. sale of firewood	Casual labour	Permanent job	Sale of personal assets	Remittance	Income earned by children	other
Central	Count	30	7	10	7	209	72	10	3	0	4	55
	%	7.4%	1.7%	2.5%	1.7%	51.4%	17.7%	2.5%	0.7%	0.0%	1.0%	13.5%
North	Count	103	10	2	1	302	40	7	3	2	1	34
	%	20.4%	2.0%	0.4%	0.2%	59.8%	7.9%	1.4%	0.6%	0.4%	0.2%	6.7%
South	Count	86	2	28	49	236	90	13	3	1	4	10
	%	16.5%	0.4%	5.4%	9.4%	45.2%	17.2%	2.5%	0.6%	0.2%	0.8%	1.9%
West	Count	52	0	4	6	391	79	11	4	3	2	13
	%	9.2%	0.0%	0.7%	1.1%	69.2%	14.0%	1.9%	0.7%	0.5%	0.4%	2.3%
County	Count	271	19	44	63	1138	281	41	13	6	11	112
	%	13.6%	1.0%	2.2%	3.2%	56.9%	14.1%	2.1%	0.7%	0.3%	0.6%	5.6%

3.1.8 Education

3.1.8.1 Highest Education level for adults

Literacy is improving in the entire county, with 78.8% of the household heads having no formal education an improvement from 81.1% last year. Only 16.1% had primary, secondary and Tertiary education. Only 2.1% of the sampled population had tertiary education, which is basic eligibility for formal employment.

Table 17: Education Levels

Zone		Education level						Adult Education	Total
		Pre primary	Primary	Secondary	Tertiary	None			
Central	Count	10	58	27	16	294	2	407	
	%	2.50%	14.30%	6.60%	3.90%	72.20%	0.50%	100.00%	
North	Count	44	24	10	3	424	0	505	
	%	8.70%	4.80%	2.00%	0.60%	81.80%	0.00%	100.00%	
South	Count	7	67	28	17	396	0	522	
	%	1.30%	14.20%	5.40%	3.30%	75.90%	0.00%	100.00%	
West	Count	40	40	18	5	462	0	565	
	%	7.10%	7.10%	3.20%	0.90%	81.80%	0.00%	100.00%	
County	Count	101	196	83	41	1576	2	1999	
	%	5.10%	9.80%	4.20%	2.10%	78.80%	0.10%	100.00%	

3.1.8.2 School enrolment for age group 3 years to 18 years

In the county, 70.1% of the children aged 36 -59 months and 71.1% of the children aged between 6 years and 18 years in the sampled households were enrolled in formal education.. Turkana North led in the proportion of children between 36 -59 months enrolled in formal education followed by Turkana Central.

For the 6- 18 years category, Turkana South survey zone had the highest proportion of children enrolled in formal education followed by Turkana Central. Only 2 of the respondents interviewed were enrolled in Adult education.

Table 18: School enrolment for age group 3 years to 18 years

Enrollment 36 to 59 months	Turkana West		Turkana North		Turkana Central		Turkana South		T County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	267		203		131		197		798	
Yes	167	62.5%	160	78.8%	96	73.3%	136	69.0%	559	70.1%
No	100	37.5%	43	21.2%	35	26.7%	61	31.0%	239	29.9%
Enrollment 6-18 years	Count	%	Count	%	Count	%	Count	%	Count	%
n	1110		660		563		807		3140	
Yes	765	68.9%	419	63.5%	411	73.0%	636	78.8%	2231	71.1%
No	345	31.1%	241	36.5%	152	27.0%	171	21.2%	909	28.9%

Turkana South survey zone led in the number of children enrolled in school

3.1.9 Reason for not attending school

The main reasons for not attending school were; family responsibility 39.3% (31.9%), lack of a nearby school 25.6% (31.5%) and households not seeing value of school 13.5% (16.5%). Family labor responsibilities increased from 31.9% in June 2018 to 39.3%.

Table 19: Reasons for not attending school

Reason for not attending school	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	452		298		188		239		1177	
Chronic Sickness	1	0.2%	4	1.3%	3	1.6%	4	1.7%	12	1.0%
Insecurity	0	0.0%	30	10.1%	4	2.1%	5	2.1%	39	3.3%
No school nearby	71	15.7%	98	32.9%	38	20.2%	94	39.3%	301	25.6%
Married	4	0.9%	2	0.7%	1	0.5%	2	0.8%	9	0.8%
Weather(Rains, floods, storms)	1	0.2%	0	0.0%	1	0.5%	0	0.0%	2	0.2%
Family labour responsibilities	254	56.2%	90	30.2%	67	35.6%	52	21.8%	463	39.3%
Working outside home	5	1.1%	0	0.0%	0	0.0%	1	0.4%	6	0.5%
Too poor to buy school items	21	4.6%	3	1.0%	30	16.0%	15	6.3%	69	5.9%
HH does not see value of schooling	62	13.7%	53	17.8%	12	6.4%	32	13.4%	159	13.5%

No food in the schools	1	0.2%	1	0.3%	3	1.6%	3	1.3%	8	0.7%
Migrated/moved from school area	3	0.7%	15	5.0%	4	2.1%	4	1.7%	26	2.2%
other	29	6.4%	2	0.7%	25	13.3%	27	11.3%	83	7.1%

4.0 CHILD HEALTH & NUTRITION

4.1 Anthropometry

Out of all sampled children in the County, 80.8% of them had a health card; Birth certificate/notification or baptism card were used to verify their age. Age determination for 19.2% of the children was based on recall, hence prone to recall bias. This might have affected indices with age as a variable such as stunting and underweight. The table below show the age verification means per survey zone.

Table 20: Summary of Children age verification means

Zone	Turkana West		Turkana North		Turkana Central		Turkana South		County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Health Card/Mother child booklet	608	78.1%	420	68.2%	328	82.6%	484	87.4%	1840	78.5%
Birth Certificate/ Notification	15	1.9%	6	1.0%	4	1.0%	5	.9%	30	1.3%
Baptism Card	3	.4%	19	3.1%	1	.3%	1	.2%	24	1.0%
Recall	152	19.5%	171	27.8%	64	16.1%	64	11.6%	451	19.2%
	778	100.0%	616	100.0%	397	100.0%	554	100.0%	2345	100.0%

4.1.1 Age and sex distribution of the sampled children

On overall, there were younger children selected in the sample across all survey zones, thus affecting equal representation across the age cohorts. The overall sex ratio (boys: girls) was within the acceptable range of 0.6-1.4 across all the four survey zones, depicting an equal representation of the sexes thus less bias.

Table 21: Distribution of age and sex of sample

AGE (mo)	Turkana Central n=365		Turkana North n=544		Turkana south n=504		Turkana West n=693	
	Total %	Ratio Boy: girl	Total %	Ratio Boy: girl	Total %	Ratio Boy: girl	Total %	Ratio Boy: girl
6-17	28.5	1.4	27.4	0.9	25.8	1.3	24.5	0.8
18-29	24.7	0.7	25.9	1.0	23.8	1.0	23.4	1.1
30-41	24.4	0.9	20.0	0.6	24.4	0.7	23.8	0.9
42-53	17.5	0.9	21.1	0.9	20.4	1.1	19.0	1.2
54-59	4.9	1.0	5.5	1.1	5.6	1.0	9.2	0.9
Total	100.0	1.0	100.0	0.9	100.0	1.0	100.0	1.0

4.1.2 Prevalence of Acute Malnutrition

The SRA conducted in the month of Feb 2019 classified Turkana as *STRESSED* (IPC Phase 2)

and *CRISIS* mainly in pastoral livelihood zones indicating significant change compared to the last three seasons (Including SRA February - 2018 and LRA August - 2018). According to the Integrated Phase Classification (IPC) for acute malnutrition in the same report, the nutrition situation was reported to be critical in Turkana (Phase4; GAM WHZ 15.0-29.9%). (KFSSG/NDMA 2019). This is not far from the June 2019 SMART survey finding where Acute malnutrition levels remained as very high WHO classification level in the 4 Turkana survey zones; Turkana Central 20.2%, Turkana North 30.2%, Turkana South 30.8% and Turkana West 23.0%. The most affected was Turkana south and North survey zones where the GAM rates doubled. There was no edema case identified across the four surveys. The Weight for Height standard deviation was -1.38 ± 1.01 .

Table 22: Mean z-scores, Design Effects and excluded subjects – Turkana North survey zone.

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	539	-1.52 \pm 1.02	2.09	0	5
Weight-for-Age	538	-1.56 \pm 1.01	1.34	0	6
Height-for-Age	514	-1.01 \pm 1.13	1.00	0	30

* contains for WHZ and WAZ the children with edema.

Table 23: Mean z-scores, Design Effects and excluded subjects – Turkana West survey zone

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	683	-1.34 \pm 0.98	1.25	0	10
Weight-for-Age	688	-1.62 \pm 1.05	1.51	0	5
Height-for-Age	680	-1.29 \pm 1.15	1.29	0	13

* contains for WHZ and WAZ the children with edema.

Table 24: Mean z-scores, Design Effects and excluded subjects – Turkana South survey zone

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	503	-1.52 \pm 1.01	2.21	0	1
Weight-for-Age	503	-1.73 \pm 1.02	2.37	0	1
Height-for-Age	497	-1.21 \pm 1.06	2.06	0	7

* contains for WHZ and WAZ the children with edema.

Table 25: Mean z-scores, Design Effects and excluded subjects – Turkana Central survey zone

Indicator	n	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	362	-1.17 \pm 1.00	1.70	0	3
Weight-for-Age	365	-1.54 \pm 1.01	1.10	0	0
Height-for-Age	363	-1.28 \pm 1.08	1.31	0	2

* contains for WHZ and WAZ the children with edema.

Turkana South survey zone had the highest design effect for all indicators compared to the rest of the survey zones, an indication of heterogeneity within the survey zone. Turkana North and West survey zones had the highest number of z-Scores out of range.

Table 26: Prevalence of malnutrition weight-for-height z-scores (WHO Standards 2006)

Turkana	Central	North	South	West	County
Wasting (WHO 2006)	n=362	n=539	n=503	n=683	n=2003
Global Acute Malnutrition (GAM) - June 2018	(97) 17.5% (14.1 - 21.5 95% C.I.)	(91) 15.9 % (12.1 - 20.6 95% C.I.)	(116) 19.5% (15.8 - 23.8 95% C.I.)	(131) 19.1% (15.3 - 23.7 95% C.I.)	(435) 18.1 % (16.4 - 19.9 95% C.I.)
Global Acute Malnutrition (GAM) - June 2019	(73) 20.2 % (15.1 - 26.4 95% C.I.)	(163) 30.2 % (24.8 - 36.4 95% C.I.)	(155) 30.8 % (25.0 - 37.4 95% C.I.)	(157) 23.0 % (19.5 - 26.8 95% C.I.)	25.6 (23.4 - 28.0 95% CI)
Severe Acute Malnutrition (SAM)- June 2018	(26) 4.7 % (3.1 - 7.0 95% C.I.)	(19) 3.3 % (2.0 - 5.4 95% C.I.)	(16) 2.7 % (1.6 - 4.4 95% C.I.)	(38) 5.5 % (3.8 - 8.1 95% C.I.)	(99) 4.1 % (3.3 - 5.2 95% C.I.)
Severe Acute Malnutrition (SAM)- June 2019	(10) 2.8 % (1.3 - 5.7 95% C.I.)	(40) 7.4 % (4.6 - 11.7 95% C.I.)	(39) 7.8 % (5.2 - 11.4 95% C.I.)	(39) 5.7 % (3.7 - 8.7 95% C.I.)	5.9%(4.9 - 7.1 95% CI)

The levels of acute malnutrition have varied in severity across the four survey zones of Turkana since the severe drought in 2011. Figure 2 below illustrates the changes in acute malnutrition over time per survey zone, which further reveals persistently high GAM levels (exceeding WHO very high thresholds of 15%) for over the last five years. This again highlights no obvious recovery from the persistent shocks from drought, floods, and conflict facing the community.

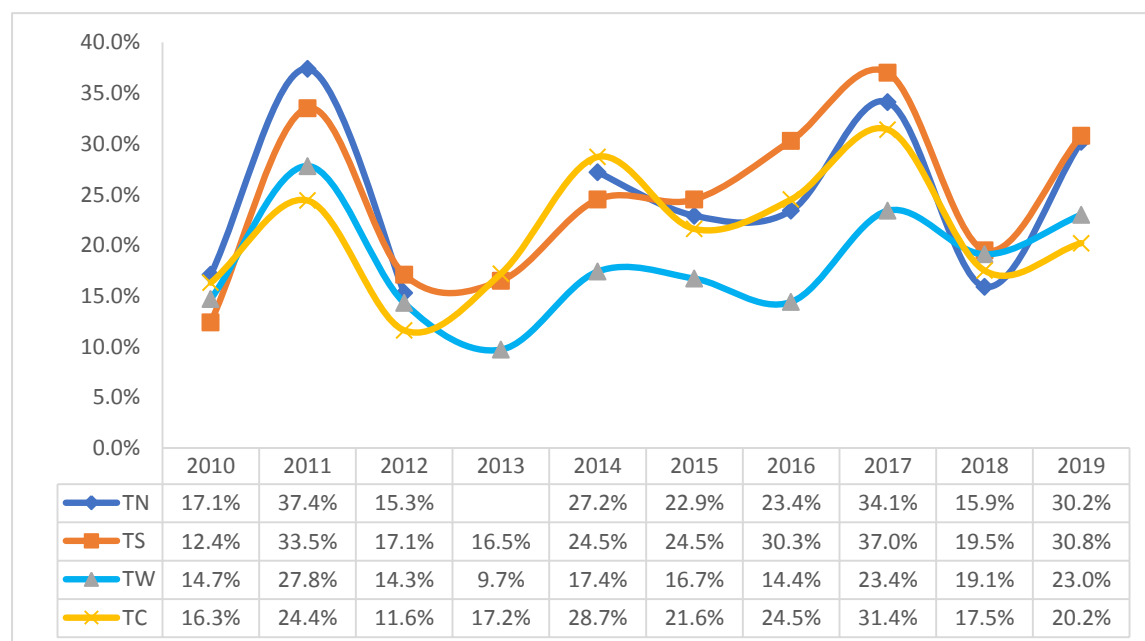


Figure 3: Trends of Global Acute Malnutrition in Turkana County (2010-2019)

4.1.3 Prevalence of acute malnutrition based on weight-for-height z-scores (and/or edema) and by sex

The proportion of boys malnourished was higher than girls in all the 4 surveys zones. Table below shows the prevalence of global acute malnutrition by sex per survey.

Table 27: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or edema) and by sex(95% Confidence interval)

	Sex	Central n=362	North n=539	South n=503	West n=683	County n=2003
		M =178,F=184	M =252,F=287	M =251, F=252	M =340,F =343	M= 983 F=1020
Prevalence of global malnutrition(<-2z-score and/or edema)	Boys	(40) 22.5 % (15.2 - 31.9 95% C.I.)	(87) 34.5 % (27.1 - 42.8 95% C.I.)	(80) 31.9 % (24.3 - 40.5 95% C.I.)	(84) 24.7 % (20.3 - 29.8 95% C.I.)	27.8%(24.4 - 31.5 95% CI)
	Girls	(33) 17.9 % (12.4 - 25.2 95% C.I.)	(76) 26.5 % (20.1 - 34.1 95% C.I.)	(75) 29.8 % (23.5 - 36.9 95% C.I.)	(73) 21.3 % (17.7 - 25.4 95% C.I.)	23.5%(21.0 - 26.3 95% CI)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	Boys	(32) 18.0 % (11.5 - 26.9 95% C.I.)	(64) 25.4 % (20.3 - 31.2 95% C.I.)	(60) 23.9 % (18.3 - 30.6 95% C.I.)	(62) 18.2 % (14.5 - 22.7 95% C.I.)	
	Girls	(31) 16.8 % (11.6 - 23.8 95% C.I.)	(59) 20.6 % (15.4 - 26.9 95% C.I.)	(56) 22.2 % (17.0 - 28.5 95% C.I.)	(56) 16.3 % (12.5 - 21.0 95% C.I.)	
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	Boys	(8) 4.5 % (1.9 - 10.5 95% C.I.)	(23) 9.1 % (5.3 - 15.3 95% C.I.)	(20) 8.0 % (4.6 - 13.5 95% C.I.)	(22) 6.5 % (3.7 - 11.1 95% C.I.)	7%(5.2 - 9.3 95% CI)
	Girls	(2) 1.1 % (0.2 - 4.6 95% C.I.)	(17) 5.9 % (3.1 - 11.2 95% C.I.)	(19) 7.5 % (4.5 - 12.3 95% C.I.)	(17) 5.0 % (2.8 - 8.7 95% C.I.)	4.9%(3.7 - 6.4 95% CI)

4.1.4 Prevalence of acute malnutrition (wasting) by age based on weight-for-height Z-scores and or edema (WHO Standards 2006)

As shown in table below, the older children were the ones who were more malnourished across the four survey zones.

Table 28: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

Zone	Age month	Total no.	Severe wasting		Moderate		Normal		Oedema	
			No.	%	No.	%	No.	%	No.	%
Central	6-17	103	3	2.9	20	19.4	80	77.7	0	0.0
	18-29	90	2	2.2	7	7.8	81	90.0	0	0.0
	30-41	88	1	1.1	16	18.2	71	80.7	0	0.0
	42-53	64	3	4.7	16	25.0	45	70.3	0	0.0
	54-59	17	1	5.9	4	23.5	12	70.6	0	0.0
	Total	362	10	2.8	63	17.4	289	79.8	0	0.0
North	6-17	146	9	6.2	22	15.1	115	78.8	0	0.0
	18-29	140	18	12.9	32	22.9	90	64.3	0	0.0
	30-41	108	6	5.6	25	23.1	77	71.3	0	0.0
	42-53	115	6	5.2	32	27.8	77	67.0	0	0.0

	54-59	30	1	3.3	12	40.0	17	56.7	0	0.0
	Total	539	40	7.4	123	22.8	376	69.8	0	0.0
South	6-17	130	14	10.8	21	16.2	95	73.1	0	0.0
	18-29	120	10	8.3	25	20.8	85	70.8	0	0.0
	30-41	122	11	9.0	33	27.0	78	63.9	0	0.0
	42-53	103	4	3.9	28	27.2	71	68.9	0	0.0
	54-59	28	0	0.0	9	32.1	19	67.9	0	0.0
	Total	503	39	7.8	116	23.1	348	69.2	0	0.0
West	6-17	164	10	6.1	29	17.7	125	76.2	0	0.0
	18-29	160	12	7.5	30	18.8	118	73.8	0	0.0
	30-41	163	6	3.7	30	18.4	127	77.9	0	0.0
	42-53	132	8	6.1	17	12.9	107	81.1	0	0.0
	54-59	64	3	4.7	12	18.8	49	76.6	0	0.0
	Total	683	39	5.7	118	17.3	526	77.0	0	0.0
County	6-17	526		6.70%		24.00			0	0.0
	18-29	487		7.20%		24.40			0	0.0
	30-41	471		5.00%		26.50			0	0.0
	42-53	388		5.10%		27.20			0	0.0
	54-59	131		3.70%		29.40			0	0.0
	Total	2003		5.9%5.		25.6%				0

There was no oedema case identified across all the four survey zones.

Table 29: Distribution of Severe acute malnutrition and oedema based on weight-for-height z-score

	Central		North		South		West	
	<-3 z-score	>=-3 z-score	<-3 z-score	>=-3 z-score	<-3 z-score	>=-3 z-score	<-3 z-score	>=-3 z-score
Oedema present	Maras kwash No. 0 (0.0 %)	Kwashi No. 0 (0.0 %)	Maras kwash No. 0 (0.0 %)	Kwash No. 0 (0.0 %)	Mars Kwash No. 0 (0.0 %)	Kwash No. 0 (0.0 %)	Maras kwash No. 0 (0.0 %)	Kwash No. 0 (0.0 %)
Oedema absent	Marasmic No. 13 (3.6 %)	Not severely malnourished No. 352 (96.4 %)	Marasmic No. 43 (7.9 %)	Not severely malnourished No. 501 (92.1 %)	Marasmic No. 40 (7.9 %)	Not severely malnourished No. 464 (92.1 %)	Marasmic No. 45 (6.5 %)	Not severely malnourished No. 648 (93.5 %)

4.1.5 Prevalence of acute malnutrition based on MUAC

The nutrition situation was also assessed using the MUAC and in comparison with the GAM rates by the WFH scores. 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 index¹. This means, overall significantly lower cases of malnourished children are identified using MUAC when compared to weight for height. Turkana North (9.7%) had the highest GAM rate followed by Turkana west (8.4%) while SAM was highest in Turkana west (3.0%) followed by Turkana North (1.7%). The table below summarizes prevalence of malnutrition by MUAC.

Table 30: Prevalence of Malnutrition based on MUAC per survey

Prevalence of Acute malnutrition MUAC	Central	North	South	West
2019	n=365	n=544	n=504	n=693
2018	n=558	n=576	n=600	n=688
Severe under nutrition ((< 115 mm) -June 2019)	(2) 0.5 % (0.1 - 2.3 95% C.I.)	(9) 1.7 % (0.7 - 3.7 95% C.I.)	(8) 1.6 % (0.8 - 3.3 95% C.I.)	(21) 3.0 % (1.7 - 5.3 95% C.I.)
Severe under nutrition ((< 115 mm) -June 2018)	(6) 1.1% (0.5-2.4% 95% C.I)	(2) 0.3% (0.1-1.4 95% C.I)	(4) 0.7% (02-1.8 95% C.I)	(8) 1.2% (0.5-2.5 95% C.I)
Moderate under nutrition (≥115–<125 mm)-June 2019)	(25) 6.8 % (4.4 - 10.5 95% C.I.)	(53) 9.7 % (7.1 - 13.2 95% C.I.)	(37) 7.3 % (5.1 - 10.5 95% C.I.)	(58) 8.4 % (6.0 - 11.6 95% C.I.)
Moderate under nutrition (≥115–<125 mm)-June 2018)	(16) 2.9% (1.7-4.8 95% C.I)	(28) 4.9% (3.1-7.6 95% C.I)	(24) 4.0% (2.7-6.0 95% C.I)	(47) 6.8% (5.1-9.1 95% C.I)
Global Acute Malnutrition (≤125 mm)-June 2019)	(27) 7.4 % (4.9 - 11.0 95% C.I.)	(62) 11.4 % (8.1 - 15.8 95% C.I.)	(45) 8.9 % (6.4 - 12.4 95% C.I.)	(79) 11.4 % (8.6 - 15.0 95% C.I.)
Global Acute Malnutrition (≤125 mm)-June 2018)	(22) 3.9% (2.5-6.1 95% C.I)	(30) 5.2% (3.3-8.1 95% C.I)	(28) 4.7% (3.2-6.8 95% C.I)	(55) 8.0% (6.1-10.4 95% C.I)

4.1.6 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 is a significant decrease in the prevalence of underweight in the county. In this year's survey, Turkana South reported the highest Prevalence of underweight (39.6%) Followed by west (35.0%) while Turkana North reported the

¹The 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/m², 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

lowest (32.1%) this is much higher compared to last year in which the highest was (24.2%) as illustrated in the table below.

Table 31: Prevalence of underweight

Underweight (WHO 2006)	Central	North	South	West	County
2018	n=558	n=576	n=596	n=687	n=2417
2019	n=365	n=538	n=503	n=688	n=2009
Prevalence of global underweight-June 2018)	(135) 24.2% (20.7-28.1 95% C.I)	(111) 19.3% (14.5-25.1 95% C.I)	(144) 24.2% (20.2-28.6 95% C.I)	(151) 22.0% (17.9-26.6 95% C.I)	(541) 22.4% (20.2-24.7 95% C.I)
Prevalence of global underweight-June 2019)	(117) 32.1 % (27.0 - 37.5 95% C.I.)	(188) 34.9 % (30.3 - 39.9 95% C.I.)	(199) 39.6 % (33.0 - 46.6 95% C.I.)	(241) 35.0 % (30.6 - 39.7 95% C.I.)	34.0% (31.9 - 36.2 95% CI)
Prevalence of severe underweight(June 2018)	(35) 6.3% (4.5-8.7 95% C.I)	(21) 3.6% (2.4-5.5 95% C.I)	(29) 4.9% (3.0-7.7 95% C.I)	(35) 5.1% (3.5-7.4 95% C.I)	(120) 5.0% (4.1-6.0 95% C.I)
Prevalence of severe underweight(June 2019)	(35) 9.6 % (6.3 - 14.4 95% C.I.)	(43) 8.0 % (5.6 - 11.3 95% C.I.)	(52) 10.3 % (7.4 - 14.2 95% C.I.)	(78) 11.3 % (8.6 - 14.8 95% C.I.)	9.3% (8.2 - 10.6 95% CI)

4.1.7 Prevalence of stunting

Height-for-age is another anthropometric indices commonly used as an indicator for malnutrition. Stunting (low height-for-age), results from extended periods of inadequate food intake, poor dietary quality, increased morbidity, or a combination of the above factors. Stunting in childhood leads to reduced adult size and reduced work capacity. This, in turn, has an impact on economic productivity at the national level. A low height-for-age reflects deficits in linear growth and is referred to as *stunting*. From these survey results, there is a significant increase in stunting (19.7%) compared to the same time last year which recorded 17.4%.

Global stunting was highest in Turkana west (25.7%) followed by Turkana central (24.2%) with Turkana North (20.2%) having the lowest stunting rate as shown in the table below. All the sub counties are classified as high.

Table 32: Prevalence of Stunting

Stunting (WHO 2006)	Central	North	South	West	County
2018	n=558	n=573	n=595	n=687	n=2411
2019	n=363	n=497	n=514	n=680	n=2054

Prevalence of global stunting (<-2 z-score) June 2018	(135) 24.2% (20.7-28.1 95% C.I)	(82) 14.3% (11.3-17.9 95% C.I)	(105) 17.6% (14.5-21.3 95% C.I)	(116)16.9% (13.3-21.1 95% C.I)	(419) 17.4% (15.5-19.5 95% C.I)
Prevalence of global stunting (<-2 z-score) June 2019	(88) 24.2 % (19.3 - 29.9 95% C.I.)	(104) 20.2 % (17.1 - 23.7 95% C.I.)	(113) 22.7 % (17.7 - 28.7 95% C.I.)	(175) 25.7 % (22.1 - 29.8 95% C.I.)	21.7%(19.7 - 23.8 95% CI)
Prevalence of severe stunting (<-3 z-score)- June 2018	(35) 6.3% (4.5-8.7 95% C.I)	(19) 3.3% (1.9-5.7 95% C.I)	(36) 6.1% (4.4-8.3 95% C.I)	(33) 4.8% (3.3-7.0 95% C.I)	(113) 4.7% (3.9-5.7 95% C.I)
Prevalence of severe stunting (<-3 z-score)- June 2019	(22) 6.1 % (3.7 - 9.7 95% C.I.)	(13) 2.5 % (1.4 - 4.4 95% C.I.)	(23) 4.6 % (3.1 - 6.9 95% C.I.)	(49) 7.2 % (5.0 - 10.3 95% C.I.)	4.9%(4.0 - 6.0 95% CI)

4.1.8 Indirect Coverage of Integrated Management of acute Malnutrition programme

All the malnourished children 6-59 months (MUAC<125MM or WFH Z score<-2 SDS) were assessed whether they were enrolled into any nutrition programme during the survey. Below is a figure summarising findings from this analysis.

Table 33: Indirect coverage of IMAM Programme

		Turkana west	Turkana North	Turkana Central	Turkana South	County
MAM and SAM	YES	38	37	18	36	129
		23.3%	22.3%	23.7%	23.1%	23.0%
	NO	125	129	58	120	432
		76.7%	77.7%	76.3%	76.9%	77.0%
Total	163	166	76	156	561	
	100.0%	100.0%	100.0%	100.0%	100.0%	
Non MAM and SAM	YES	14	16	7	17	54
		2.6%	4.2%	2.4%	4.9%	3.5%
	NO	516	362	284	329	1491
		97.4%	95.8%	97.6%	95.1%	96.5%
Total	530	378	291	346	1545	
	100.0%	100.0%	100.0%	100.0%	100.0%	

The indirect coverage was 23% for the county. In all the other survey zones, none attained the 50% SPHERE standard for rural area in all the programs (OTP and SFP).

4.2 Children's Morbidity and Health Seeking Behaviour

According to UNICEF conceptual framework on causes of malnutrition, disease is an immediate cause of malnutrition. It also affects food intake which is also categorized as an immediate cause. It was important therefore to assess morbidity and whether it had some effect on nutrition status of the vulnerable.

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 prior to the survey. Those who gave an affirmative answer to this question were further probed on what illness 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 probed on the kind of treatment that was given to them.

From the responses, 41.4% of the children 6-59 months were reported to have been ill within the past two weeks of survey in the county. This was slightly lower than the same time in 2018 where 43.4% reported to have been sick. Turkana North had the least prevalence of reported morbidity, which was the same last year while Turkana West had the highest proportion of child morbidity as shown in the table below.

Table 34: Children ill

		West	North	Central	South	County
	n	693	544	367	502	2106
Yes	Count	387	142	146	196	871
	%	55.8%	26.1%	39.8%	39.0%	41.4%
No	Count	306	402	221	306	1235
	%	44.2%	73.9%	60.2%	61.0%	58.6%

Among those who were sick in the county, majority (40.5%) were affected by ARI-Cough. Fever like malaria affected 37.0%, while 17.9% suffered from watery diarrhea. Only diarrhea had increased when compared to the same period last year, the rest were on the decline. Increase in diarrheal cases could be attributed to increased rainfall during the survey period. Traditionally, studies have shown a positive correlation between child morbidity and malnutrition. The table below summarizes prevalence of child morbidity in the county.

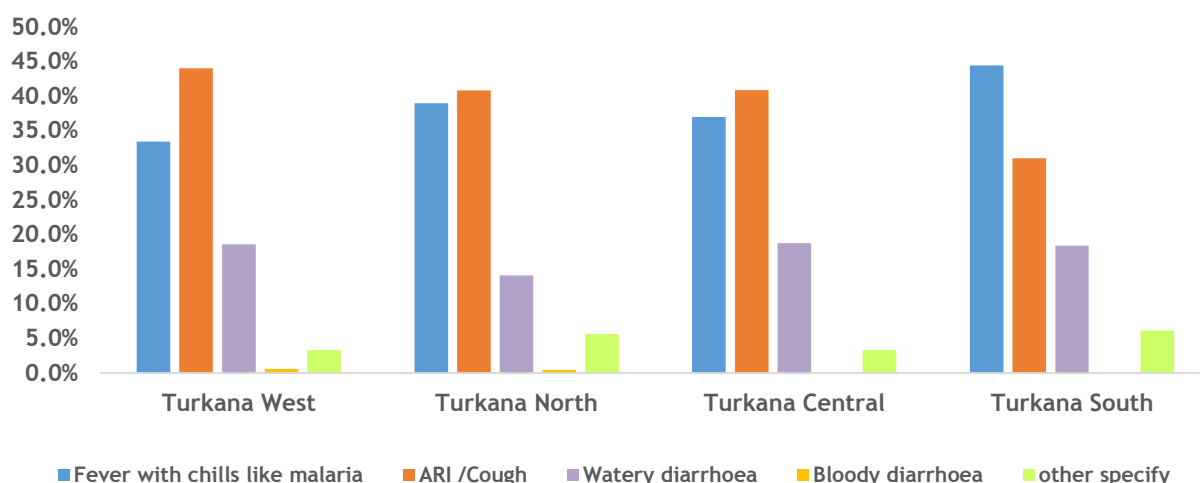


Figure 4: Prevalence of child morbidity 2 weeks prior to the survey

4.2.2 Therapeutic Zinc Supplementation during Watery Diarrhea Episodes

Based on compelling evidence from efficacy studies that zinc supplementation reduces the duration and severity of diarrhea, in 2004 WHO and UNICEF recommended incorporating zinc supplementation (20 mg/day for 10-14 days for children 6 months and older, 10 mg/day for children under 6 months of age) as an adjunct treatment to low osmolality oral rehydration salts (ORS), and continuing child feeding for managing acute diarrhea². Kenya has adopted these recommendations. According to Kenyan policy guideline on control and management of diarrheal diseases in children below five years, 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 were supplemented with zinc. The findings are illustrated in the Table below.

Table 35: Therapeutic Zinc supplementation

	Turkana West		Turkana North		Turkana Central		Turkana South		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	105	85.4%	26	86.7%	33	97.1%	45	93.8%	209	88.9%
No	18	14.6%	3	10.0%	1	2.9%	3	6.3%	25	10.6%
Don't Know	0	0.0%	1	3.3%	0	0.0%	0	0.0%	1	0.4%

Treatment of diarrhea using Zinc was good across all survey zones. However, compared to last years, the incidence of diarrhea was significantly higher due to the heavy rains experienced at the time of this survey.

4.2.3 Health Seeking Behavior

The caretakers who reported that their children had been ill during the past two weeks were asked if they sought any health assistance; in the county, 85.6% of them reported to had sought assistance. This was a slight reduction from 87.6% last year.

Table 36: Those who sought health assistance

	n	West	North	Central	South	County
		Count	387	142	146	196
Yes	Count	318	119	129	180	746
	%	82.2%	83.8%	88.4%	91.8%	85.6%
No	Count	69	23	17	16	125
	%	17.8%	16.2%	11.6%	8.2%	14.4%

Mothers and caregivers whose children were sick in the past 2 weeks prior to the survey and had sought assistance were further asked where they had first sought it. Majority (94.7%) of the caretakers reported to have sought care form pubic clinics. The table below summarizes the health seeking behavior per survey zone in Turkana County.

² Klemm RDW, Harvey PWJ, Wainwright E, Faillace S, Wasantwisut, E. Micronutrient Programs: What Works and What Needs More Work? A Report of the 2008 Innocenti Process. August 2009, Micronutrient Forum, Washington, DC.

Table 37: First Point of seeking health assistance

	Turkana West		Turkana North		Turkana Central		Turkana South		County	
	count	%	count	%	count	%	count	%	count	%
Traditional healer	5	1.4%	0	0.0%	0	0.0%	1	.5%	6	0.7%
Community health worker	24	6.7%	17	11.4%	10	7.0%	1	.5%	52	6.2%
Private clinic/ pharmacy	22	6.2%	1	.7%	3	2.1%	5	2.7%	31	3.7%
Shop/kiosk	1	.3%	5	3.4%	0	0.0%	1	.5%	7	0.8%
Public clinic	253	70.9%	108	72.5%	124	86.7%	172	93.0%	657	78.8%
Mobile clinic	8	2.2%	3	2.0%	2	1.4%	1	.5%	14	1.7%
Relative or friend	2	.6%	1	.7%	1	.7%	0	0.0%	4	0.5%
Local herbs	11	3.1%	5	3.4%	2	1.4%	2	1.1%	20	2.4%
NGO/FBO	29	8.1%	7	4.7%	0	0.0%	0	0.0%	36	4.3%
others	2	.6%	2	1.3%	1	.7%	2	1.1%	7	0.8%
n	357		149		143		185		834	

A bigger population is currently seeking care in public facilities (78.8%) though a reduction from the same time last year (94.7%). Turkana South and Central are leading with the households seeking health care services at public health facilities while Turkana west has the least of the proportion seeking health care at the public health facilities. Community health workers are emerging as a major point of health seeking point by the population where Turkana North is leading.

4.3 Childhood Immunization, Vitamin A Supplementation and Deworming

4.3.1 Childhood Immunization

Kenya aims to achieve 95% under one immunization coverage by the end of third medium term plan (2018- 2022). 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. From the assessment, 97.8% of children were confirmed by scar to have been immunized on BCG³ an improvement from last years 94.8%. Table 32 - 36 below summarizes the coverage of the assessed 4 vaccines per survey zone in Turkana County.

Table 38: Child BCG immunization Coverage

		West	North	Central	South	County
	n	693	544	367	502	2106
Scar	Count	670	530	365	495	2060
	%	96.7%	97.4%	99.5%	98.6%	97.8%
No	Count	23	14	2	7	46

³The 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.

scar	%	3.3%	2.6%	0.5%	1.4%	2.2%
------	---	------	------	------	------	------

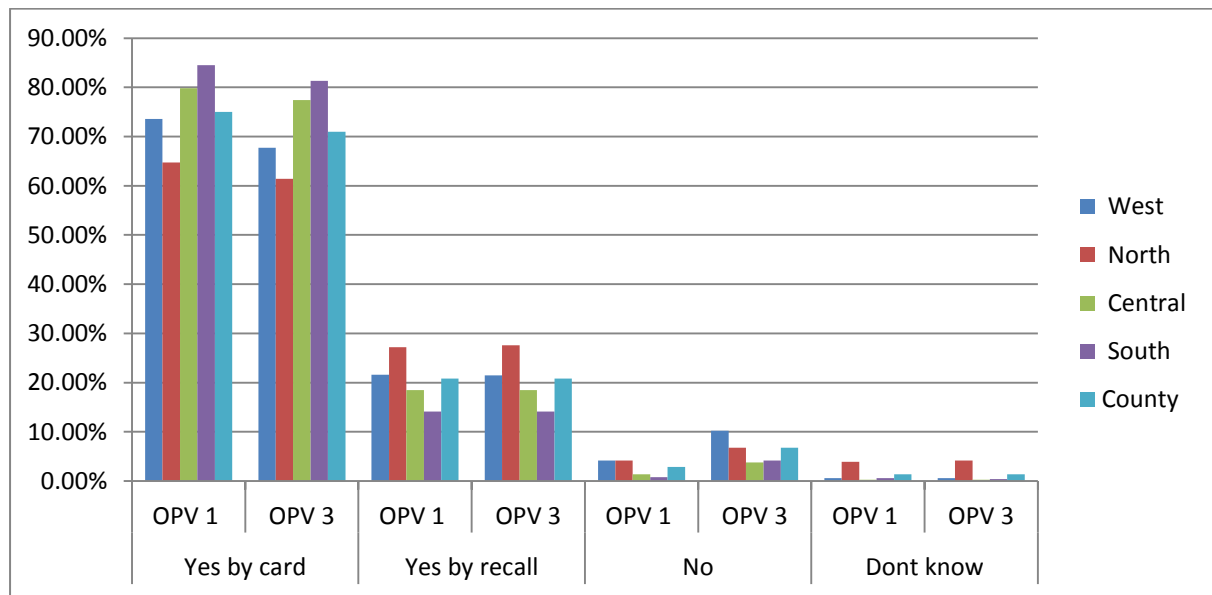


Figure 5: Child OPV 1 and 3 coverage

There was an improvement in OPV 1 and 3 antigens coverage in the county. Turkana South survey zone had the highest proportion having MCH cards which has always been the case. Turkana North survey zone continued to perform slightly lower than the other survey zones in terms of cards possession. Results are consistent with the national award given to Turkana as the best performing county in immunization in 2018.

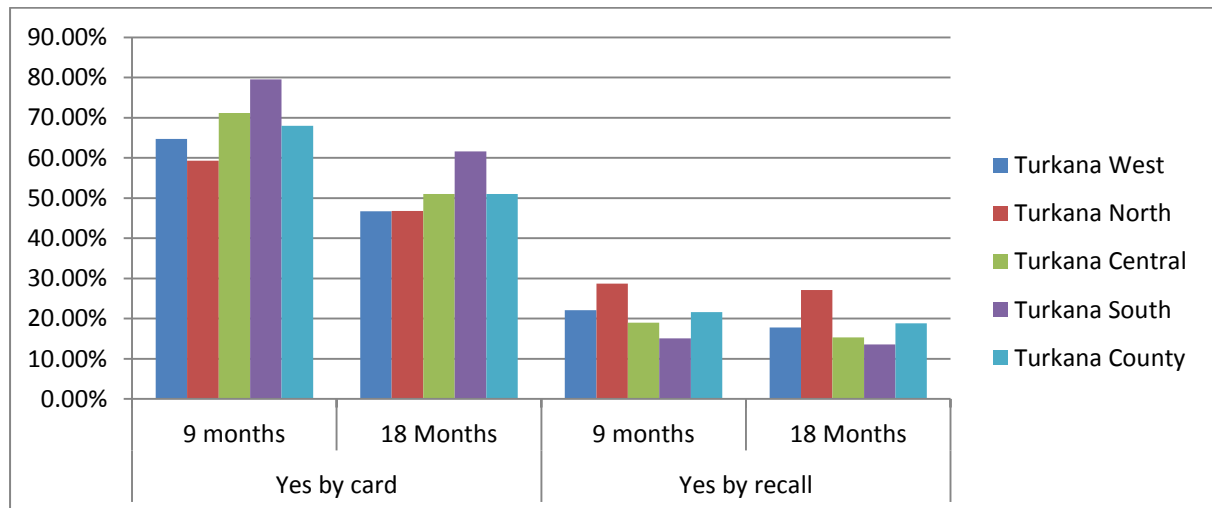


Figure 6: Child measles Vaccination coverage at 9 months and at 18 months

There was a general improvement for measles antigen coverage with the coverage by card at 9 months improving from 63.6% in June 2018 to 68% in June 2019 while measles at 18 months improved from 29.9% to 51%. Again Turkana South survey zone was the best in the two while Turkana North was the poorest performer.

4.3.2 Vitamin A supplementation

The Lancet (Child survival series) lists vitamin A supplementation among the key interventions achievable at a large scale that have proven potential to reduce the number of preventable child deaths each year⁴. Moreover, vitamin A supplementation is recognized as one of the most cost-effective interventions for improving child survival. Improving the vitamin A status of deficient children through supplementation enhances their resistance to disease and can reduce mortality from all causes by approximately 23 per cent⁵. Therefore, vitamin A supplementation is critical, not only for eliminating vitamin A deficiency as a public-health problem, but also as a central element for child survival.

To assess vitamin A supplementation, parents and caregivers were probed on whether children had been supplemented and 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 with sample of capsules commonly used in the county being shown to the caregiver.

According to the survey, 91.2% of the children aged 6- 11 months were supplemented with vitamin A at least once and improvement from June 2018 where it was 61%, and only 44.4% children aged 12 to 59 months who had been at least been supplemented twice as recommended by MOH policy which is also an improvement from 33.4% in 2018.. The performance of vitamin A supplementation especially among children 12-59 months was poor compared to the ministry of health target of 80%. Overall vitamin A supplementation coverage deteriorated improved in 2019 as compared to 2018. The figure below shows vitamin A supplementation coverage per survey zone in Turkana County.

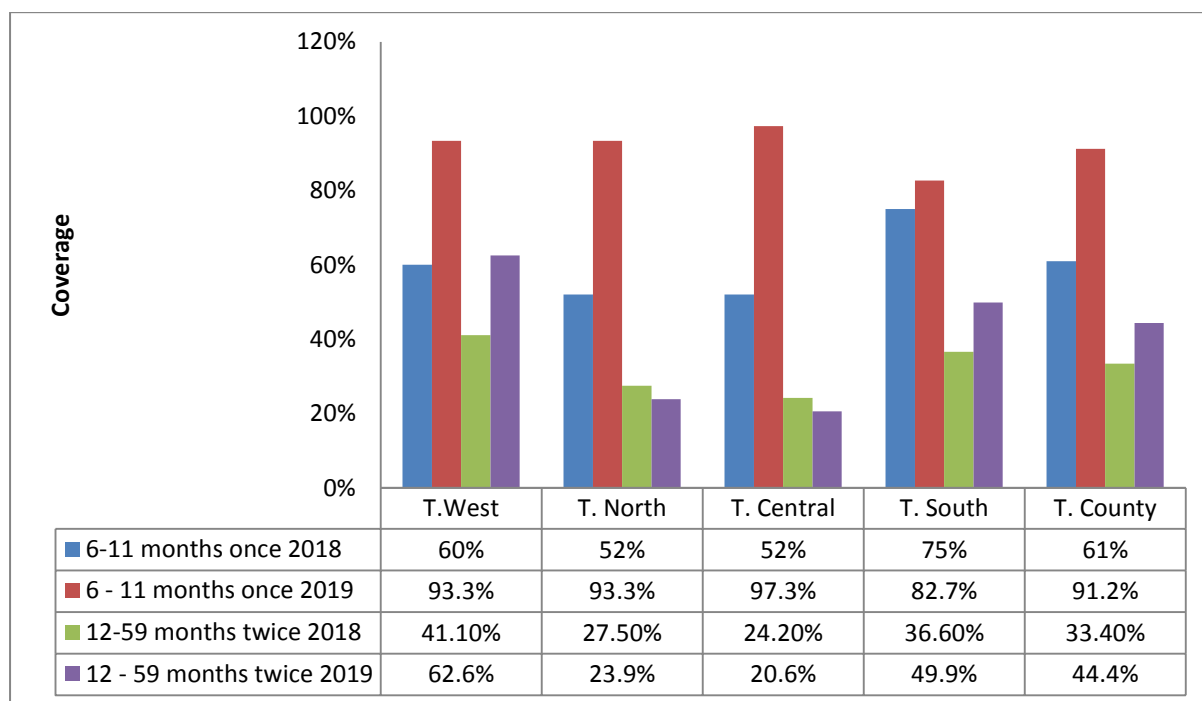


Figure 7: Vitamin A supplementation coverage

⁴ Jones, Gareth, et al., 'How Many Child Deaths can we Prevent this Year?', The Lancet, vol. 362, 5 July 2003, pp. 65-71.

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

3.7.3 De-worming

De-worming is important in controlling parasites such as 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.

De-worming was assessed for all children aged 12-59 months old on whether or not. About two thirds of the children had had been dewormed at least once.

Table 39: De-worming coverage among children 12-59 months old

		T West	T North	T Central	T South	T. County
	n	600	467	305	427	1799
Not dewormed	Count	141	185	113	97	536
	%	23.5%	39.6%	37.0%	22.7%	29.8%
Dewormed	Count	459	282	192	330	1263
	%	76.5%	60.4%	63.0%	77.3%	70.2%

Further de-worming was assessed for those who reported they had been dewormed on whether they had been dewormed once or twice in a year. Based on the findings, 40% of this category of children was de-wormed at least twice as per the WHO recommendations while 60% of the children were dewormed at least once. This was a slight improvement from 36.5% dewormed twice the same time last year. This coverage is extremely low compared to the Country's target of 80%. This could be attributed to low community awareness on the importance of deworming or low access to the service, thus the need for further research to confirm this. The table below shows coverage of de-worming per survey zone in Turkana County.

Table 40: De-worming coverage instance among children 12-59 months old

		T. Central	T. North	T. South	T. West	County
	n	459	282	192	330	1263
Dewormed once	Count	197	190	155	212	754
	%	43%	67%	81%	64%	60%
Dewormed twice	Count	262	92	37	118	509
	%	57%	33%	19%	36%	40%

5.0 MATERNAL NUTRITION

Good maternal nutrition is important for a successful pregnancy, child delivery and lactation. Pre-pregnancy nutrition influences a woman's ability to conceive, determines the fetal growth and development and the size of the fetus and its overall health as well as the health of the mother. Malnutrition prior and around pregnancy makes the placenta fail to develop fully therefore it cannot optimally nourish the fetus. Underweight and overweight women experience more complications during pregnancy and delivery than normal women. Anemic women are more likely to deliver low birth weight infants and low folic acid levels are associated with an increased risk of low birth weight and birth defects. Adequate weight gain during pregnancy is essential for foetal growth and desired weight gain is based on pre-pregnancy weight using BMI criteria and pre-conception nutritional status of the woman.

5.1.1 Women physiological status

Women in the survey were asked their current physiological status where by the following was found out; pregnant (9.1%), lactating (54.0%), pregnant and lactating (0.5%) respectively and neither pregnant nor lactating 36.4%. The table below details the physiological status of women of reproductive age across the four survey zones.

Table 41: Women Physiological status

		West	North	Central	South	County
Pregnant	count	53	42	25	39	159
	%	9.7%	10.3%	7.5%	8.3%	9.1%
Lactating	count	291	251	175	231	948
	%	53.4%	61.7%	52.4%	49.3%	54.0%
Pregnant and lactating	count	2	3	3	1	9
	%	0.4%	0.7%	0.9%	0.2%	0.5%
None of the above	count	199	111	131	198	639
	%	36.5%	27.3%	39.2%	42.2%	36.4%
Total	n	545	407	334	469	1755

5.2 Acute Malnutrition

5.2.1 Nutrition status of women of reproductive age

Maternal nutrition was assessed by measuring MUAC of all women of reproductive age (15 to 49 years) in all sampled households, irrespective of their physiological status. In the county 9.1% of the women of reproductive age were found to be malnourished (MUAC<21CM) and 90.9% were well nourished (MUAC >21CM).

Table 42: Nutrition status of women of reproductive age

		West	North	Central	South	County
	n	544	406	333	469	1752
MUAC< 21.0 CM	Count	46	37	28	48	159
	%	8.5%	9.1%	8.4%	10.2%	9.1%
MUAC 21.0 CM and above	Count	498	369	305	421	1593
	%	91.5%	90.9%	91.6%	89.8%	90.9%

5.2.2 Nutrition status of pregnant and lactating women

A further MUAC measurements analysis for those who reported to be pregnant or lactating was carried out where by 9.0% were malnourished (MUAC<21.0CM) and 91.0% were well nourished. Contrarily to expectations 9.2% of those who were neither pregnant nor lactating were malnourished.

Table 43: Nutrition status of Pregnant and lactating women

			West	North	Central	South	County
		n	544	406	333	469	1752
PLW	MUAC < 21.0 CM	Count	25	29	17	29	100
		%)	7.2%	9.8%	8.4%	10.7%	9.0%
	MUAC 21.0 CM and above	Count	320	266	185	242	1013
		%)	92.8%	90.2%	91.6%	89.3%	91.0%
			n	345	295	202	271
Non PLW	MUAC < 21.0 CM	Count	21	8	11	19	59
		%)	10.6%	7.2%	8.4%	9.6%	9.2%
	MUAC 21.0 CM and above	Count	178	103	120	179	580
		%)	89.4%	92.8%	91.6%	90.4%	90.8%
			n	199	111	131	198

Turkana South led to those pregnant and lactating women who were malnourished followed by Turkana North. The least malnourished was West.

5.3 Iron and Folic Acid Supplementation (IFAS)

According to WHO, daily IFAS is recommended as part of the Ante Natal Care (ANC) to reduce the risk of low birth weight, maternal anaemia, iron deficiency and neural tube defects commonly referred to as NTDs. WHO Guidelines recommends that all Pregnant Women should receive Iron and Folic Acid Supplementation (IFAS) regardless of anaemia status in countries where anaemia is >40%, and Kenya is one of them. IFA formulations are: 60mg iron /400µg folic acid and should be given as a combined pill throughout pregnancy in accordance with WHO, 2012. Iron and Folic Acid Supplementation (IFAS) has been shown to reduce Low Birth Weight, which is the primary cause of neonatal deaths. Folic Acid supplementation with 400µg reduces incidence of NTDS if taken before conception and within 28 days of pregnancy. Similarly, IFAS sustains strength during pregnancy and ensures enough blood stores in the body during and after delivery. IFAS is a component within Focused Antenatal Care (FANC).

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.

The assessment findings showed that 95.6% of women with children below 2 years across the county had been supplemented with iron folate supplements during their last pregnancy slight improvement from June 2018 where 94.4% had been supplemented. The results show a continued improvement compared to last 2 years.

Table 44: Caretakers with children aged 24 months and below who were supplemented with Iron Folic acid in their last pregnancy

		West	North	Central	South	County
	n	362	295	201	251	1109
Yes	Count	347	286	194	233	1060
	%	95.9%	96.9%	96.5%	92.8%	95.6%
No	Count	14	8	6	17	45
	%	3.9%	2.7%	3.0%	6.8%	4.1%
Dont Know	Count	1	1	1	1	4
	%	.3%	.3%	.5%	.4%	.4%

Out of those that reported to have consumed IFAS tablets in the last pregnancy, 52.9% reported to have taken for <90 days while 41.8% reported to have taken within >90 to 180 days; 5.3% of the women took IFAS for more than 180 days. Though an improvement from last year's survey this indicated poor utilization of IFAS considering the recommended 270 days of consumption. There is need to create more demand for IFAS among pregnant women through behavior change communication approaches.

Table 45: Number of days caretakers with children aged 24 months and below consumed IFAS in their last pregnancy

		West	North	Central	South	County
Day of IFAS Consumption	n	347	286	194	233	1060
< 90 Days	Count	149	208	122	82	561
	%	42.9%	72.7%	62.9%	35.2%	52.9%
90 to < 180 Days	Count	197	64	70	112	443
	%	56.8%	22.4%	36.1%	48.1%	41.8%
180 Days and above	Count	1	14	2	39	56
	%	.3%	4.9%	1.0%	16.7%	5.3%

5.4 Mosquito Nets Ownership and Utilization

5.4.1 Mosquito nets ownership

Overall, 55.4% of Turkana County residents owned mosquito net as illustrated in the table below. This is a reduction in mosquito ownership from June 2018 SMART survey where 63.2% owned mosquito nets. Turkana South led in mosquito net ownership while Turkana North had the least proportion of households who owned mosquito nets.

Table 46: Mosquito nets ownership

		Central	North	South	West	County
	n	405	505	524	565	1999
No mosquito net	Count	219	221	350	317	1107
	%	54.1%	43.8%	66.8%	56.1%	55.4%
Own Mosquito net	Count	186	284	174	248	892
	%	45.9%	56.2%	33.2%	43.9%	44.6%

5.4.2 Mosquito nets utilization

Out of the population who inhabited the surveyed households, 68% slept under mosquito nets the day preceding the survey. Though Turkana North had the least ownership of mosquito nets, they had the highest utilization of mosquito nets while Turkana south had the least utilization though they led on ownership.

Table 47: Mosquito nets utilization

		West	North	Central	South	County
	n	1440	1216	837	887	4380
Yes	Count	928	949	553	547	2977
	%	64.4%	78.0%	66.1%	61.7%	68.0%
No	Count	501	266	284	332	1383
	%	34.8%	21.9%	33.9%	37.4%	31.6%
Not Applicable	Count	11	1	0	8	20
	%	.8%	.1%	0.0%	.9%	.5%

6.0 WATER SANITATION & HYGIENE

Internationally water access and good sanitation is considered a human right.⁶ That means all individuals are entitled to have access to a specified 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 Stunting levels. Diarrhea, one of 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).

6.1 Main Source of Water

The respondents were asked where they were currently obtaining water for household use. In summary 32.2% and 19.0% were using boreholes and piped water systems respectively in the county according to June 2019 findings as compared to June 2018 survey that indicated 20.7% and 24.2% used boreholes and piped water systems respectively. These sources are considered relatively safe sources since they are protected. Other unprotected sources included tanker – truck 1.4% and water kiosk 4.9%. Other unprotected water sources included dug well (22.4%), surface water (19.9%) and spring (0.2%). It is worthwhile to note that Turkana Central 20.4%, North 25.3% and South 19.9% 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. These were the same sub-counties with the highest proportion of the same last year. Still Turkana West had the highest share of dug well though it reduced from 62% to 42.7%.

Due to 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. The table below summarizes main sources of water per survey zone.

Table 48: Main current sources of water

	Turkana West		Turkana North		Turkana Central		Turkana South		T County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	565		505		407		522		1999	
Piped water system	78	13.8%	127	25.1%	129	31.7%	309	59.2%	643	32.2%
Tube well/Borehole	105	18.6%	101	20.0%	110	27.0%	64	12.3%	380	19.0%
Dug well	241	42.7%	142	28.1%	50	12.3%	14	2.7%	447	22.4%
Spring	3	.5%	0	0.0%	0	0.0%	0	0.0%	3	.2%
Rain water	1	.2%	0	0.0%	0	0.0%	0	0.0%	1	.1%
Tanker- TRUCK	9	1.6%	1	.2%	0	0.0%	18	3.4%	28	1.4%

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

Water Kiosk	45	8.0%	6	1.2%	34	8.4%	13	2.5%	98	4.9%
Surface water (river, dam, pond)	83	14.7%	128	25.3%	83	20.4%	104	19.9%	398	19.9%
other	0	0.0%	0	0.0%	1	.2%	0	0.0%	1	.1%

6.1.1 Type of Piped water

Those households that had their main current household water sources as piped water were further asked to define the type of piped water they were using. In summary 49.3% of those using piped water were using a public tap shared by several households an increase from 41.1% last year, with only 15.9% against 12.2% in June 2018 having piped water into their dwelling. 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 49: Type of piped water

	Turkana West		Turkana North		Turkana Central		Turkana South		County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	78		127		129		309		643	
Piped into dwelling	1	1.3%	14	11.0%	32	24.8%	55	17.8%	102	15.9%
Piped to yard	15	19.2%	14	11.0%	23	17.8%	53	17.2%	105	16.3%
Piped to neighbour	7	9.0%	23	18.1%	40	31.0%	49	15.9%	119	18.5%
Public tap/stand pipe	55	70.5%	76	59.8%	34	26.4%	152	49.2%	317	49.3%

6.1.2 Type of Dug Well Used

Out of those that used water from water well in the county, 99.3% of them were relying on unprotected wells with only 0.7% of them using protected well which was presumed to be less exposed to contamination. This was an improvement compared to 96.2% and 3.8% respectively in June 2018.

Table 50: Type of dug well used

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
	241		142		50		14		447	
protected well	1	0.4%	2	1.4%	0	0.0%	0	0.0%	3	0.7%
Unprotected well	240	99.6%	140	98.6%	50	100.0%	14	100.0%	444	99.3%

6.2 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.

6.2.1 Distance to water sources

Analysis of distances to water sources indicated a slight improvement from 56.3% to 64.4% of the households obtained their water from sources less than 500m (less than 15 minutes walking distance),

26.9% took between 15 min to 1 hour (approximately 500m to 2km) while the rest (8.7%) walked as far as more than 2Km (1- 2hrs) to their water sources. The table below shows distance to water sources per survey zone in Turkana County.

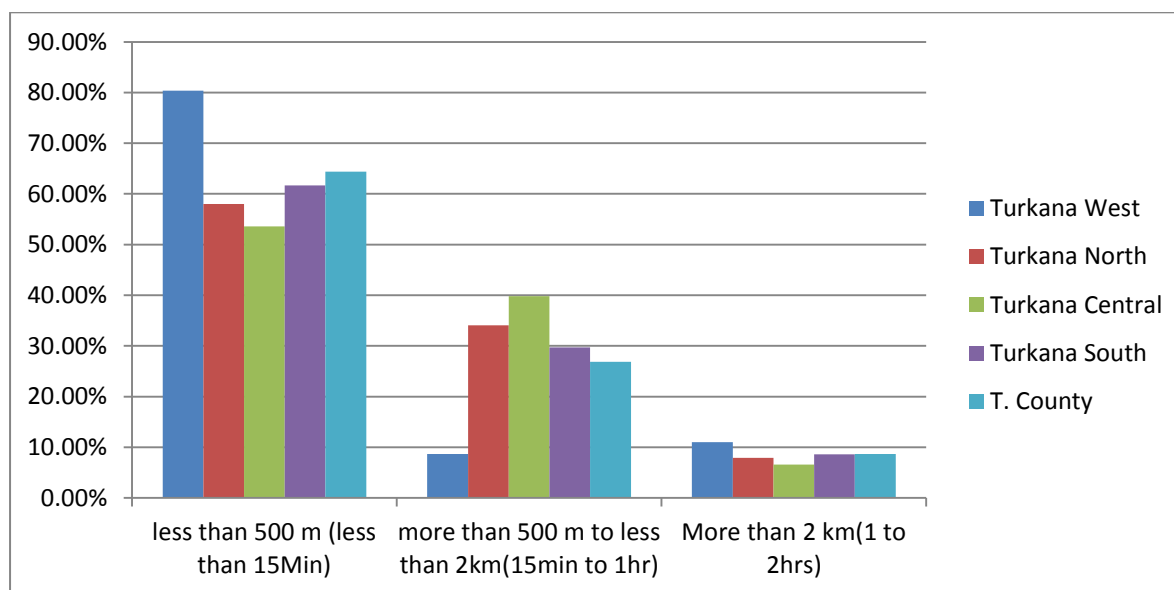


Figure 8: Distance to water sources

6.2.2 Queuing time to water sources

Almost three quarter (73.3%) of the households were not queuing for water, which indicates improved access to water for the households; this is an improvement from 66.2% at the same time last year.

Table 51: Proportion of Households Queuing for water

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	565		505		407		522		1999	
Yes	144	25.5%	78	15.4%	66	16.2%	245	46.9%	533	26.7%
No	421	74.5%	427	84.6%	341	83.8%	277	53.1%	1466	73.3%

Out of those that were queuing for water in the county, more than half (61.4%) (52.3%) of the respondents were waiting for less than 30 minutes while about a quarter (23.6%) of them were queuing for 30 and 60 minutes as indicated in the table below. This was an improvement from June 2018 where 52.3% were queuing for less than 30 minutes and 38.9% were queuing for 30-60 minutes.

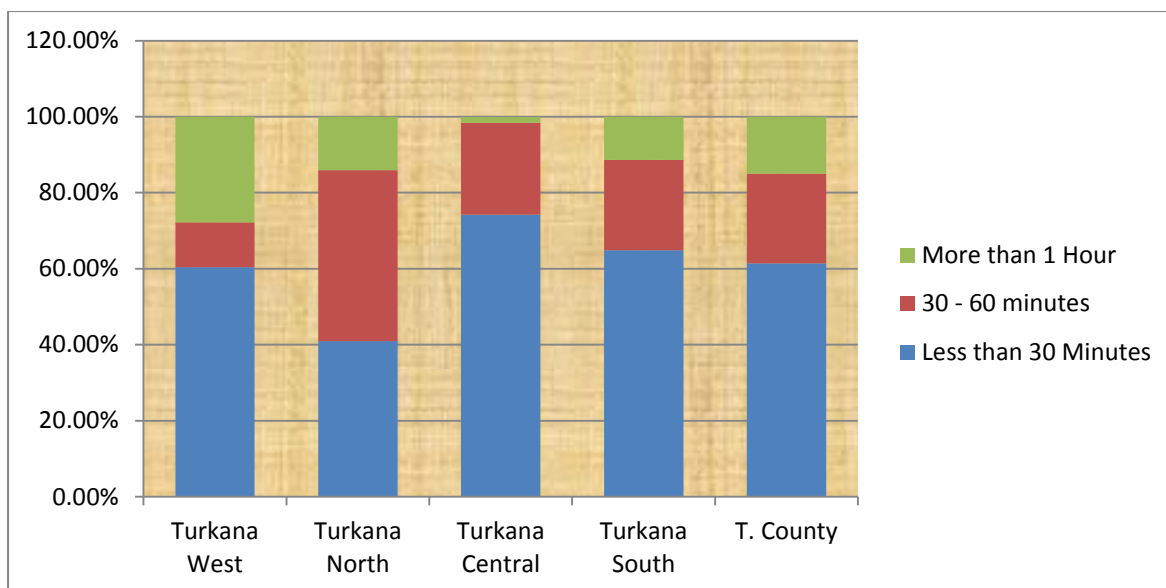


Figure 9: Queuing time at water source

6.3 Methods of drinking water treatment and storage

6.3.1 Household water treatment

Despite most of the households obtaining water from unsafe sources, only 18.4% of the households in the county were treating their water before drinking though an improvement from 11.4% same time last year. Turkana North (32.7%) had the highest proportion of the population that treated water as indicated in the table below.

Table 52: Drinking Water treatment

	Turkana West		Turkana North		Turkana Central		Turkana South		T. Central	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	565		505		407		522		1999	
Yes	84	14.9%	165	32.7%	52	12.8%	66	12.6%	367	18.4%
No	481	85.1%	340	67.3%	355	87.2%	456	87.4%	1632	81.6%

Majority of the households were treating through chemicals (62.9%) and traditional herbs unlike in June 2018 where boiling 56.8% and chemicals 44.3% were the leading treatment methods. This extremely low proportion of households that was treating drinking water, coupled with the low latrine coverage and high rates of open defecation could be one of the main contributors of malnutrition in the County as already explained above (relationship between undernutrition and poor WASH).

Table 53: Methods used for treating drinking water

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	91		216		55		72		434	
Boiling	24	26.4%	73	33.8%	12	21.8%	29	40.3%	138	31.8%
Chemicals (Chlorine, Pur, Water guard)	64	70.3%	134	62.0%	42	76.4%	33	45.8%	273	62.9%
Traditional herbs	3	3.3%	6	2.8%	0	0.0%	9	12.5%	18	41.5%

Pot filters	0	0.0%	3	1.4%	1	1.8%	1	1.4%	5	11.5%
-------------	---	------	---	------	---	------	---	------	---	-------

6.3.2 Storage of Drinking water

Out of the sampled households across the county, 81.5% were storing their drinking water in a closed container to preventing it from contamination. This is an improvement from June 2018 where only 63.5% were using closed containers to store their drinking water.

Table 54: Storage of drinking water

	Turkana West		Turkana North		Turkana Central		Turkana South		T County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	565		505		407		522		1999	
Open Container / Jerican	216	38.2%	66	13.1%	34	8.4%	54	10.3%	370	18.5%
Closed container / Jerican	349	61.8%	439	86.9%	373	91.6%	468	89.7%	1629	81.5%

6.4 Water Payment

There was a slight increase in the proportion paying for water for domestic use from 35.6% in June 2018 to 36.7% in June 2019. Turkana South had the highest proportion at 58.6% purchasing water for domestic use; while in June 2018 Turkana North had the highest proportion

Table 55: Payment for water

	Turkana West		Turkana North		Turkana Central		Turkana South		T County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	565		505		407		522		1999	
Yes	132	23.4%	144	28.5%	152	37.3%	306	58.6%	734	36.7%
No	433	76.6%	361	71.5%	255	62.7%	216	41.4%	1265	63.3%

There was minimal change of the proportion of households who paid for water on monthly bases comparing the June 2018 (61.8%) to June 2019 (62.4%). Turkana North led with the proportion paying water on monthly bases with 68.4%, followed by Turkana Central, with Turkana East having the least at 19.7%. 80.3% of the households in Turkana West were paying water for domestic use per a 20 L jerrican.

Table 56: Domestic water payment mode

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	132		144		152		306		734	
Per 20 Litre Jerican	106	80.3%	7	4.9%	48	31.6%	115	37.6%	276	37.6%
Per Month	26	19.7%	137	95.1%	104	68.4%	191	62.4%	458	62.4%

Out of those households that were paying for water per 20 L jerrican in the county, 51.1% 92.7% were purchasing water for less than KSh.10 per 20 L jerrican a decrease from 92.7% same time last year. This is an indication cost of water has increased considerably. The table below shows the percentage of households paying for water and cost of water per 20 liter jerrican per survey zone.

Table 57: Cost of water per 20 Liter jerrican

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	106		7		48		115		231	
<10 Ksh	68	64.2%	0	0%	1	2.1%	72	62.6%	141	51.1%
10 to 20	11	10.4%	7	100%	19	39.6%	42	36.5%	34	28.7%
>20 to 30	19	17.9%	0	0.0%	6	12.5%	0	0.0%	25	9.1%
>30	8	7.5%	0	0%	22	45.8%	1	0.9%	31	11.3%

On average households paying for water monthly were paying more than KSh.100 per month .Turkana Central paid the highest amount; that is KSh. 301.70 while Turkana West paid the lowest at KSh. 125 as illustrated in the table below.

Table 58: cost of water per month

	Turkana West	Turkana North	Turkana Central	Turkana South
	KSH.125.0	Ksh.192.8	KSh.301.7	KSh.252.9

6.5 Household water consumption

According to SPHERE standards, water consumption of 15 liters and above per person per day is considered adequate. Majority of those interviewed during the survey indicated they were using less than 15 liters per person per day, hence over 76.0% 70% of all household in all survey zones were not utilizing adequate amount of water. This is a deterioration from the June 2018 SMART survey where 70% of the households were using inadequate amount of water. Majority of these were in Turkana West, Turkana Central survey zones as seen in the table below.

Table 59: household water consumption per day per survey zone

	Turkana central		Turkana north		Turkana south		Turkana west		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	405		505		523		565		1998	
<15 liters /person /day	302	74.6%	364	72.1%	365	69.8%	487	86.2%	1518	76.0%
15 liters or more / person /day	103	25.4%	141	27.9%	158	30.2%	78	13.8%	480	24.0%

6.6 Hand washing

Hand washing with soap is the single most cost-effective intervention in preventing diarrhea diseases⁷. 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 82.4% of the caretakers were aware of the hand washing practices; an improvement from 81.6%. Turkana North had the least proportion of the households that were aware of hand washing practices as compared to the rest of the survey zones.

Table 60: Awareness of hand washing practices

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	565		505		407		522		1999	
Yes	518	91.7%	390	77.2%	332	81.6%	408	78.2%	1648	82.4%
No	32	5.7%	94	18.6%	41	10.1%	111	21.3%	278	13.9%
Don't Know	15	2.7%	21	4.2%	34	8.4%	3	.6%	73	3.7%

Assessment of hand washing in the 4 critical times in Turkana County indicated that most of the households were practicing hand washing before eating 94.4%, at least 79.7% after visiting the toilet, which is an improvement from 64.8%. About three quarters washed their hand before cooking and slightly less than half of the households after taking the baby toilet. Generally there were improved in hand washing practices in June 2019 compared to June 2018.

It is worthwhile to take note of the low proportions practicing hand washing after fecal disposal in all survey zones except Turkana North which had 64.1% washing their hands after fecal disposal. This practice predisposes most households to contamination.

Table 61: Hand washing at critical times

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	518		390		331		407		1646	
After toilet	361	69.7%	376	96.4%	296	89.4%	278	68.3%	1311	79.7%
Before cooking	399	77.0%	323	82.8%	251	75.8%	260	63.9%	1233	74.9%
Before eating	483	93.2%	358	91.8%	327	98.8%	387	95.1%	1555	94.5%
After taking children to the toilet	184	35.5%	250	64.1%	165	49.8%	78	19.2%	677	41.1%

6.6.1 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

⁷Borghji, J., Guinness, L., Ouedraogo, and J., Curtis, V. (2002): Is hygiene promotion cost-effective? A case study in Burkina Faso. *Tropical Medicine and International Health*, **7(11)**, 960-969.

trillion germs.⁸) Adults and children who practice proper hand washing will enjoy direct health benefits and other benefits.

There was an improvement in the proportion of care givers washing their hands at four critical times (before eating, before cooking, after visiting the toilet, after changing the baby diaper) from 16.0% in June 2018 to 28.6% in June 2019. This is an indication that still a large proportion of the community is exposed to contamination by diarrheal causing germs.

Table 62: Hand washing at all the four critical times

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	405		505		524		565		1999	
< 4 Instances	257	63.5%	279	55.2%	477	91.0%	415	73.5%	1428	71.4%
All 4 Instances	148	36.5%	226	44.8%	47	9.0%	150	26.5%	571	28.6%

6.6.2 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.⁹

The survey indicated that almost half (45.9%) of the households were using soap and water for hand washing, followed by 37.7% using only water. There is a slight reduction for those using soap from last year's SMART survey where (48.9%) had reported using soap and water. Hand washing without soap does not offer effective protection against germs.

Table 63: What is used for hand washing

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	518		390		332		408		1648	
Only water	229	44.2%	183	46.9%	82	24.7%	128	31.4%	622	37.7%
Soap and water	201	38.8%	119	30.5%	212	63.9%	224	54.9%	756	45.9%
Soap when i can afford it	83	16.0%	87	22.3%	36	10.8%	56	13.7%	262	15.9%
Traditional herbs	3	.6%	1	.3%	0	0.0%	0	0.0%	4	.2%
other	2	.4%	0	0.0%	2	.6%	0	0.0%	4	.2%

⁸ Franks AH, Harmsen HJM, Raangs GC, Jansen GJ, Schut F, Welling GW. Variations of bacterial populations in human feces measured by fluorescent in situ hybridization with group-specific 16S rRNA-targeted oligonucleotide probes. *Appl Environ Microbiol.* 1998; 64(9):3336-3345.

⁹ Cairncross, S. and Valdmanis V. (2006) Chapter 41: Water Supply, Sanitation, and Hygiene Promotion. In D.T. Jamison, J.G. Breman, A.R. Measham, et al. (Editors), *Disease Control Priorities in Developing Countries*, 2nd edition (771-792). Washington (DC): World Bank.

Table 64: Hand washing in HH with Children 0-23 Months

Practice	Central		North		South		West	
	n	%	n	%	n	%	n	%
Awareness of handwashing	164	87.20%	212	77.10%	194	77.00%	281	90.60%
Hand washing moments	N=164		N=212		N=193		N=281	
After toilet	148	90.20%	206	97.20%	135	69.90%	207	73.70%
Before cooking	125	76.20%	175	82.50%	130	67.40%	215	76.50%
Before eating	160	97.60%	197	92.90%	185	95.90%	264	94.00%
After taking child toilet	104	63.40%	145	68.40%	47	24.40%	116	41.30%
Below 4 critical moments	96	51.10%	145	52.70%	220	87.30%	213	68.70%
All 4 critical moments	92	48.90%	130	47.30%	32	12.70%	97	31.30%

There was improved knowledge to the care givers of children 0-23 months on hand washing from 81.7% to 90.6% in June 2019. The proportion of care givers washing hands at four critical times improved from 11.1% in June 2018 to 31.3% in June 2019. This is an indication interventions put in place to improve child caring behavior at community level like BFCI are bearing fruits.

6.7 Latrine Utilization

There was a slight improvement of households sanitation status with the June 2019 SMART survey finding that 75% of the households relieved themselves in the open bush (open defecation) against 78.5% in June 2018. Turkana West (83.7%) and North (80.4 %) recorded the highest Open defecation rate with Turkana South 58% and Central (77.9%) having the lowest but poor rate. The table below shows latrine ownership and utilization per survey zone.

Table 65: Latrine ownership and utilization

	Turkana West		Turkana North		Turkana Central		Turkana South		T. County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	565		505		407		522		1999	
Pit latrines	91	16.1%	70	13.9%	88	21.6%	178	34.1%	427	21.4%
Composting toilets	1	.2%	17	3.4%	0	0.0%	39	7.5%	57	2.9%
Hanging toilet / Hanging latrines	0	0.0%	11	2.2%	0	0.0%	1	.2%	12	.6%
No facility / bush / field	473	83.7%	406	80.4%	317	77.9%	303	58.0%	1499	75.0%
other	0	0.0%	1	.2%	2	.5%	1	.2%	4	.2%

7.0 FOOD SECURITY

According to FAO food and nutrition security is defined as 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. As of February this year, 572,021 women and children under five years are acutely malnourished in Kenya of which 54,264(9.5%) are in Turkana (KFSSG, 2019). This makes Turkana County one of the malnutrition high burden counties as it is position two in the country from Mandera, the county with the highest malnutrition caseload in the country. It is a fact that Turkana County is one of the most food secure counties in Kenya.

7.1 Cash transfer

Cash transfers are direct payments of money to people, either as an alternative or in addition to distributing items such as food, blankets and shelter kits. This can be done through physically giving cash, mobile money, vouchers for local suppliers or smart card transfers. These can be either conditional or unconditional cash transfers. Kenyan government has an established social protection program costing KSh.30 billion annual budget and covers 1,338,000 people. Kenya's cash transfer program offers a model for affordable and well-targeted social protection, facilitated by deep government commitment and sensible donor support.

Evidence shows that providing cash to vulnerable population and especially to women can reduce physical abuse, rates of child marriage and improve women's health and economic status. It is with this in mind that the survey sought to establish what proportion of the households interviewed was enrolled in any cash transfer program.

Table 66: Household enrolled which cash transfer programme

		Central	North	South	West	County
	n	63	157	95	95	410
HSNP	Count	43	100	63	64	270
	%	68.3%	63.7%	66.3%	67.4%	65.9%
Older persons program	Count	8	22	15	9	54
	%	12.7%	14.0%	15.8%	9.5%	13.2%
OVC Program	Count	7	29	4	13	53
	%	11.1%	18.5%	4.2%	13.7%	12.9%
People with severe disability	Count	1	0	1	0	2
	%	1.6%	0.0%	1.1%	0.0%	0.5%
WFP Linda lishe Bora	Count	1	2	0	0	3
	%	1.6%	1.3%	0.0%	0.0%	0.7%
Others	Count	1	0	11	5	17
	%	1.6%	0.0%	11.6%	5.3%	4.1%
Enrolled in more than 1	Count	1	4	0	2	7
	%	1.6%	2.5%	0.0%	2.1%	1.7%

About a fifth (20.5%) of the surveyed households was enrolled in different cash transfer programme with 1.7% having been in more than one program. The main cash transfer was HSNP were 65.9% of the households were enrolled.

7.2 Food access and consumption

7.2.1 Dominant foods and food groups consumed by households and women

In the county weighted averages the top most food groups consumed by the respondents are cereals, oil & fats, , condiments, sweets, pulses, vegetables, milk & dairy product meat and fruits in that orders among others. This is shown in the table below.

Table 67 : Food groups consumed by respondents in the last 24 hours

	Cereals	Vegetables	Roots and Tubers	Fruits	Meat	Eggs	Fish	Pulses	Milk and Dairy	Oils and Fats	Sugars	Condiments
n=1999	59.4%	34.1%	3.9%	6.3%	14.7%	1.4%	5.9%	35.9%	26.0%	53.5%	47.7%	48.5%

7.2.2 Household Dietary Diversity (HDD)

Household dietary diversity assessment in the June 2019 SMART survey was based on a 24 hour recall period. At the data collection, 16 food groups as described in FAO 2010 guideline were used. The groups were combined at the analysis stage to come up with 10 food groups.

The HDD is meant to provide an indication of household economic access to food, thus items that require household resources to obtain, such as condiments, sugar and sugary foods, and beverages, are included in the score. Individual dietary diversity scores aim to reflect nutrient adequacy. Studies in different age groups have shown that an increase in individual dietary diversity score is related to increased nutrient adequacy of the diet. Dietary diversity scores have been validated for several age/sex groups as proxy measures for macro and/ or micronutrient adequacy of the diet.

All the study areas showed a considerable deterioration from the June 2019 SMART survey although there was an improvement in Turkana Central survey zone where the proportion of households consuming more than 5 food groups increased by 7.5%.. Turkana North showed the poorest household dietary diversity with only 6.1% consuming more than 5 food groups. Overall about 1/5 of the households in the county consumed more than five food groups justifying the high child under nutrition in the county. The figure below details the analysis.

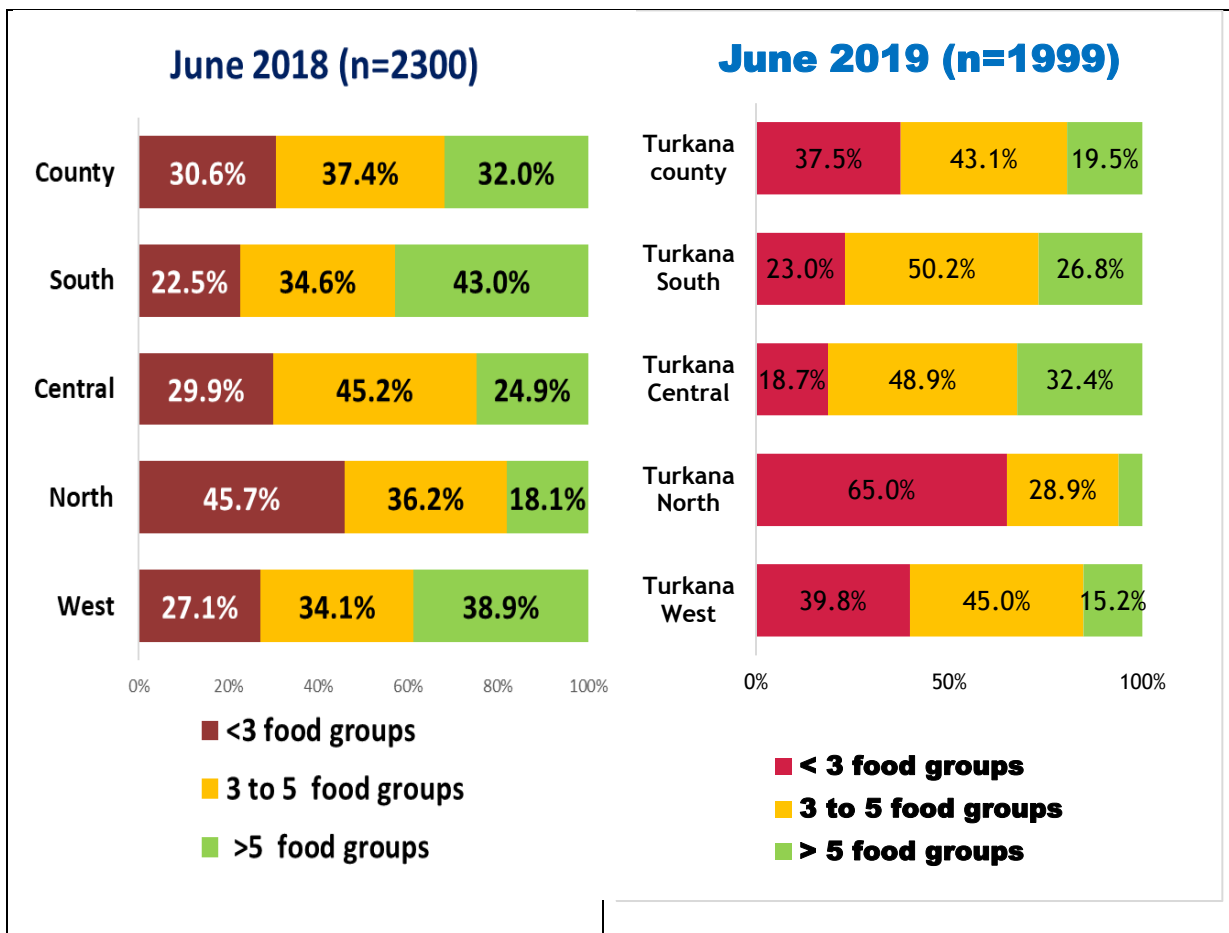


Figure 10: Household Dietary Diversity Score based on 24 hours recall for June 2018(n=2300)

Figure 11: Household Dietary Diversity Score based on 24 hours recall for June 2019 (n=1999)

Figure 10: Household Dietary Diversity Score based on 24 hours recall for June 2018

7.2.3 Women Dietary diversity score

The Minimum Dietary Diversity for WRA (MDD-W) indicator is a food group diversity indicator that has been shown to reflect one key dimension of diet quality; micronutrient adequacy. MDD-W is a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten defined food groups the previous day or night. 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). The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality. Unlike in June 2018 where Turkana South survey zone had the highest proportion of women consuming 5 food groups and more in June 2019 Turkana Central had the highest proportion consuming more than 5 food groups while Turkana North survey zone had the least.

Table 68: Table 7069: Minimum MDD-W Jun 2018

Survey zone	<5 food groups	5 and more food groups
Turkana South	73.20%	26.80%
Turkana Central	67.60%	32.4%
Turkana West	84.80%	15.20%
Turkana North	93.90%	6.1%
Turkana County	80.50%	19.5%

As indicated in figure below, the most consumed food was cereals, oils and fats, sugars, condiments pulses vegetables and milk and milk and dairy products in that order in all the survey zones except in Turkana North where vegetables consumption was very low. Turkana Central had the highest dietary diversity followed by Turkana South and West while Turkana North had the poorest.

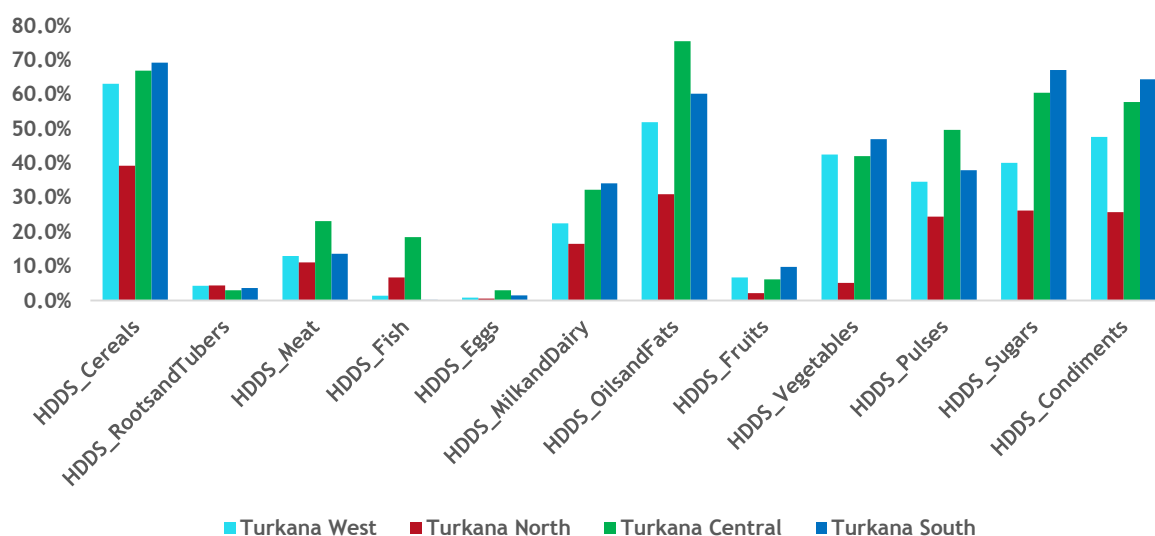
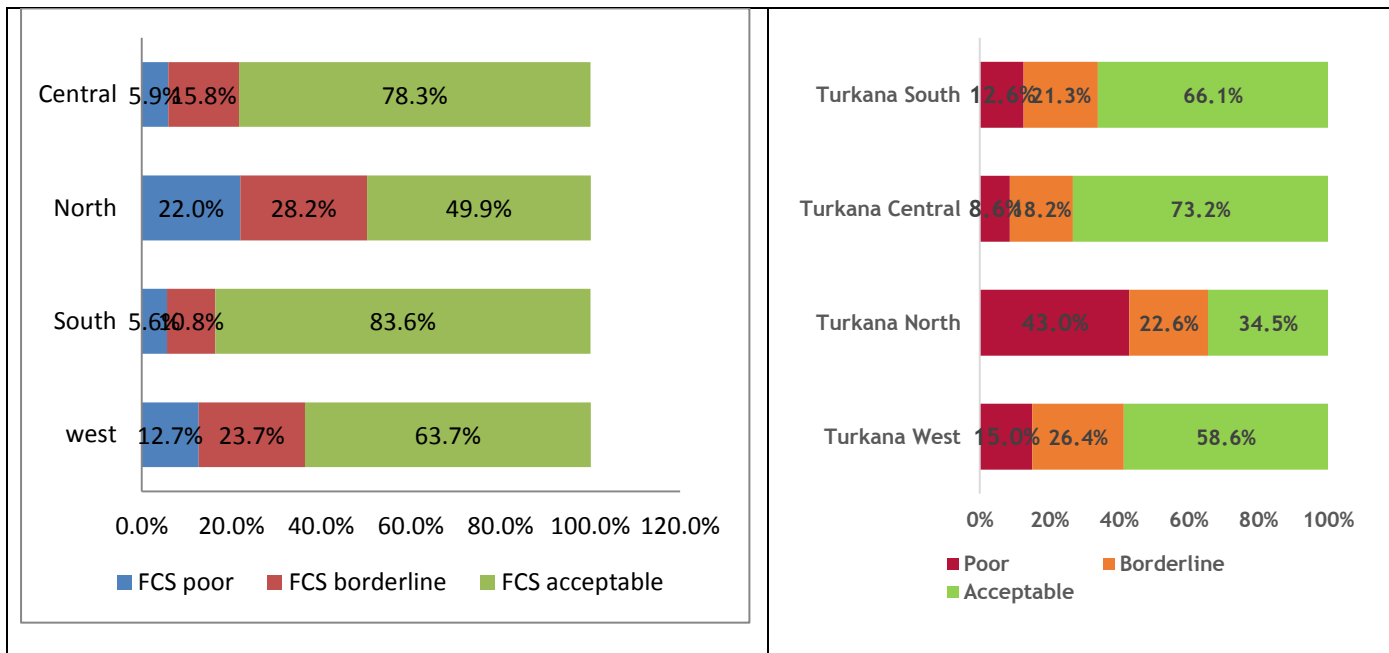


Figure 11: Food groups consumed (Women)

7.2.4 Food Consumption Score Classification

The Food Consumption Score (FCS) is a composite score based on dietary diversity, food frequency and relative nutrition importance of different food group (WFP 2015). FCS is a proxy for household food security and is designed to reflect the quality of people’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.



Jun 2018 Food Consumption Score (n=2228)

Jun 2019 Food Consumption Score (n=1999)

Figure 12: Food Consumption Score for June 2018 and 2019

Only a third of households in Turkana North survey zone had acceptable FCS and indication that food insecurity was worse in the survey zone. This is supported by the high GAM level in the zone.

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

Further analysis done on diet quality based on vitamin A rich, iron rich and protein rich diets shows majority of households which were classified under poor and borderline categories consumed none of vitamin A and iron rich foods that is 95.3% and 56.4% respectively, the same trend as June 2018. 67.1% of these households sometimes consumed protein rich foods with only 8.7% consuming protein frequently. Among the households that were categorized as having acceptable consumption, 92.2% sometimes consumed protein rich foods while 24.5% and 88.3% did so in case of iron rich and vitamin A rich foods respectively. This was deterioration in Iron rich food consumption compared to July 2018 where 92.8% were frequently or sometime consuming the food.

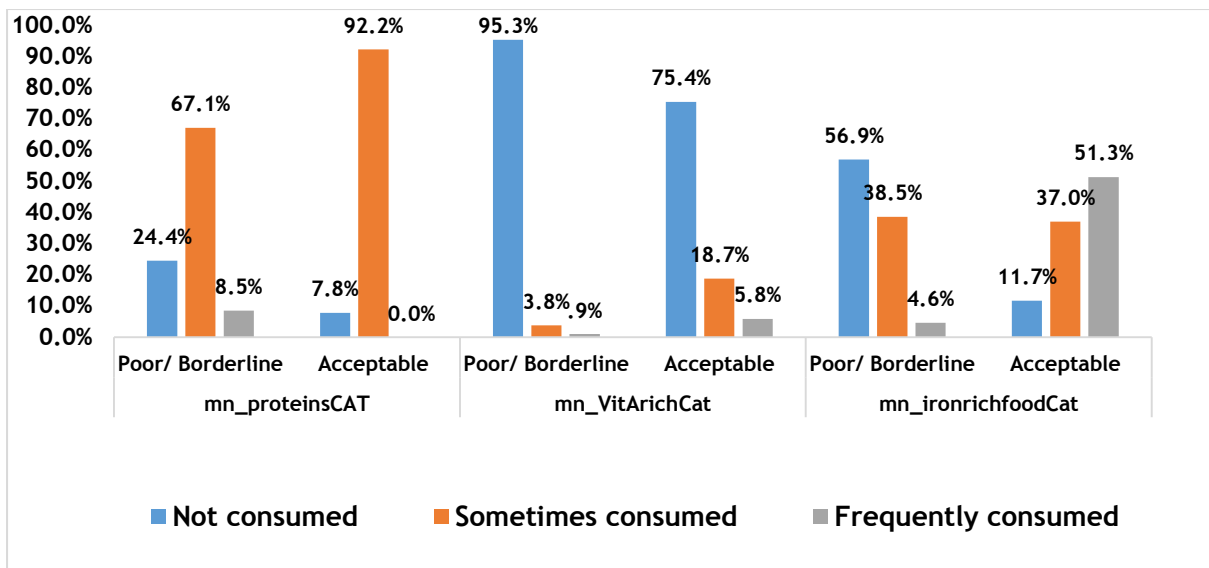


Figure 13: Consumption of protein, Vitamin A and Hem iron rich foods per food groups (n=1999)

From the graph below, Protein rich foods, staple, fats/oils and iron rich foods were the most consumed foods in all survey zones. Vitamin A rich foods, fruits and vegetables were the least consumed in all survey zones. This explains the micronutrients deficiency levels specifically vitamin A among the vulnerable population.

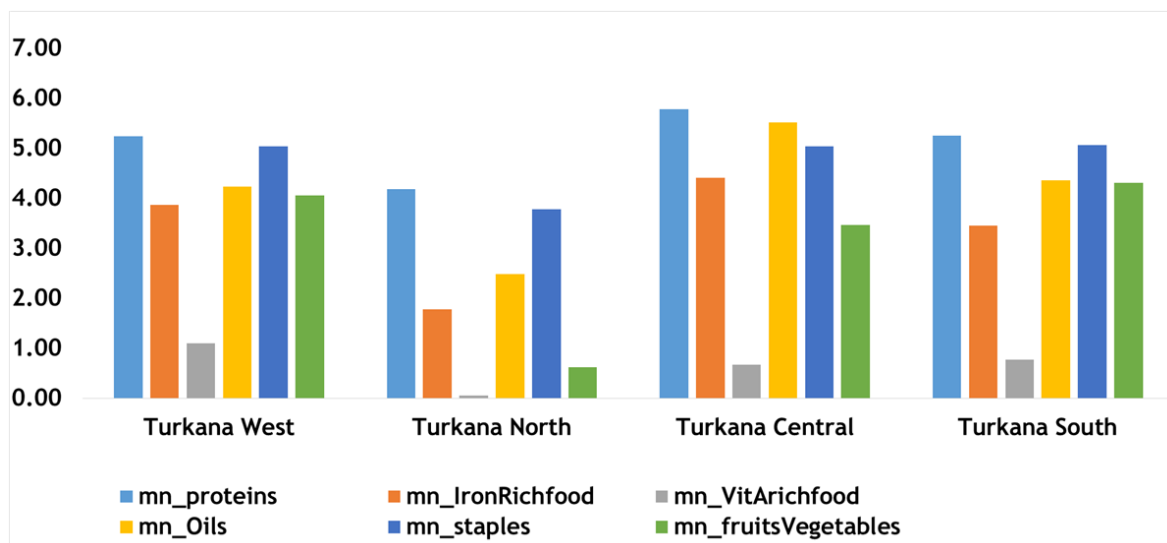


Figure 14: Number of days food was consumed showing micronutrient consumption

7.2.6 Food fortification

Food fortification and nutrient supplementation have been strategies being used to fill the micronutrient gaps in the household diets. There was slight improvement on the knowledge and awareness of food fortification with 17.9% (357) households having knowledge on food fortification in June 2019 compared to 13.6% (312) who had food fortification knowledge in June 2018. This was still too low considering the vital role of food fortification in the community.

Table 70: Food fortification Knowledge and awareness

	Turkana West	Turkana North	Turkana Central	Turkana South	County
n	565	505	407	522	1999
Yes	17.7%	12.3%	10.1%	29.5%	17.9%
No	82.3%	87.7%	89.9%	70.5%	82.1%

Turkana south led with proportion of household with fortification knowledge while Turkana Central had the minimum. It was expected Turkana central could be having the highest proportion considering their proximity to the largest urban centre.

The sources of information on fortification were seen to be scarce and inadequate to reach all caregivers. This is shown in the table below.

Table 71: Source of fortification message

Channel		West	North	Central	South	County
On a TV show	n	4	3	3	12	22
	%	3.9%	3.3%	5.7%	7.1%	5.3
Health talk	n	56	59	34	111	260
	%	54.4%	64.8%	64.2%	66.1%	62.7
Radio	n	39	26	10	31	106
	%	37.9%	28.6%	18.9%	18.5%	25.5
Road show	n	1	0	3	7	11
	%	1.0%	0.0%	5.7%	4.2%	2.7
In a training session attended	n	3	3	3	7	16
	%	2.9%	3.3%	5.7%	4.2%	3.9
	n	103	91	53	168	415

Table 72: Respondent's knowledge on the food fortification logo

		West	North	Central	South	County
Yes	n	15	50	35	88	188
	%	15.0%	80.6%	85.4%	57.1%	52.7%
No	n	85	12	6	66	169
	%	85.0%	19.4%	14.6%	42.9%	47.3%
Total	n	100	62	41	154	357

Out of those who had heard of food fortification only half had seen the fortification logo, hence need for more awareness.

Table 73: Main current source of Maize flour for the household

		West	North	Central	South	County
Bought from shops, supermarkets etc	n	307	349	114	202	972
	%	54.3%	69.1%	28.0%	38.7%	48.6%
Maize is taken for Milling at nearby posho mill	n	168	70	202	222	662
	%	29.7%	13.9%	49.6%	42.5%	33.1%
Bought from nearby posho mill	n	89	45	61	97	292
	%	15.8%	8.9%	15.0%	18.6%	14.6%
others	n	1	41	30	1	73
	%	.2%	8.1%	7.4%	.2%	3.7%
Total	n	565	505	407	522	1999

About half of the households in the surveyed area had shops and supermarkets as the main source of household maize flour an indication that the households were benefiting from mandatory fortification of flour. The other half of the households was getting flour from posho mill. This could present an opportunity to find a low cost way to fortify flour at posho mill or household levels. Only 11.7% of the household knew the fortification status of their maize flour.

7.2.7 Coping Strategy Index (CSI)

The Coping Strategies Index is a simple and easy-to-use indicator of household stress due to a lack of food or money to buy food. The CSI is based on a series of responses (strategies) to a single question: “What do you do when you don’t have adequate food, and don’t have the money to buy food?” The CSI combines, the frequency of each strategy (how many times was each strategy adopted) and the severity (how serious is each strategy). 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 2012).

About 2/3 of the households (73.2%) reported to have had an incident in the last 7 days where they had no adequate food or money to buy food. This was an indication of serious food insecurity in the county.

The table below summarizes the coping strategies adopted by the households in such instances. The CSI for June 2018 was 21.8 against the current of 21.06 indicating no improvement in food security in the county for the period.

Table 74: Coping strategy index

Coping strategy	Proportion of HHs (n=1779)	Frequency score (0-7)	Severity score (1-3)	Weighted score =Freq*weight	
				Previous year (June 2018)_	Current year (June 2019)
Rely on less preferred	1424	3.06	1	3.27	3.06

& less expensive food					
Borrow food	1283	2.30	2	4.58	4.59
Limit portion sizes	1378	2.68	1	2.92	2.68
Restrict consumption of food by adults for young children to eat	1289	2.58	3	7.5	7.75
Reduced number of meals	1381	2.97	1	3.53	2.97
Total Coping Strategy Score				21.8	21.06

8.0 CONCLUSION

There was a general deterioration of both children and women nutritional compared to the same period in 2018. According to the current SMART survey results and using the new WHO malnutrition cut-offs, the county nutritional status was classified as VERY HIGH (IPC Phase 4) with weighted global acute malnutrition (GAM) of 25.6%. There was a general deterioration of nutrition status across the four survey zones with Turkana South and North zones having a significant change in GAM compared to June 2018 SMART results. The same was seen in children underweight where there was a general deterioration with Turkana North survey zone showing a significant deterioration. The same deterioration was seen with MUAC and stunting though none was significant.

Slightly lower proportion (41.4%) of children was reported to be sick in the county than the same time last year (43.4%). All survey zones had a decrease in the proportion of children who had been sick in the last two weeks preceding the survey except Turkana Central where there was an increase. ARI/Cough was the leading cause of morbidity in all survey zones except in South unlike in 2018 where Fever like malaria was the leading cause of morbidity. Major illnesses affecting children in the County were, ARI/Cough (40.5%) fever like malaria (37.0%), and watery diarrhea 17.9%. Morbidity can be linked with high wasting in the County. High number of diarrhea cases in the county can be attributed to poor performance in WASH indicators. Majority of the sick (85.6%) sought assistance when sick a slight decline from (87.6%) in 2018. A bigger proportion of the sick (78.8%) sought assistance from public health facilities.

About half of the surveyed households obtained their drinking water from unsafe water sources. Turkana South survey zone led with households who got their drinking water from safe sources (71.5%) while Turkana West had only 32.4% of their household getting water from safe sources. Majority of the households was getting their water from a distance less than 500m from their dwelling with only ¼ queuing for water. The proportion of households practicing open defecation was 75% an improvement from 78.5 % the same period last year. Only a fifth (18.4%) of the households were treating their water however 81.5% had good water storage containers. Majority of care givers reported to be washing their hands (82.4%) though few (28.6%) of them washed their hands in the 4 critical moments. Like last year Turkana North led with proportion of care givers washing hands during the 4 critical moments at 44.8% an improvement from 38% while Turkana West had the least

at 26.5% though an improvement from 11%. Care giver of children less than 2 year had a higher proportion washing hands at four critical times.

There was a general improvement in vitamin A supplementation and deworming where 6 to 11 months category improvement from 61% in 2018 to 91.2%, while 12 to 59 months category improvement from 33.4% twice a year to 44.4% in June 2019 tough below 80% target. Only 29.8% of the eligible children were reported to have been deworming of which 40% met the recommendation of twice a year. This calls for innovations to reach the 80% target for the county. Generally immunization coverage was good for all antigens with the lowest coverage in BCG being 97%. However coverage decreased with the age of the child with measles at 18 months coverage being 69.8% which was an improvement from 52.3%. Improvement cut across all survey zones. The same as last year, Turkana South was doing well in availability of MCH cards while Turkana North was poorest. Majority of diarrhoea cases were supplemented with zinc with lowest being Turkana West at 85.4%.

Maternal nutrition status was based on MUAC measurement among women of reproductive age as well as iron and folic acid consumption among mothers of children below two years. The prevalence of malnutrition among pregnant and lactating women increased from 6.6% to 9.0%. Overall, 9.1% of women of reproductive age were having a MUAC of <21cm an improvement from 13.0% in June 2018. Almost all the ANC women (95.6%) were supplemented with iron and folic acid (an improvement from 94.4% in 2018) during their immediate previous pregnancy, the proportion that consumed iron and folic acid for the recommended duration remained quite low. None of them consumed the supplements for the recommended 270 days and 47.1% consumed the supplements for 180 days and above an improvement from 31.9%.

Unlike last year there was a notable deterioration of food security indicator in the County. The number of households consuming more than 5 food groups decreased drastically compered to June 2018. The effects of the current year drought eroded the efforts made in last year's recovery.

In conclusion it can be noted that the key drivers of poor nutrition status still remains the same, that is; Chronic food insecurity, High prevalence of childhood illness, Inadequate dietary diversity, Poor access to safe water, Poor hygiene practices, Inadequate incomes and assets for the households.

9.0 RECOMMENDATIONS

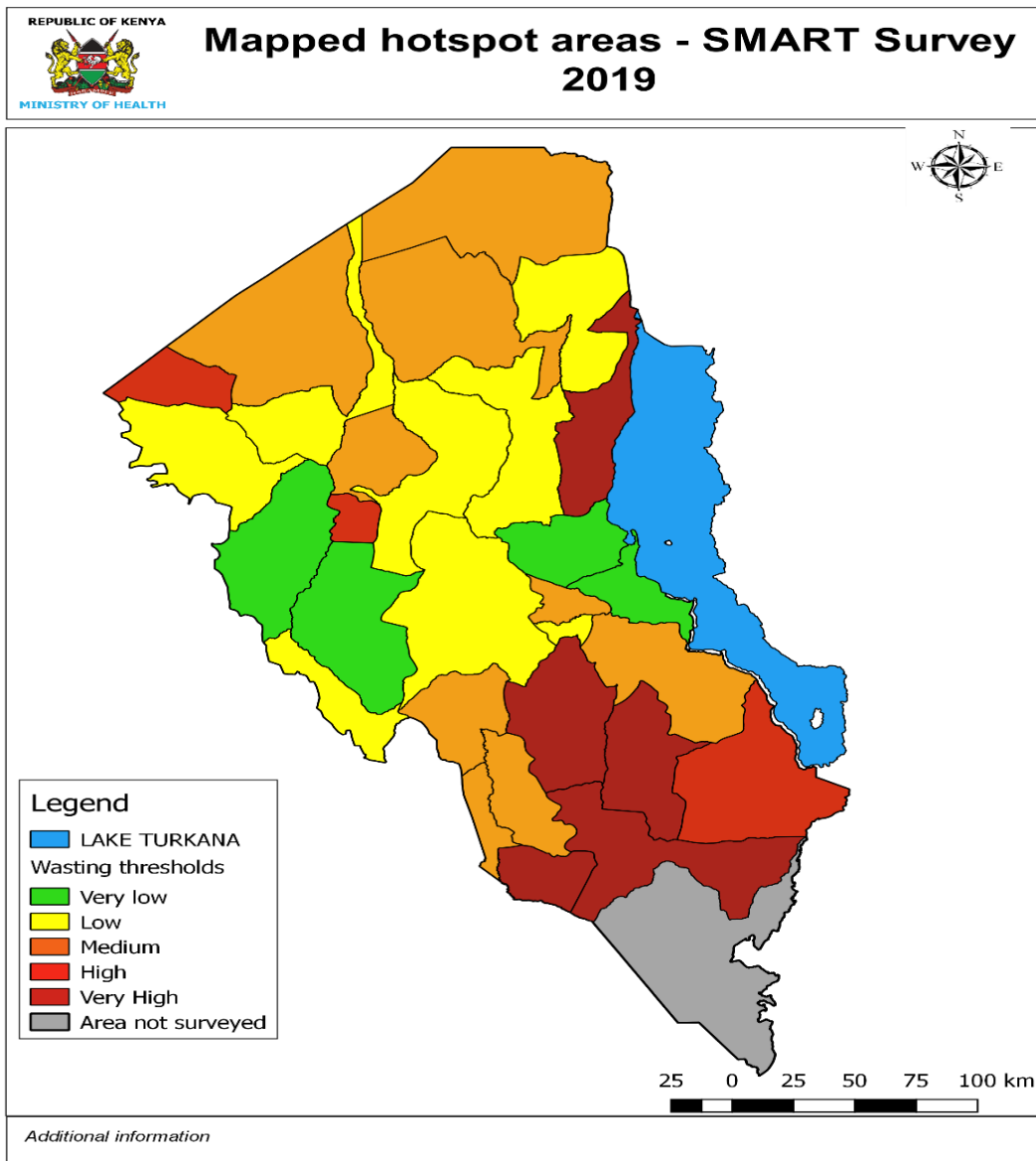
Table 75: Recommendation

S/No	Action	By whom	By when	Status
1	Scale up service delivery in to hard to reach areas in the county in addition to the ongoing integrated outreaches	MoH, NDMA and nutrition partners	Immediately	Integrated outreaches launched in March 2019 have slowed down due to resource constraints. Need to scale-up.
2	Remap and design a sustainable strategy for integrated outreaches in hard to reach areas	MoH and nutrition partners	immediately	-
3	Continue with creation of linkages for acutely malnourished children and women to existing social safety net programs	MoH, NDMA and nutrition partners	Immediately	-Unconditional cash transfers and HSNP targeting households with malnutrition cases on-going -NICHE project to target such

				households
4	Manage and strengthen supply chain to ensure appropriate nutrition commodities are consistently available at health facility level especially for MAM supplies	MoH (nutrition& public health), UNICEF-KEMSA, WFP and nutrition partners	Continuous	There has been a smooth pipeline for RUTF through LMIS roll-out but MAM pipeline has been inconsistent
5	Scale up of WASH services in areas that are most affected by drought and poor sanitation practices	MoH, MoW, Oxfam, DOL, UNICEF and nutrition partners	Immediately	-Hygiene promotion (CLTS/SANNUT) and prepositioning of water storage containers done but coverage still low -Rehabilitation of water infrastructure on-going
6	Continue 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	-IMAM surge scaled up to 56 facilities done. -BFCI rolled out in 15 community units done but coverage still low
8	Conduct IMAM programme coverage survey	MoH and Nutrition Partners	December 2019	
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	-The MSP formed under the chairmanship of CeC agriculture- CRF being finalized and anchored in CIDP -CHS Bill passed and CHVs to be remunerated.
10	Ensure active follow up of implementation of emergency response plans and adjust based on evidence and learning	MoH, NDMA, UNICEF and nutrition partners	Weekly/ Monthly	On-going

10.0 APPENDIX

10.1 Appendix 1: Mapped out hotspots- June 2019



10.2 Appendix ii. Summary of plausibility report

	Indicator	Acceptable values/range	CENTRAL	NORTH	SOUTH	WEST
1	Flagged data (% of out of range subjects)	<7.5	0 (0.8 Excl)	0 (0.9% excel)	0 (0.2 Excel)	0 (1.4% Excel)
2	Overall sex ratio (significant CHI square)	>0.001	0 (p=0.875Excl)	0 (p=0.145Excel)	0 (p=0.929 Excel)	0 (p=0.909 Excel)
3	Age ratio (6-29vs 30-59) Significant CHI square	>0.001	4(p=0.006 Accep)	4 (p=0.001 Accep)	2 (p=0.099 good)	0 (p=0.300 Excl)
4	Dig. prevalence score-weight	<20	0 (5 Excel)	0 (5 Excel)	0 (5)	0 (4 Excel)
5	Dig. prevalence score-height	<20	0 (6 Excel)	0 (5 Excl)	0 (4 cel)	0 (7 Exc)
6	Dig. prevalence score-MUAC	<20	2(8 Good)	0 (3 Excel)	0 (6 Excel)	0 (4 Excl)
7	Standard Dev..height WHZ	>0.80	0 (1.00 Excel)	0 (1.02 Excell)	0 (1.01 Excel)	0 (0.98 Excel)
8	Skewness WHZ	<±0.6	0 (-0.01 Excel)	0 (-0.18 Excel)	0 (-0.02 Excel)	0 (-0.13 Excel)
9	Kurtosis WHZ	<±0.6	1 (-0.25 Good)	0 (-0.05 Good)	0 (-0.14Excel)	0 (0.01 Excel)
10	Poisson WHZ -2	>0.001	0 (p=0.066 Excel)	3 (p=0.002 Accept)	3 (p=0.001 Accept)	0 (p=0.291 Excl)
11	OVERALL	<24	7% Excellent	7% Excellent	5% Excellent	0 % Excellent

10.3 Appendix iii: Movement plan with sampled clusters-South (South and East)

TEAMS	8/6/19	9/6/19	10/6/19	11/6/19	11/6/19	12/6/19	13/6/19
1	T	Nayanaekatan CL-24	Kadokochin CL-34	Natorobwuo A CL-14	Kambi Baraka CL-8	Kasukokorio CL-6	Kaenyumae CL-16
2	R	Kaibole CL-25	Namaniko CL-30	Nalemkais CL- 4	Ngabakan D CL-9	Ngimeyana CL-23	IDP A CL-15
3	A	Ngimeyana CL-26	Natangikala CL-35	Kailoseget CL-11	Check Point CL-10	Loupwala CL-2	Kenya Posta CL-19
4	V	Akatorongot CL-27	Nachibil CL-33	Nalipamun CL- 13	Kaharun CL-21	Lorus Aliban CL-20	Lochwaa B CL-18
5	E	Huruma CL-28	Karenyang CL-31	Naoyeregae A CL-3	Naperobei CL-22	Bethlehem CL-5	Kaaroge CL-17
6	L	Epetamuge CL-29	Windmill CL-32	Market A CL-12	Namakats CL-7	Kangakipur CL-1	

10.4 Appendix vi: Movement Plan with sampled clusters Turkana Central and Loima

DATES	T1	T2	T3	T4	T5
8 th June	Travelling	Travelling	Travelling	Travelling	Travelling
9 th June 2019	Lojokobwo-18	Nakatiyan-19	Edome-20	Nakuomor-21	Natapae-22
10 th June 2019	Komio-23	Ameyan Angikukus-24	Nakoriokoruo-25	Nakamane-28	Lomunyenakwaan-27
11 th June	Lokorikipi-26	Daraja-1	Natirae-2	Nasiritei-7	Lolupe-8
12 th June	Nawokodou-9	Kangirisae-10	Nakudet-11	Akatorongot-12	Lorokipi-16
13 th June	Carlifornia B-17	Nasingila-15	Nayanaeangikalalio-14	Agule aloote-13	Kadunyangole-5
16 th -June	Kakemera-3	Market-4	Apetet-6		

10.5 Appendix iv: Movement Plan with sampled clusters Turkana west

DATE	TEAM	WARD	COMMUNITY UNIT	VILLAGE	Clusters
8/6/2019	1	Lokichoggio	Lokichoggio	Jerusalem	21
	2	Lokichoggio	Lokichoggio	Ngikangolak	22
	3	Nanam	Lopiding	Lootom 1	32
	4	Nanam	Mogila	Naimoit	33
	5	Nanam	Nanam	Ngimerisua	34
	6	Songot	Lorimiet	Nasoo	36
	7	Songot	Loteteleit	Napeikar	37
9/6/2019	1	Kakuma	Nadapal	Towokayeni	12
	2	Kakuma	Nadapal	Ngikwakais	11
	3	Kalobeyei	Natira	Apak	17
	4	Kalobeyei	Kalobeyei	Nakilekipus	16
	5	Songot	Songot	Lotem	38
	6	Kakuma	Nadapal	Loyal	9
	7	Kakuma	Nadapal	Nagis	10
10/6/2019	1	Songot	Lokangae	Nakalalioit	35
	2	Letea	Katelemot	Locharakan	18
	3	Letea	Loreng	Ngilikid-kaal	19
	4	Letea	Tulabalany	Center 1	20
	5	Lopur	Lopur	Lochor- edome	23
	6	Lopur	Lopuski	Kangitesiroi	24
	7	Lopur	Namon	Lokiripeto/Namon	25
11/6/2019	1	Nakalale	Naduat	Ngamoru-akwak	31

	2	Nakalale	Losajait	Losait 3	28
	3	Nakalale	Lolupe	Lomeguro	27
	4	Nakalale	Naduat	Kalecher	29
	5	Nakalale	Lokore	Pelekech	26
	6	Kakuma	Tarach	Ngiremieto	15
	7	Nakalale	Naduat	Lomeguro	30
12/6/2019	1	Kakuma	Tarach	Naburoe	14
	2	Kakuma	Tarach	Asikiriait	13
	3	Kakuma	Nadapal	Kiwanja-ndege	8
	4	Kakuma	Morungole 2	Nakwasinyen	7
	5	Kakuma	Morungole 2	Lomunyenapus	6
	6	Kakuma	Morungole 2	America	5
	7	kakuma	Morungole 1	Ngimungetuk	4
13/6/2019	1	Kakuma	Morungole 1	IDP	1
	2	Kakuma	Morungole 1	Kabokorit	2
	3	Kakuma	Morungole 1	Napeibabat	3
	RESERVED CLUSTERS				
		Kakuma	Morungole 1	Leggio	RC
		kakuma	Nadapal	Komdei	RC
		Kalobeyei	Oropoi	Kimkoe	RC
		Letea	Letea	Ngikengoi	RC

10.6 Appendix v: Movement Plan with sampled clusters Turkana North and Kibish

DAY	w	UNITS	VILLAGE	CLUSTER NO	TEAM NO
1	9/6/2019	Lowarengak	IDP	9	1
		Katiko	Nayanae epu	8	2
		Kataboi	Epur	7	3
		Lowarengak	Namorotot	10	4

		Nachukui	Corner lejo	11	5
		Todonyang	Todonyang plains	34	6
2	10/6/2019	Lokitaung	Nadokoro	13	1
		Lokitaung	Shabaa	14	2
		Kachoda	Lomareng	12	3
		Kaaleng	Band forest	15	4
		Kaalem	Akope	6	5
		Edoot	Natete	28	6
3	11/6/2019	Kaitede	Kanamethe	25	1
		Kaitede	Natodomeri mobile	26	2
		Lokomarinyang	Ekalale	23	3
		Lokomarinyang	Nakwaperit	24	4
		Koyasa	Kalokok	31	5
		Napak	Kambi mawe	29	6
4	12/6/2019	Napak	Natumakalei	32	1
		Napak	Ngikalokak	33	2
		Lokitele	Lobulono	30	3
		Nayok	Nakilinga	22	4
		Nayok	Maendeleo	21	5
		Nayok	Central one	20	6
5	13/6/2019	Kapoko	Rukruk	19	1
		Kapoko	Aldat	18	2
		Kapoko	Nayanae Amoni	17	3
		Kapoko	Akoros	16	4
		Edoot	Kokuro A	27	5
		Mlimatatu	Elelea	5	6
6	14/6/2019	Kaeris	Ejem	1	
		Kaeris	Kambi Lejo	2	
		Kaeris	Nawoitrong	3	
		Kanakurudio	Marole	4	

10.7 Appendix vii: Weight for Height Z scores \pm SD-Malnutrition hot spots- June 2019

Survey zone	Cluster	SAM	MAM	GAM	WARD	Community UNIT	Village
Central	1	0.00%	11.80%	11.80%	Kalokol	Kalokol	Daraja
Central	3	7.70%	23.10%	30.80%	Kanamkemer	Kanamkemer	Kakemera
Central	4	7.10%	14.30%	21.40%	Kanamkemer	Kanamkemer	Market

Central	5		50.00%	50.00%	Kanamkemer	Lolupe	Kadunyangole
Central	6	0.00%	18.80%	18.80%	Kanamkemer	Nawoithorong	Apetet
Central	7	0.00%	11.80%	11.80%	Kangathotha	Eliye	Nasiritei
Central	8	0.00%	18.80%	18.80%	Kangathotha	Lochor Akeny	Lolupe
Central	10		60.00%	60.00%	Kerio Delta	Kangirisai	Kangirisae
Central	11	14.30%	28.60%	42.90%	Kerio Delta	Lorenglup	Nakudet
Central	13	12.50%	31.30%	43.80%	Township	kawalase	Agulealoote
Central	14	0.00%	21.40%	21.40%	Township	kawalase	Nayanaeangkalalio
Central	15	0.00%	11.10%	11.10%	Township	nakwamekwi	Nasingila
Central	17	0.00%	22.20%	22.20%	Township	township	Carlifonia b
Central	18	10.00%	20.00%	30.00%	Lobei Kotaruk	kangalita	Lojokobwo
Central	19		41.70%	58.40%	Lobei Kotaruk	lobei	Nakatiyan
Central	21	0.00%	31.30%	31.30%	Loima	namoruputh	Nakuomor
Central	24	0.00%	38.50%	38.50%	Turkwel	lomil	Ameyan, Ngikukus
Central	25	0.00%	23.10%	23.10%	Turkwel	lorugum	Nakoriokorio
Central	26	0.00%	25.00%	25.00%	Turkwel	nameyan	Lokorikipi
Central	27	0.00%	18.20%	18.20%	Turkwel	napeililim	Lomunyen akwan
Central	28	5.90%	11.80%	17.70%	Turkwel	turkwel	Nakamane
North	1	0.00%	15.20%	15.20%	Kaeris	Kaeris	Ejem
North	2	4.80%	19.00%	23.80%	Kaeris	Kaeris	Kambi lejo
North	3	0.00%	38.10%	38.10%	Kaeris	Kaeris	Nawoitrong
North	4	0.00%	20.00%	20.00%	Kaeris	Kanakurudio	Marole
North	5	0.00%	23.10%	23.10%	Kaleeng/ Kaikor	Milimatatu	Elelea
North	6	34.80%	65.20%	100.00%	Lake Zone	Kaalem	Akope
North	7	6.70%	40.00%	46.70%		Kataboi	Epur
North	8	0.00%	18.20%	18.20%	Lake Zone	Katiko	Nayanae Epuu
North	9	8.30%	50.00%	58.30%	Lake Zone	Loarangak	IDP
North	10	15.80%	57.90%	73.70%	Lake Zone	Loarangak	Namarotot
North	11	6.70%	26.70%	33.40%	Lake Zone	Nachukui	Corner Lesu
North	12	0.00%	37.50%	37.50%	Lapur	Kachoda	Lomaren
North	13	0.00%	15.40%	15.40%	Lapur	Lokitaung	Nadukorau
North	14	9.10%	27.30%	36.40%	Lapur	Lokitaung	Shabaha
North	15	20.00%	30.00%	50.00%	Kaleeng	Kaaling	Banforest
North	16	0.00%	43.80%	43.80%	Kaleeng/ Kaikor	Ilemkajokon	Akoros
North	17	11.10%	44.40%	55.50%	Kaleeng/ Kaikor	Ilemkajokon	Nayanaeamoni
North	18	22.20%	22.20%	44.40%	Kaleeng/ Kaikor	Kapoko	Aldat
North	19	0.00%	16.70%	16.70%	Kaleeng/ Kaikor	Kapoko	Rukruk
North	20	4.80%	9.50%	14.30%	Kaleeng/ Kaikor	Nayook	Central 1
North	21	11.10%	22.20%	33.30%	Kaleeng/ Kaikor	Nayook	Maendeleo 2

North	24	14.30%	42.90%	57.20%	Kibish	Lokamarinyang	Ekalale
North	25	0.00%	20.00%	20.00%	Kibish	Lokamarinyang	Nakwalepit
North	26	11.10%	33.30%	44.40%	Kibish	Naitese	Kanaethe Mobile
North	27	0.00%	18.80%	18.80%	Kibish	Naitese	Natodomeri Mobile
North	28	9.50%	28.60%	38.10%	Lapur	Edoot	Kokuro a
North	29	25.00%	56.30%	81.30%	Lapur	Edoot	Natete
North	30	14.30%	38.10%	52.40%	Lapur	Lotikile	Lobulono
North	31	6.70%	40.00%	46.70%	Lapur	Naita	Kalokok
North	32	0.00%	23.10%	23.10%	Lapur	Natukumalei	Lokwanya
North	33	16.70%	33.30%	50.00%	Lapur	Natukumalei	Ngikalokak
North	34	0.00%	18.80%	18.80%	Lapur	Todonyang	Todonyang plain[kambi mpya]
South	1	0.00%	20.00%	20.00%	Kalapata	Kangakipur	Kangakipur
South	2	31.60%	63.20%	94.80%	Kalapata	Nakalei	Loupwala
South	3	13.60%	31.80%	45.40%	Kaptir	Kaptir	Naoyeregae A
South	4	0.00%	15.40%	15.40%	Kaptir	Nakwamoru	Nalemkais
South	5	10.00%	40.00%	50.00%	Katilu	Kalemgorock	Bethlehem
South	6	6.70%	20.00%	26.70%	Katilu	Kalemgorock	Kasukokorio
South	7	0.00%	23.10%	23.10%	Katilu	Kalemgorock	Namakat
South	8	5.90%	29.40%	35.30%	Katilu	Katilu	Kambi baraka
South	9	6.30%	6.30%	12.60%	Katilu	Katilu	Ngabakan D
South	10	0.00%	12.50%	12.50%	Katilu	Lokapel	Check point
South	11	0.00%	18.20%	18.20%	Lobokat	kainuk	Kailoseget
South	13	8.30%	33.30%	41.60%	Lobokat	kainuk	Nalipamun
South	14	7.10%	14.30%	21.40%	Lobokat	kainuk	Natorobwuo A
South	15	18.80%	43.80%	62.60%	Lokichar	kamarese	IDP A
South	16	18.20%	63.60%	81.80%	Lokichar	lochoremoit	Kaenyumae
South	17	13.30%	40.00%	53.30%	Lokichar	lochwa	Kaaroge
South	18	0.00%	20.00%	20.00%	Lokichar	lochwa	Lochwaa B
South	19	7.10%	28.60%	35.70%	Lokichar	lokichar	Kenya Posta
South	20	7.70%	53.80%	61.50%	Lokichar	naposmoru	Lorus Aliban
South	21	0.00%	17.60%	17.60%	katilu	lopur	Kaharun
South	22	15.40%	30.80%	46.20%	katilu	lopur	Naperobei
South	23	5.90%	29.40%	35.30%	Lokichar	Kapese	Ngimeyana
South	24	11.10%	33.30%	44.40%	Katilia	Elelea	Nayanaekatan
South	25	22.20%	55.60%	77.80%	Katilia	Katilia	Kaibole
South	26	7.70%	46.20%	53.90%	Katilia	Katilia	Ngimeyana
South	27	20.00%	70.00%	90.00%	Lokori Kochodin	Lokori	Akatorongot
South	29	0.00%	18.80%	18.80%	Lokori Kochodin	Lokwii	Epetamuge
South	30	0.00%	41.70%	41.70%	Lokori Kochodin	Lokwii	Namaniko
South	31	20.00%	40.00%	60.00%	Lokori Kochodin	Lotubai	Karenyang
South	33	8.30%	25.00%	33.30%	Lokori	Morelem	Nachibil

					Kochodin		
South	34	0.00%	20.00%	20.00%	Lokori Kochodin	Nakukulas	Kadokochin
South	35	0.00%	58.30%	58.30%	Lokori Kochodin	Nakukulas	Natangikala
West	1	0.00%	15.80%	15.80%	Kakuma	Morungole 1	IDP
West	3	11.80%	35.30%	47.10%	Kakuma	Morungole 1	napeipapat
West	4	19.20%	30.80%	50.00%	Kakuma	Morungole 1	ngimng'etuk
West	5	6.30%	18.80%	25.10%	Kakuma	Morungole 2	america
West	6	5.00%	25.00%	30.00%	Kakuma	Morungole 2	lomunyanapus
West	7	0.00%	28.60%	28.60%	Kakuma	Morungole 2	nakwasinyen
West	8	5.60%	16.70%	22.30%	Kakuma	Nadapal	kiwanja ndege
West	9	4.80%	19.00%	23.80%	Kakuma	Nadapal	loyal
West	10	0.00%	25.00%	25.00%	Kakuma	Nadapal	nagis
West	11	33.30%	40.00%	73.30%	Kakuma	Nadapal	ngikwakais
West	12	15.00%	25.00%	40.00%	Kakuma	Nadapal	towokayeni
West	13	0.00%	33.30%	33.30%	Kakuma	Tarach	asikiriait
West	14	3.80%	19.20%	23.00%	Kakuma	Tarach	naburoe
West	15	0.00%	29.40%	29.40%	Kakuma	Tarach	ngiremieto
West	16	0.00%	23.50%	23.50%	Kalobeiyei	Kalobeyei	nakilekipus
West	18	4.00%	12.00%	16.00%	Letea	Katelemot	locharakan
West	19	4.00%	8.00%	12.00%	Letea	loreng	ngilikid-kaal
West	20	2.30%	16.30%	18.60%	Letea	tulabalany	centre 1
West	21	18.80%	31.30%	50.10%	Lokichoggio	lokichoggio	jerusalem
West	22	14.30%	57.10%	71.40%	Lokichoggio	lokichoggio	ngikangolak
West	23	10.50%	42.10%	52.60%	Lopur	lopur	locheredome
West	24	0.00%	33.30%	33.30%	Lopur	lopusiki	kangitesiroi
West	25	0.00%	17.60%	17.60%	Lopur	Namon	Lokiripeto(Namon)
West	26	15.00%	25.00%	40.00%	Nakalale	lokore	Pelekech
West	28	15.40%	38.50%	53.90%	Nakalale	losijait	Losait 3
West	29	0.00%	21.10%	21.10%	Nakalale	naduat	Kalecher
West	30	0.00%	23.10%	23.10%	Nakalale	naduat	Lomeguro
West	31	0.00%	30.80%	30.80%	Nakalale	naduat	Ngamor-akwaK
West	32	13.30%	40.00%	53.30%	Nanam	loping	lotoom 1
West	33	10.00%	10.00%	20.00%	Nanam	mogila	naimoit
West	34	0.00%	40.00%	40.00%	Nanam	Nanam	ngimerisua
West	36	11.10%	22.20%	33.30%	Songot	lorimiet	nasoo
West	37	0.00%	16.70%	16.70%	Songot	lotiteleit	napeikar
West	38	3.30%	26.70%	30.00%	Songot	Songot	lotem

10.8 Appendix viii: Revised June 2018 SMART survey questionnaire

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

2. Household Demographics										
2.1	2.2a	2.2b	2.3	2.4	2.5a go to 2.5b, c and d before proceeding to 2.6	2.6	2.7a	2.7b	2.8	2.10a
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 to 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	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

								displacements) 10=Insecurity/v iolence 11-No school Near by 12=Married 13. Pregnant/ taking care of her own child 14. attending Duksi/Madrasa 15. too young for school 13=others (specify).....			2.11
< 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										
	2.5c. Total number of ALL people in the Household including children		2.5d Total number of children under 5 years (0-59 months) _____	2.5e Total number of children below 2 years (0-23 months) _____							

--	-------	--	--	--	--	--	--	--	--

2.9	How many mosquito nets does this household have? _____ (Indicate no.) go to question 2.10a before proceeding to question 2.10b	
2.1 1	Main Occupation of the Household Head – HH. (enter code from list) 1=Livestock herding 2=Crop farming/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 _____
2.1 3	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 _____
2.1 5	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
---	---	---	---

4.	5.	6.	7.	8. CHILD HEALTH AND NUTRITION (ONLY FOR CHILDREN 6-59 MONTHS OF AGE; IF N/A SKIP TO SECTION 3.6) Instructions: <i>The caregiver of the child should be the main respondent for this section</i> 3.1 CHILD ANTHROPOMETRY 3.2 and 3.3 CHILD MORBIDITY <i>(Please fill in ALL REQUIRED details below. Maintain the same child number as part 2)</i>											
----	----	----	----	---	--	--	--	--	--	--	--	--	--	--	--

	C	D	E	F	G	H	I	J	K	L	M	N	3.2 a	3.2 b	3.3 a	3.3 b	3.3 c
Relationship of the respondent with the child	SEX FemaleF MaleM	Exact Birth Date	Age in months	Weight (KG) XX.X	Height (CM) XX.X	Oedema Y= Yes N= No	MUAC (cm) XX.X	Was child weighed at birth? 1. Yes 2. No 3. Don't know If no or don't know skip to	How much did the child weigh?	Child's weight verified by: 1=Health card 2=Recall 1	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.BSP 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) <i>See case definitions above</i>	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/	If the <u>water</u> in the (2) W the child 1. O 2. Z su or Show probe this co check drugs(c mother

	sample)		year	by Card?	drugs for worms in the past year? (show Sample)				4 = Do not know	Recall 3 = No 4 = Do not know
01										
02										
03										
04										

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

3.5 Enrolment in an MNP program		3.6 Consumption of MNPs			
3.5.1.a Is MNP program available (program running in the past six month) in the survey area? Yes =1 No = 2 If 'No' skip section 3.5 and 3.6 and go to 3.7					
3.5.1. b Is the child enrolled in the MNP	3.5.2 If the child, 6-23months, is not enrolled for MNP, give	3.6.1 Has the child	3.6.2 If yes, how frequent do you give MNP to your	3.6.3 If no, since when did you stop feeding MNPs to	3.6.4 What are the reasons to stop feeding your child with MNPs?

	<p>program?(show the example of the MNP sachet)</p> <p><i>(record the code in the respective child's number)</i></p> <p>Yes =1</p> <p>No=0</p> <p>If no go to 3.5.2, If yes go to section 3.6.1</p>	<p>reason. <i>(Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)</i></p> <p>Do not know about MNPs1</p> <p>Discouraged from what I heard from others2</p> <p>The child has not fallen ill, so have not gone to the health facility3</p> <p>Health facility or outreach is far4</p> <p>Child receiving therapeutic or supplementary foods5</p> <p>Other reason, specify6</p> <p><i>Skip to 3.7</i></p>	<p>consumed MNPs in the last 7 days?(shows the MNP sachet) <i>(record the code in the respective child's number)</i></p> <p>YES = 1</p> <p>N0= 0</p> <p><i>If no skip to 3.6.3</i></p>	<p>child? <i>(record the code in the respective child's number)</i></p> <p>Every day1</p> <p>Every other day2</p> <p>Every third day3</p> <p>2 days per week at any day4</p> <p>Any day when I remember.....5</p>	<p>your child? <i>(record the code in the respective child's number)</i></p> <p>1 week to 2 weeks ago1</p> <p>2 week to 1 month ago2</p> <p>More than 1 month3</p>	<p><i>(Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)</i></p> <p>Finished all of the sachets1</p> <p>Child did not like it2</p> <p>Husband did not agree to give to the child3</p> <p>Sachet got damaged4</p> <p>Child had diarrhea after being given vitamin and mineral powder5</p> <p>Child fell sick.....6</p> <p>Forgot7</p> <p>Child enrolled in IMAM program ...8</p> <p>Other (Specify).....9</p>
--	---	--	--	--	--	---

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	

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

<p>4.1</p>	<p>What is the MAIN source of drinking water for the household <u>NOW</u>?</p> <p>piped water</p> <p>piped into dwelling 11</p> <p>piped to yard / plot..... 12</p> <p>piped to neighbour 13</p> <p>public tap / standpipe 14</p> <p>tube well / borehole 21</p> <p>dug well</p> <p>protected well..... 31</p> <p>unprotected well..... 32</p> <p>spring</p> <p>protected spring..... 41</p> <p>unprotected spring..... 42</p> <p>rainwater 51</p> <p>tanker-truck..... 61</p> <p>cart with small tank 71</p> <p>water kiosk..... 72</p> <p>surface water (river, dam, lake, pond, stream, canal, irrigation channel)..... 81</p> <p>packaged water</p> <p>bottled water 91</p> <p>sachet water 92</p> <p>1.</p>	<p>4.2 a What is the trekking distance to the current main water source?</p> <p>1=less than 500m (Less than 15 minutes)</p> <p>2=more than 500m to less than 2km (15 to 1 hour)</p> <p>3=more than 2 km (1 – 2 hrs)</p> <p>4=Other(specify) _____</p>	<p>4.2b – Who MAINLY goes to fetch water at your current main water source?</p> <p>1=Women,</p> <p>2=Men,</p> <p>3=Girls,</p> <p>4=Boys</p>
-------------------	--	--	---

<p>4.2.2 a</p>	<p>How long do you queue for water?</p> <p>1. Less than 30 minutes</p> <p>2. 30-60 minutes</p> <p>3. More than 1 hour</p> <p>4. Don't que for water</p> <p>1.</p>	<p>.3 Do you do anything to your water before drinking? (MULTIPLE RESPONSES POSSIBLE) _____</p> <p><i>(Use 1 if YES and 2 if NO).</i></p> <p>1. Nothing</p> <p>2. Boiling..... _____</p> <p>3. Chemicals (Chlorine,Pur,Waterguard)..... _____</p> <p>4. Traditional herb..... _____</p> <p>5. Pot filters..... _____</p>
-----------------------	--	---

		5.	
4.3a		6.	
4.4	Where do you store water for drinking? 1. Open container / Jerrican 2. Closed container / Jerrican <input type="checkbox"/>	4.5 How much water did your household use YESTERDAY (excluding for animals)? <i>(Ask the question in the number of 20 liter Jerrican and convert to liters & write down the total quantity used in liters)</i> <input type="checkbox"/>	
4.6	Do you pay for water? 1. Yes 2. No (If No skip to Question 4.7.1) <input type="checkbox"/>	4.6.1 If yes, how much per 20 liters jerrican _____ KSh/20ltrs	4.6.2 If paid per month how much <input type="checkbox"/>
4.7.1 a	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? <i>Record result and observation.</i> OBSERVED FIXED FACILITY OBSERVED (SINK / TAP) IN DWELLING1 IN YARD /PLOT2 MOBILE OBJECT OBSERVED (BUCKET / JUG / KETTLE) 3 NOT OBSERVED NO HANDWASHING PLACE IN DWELLING / YARD / PLOT 4 NO PERMISSION TO SEE5	4.7.1b Is soap or detergent or ash/mud/sand present at the place for handwashing? YES, PRESENT1 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..... <input type="checkbox"/> 2. Before cooking..... <input type="checkbox"/> 3. Before eating..... <input type="checkbox"/> 4. After taking children to the toilet..... <input type="checkbox"/>		

5. Others.....

4.7.2 If the caregiver washes her hands, then probe further; what did you use to wash your hands?

1. Only water
2. Soap and water
3. Soap when I can afford it
4. traditional herb
5. Any other specify

4.8 What kind of toilet facility do members of your household usually use?

If 'Flush' or 'Pour flush', probe:

Where does it flush to?

If not possible to determine, ask permission to observe the facility.

flush / pour flush

- flush to piped sewer system 11**
- flush to septic tank 12**
- flush to pit latrine 13**
- flush to open drain 14**
- flush to DK where 18**

pit latrine

ventilated improved pit

latrine 21

pit latrine with slab 22

pit latrine without slab /

open pit 23

composting toilet 31

bucket 41

hanging toilet /

hanging latrine 51

no facility / bush / field 95

		1. OTHER (specify) 96
--	--	-------------------------------------

5.0: Food frequency and Household Dietary Diversity

Type of food	Did members of your household consume any food from these food groups in the last 7 days?(food must have been cooked/served at the household) 0-No 1-Yes	If yes, mark days the food was consumed in the last 7 days? 0-No 1-Yes									What was the main source of the dominant food item consumed in the HHD? 1.Own production 2.Purchase 3.Gifts from friends/families 4.Food aid 5.Traded or Bartered 6.Borrowed 7.Gathering/wild fruits 8.Other (specify)	<u>WOMEN DIETARY DIVERSITY</u> ONLY FOR WOMEN AGE 15 TO 49 YEARS. REFER TO THE HOUSEHOLD DEMOGRAPHICS SECTION Q2.3 AND Q2.5							
		Please describe the foods that you ate or drank yesterday during day and night at home or outside the home (start with the first food or drink of the morning) 0-No 1-Yes																	
		D1	D2	D3	D4	D5	D6	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 a Pulses/legumes,(e.g. beans, lentils, green grams, cowpeas)?														
5.12b nuts and seeds														
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).
	<p>In the past 7 DAYS, have there been times when you did not have enough food or money to buy food?</p> <p>If No; END THE INTERVIEW AND THANK THE RESPONDENT</p> <p>If YES, how often has your household had to: (INDICATE THE SCORE IN THE SPACE PROVIDED)</p>	
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?	
	<p>TOTAL HOUSEHOLD SCORE:</p> <p>END THE INTERVIEW AND THANK THE RESPONDENT</p>	

4.1 FOOD FORTIFICATION (FF)/- Please ask the respondent and indicate the appropriate number in the space provided	
1.1	<p>Have you heard about food fortification?</p> <p>1. Yes</p> <p>2. No</p> <p>3. Don't know</p>

<p>1.1.1</p>	<p>If yes, where did you hear or learn about it? (MULTIPLE RESPONSE ARE POSSIBLE- (Use 1 if “Yes” and 2 if “No”))</p> <p>6. Radio..... <input type="checkbox"/></p> <p>7. Road show..... <input type="checkbox"/></p> <p>8. In a training session attended..... <input type="checkbox"/></p> <p>9. On a TV show..... <input type="checkbox"/></p> <p>10. Others..... <input type="checkbox"/></p>	
<p>1.2</p>	<p>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?</p> <p>1. Yes</p> <p>2. No</p> <p>3. Don’t know</p>	<p><input type="checkbox"/></p>
<p>1.3</p>	<p>What is the MAIN source of Maize flour for the household NOW?</p> <p>2. Bought from the shops, supermarket e.t.c</p> <p>3. Maize is taken for milling at a nearby Posho Mill</p> <p>4. Bought from a nearby Posho Mill</p> <p>5. Other (<i>Please specify</i>)</p> <p>_____</p>	<p>1.1b Do you know if the maize flour you consume is fortified or not?</p> <p>1. Yes</p> <p>2. No</p> <p>3. Don’t know</p>
<p>1.4</p>	<p>What brands of the following foods does your household consume?</p> <p>1. Maize flour</p> <p>2. Wheat flour</p> <p>3. Margarine</p> <p>4. Oils</p> <p>5. Fats</p> <p>6. Sugar</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

--	--	--

11.0 REFERENCES:

1. Klemm RDW, Harvey PWJ, Wainwright E, Faillace S, Wasantwisut, E. Micronutrient Programs: What Works and What Needs More Work? A Report of the 2008 Innocenti Process. August 2009, Micronutrient Forum, Washington, DC
2. Jones, Gareth, et al., 'How Many Child Deaths can we Prevent this Year?', The Lancet, vol. 362, 5 July 2003, pp. 65-71.¹ Vitamin A Supplementation: A Decade of Progress, UNICEF 2007
3. Borghi, J., Guinness, L., Ouedraogo, and J., Curtis, V. (2002): Is hygiene promotion cost-effective? A case study in Burkina Faso. *Tropical Medicine and International Health*, **7(11)**, 960-969.
4. The UN committee on economic, Cultural and Social rights states in its General Comment of November 2002
5. Franks AH, Harmsen HJM, Raangs GC, Jansen GJ, Schut F, Welling GW. Variations of bacterial populations in human feces measured by fluorescent in situ hybridization with group-specific 16S rRNA-targeted oligonucleotide probes. *Appl Environ Microbiol.* 1998; 64(9):3336-3345.
- 6.