TURKANA SMART NUTRITION SURVEY

JANUARY 2023 REPORT


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ACKNOWLEDGEMENT

Turkana County January 2023 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, WFP, Concern World Wide, World Vision Kenya, Save the Children International, WHH, World Relief, KRCS, USAID Imarisha Jamii, USAID Nawiri and IRC for their financial, in-kind and technical support.

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Gabriel Lopodo
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

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EXCUTIVE SUMMARY

Introduction

The Turkana January SMART survey was made possible by the county department of health and Sanitation with support of several nutrition partners who included UNICEF, WFP, Concern Worldwide, Save the Children International (SCI), International Rescue Committee (IRC), USAID Nawiri, WHH, WVK, USAID Imarisha jamii (AMREF Health Africa) and World Relief (WR). The survey covered four survey zones combined into one county survey. The survey zones were 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). They were indented to cover the entire county covering all livelihood zones; that is pastoral, agro-pastoral, Fisher forks and formal employment/business/petty trade.

The goal of the survey was to determine the prevalence of malnutrition among the children aged 6-59 months old and determine mortality rate in Turkana County. Specific objectives of the survey were to assess the prevalence of malnutrition among children under five-year-old and to assess malnutrition levels among women of reproductive age by MUAC. In addition the survey was to determine the immunization coverage for measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months and to estimate coverage of iron / folic acid supplementation during pregnancy among WRA, Other objectives were to determine de-worming coverage for children aged 12 to 59 months; to determine the prevalence of common illnesses among children under five and to collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices. Unlike in June 2021 this time the survey accessed availability of fortified food products in households and lastly estimated the crude mortality rate (CMR) and under five mortality rates (U5MR).

Methodology

The Standardized Monitoring Assessment for Relief and Transition Method (SMART methodology was used to conduct the January 2023 SMART survey. SMART is a cross-sectional design methodology. It is majorly a descriptive study and aims to provide data on the entire population under study.

This used a two-stage sampling process with the first stage involving sampling of villages (clusters). This information was sourced from KNBS with estimated population; additional contributions were made from community level leaders including chiefs/sub chiefs, ward administrators and community health program. Sampling was done using ENA for SMART software (11TH January 2020 version). While in the second stage, households were selected randomly upon getting the updated list of households in the village/Cluster provided by the village elder/community health volunteer (CHV).

Based on previous SMART Survey experience and considering the maximum number of clusters allowed and considering the time spent on travelling to each household, introductions and breaks, 16 to 18 households were sampled per cluster per day for interview. This depended on survey zones with Turkana West and Central having 16 households per day and the highest being Turkana South and North at 18 households per day. The data was uploaded in Kobo collect and ODK aggregate servers hosted by Concern Worldwide 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 11thJanuary 2020. 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 2006 WHO malnutrition cut-offs. All the other quantitative data were analysed in the SPSS (Version 25) and Microsoft Excel 2016 computer packages.

Table 1:Summary of the findings- January 2023

S/No	Indicator	Acceptable values/range	Central	North	South	West	County
1	Overall plausibility score	<24	12 % Good	0% excellent	7 % Excellent	4 % Excellent	
Anthropometric results (% (With 95% CI))							
	Indicator		**Central**	**North**	**South**	**West**	County
2	n	MUAC	629	766	800	554	2749
3	Global < 125mm		(39) 6.2% (4.2 – 9.0 95% C.I)	(69) 9.0 % (6.5 - 12.4 95% C.I.)	(91) 11.4 % (8.8 - 14.5 95% C.I.)	(38) 6.9 % (4.8 - 9.6 95% C.I.)	(237) 8.6 % (7.3 - 10.1 95% C.I.)
4	Severe under nutrition <115mm		(6) 1.0 % (0.4 - 2.1 95% C.I.)	(4) 0.5 % (0.2 - 1.4 95% C.I.)	((7) 0.9 % (0.4 - 1.7 95% C.I.)	(5) 0.9 % (0.3 - 2.5 95% C.I.)	(22) 0.8 % (0.5 - 1.2 95% C.I.)
5	n	Underweight	624	758	**787**	550	2647
6	Global underweight		(175) 28.0 % (23.5 - 33.1 95% C.I.)	(222) 29.3 % (25.3 - 33.6 95% C.I.)	(332) 42.2 % (37.1 - 47.5 95% C.I.)	(168) 31.8 % (26.6 - 37.4 95% C.I.)	((850) 32.1% (29.4-35.0 95% C.I)
7	Severe underweight		(44)7.1 % (4.9 - 10.0 95% C.I.)	(57) 7.5 % (5.7 - 9.9 95% C.I.)	98) 12.5 % (9.7 - 15.9 95% C.I.)	(53) 10.0 % (6.9 - 14.3 95% C.I.)	(223) 8.4% (7.0-10.1 95% C.I)
8	n	Stunting	n = 599	n= 745	n= 769	n = 534	n=2573
8	Global Stunting		(115) 19.2 % (15.5 - 23.6 95% C.I.)	(172) 22.9 % (19.9 - 26.2 95% C.I.)	(209) 27.2 % (23.3 - 31.5 95% C.I.)	(111) 20.8 % (16.0 - 26.5 95% C.I.)	(556) 21.6% (19.3-24.1 95% C.I)
9	Severe Stunting		(24) 4.0 % (2.4 -	(115) 15.4 %(12.6 -	(52) 6.8 % (4.5 -	(30) 5.6 % (3.5 -	((134) 5.2%

			6.7 95% C.I.)	18.8 95% C.I.)	10.0 95% C.I.)	8.9 95% C.I.)	(4.1-6.4 95% C.I)
10	n	Wasting	624	752	788	553	2649
11	Global Acute Malnutrition (GAM)		(151) 24.2 % (19.5 - 29.7 95% C.I.)	(215) 28.6 % (24.7 - 32.8 95% C.I.)	(277) 35.2 % (30.8 - 39.8 95% C.I.)	(112) 20.3 % (17.4 - 23.4 95% C.I.)	(716) 27.0% (24.5-29.6 95% C.I)
12	Severe Acute Malnutrition (SAM)		(26) 4.2 % (2.2 - 7.6 95% C.I.)	(50) 6.6 % (4.9 - 8.9 95% C.I.)	(58) 7.4 % (5.5 - 9.7 95% C.I.)	(16) 2.9 % (1.7 - 4.9 95% C.I.)	(133) 5.0% (4.0-6.2 95% C.I)
Child morbidity (last two weeks)							
	Indicator	Type of illness	Central	North	South	West	County
13	Ill	yes	29.7%	20.8%	35.0%	28.2%	28.5%
14	Type of illness	Fever with chills	49.2%	71.7%	50.5%	59.0%	56.2%
15		ARI	78.1%	88.1%	73.7%	75.0%	77.9%
16		Watery diarrhea	15.5%	5.7%	9.6%	10.3%	10.3%
17		Bloody diarrhea	3.2%	2.5%	3.2%	1.3%	2.7%
19	Sought Assistance	Yes	90.4%	89.3%	93.2%	90.4%	91.2%
20	Zinc supplementation	yes	89.7%	88.9%	96.3%	81.3%	90.1%
Vitamin A supplementation and deworming							
	Indicator	No. of times	Central	North	South	West	County
21	Vitamin A Supplementation (6- 11m)	Once	86.5%	86.2%	84.3%	82.7%	84.8%
22	Vitamin A Supplementation 12- 59m)	Twice	85.7%	88.3%	78.5%	84.3%	84.1%
23	Vitamin A supplementation 6- 59 months	Twice/ once	85.8%	88.1%	79.3%	84.1%	84.1%

25	Deworming (12-59 m)	Once	86.3%	88.3%	93.2%	90.4%	89.7%
26	Child disability	Yes	1.8%	1.0%	1.0%	0.9%	1.1%
IMMUNISATION							
	Antigen	Means of Verification	Central	North	South	West	County
27	BCG	Presence of Scar	99.8%	98.4%	99.5%	99.3%	99.2%
28	OPV1	Card and Recall	94.8%	73.8%	94.0%	71.7%	88.0%
29	OPV3	Card and Recall	94.0%	73.5%	93.0%	71.3%	83.3%
30	Measles at 9 months	Card and Recall	93.8%	72.4%	92.1%	68.2%	82.1%
32	Measles at 18 months	Card and Recall	91.9%	70.5%	91.3%	60.8%	79.3%
MATERNAL NUTRITION							
	Indicator	Description	Central	North	South	West	County
33	MUAC< 21.0 cm	Women of reproductive age (non PLW)	11.2%	16.4%	13.4%	11.0%	12.9%
	MUAC< 21.0 cm	Women of reproductive age - PLW	9.2%	9.6%	11.6%	5.5%	9.2%
34	Women supplemented with FeFo	Mothers of children less than 2 years	95.7%	95.6%	97.7%	95.9%	96.3%
35	Pregnant women consuming FeFo	above 180 days	7.9%	3.0%	6.7%	3.1%	5.3%
36	Consuming FeFo	Average number of days	111.96	116.04	141.82	104.74	120.89
WATER HYGIENE AND SANITATION							
	Indicator	Description	Central	North	South	West	County
	Households water consumption	at least 15 Liters per day	62.2%	76.1%	64.8%	64.1%	67.3%
37	Trekking distance	less than 500 m	50.7%	53.2%	53.7%	52.5%	52.7%

38	Household treating their drinking water		5.7%	24.7%	5.9%	7.1%	11.5%
39	Hand washing (U2 households)	4 critical times	20.1%	36.0%	33.6%	2.2%	23.7%
HOUSEHOLD AND WOMEN DIETARY DIVERSITY							
	Indicator	Description	Central	North	South	West	County
40	Households consuming more than 5 food groups	Household dietary diversity	16.1%	0.7%	15.8%	0.4%	8.3%
41	Women consuming more than 5 food groups	(MDD-W)	53.5%	4.1%	19.6%	26.4%	25.1%
FOOD CONSUMPTION SCORE AND COPING STRATEGY INDEX							
	Indicator	Description	Central	North	South	West	County
42	Households with acceptable FCS		29.4%	3.9%	29.6%	9.3%	17.9%
43	Coping Strategy Index	Index is given as a number not Percentage					21.56
HUNGER SCALE							
	Indicator	Description	Central	North	South	West	County
44	Severe hunger		23.7%	17.7%	5.2%	6.1%	12.9%

Conclusion

The overall county nutrition significantly improved in January 2023 compared to June 2022 though still critical. The GAM levels (WHZ) are at critical levels in all survey zones though still at extremely critical in Turkana South Survey zone while it is critical at the county weighted average.

The persistent poor nutrition status is consistent with poor Food security indicator status; that is HDDS/ FCS. The key drivers to high undernutrition in the county are worsening leading to deteriorating trend of malnutrition. The malnutrition levels across the four survey zones are attributed to worsening food insecurity resulting from successive failed rains leading to drought and rapid increase in food prices, loss of livestock, poor coping mechanisms. Other drivers include 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:

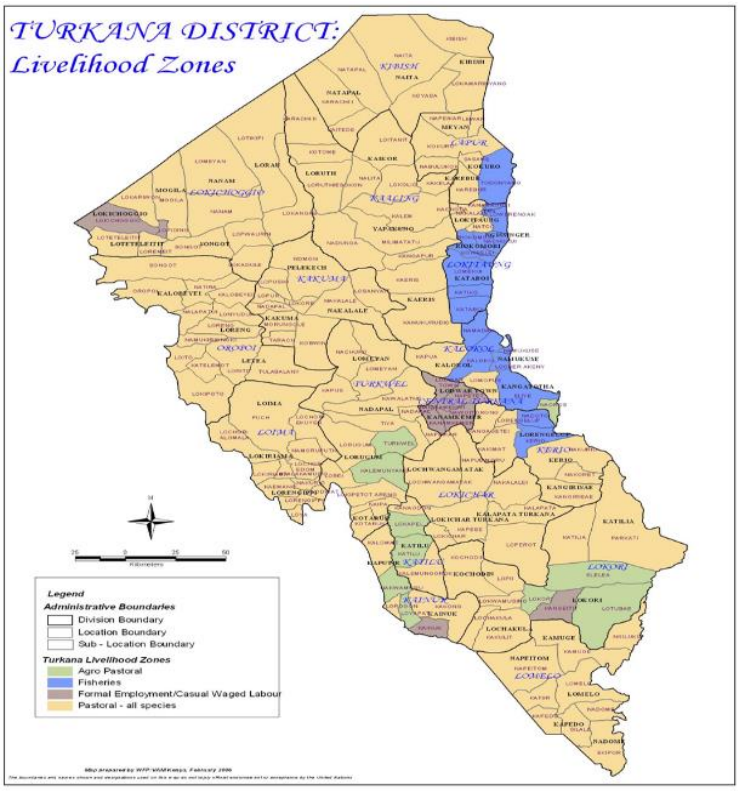
1. Conduct exhaustive mass screening in all hot spots to ensure all malnourished women and children access treatment in all service delivery points.

2. Remap and scale-up a sustainable strategy for integrated outreaches in hard-to-reach areas.
3. Strengthen Quality of care for malnourished children through mentorship and training especially for severely malnourished children in inpatient care.
4. Manage and strengthen supply chain to ensure appropriate nutrition commodities are consistently available at health facility level.
5. Launch Blanket supplementary feeding programme (BSFP)
6. Launch the General food assistance programme in areas where food markets are dysfunctional.
7. Continue with creation of linkages for acutely malnourished children and women to existing social safety net programs – Scale-up cash transfer and stabilize food markets in hard-to-reach areas
8. Conduct peace building in most affected areas of Turkana south, Turkana North, T. west and Loima for improved humanitarian access.
9. Activate one health program for cross border programing.
10. Scaling up of school feeding programme for school going children.
11. Initiate food for Assets (FFA) to compliment cash transfer.
12. Rehabilitation of boreholes to minimize trekking distance.
13. Enhance water tracking technology
14. Stimulate markets across the county.
15. There should be plans to introduce adult education among the care- givers.
16. Share survey report with stakeholders at the county and sub county level.

1.0 CHAPTER 1

1.1 Background information

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



The County has an estimated total population *1,049,168 and 147,856 of <5s (according to 2022 Estimates*) and covers an area of 77,000km^2 (KNBS 2019). 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 KNBS report 2016, Turkana County is the poorest county in Kenya at 79.4% compared to a national average of 31.6%.

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 July 2022 Integrated Phase Classification (IPC) for acute malnutrition among children U5, the nutrition situation deteriorated significantly compared to the same season in 2021. Turkana North and South slipped into extremely critical phase (IPC AMN Phase 5) which was worse than the 2011 Horn of Africa crisis and the 2017 drought emergency. In the June 2022 SMART survey, Acute malnutrition levels worsened significantly in the 4 Turkana survey zones; Turkana Central 27.3%, Turkana North 38.8%, Turkana South 41.4% and Turkana West 27.6%. The county was classified as "Crisis" (IPC Phase 3, food security) as per the July 2021 LRA assessment report with a projected emergency phase (IPC phase 4) in pastoral areas during the current period. The county's EWS bulletin December 2022, all livelihood zones were classified in ALARM phase and worsening apart from Pastoral LZ at emergency and worsening. The last SMART survey conducted in June 2022 showed a very critical situation which need follow-up to adjust response. This survey provides a progress update of health, nutrition and food security situation in the county to inform response actions, LRA report and programme adjustments. There had been other shocks including COVID 19 pandemic, prolonged, depressed long rains and insecurity along the borders.

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) in Turkana County.

1.4.1 Specific Objectives

a) To assess the prevalence of malnutrition among 6-59 months old children.
b) To assess malnutrition levels among women of reproductive age by MUAC.
c) To determine the immunization coverage for measles, Oral Polio Vaccines (OPV 1 and 3), and vitamin A supplementation in children aged 6-59 months;
d) To estimate coverage of iron / folic acid supplementation during pregnancy in women of reproductive age
e) To determine de-worming coverage for children aged 12 to 59 months;
f) To determine the prevalence of common illnesses among children under five;
g) To collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices.
h) Access availability of fortified food products in households
i) To determine the proportion of children with disability

1.5 Timing of Turkana SMART survey

The survey was conducted towards the start of the dry season, in the month of January 2023.
The results of the survey will feed into the SRA 2023.

Table 1: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

There are a total of 7 sub counties in Turkana County. Due to the vastness and heterogeneity of the county, four independent surveys were conducted as summarized below;

Table 2: 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 Methodology 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) as well as 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. Necessary COVID 19 infections preventive measures were put in place during recruitment, training data collection, analysis and dissemination of results.

2.1.1 **Sample size calculation**

The Sample size was determined using as per ENA for SMART software Jan 11th 2020 version. The table below outlines factors considered when determining the sample size calculation.

Table 3: Sample size calculation

Variable	**Turkana Central**	**Turkana South**	**Turkana North**	**Turkana West**	**Rationale**
Estimate (GAM)	**22.4 %**	**34.3%**	**21.8%**	**36.3%**	Use of Lower CI due to projected slight improvement of nutrition situation from June 2022
Desired Precision	5.0%	5.0%	5.0%	5.0%	SMART methodology guidance (Rule of thumb)
Design Effect	1.5	1.5	1.5	1.5	Rule of thumb (All the ENA generated DEFF from 2022 were above 1.8)
Estimated Number of Children	**436**	**565**	**428**	**580**	As per EN output
Average HH Size	6	6	6	6	From the 2019 census report
Non-Response Rate (%)	2	2	2	2	Based on previous SMART Survey Experience
Proportion of Children Under 5	15.3%	15.0%	15.0%	15.0%	From previous surveys
Estimated Number of Households	**539**	**712**	**539**	**731**	As per ENA output
Number of Households per Day	**15**	**17**	**15**	**17**	Based on previous SMART Survey Experience and considering the maximum No of clusters allowed
Number of Cluster	**36**	**42**	**36**	**43**	Computed from the Number of HHs per Day
Number of Teams	**6**	**7**	**6**	**7**	

2.1.2 **Sampling method**

A two-stage sampling process was used in this survey. The first stage involved sampling of villages (villages) from a sampling frame (villages identified by information from KNBS estimated populations with contributions from the chiefs/sub chiefs and community health program). The name of villages, their respective population sizes were then entered into ENA for SMART software (Jan 11th 2020 version). The second stage involved randomly selecting households upon getting the updated list of households in the village/Cluster. Taking in to account the time spent on travelling, introductions and breaks to each household per cluster, 16 to 18 HH were sampled for HH questionnaire. The definition of a household was a shelter or more whose residents ate from the same "cooking pot" the day preceding the survey.

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 had their MUAC measurements taken.

2.1.5 **Survey team composition**

The county SMART Survey had 8 survey zone coordinators and 2 survey managers. With a total of 26 teams, each survey zone had between 6-7 teams. The number of teams per zone was determined by the number of clusters. Each team had 3 members; two Measurers, one Enumerator/Team Leader.

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

2.1.6 **Survey team training**

A comprehensive training of the survey teams was carried out for 4 days at a central point (2 halls each 40 participants). The training entailed sampling methods; anthropometric measurements; interviewing techniques; and completion of questionnaires. Standardization tests and pilot test were part of the training which included each enumerator completing two questionnaires and all pre-tested questionnaires entered on a computer to test the practicability of data entry. The pre-test exercise was discussed and necessary changes on the questionnaire done accordingly.

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

- Anthropometry (weight, height, edema, MUAC, age, sex) for children and MUAC for mothers.
- Prevalence of childhood illnesses in the last 2 weeks prior to the survey.
- Water, hygiene and sanitation, social protection and Food security.
- Mortality

The standard survey questionnaires developed by the NITWG and modified to the context was used.

2.1.7 **Data collection**

Data was uploaded daily to ODK Aggregate server by the teams. Anthropometry data was downloaded to excel then to ENA daily during data collection, for plausibility checks with feedback given to the teams every morning. Analysis of anthropometric data was done using ENA for SMART (Jan 11th 2020 version). Other data sets will be analyzed by use of SPSS 25.0 and Microsoft Excel. Weighting of the sub county results was later done to obtain the County baseline data.

2.1.8 **COVID 19 protocols**

COVID-19 protocols were observed throughout the survey.

2.1.9 **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 (double weighing scale).

Height: Recumbent length was taken for children less than 87cm or less than 2 years of age while height measured was done for those greater or equal to 87cm or more than 2 years of age.

MUAC: With the hand relaxed and hanging by the body's side, the Mid Upper Arm Circumference (MUAC) was measured to the nearest cm , at the middle point between the elbow and the shoulder, on the less active hand. MUAC measurements were taken for children 6-59months of age and for women in the reproductive age bracket (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 children12-59 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 4: 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. Rreducing 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 5: Definitions of acute malnutrition using WFH and/or edema in children aged 6–59 months

Acute malnutrition	WFH Z-Score	Oedema

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

Adapted from SMART Manual, Version 1, April 2006

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 >=115mm to <125mm
3. At risk is defined by measurements >=125mm to <135mm
4. Normal >=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 (11th January 2020). 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 6: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 version 25 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. There was another type of vitamin A tablets which were supplied by the county to the health facilities and was only discovered when the teams were in the field. This omission could have led to poor recall of vitamin supplementation.

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

A total of 2, 502 households were reached during the survey out of the 2, 521 sampled households, which was 99.2% coverage. One cluster in Turkana South was not accessed. Among the major reasons for not being interviewed were absent household members due to community migration while other had migrated to neighboring county. All surveyed households accepted to be interviewed.

Table 7: Number of households surveyed

	Central	North	West	South	County
	Count	Count	Count	Count	Count
Number of sampled Households	539	712	539	731	2521
Number of Households Reached	539	712	538	713	2500
Number of children reached	629	766	554	802	2751
Non response rate	0%	0%	1%	2%	1%

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

The average household size in the county in the January 2023 SMART survey was 4.64 persons 4.39 persons, a 0.25 increase from 4.39 in June 2022 while the mean number of children under five years per household was 1.19, an increase from 1.03 in June 2022.The proportion of under-fives children surveyed out of the entire household members in the survey was 25.8% also a decrease from 26.1% in June 2022 as detailed below.

Table 8: Age cohort distribution

	T. Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
18 years and above (Adult)	1133	44.0%	1339	44.5%	1419	39.7%	1019	41.5%	4910	42.3%
5 years to less than 18 years	756	29.3%	846	28.1%	1273	35.7%	831	33.9%	3706	31.9%
Less than 5 years	688	26.7%	826	27.4%	878	24.6%	604	24.6%	2996	25.8%
Total	2577		3011		3570		2454		11612	

Two survey zones almost, had the same household size unlike in the past where all had the same household size. Turkana west had the largest household size while South had the smallest as well as number of children per household.

Table 9:Household size per survey zone

	Turkana Central	Turkana North	Turkana West	Turkana South	**Turkana County**

Household size	4.78	4.23	6.64	3.44	4.64
Mean U5	1.28	1.16	1.63	0.85	1.20

Females were more than male for all age categories except for children less than five years where males were more than females in all survey zones though in Turkana South females were more than males. The same trend as in June 2022.

Table 10: Sex distribution for the various age cohorts

		Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
18 years and above (Adult)	Female	609	53.8%	791	59.1%	826	58.2%	608	59.7%	2834	57.7%
	Male	524	46.2%	548	40.9%	593	41.8%	411	40.3%	2076	42.3%
	Total	1133	44.0%	1339	44.5%	1419	39.7%	1019	41.5%	4910	42.3%
5 years to less than 18 years	Female	349	46.2%	437	51.7%	652	51.2%	418	50.3%	1856	50.1%
	Male	407	53.8%	409	48.3%	621	48.8%	413	49.7%	1850	49.9%
	Total	756	29.3%	846	28.1%	1273	35.7%	831	33.9%	3706	31.9%
Less than 5 years	Female	330	48.0%	393	47.6%	440	50.1%	281	46.5%	1444	48.2%
	Male	358	52.0%	433	52.4%	438	49.9%	323	53.5%	1552	51.8%
	Total	688	26.7%	826	27.4%	878	24.6%	604	24.6%	2996	25.8%
n	Female	1288	50.0%	1621	53.8%	1918	53.7%	1307	53.3%	6134	52.8%
	Male	1289	50.0%	1390	46.2%	1652	46.3%	1147	46.7%	5478	47.2%
	Total	2577		3011		3570		2454		11612	

3.1.2 **Residency and marital Status**

Almost all (99.9%) the surveyed respondents were residents, a slight improvement from June 2022 99.3%. This is a trend witnessed also in 2022 and 2019.

Table 11: Residency

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	**Count**	%	**Count**	%	**Count**	%	**Count**	%
Refugee	0	0.0%	1	0.1%	0	0.0%	2	0.4%	3	0.1%
Resident	540	100.0%	711	99.9%	713	100.0%	535	99.6%	2499	99.9%
n	540	100%	712	100%	713	100%	537	100%	2502	100%

3.1.3 **Immigrant Children in the households**

Children immigration and the reasons for the immigration was an indicator the survey sought to investigate. Unlike in June 2022 where there was a decrease in the proportion of children who had migrated from 14.8% to 6.1% in January 2023 the proportion increased to 9.7%. Turkana South survey zone led with the number and proportion of the migrated children, the same trend seen in 2022 and 2021.

Table 12: Children migration

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Turkana county**	
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
No	503	93.1%	668	93.6%	602	84.4%	485	90.1%	2258	90.1%
Yes	37	6.9%	44	6.2%	111	15.6%	52	9.7%	244	9.7%
No	540	100.0%	714	100.0%	713	100.0%	538	100.0%	2505	100.0%

3.1.4 **Reasons for Children migration**

Lack of food (37.3%) and death of care givers/parent (21.7%) were given as the main reasons why children came to live in the interviewed households while no nearby school (20.1%) was third. This was consistent with the June 2022 SMART survey findings. Turkana South led with lack of food while Turkana North led with death of care givers. As was the case with June 2021 SMART, Turkan West had children living in the street has the reason for children in migration. Other reasons for children coming to live in the sampled households formed a sizable proportion across the four survey zones.

Table 13: Reasons for Children migration

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
n	37		44		111		52		244	
Care giver died	10	27.0%	12	27.3%	19	17.1%	12	23.1%	53	21.7%
Child was living on the street,	0	0.0%	0	0.0%	0	0.0%	1	1.9%	1	0.4%
Did not have access to food	9	24.3%	16	36.4%	49	44.1%	17	32.7%	91	37.3%
Father and Mother left home	3	8.1%	4	9.1%	10	9.0%	3	5.8%	20	8.2%
other	2	5.4%	6	13.6%	8	7.2%	14	26.9%	30	12.3%
School	13	35.1%	6	13.6%	25	22.5%	5	9.6%	49	20.1%

3.1.5 **Caretakers' marital status**

There was a 0.9% reduction in the proportion of married caregivers in January 2023 when compared to June 2022. There is strong corelation between marital status and child malnutrition. As has been the case in the last 2 surveys, married caregiver led followed by widowed across all survey zones. Turkana North led with widowed caregivers as has been the case in the last survey while Turkana South with proportion married though negligible. The proportion widowed slightly increased by 1.9%.

Table 14: Summary of caretakers' marital status

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Turkana County**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
n	540		714		713		538		2502	
Divorced	4	0.7%	13	1.8%	2	0.3%	2	0.4%	21	0.8%
Married	432	80.0%	537	75.2%	579	81.2%	434	80.7%	1982	79.1%
separated	13	2.4%	23	3.2%	8	1.1%	13	2.4%	57	2.3%
Single	33	6.1%	31	4.3%	46	6.5%	14	2.6%	124	5.0%
Widowed	58	10.7%	108	15.1%	78	10.9%	74	13.8%	318	12.7%

3.1.6 **Occupation of the household main provider**

As it was the case with the June 2022 SMART survey, in the January 2023 survey, livestock herding, firewood/charcoal and petty trade were the three major main occupation of the household's main provider. Livestock herding was the main occupation in Turkana North survey zone which is consistent with the last two surveys. Employed labour kept on the decline with the January SMART survey having a 0.4% reduction from The June 2022 survey. Petty trade continued to be a major occupation across the survey zones more so in zones with major town centers.

Table 15: Summary of household's main provider occupation

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
n	540		712		713		537		2502	
crop farming/Own farm labour	30	5.6%	0	0.0%	78	10.9%	7	1.3%	115	4.6%
Employed (salaried)	14	2.6%	7	1.0%	12	1.7%	4	0.7%	37	1.5%
Firewood/charcoal	154	28.5%	169	23.7%	188	26.4%	149	27.7%	660	26.4%
Fishing	21	3.9%	19	2.7%	1	0.1%	0	0.0%	41	1.6%
Livestock herding	96	17.8%	357	50.1%	207	29.0%	153	28.5%	813	32.5%
Merchant/trader	10	1.9%	3	0.4%	22	3.1%	6	1.1%	41	1.6%
other	62	11.5%	9	1.3%	8	1.1%	19	3.5%	98	3.9%
Petty trade	107	19.8%	129	18.1%	123	17.3%	145	27.0%	504	20.1%
Waged labour (Casual)	46	8.5%	19	2.7%	74	10.4%	54	10.1%	193	7.7%

3.1.7 **Main current source of income of the Household head**

Petty trade remained the dominant source of income for the households for all survey zones with sale of livestock as the second main current source of income for most households. Most prevalent petty trade are the firewood/ charcoal selling which is destructive form of livelihood showing a strain on the environment. There was an improvement from casual labour which was second in the June 2022 survey now coming third while Sale of livestock which is the main livelihood source came second showing improved livestock body condition hence an improving drought situation. Despite cash transfer being a major response strategy only a small proportion (0.8%) of the households indicated they were in the program. Some destructive source of income like sale of alcohol and personal assets featured in this survey as it was in the June 2022.

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

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
n	540		712		713		537		2502	
Casual labor	63	11.7%	20	2.8%	75	10.5%	49	9.1%	207	8.3%
Emergency cash transfer	0	0.0%	4	0.6%	7	1.0%	0	0.0%	11	0.4%
Income earned by Children	3	0.6%	9	1.3%	1	0.1%	0	0.0%	13	0.5%
other	68	12.6%	32	4.5%	11	1.5%	33	6.1%	144	5.8%
Other-Specify	3	0.6%	1	0.1%	2	0.3%	1	0.2%	7	0.3%
Permanent job	14	2.6%	8	1.1%	12	1.7%	5	0.9%	39	1.6%
Petty trading e.g. sale of firewood	249	46.1%	335	47.1%	329	46.1%	345	64.2%	1258	50.3%
Regular cash transfer program (HSNP or Inua Jamii)	4	0.7%	1	0.1%	9	1.3%	6	1.1%	20	0.8%
Remittance	10	1.9%	0	0.0%	11	1.5%	2	0.4%	23	0.9%
Sale of crops	20	3.7%	1	0.1%	82	11.5%	3	0.6%	106	4.2%
Sale of livestock	61	11.3%	267	37.5%	139	19.5%	79	14.7%	546	21.8%
Sale of livestock products	38	7.0%	31	4.4%	31	4.3%	2	0.4%	102	4.1%
Sale of personal assets	7	1.3%	3	0.4%	4	0.6%	12	2.2%	26	1.0%

3.1.8 **Education**

3.1.8.1 Highest Education level for adults

The Turkana County Literacy level for the interviewed care givers in January 2023 SMART survey were worse than the 2022 survey by 1.5%. A total of 84.5% of the interviewed care givers had no formal education with Turkana North and West being the most affected at 93.3% and 85.5% respectively, the same trend as in June 2022. Turkana South was the most literate.

Table 17: Education Levels

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
None	440	81.5%	664	93.3%	552	77.4%	459	85.5%	2115	84.5%
other	0	0.0%	0	0.0%	0	0.0%	1	0.2%	1	0.0%
Pre primary	26	4.8%	13	1.8%	51	7.2%	21	3.9%	111	4.4%
Primary	28	5.2%	16	2.2%	47	6.6%	35	6.5%	126	5.0%
Secondary	18	3.3%	13	1.8%	46	6.5%	15	2.8%	92	3.7%
Tertiary	28	5.2%	6	0.8%	17	2.4%	6	1.1%	57	2.3%
n	540		712		713		537		2502	

3.1.8.2 School enrollment for age group 3 years to 18 years

There was a 1.1% decline in school enrollment of children in Turkana County in January 2023 compared to June 2022, a trend maintained from June 2021. The highest decline was noted in Turkana South and Central reducing by 12.1% and 9.3%. The other two survey zones registered an improvement.

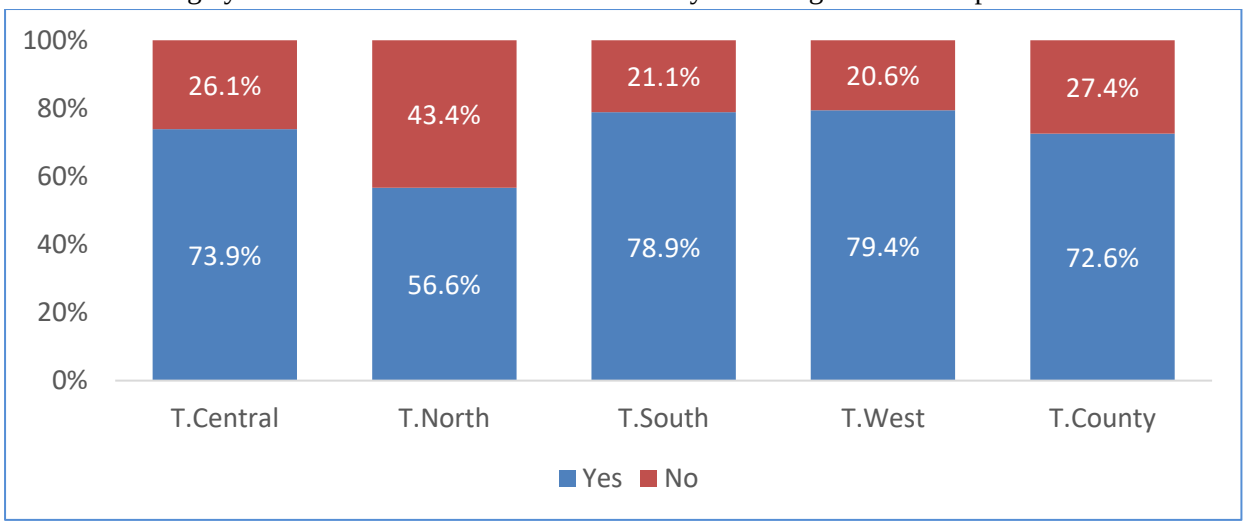


Figure 1: School enrollment per survey zone-January 2023

3.1.9 **Reason for not attending school**

As has been the case with the last two surveys, majority of children didn't attend school either due to family responsibility (36.3%), or the household was too poor to buy school items (17.7%) or even household didn't see value for schooling (15.9%). The proportion reporting household labor responsibility increased by 1.3% while the proportion reporting no school nearby decreased, a trend witnessed since 2019. Turkana North led with too poor to purchase school items while 66.1% of household in Turkana West reported family labor responsibilities a deviation from North which usually ed on the indicator.

Table 18: Reasons for not attending school-January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
n	265		512		341		218		1336	
Working outside home	6	2.3%	3	0.6%	0	0.0%	0	0.0%	9	0.7%
Weather (rain, floods, storms)	0	0.0%	1	0.2%	1	0.3%	1	0.5%	3	0.2%
Too poor to buy school items e.t.c	20	7.5%	175	34.2%	34	10.0%	8	3.7%	237	17.7%
Teacher absenteeism	1	0.4%	1	0.2%	3	0.9%	0	0.0%	5	0.4%
other	39	14.7%	43	8.4%	27	7.9%	15	6.9%	124	9.3%
No school Near by	64	24.2%	74	14.5%	49	14.4%	6	2.8%	193	14.4%
No food in the schools	2	0.8%	1	0.2%	12	3.5%	0	0.0%	15	1.1%
Migrated/ moved from school area	2	0.8%	10	2.0%	3	0.9%	0	0.0%	15	1.1%
Married	4	1.5%	3	0.6%	4	1.2%	1	0.5%	12	0.9%
Insecurity	1	0.4%	17	3.3%	0	0.0%	0	0.0%	18	1.3%
Household doesn’t see value of schooling	51	19.2%	18	3.5%	100	29.3%	43	19.7%	212	15.9%
Family labour responsibilities	72	27.2%	164	32.0%	105	30.8%	144	66.1%	485	36.3%
Chronic Sickness	3	1.1%	2	0.4%	3	0.9%	0	0.0%	8	0.6%

CHILD HEALTH & NUTRITION

3.2 Anthropometry

Age verification by health cards slight decreased from 81.5% in June 2022 to the current 80.8%; being in the same range as in 2021. Turkana North and West survey zones led with recall the same case as in 2022. There is no significant difference within different birth verification methods between the two-survey duration. However, the recall method has been on the decline from 18% in June 2021 to the current 14.2%. There is still need for promotion of birth registration across different survey zones to tackle the 14.2% who could not be verified with any document. MCH booklets coverage was highest in Turkana South 96.2%, a 2.2% from 2022 survey while the rest were within the same range of 70%. The table below show the age verification means per survey zone.

Table 18:Summary of Children age verification means- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Recall	42	6.1%	196	23.7%	26	3.0%	161	26.7%	425	14.2%
Health card/Mother child booklet	523	76.0%	614	74.3%	845	96.2%	437	72.4%	2419	80.7%
Birth certificate/notification	123	17.9%	7	0.8%	7	0.8%	6	1.0%	143	4.8%
Baptism card	0	0.0%	9	1.1%	0	0.0%	0	0.0%	9	0.3%
n	688	100.0%	826	100.0%	878	100.0%	604	100.0%	2996	100.0%

3.2.1 Age and sex distribution of the sampled children

During the January 2023 SMART survey sampled more young children across all survey zones; the same trend as in the previous surveys. The overall sex ratio was between 1.0 to 1.2 across all survey zones which met the acceptable range of 0.6 -1.4; the same case like in the previous surveys where it was 1.0 to 1.1. There was equal representation of the sexes across the zones, hence less biasness. The results are detailed below.

Table 19: Distribution of age and sex of sample

	Turkana Central **n**=629		**Turkana North** **n**=766		**Turkana south** **n**=800		**Turkana West** **n**=554	
AGE (mo)	Total %	Ratio Boy: girl	Total %	Ratio Boy: girl	Total %	Ratio Boy: girl	Total %	Ratio Boy: girl
6 to 17	22.9	1	18.4	1	24.5	1	24	1.3
18-29	28	1.1	28.3	1.2	24.5	1.3	25.5	1
30-41	21.3	1.2	21.3	0.9	19.3	1	23.1	1.4
42-53	19.2	1.3	23.6	1.2	21.3	1	19.9	1.1
54-59	8.6	1.2	8.4	1.6	10.5	0.9	7.6	1
Total	100	1.1	100	1.1	100	1	100	1.2

3.2.2 **Prevalence of Acute Malnutrition**

The July 2022 Integrated Phase Classification (IPC) for acute malnutrition among children U5, showed the nutrition situation deteriorated significantly compared to the same season in 2021. Turkana North and South slipped into **extremely critical** phase (IPC AMN Phase 5) which was worse than the 2011 Horn of Africa crisis and the 2017 drought emergency. In ccounty's EWS bulletin December 2022, all livelihood zones were classified in ALARM phase and worsening apart from Pastoral LZ at emergency and worsening. The January 2023 SMART survey, confirmed the acute malnutrition levels slightly improved in the 4 Turkana survey zones compared to June 2022; Turkana Central 24.2%, Turkana North 28.6%, Turkana South 35.2% and Turkana West 20.3%. Turkana South remained the most affected remaining in the extremely critical level.

There was no child identified with oedema during the January SMART survey. The Weight for Height standard deviation ranged between -1.20±0.94 to -1.58±1.01 for the four survey zones with design effect ranging from 1.00 to 2.16.

Table 20: Mean z-scores, Design Effects and excluded subjects (Turkana Central)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	624	-1.28±0.98	2.16	0	5
Weight-for-Age	624	-1.39±1.06	1.74	0	5
Height-for-Age	599	-0.95±1.16	1.54	0	30

* contains for WHZ and WAZ the children with edema.

Table 21: Mean z-scores, Design Effects and excluded subjects (Turkana North)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	752	-1.44±1.03	1.50	1	13
Weight-for-Age	758	-1.46±1.02	1.58	0	8
Height-for-Age	745	-0.87±1.11	1.33	0	21

* contains for WHZ and WAZ the children with edema.

Table 22:Mean z-scores, Design Effects and excluded subjects (Turkana South)

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	788	-1.58±1.01	1.71	1	11
Weight-for-Age	787	-1.80±1.05	2.16	1	12
Height-for-Age	769	-1.29±1.15	1.60	0	31

* contains for WHZ and WAZ the children with edema.

Table 23: Mean z-scores, Design Effects and excluded subjects (Turkana West)

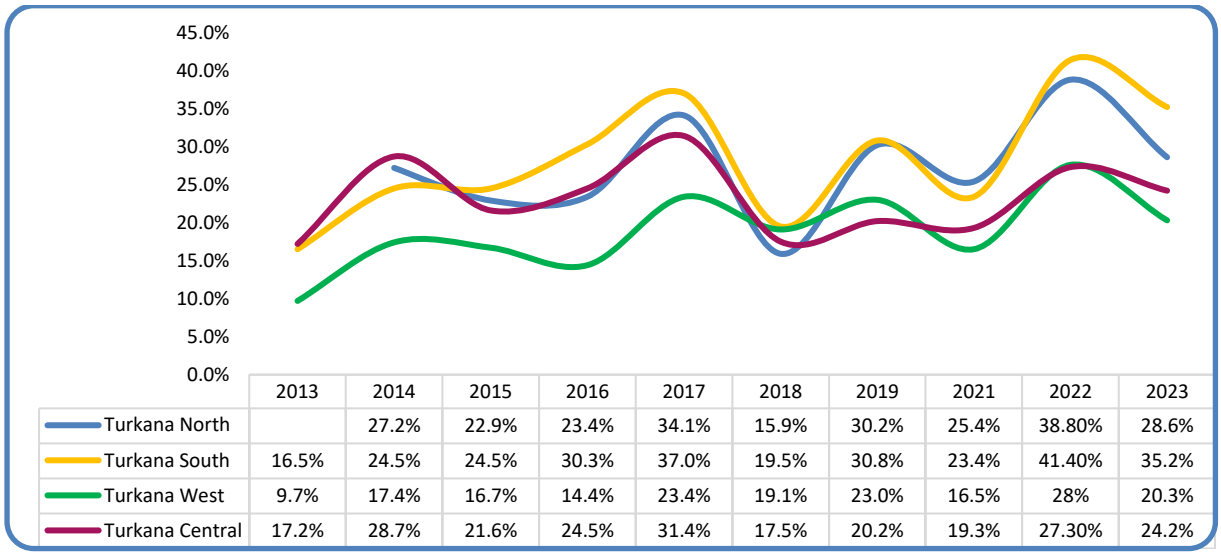
Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	553	-1.20±0.94	1.00	0	1
Weight-for-Age	550	-1.40±1.01	2.24	0	4
Height-for-Age	534	-1.09±1.15	2.17	0	20

* contains for WHZ and WAZ the children with edema.

Table 24: Prevalence of malnutrition weight-for-height z-scores (WHO Standards 2006)-January 2023

Turkana	Central	North	South	West	County
Wasting (WHO 2006) Jan 2023	n=624	n= 752	n= 788	n= 553	n=2649
Wasting (WHO 2006) Jun 2022	n= 553	n= 727	n= 752	n= 525	n=2549
Global Acute Malnutrition (GAM) - Jan 2023	(151) 24.20% (19.5-29.7, 95% C.I.)	(215) 28.60% (24.7-32.8, 95% C.I.)	(277) 35.20% (30.8-39.8, 95% C.I.)	(112) 20.30% (17.4-23.4, 95% C.I.)	(716) 27.00% (24.5-29.6, 95% C.I.)
Global Acute Malnutrition (GAM) - June 2022	(151) 27.3 % (22.4 - 32.8 95% C.I.)	(282) 38.8 % (34.3 - 43.5 95% C.I.)	(311) 41.4 % (36.3 - 46.5 95% C.I.)	(145) 27.6 % (21.8 - 34.3 95% C.I.)	(891) 34.8 % (32.3 - 37.3 95% C.I.)
Severe Acute Malnutrition (SAM)- Jan 2023	(26) 4.20% (2.2-7.6, 95% C.I.)	(50) 6.60 (4.9-8.9, 95% C.I.)	(58) 7.40% (5.5-9.7, 95%C.I.)	(16) 2.9.% (1.7-4.9, 95% C.I.)	(133) 4.0 -6.2, 95% C.I.)
Severe Acute Malnutrition (SAM)- June2022	(33) 6.0 % (3.5 - 9.9 95% C.I.)	(88) 12.1 % (8.6 - 16.7 95% C.I.)	(84) 11.2 % (8.7 - 14.2 95% C.I.)	(28) 5.3 % (3.5 - 8.2 95% C.I.)	(233) 9.1 % (7.6 - 10.8 95% C.I.)

Turkana county level of malnutrition have varied in severity across different assessment zones from the 2010 assessment period to date. The county has tracked this change in a wave like figure for illustration as seen below.



	2013	2014	2015	2016	2017	2018	2019	2021	2022	2023
Turkana North		27.2%	22.9%	23.4%	34.1%	15.9%	30.2%	25.4%	38.80%	28.6%
Turkana South	16.5%	24.5%	24.5%	30.3%	37.0%	19.5%	30.8%	23.4%	41.40%	35.2%
Turkana West	9.7%	17.4%	16.7%	14.4%	23.4%	19.1%	23.0%	16.5%	28%	20.3%
Turkana Central	17.2%	28.7%	21.6%	24.5%	31.4%	17.5%	20.2%	19.3%	27.30%	24.2%

Figure 1: Trends of Global Acute Malnutrition in Turkana County (Jun 2013- Jan 2023)

The county has experienced persistently high GAM levels (exceeding WHO very high thresholds of 15%) over the last ten years. Though the January 2023 GAM levels reduced across the four survey zones, they remain above the WHO emergency cut offs a proof the county is still a high burden malnutrition area. The persistence high malnutrition levels could be attributed to various shocks varying from drought, floods, diseases outbreaks and conflict facing the community.

3.2.3 **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; a trend repeated for the last two years. Though this was attributed to boys herding livestock more than girls, more research is needed to establish why boys are more malnourished than girls. Table below shows the prevalence of global acute malnutrition by sex per survey zone.

Table 25: **Prevalence of acute malnutrition based on weight-for-height z-scores (and/or edema) and by sex(95% Confidence interval) January 2023**

	Sex	**Central n**=624	**North n**=752	**South n**= 788	**West n**=553	**County n= 2714**
		M =332**, F**=292	**M** =393**, F**=359	**M** =397**, F**=391	**M** =296**, F** =257	**M= 1418 F=1296**
Prevalence of global malnutrition (<-2z-score and/or edema)	Boys	(91) 27.4 % (21.6 - 34.1 95% C.I.)	(127) 32.3 % (27.8 - 37.1 95% C.I.)	(151) 38.0 % (32.0 - 44.5 95% C.I.)	(64) 21.6 % (18.2 - 25.5 95% C.I.)	(432) 30.5 % (27.6 - 33.5 95% C.I.)
	Girls	(60) 20.5 % (15.4 - 26.8 95% C.I.)	(88) 24.5 % (19.6 - 30.2 95% C.I.)	(126) 32.2 % (27.2 - 37.7 95% C.I.)	(48) 18.7 % (14.4 - 23.9 95% C.I.)	(319) 24.6 % (22.0 - 27.4 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	Boys	(76) 22.9 % (17.4 - 29.6 95% C.I.)	(91) 23.2 % (19.2 - 27.6 95% C.I.)	(114) 28.7 % (23.5 - 34.5 95% C.I.)	(53) 17.9 % (14.7 - 21.6 95% C.I.)	(334) 23.6 % (21.4 - 25.9 95% C.I.)
	Girls	(49) 16.8 % (12.2 - 22.6 95% C.I.)	(74) 20.6 % (16.0 - 26.1 95% C.I.)	(105) 26.9 % (22.2 - 32.1 95% C.I.)	(43) 16.7 % (12.6 - 21.9 95% C.I.)	(271) 20.9 % (18.4 - 23.6 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	Boys	(15) 4.5 % (2.2 - 9.2 95% C.I.)	(36) 9.2 % (6.5 - 12.7 95% C.I.)	(37) 9.3 % (6.6 - 13.0 95% C.I.)	(11) 3.7 % (1.9 - 7.0 95% C.I.)	(98) 6.9 % (5.5 - 8.7 95% C.I.)
	Girls	(11) 3.8 % (1.7 - 8.3 95% C.I.)	(14) 3.9 % (2.2 - 6.9 95% C.I.)	(21) 5.4 % (3.4 - 8.4 95% C.I.)	(5) 1.9 % (0.7 - 5.4 95% C.I.)	(48) 3.7 % (2.8 - 4.9 95% C.I.)

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

The prevalence of Oedema was 0.0% in all the four survey zones unlike in June 2022 when Turkana West had 0.2% of the children with oedema.

Unlike the June 2022 SMART survey where there was a spread of malnutrition among different age categories, the January 2023 SMART showed the older child was more malnourished, though not significant. The table below details the analysis across the four survey zones.

Table 26: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema Jan 2023

Zone	Age month	Total no.	Severe wasting		Moderate		Normal		Oedema	
			No.	%	No.	%	No.	%	No.	%
Central	**6-17**	143	3	2.1	26	18.2	114	79.7	0	0
	18-29	175	6	3.4	26	14.9	143	81.7	0	0
	30-41	131	10	7.6	31	23.7	90	68.7	0	0

	42-53	121	5	4.1	30	24.8	86	71.1	0	0
	54-59	54	2	3.7	12	22.2	40	74.1	0	0
	Total	624	26	4.2	125	20	473	75.8	0	0
North	**6-17**	136	8	5.9	18	13.2	110	80.9	0	0
	18-29	213	12	5.6	41	19.2	160	75.1	0	0
	30-41	160	13	8.1	25	15.6	122	76.3	0	0
	42-53	180	14	7.8	64	35.6	102	56.7	0	0
	54-59	63	3	4.8	17	27	43	68.3	0	0
	Total	752	50	6.6	165	21.9	537	71.4	0	0
South	**6-17**	188	13	6.9	28	14.9	147	78.2	0	0
	18-29	194	13	6.7	52	26.8	129	66.5	0	0
	30-41	152	8	5.3	38	25	106	69.7	0	0
	42-53	170	13	7.6	64	37.6	93	54.7	0	0
	54-59	84	11	13.1	37	44	36	42.9	0	0
	Total	788	58	7.4	219	27.8	511	64.8	0	0
West	**6-17**	132	6	4.5	25	18.9	101	76.5	0	0
	18-29	141	4	2.8	23	16.3	114	80.9	0	0
	30-41	128	3	2.3	21	16.4	104	81.3	0	0
	42-53	110	3	2.7	20	18.2	87	79.1	0	0
	54-59	42	0	0	7	16.7	35	83.3	0	0
	Total	553	16	2.9	96	17.4	441	79.7	0	0
County	**6-17**	598	28	4.7	97	16.2	473	79.1	0	0
	18-29	722	34	4.7	142	19.7	546	75.6	0	0
	30-41	571	34	6	115	20.1	422	73.9	0	0
	42-53	581	35	6	178	30.6	368	63.3	0	0
	54-59	242	15	6.2	73	30.2	154	63.6	0	0
	Total	2714	146	5.4	605	22.3	1963	72.3	0	0

There was no oedema case identified across all the four survey zones, a trend witnessed in the last three surveys apart from the June 2022 where oedema was detected in Turkana West.

Table 27: **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	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor. 0 (0.0 %)	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor. 0 (0.0 %)	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor. 0 (0.0 %)	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor. 0 (0.0 %)
Oedema absent	Marasmic No. 30, -4.8%	Not severely malnourished. 599, -93.30%	Marasmic, No 57, -7.50%	Not severely malnourished. 708, -92.50%	Marasmic No.62, -92.20%	Not severely malnourished. 737, -92.20%	Marasmic No 16, 2.90%	Not severely malnourished. 538, -97.10%

3.2.5 **Prevalence of acute malnutrition based on MUAC**

Several methods were used to assess nutrition situation during the current survey among which MUAC in addition to other methods. When compared to GAM by WFH z-score, 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. MUAC is best used as a rapid screening tool for admission into nutrition intervention programmes especially in community screening.

Usually, MUAC 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 and this was observed across the four Turkana survey zones over years. This could be associated with the physiology of this population in Turkana which is similar to the Somali and South Sudanese, with a high cormic index[1].This means, overall, significantly lower cases of malnourished children are identified using MUAC when compared to weight for height. Malnutrition by MUAC in the January 2023 SMART survey significantly decreased. Turkana South **11.4%** had the highest GAM rate followed by Turkana South **9.0**% with Turkana Central **6.2%** being the lowest. SAM was highest in Turkana Central 1.0%. This shows some improvement from the June 2022. The table below summarizes prevalence of malnutrition by MUAC.

Table 28: Prevalence of Malnutrition based on MUAC per survey January 2023

Prevalence of Acute malnutrition MUAC	Central	North	South	West	County
2023 Jan	n=629	n=766	n=800	n=554	n =2749
2022	n=402	n=624	n=595	n=498	n =2602
Severe under nutrition ((< 115 mm) -June 2023)	(6) 1.0 % (0.4 - 2.1 95% C.I.)	(4) 0.5 % (0.2 - 1.4 95% C.I.)	(7) 0.9 % (0.4 - 1.7 95% C.I.)	(5) 0.9 % (0.3 - 2.5 95% C.I.)	(22) 0.8 % (0.5 - 1.2 95% C.I.)
Severe under nutrition ((< 115 mm) -June 2022)	(9) 1.6% (0.7 - 3.4 95% C.I.)	(22) 3% (1.6 - 5.5 95% C.I.)	(23) 3% (1.9 - 4.8 95% C.I.)	(13) 2.4% (1.4 - 4.2 95% C.I.)	(330) 12.7 % (11.0 - 14.6 95% C.I.)
Moderate under nutrition (≥115–<125 mm)-June 2023)	(33) 5.2 % (3.4 - 8.0 95% C.I.)	(65) 8.5 % (6.0 - 11.9 95% C.I.)	(84) 10.5 % (8.1 - 13.5 95% C.I.)	(33) 6.0 % (4.3 - 8.2 95% C.I.)	(215) 7.8 % (6.6 - 9.3 95% C.I.)
Moderate under nutrition (≥115–<125 mm)-June 2022)	(21)3.7% (2.0 - 6.7 95% C.I.)	(114) 15.4% (11.7 - 20.0 95% C.I.)	(81)10.6% (8.3 - 13.5 95% C.I.)	(45) 8.5% (5.8 - 12.2 95% C.I.)	(262) 10.1 % (8.6 - 11.8 95% C.I.)
Global Acute Malnutrition (≤125 mm)-June 2023)	(39) 6.2 % (4.2 - 9.0 95% C.I.)	(69) 9.0 % (6.5 - 12.4 95% C.I.)	(91) 11.4 % (8.8 - 14.5 95% C.I.)	(38) 6.9 % (4.8 - 9.6 95% C.I.)	(237) 8.6 % (7.3 - 10.1 95% C.I.)
Global Acute Malnutrition (≤125 mm)-June 2022)	(30) 5.3% (3.1 - 8.9 95% C.I.)	(52) 8.3 % (5.6 - 12.1 95% C.I.)	(104)13.6% (10.9 - 16.8 95% C.I.)	(58) 10.9% (7.9 - 14.9 95% C.I.)	(68) 2.6 % (2.0 - 3.4 95% C.I.)

3.2.6 **Prevalence of underweight**

Weight -For-Age (WFA) is 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 changes in weight against age. A low WFA is referred to as underweight. When June 2022 SMART survey was compared to January 2023 SMART survey, it was

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

found there was a significant decrease in the prevalence of underweight in the county from 38.3% to 32.1%, changing the increasing trend witnessed from 2021 to 2022 SMART surveys. The decrease was also significant in Turkana North survey zone. The table below details the analysis.

Table 29: Prevalence of underweight January 2023

Underweight (WHO 2006)	Central	North	South	West	County
2023 January	**n=624**	**n=758**	**n=787**	**n=550**	**n=2717**
2022	**n=553**	**n=729**	**n=755**	**n=529**	**n=2566**
Prevalence of global underweight-June (2023)	(175) 28.0 % (23.5 - 33.1 95% C.I.)	(222) 29.3 % (25.3 - 33.6 95% C.I.)	(332) 42.2 % (37.1 - 47.5 95% C.I.)	(146) 26.5 % (21.2 - 32.6 95% C.I.)	(872) 32.1 % (29.6 - 34.7 95% C.I.)
Prevalence of global underweight-June (2022)	(188) 34.00% (27.8 - 40.8 95% C.I.)	(282) 38.7 % (34.5 - 43.1 95% C.I.)	(343) 45.4 % (40.8 - 50.2 95% C.I.)	(168) 31.8 % (26.6 - 37.4 95% C.I.)	(984) 38.3 % (35.6 - 41.2 95% C.I.)
Prevalence of severe underweight June (2023)	(44) 7.1 % (4.9 - 10.0 95% C.I.)	(57) 7.5 % (5.7 - 9.9 95% C.I.)	(98) 12.5 % (9.7 - 15.9 95% C.I.)	(33) 6.0 % (4.0 - 8.8 95% C.I.)	(229) 8.4 % (7.1 - 10.0 95% C.I.)
Prevalence of severe underweight-June (2022)	(50) 9.00% (5.8 - 13.8 95% C.I.)	(87) 11.9 % (9.2 - 15.4 95% C.I.)	(108) 14.3 % (11.4 - 17.8 95% C.I.)	(53) 10.0 % (6.9 - 14.3 95% C.I.)	(300) 11.7 % (10.1 - 13.5 95% C.I.)

3.2.7 **Prevalence of stunting**

The survey used ***stunting*** which is another index used in the survey to assess nutrition status for children and uses Height-For-Age as an index. ***Stunting*** is a low height-for-age reflects deficits in linear growth**.** This is the advance result of poor nutrition in-utero and early childhood**.** Children suffering from stunting are known not to attain their full possible height and their brains may never develop to their full cognitive potential. Worldwide, about 144.0 million children under 5 years old suffer from stunting. According to the KDHS 2022, the prevalence of stunting among children under five years was 18% in 2022, representing a significant decrease from 35% in 2008–09. These children begin their lives at a marked disadvantage: they face learning difficulties in school, earn less as adults, and face barriers to participation in their communities[2]**.** 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.

According to the January 2023 SMART survey, stunting insignificantly reduced 21.9% in June 2022 to 20.7%. Stunting was highest in Turkana South at 27.2% and lowest in Turkana North at 15.4%; the same trend seen in June 2022 as shown in the table below. All the sub counties are classified as high according to WHO standards.

Table 30: Prevalence of Stunting January 2023

Stunting (WHO 2006)	Central	North	South	West	County
2023 January	**n=599**	**n=745**	**n=769**	**n=534**	**n=2646**
2022	**n=551**	**n=686**	**n=750**	**n=512**	**n=2512**
Prevalence of global stunting (<-2 z-score) June 2023	(115) 19.2 % (15.5 -	(115) 15.4 % (12.6 -	(209) 27.2 % (23.3 -	(111) 20.8 % (16.0 - 26.5 95% C.I.)	(548) 20.7 % (18.7 - 22.9 95% C.I.)

[2] UNICEF, WHO, World Bank Group. Levels and trends in child malnutrition: key findings of the 2020 edition of the joint child malnutrition estimates. United Nations Children's Fund, World Health Organization, World Bank Group, 2020

	23.6 95% C.I.)	18.8 95% C.I.)	31.5 95% C.I.)		
Prevalence of global stunting (<-2 z-score) June 2022	(128) 23.20% (18.5 - 28.7 95% C.I.)	(128) 18.20% (15.2 - 21.7 95% C.I.)	(172)22.90% (19.9 - 26.2 95% C.I.)	(116)22.70% (17.7 - 28.5 95% C.I.)	(553) 21.90% (20.2 - 23.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)- June 2023	(24) 4.0 % (2.4 - 6.7 95% C.I.)	(26) 3.5 % (2.3 - 5.2 95% C.I.)	(52) 6.8 % (4.5 - 10.0 95% C.I.)	(30) 5.6 % (3.5 - 8.9 95% C.I.)	(130) 4.9 % (4.0 - 6.1 95% C.I.)
Prevalence of severe stunting (<-3 z-score)- June 2022	(22) 4.00% (2.4 - 6.5 95% C.I.)	(31)4.40% (3.0 - 6.5 95% C.I.)	(46)6.10% (4.7 - 7.9 95% C.I.)	(35) 6.80% (4.4 - 10.4 95% C.I.)	(138)5.50% (4.5 - 6.7 95% C.I.)

3.2.8 **Indirect Coverage of Integrated Management of acute Malnutrition programme**

For all children 6 to 59 months old who malnourished (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 finding from this analysis.

Table 31: Indirect coverage of IMAM Programme – January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
Yes	50	33%	134	62%	164	59%	80	71%	428	60%
No	101	67%	81	38%	113	41%	32	29%	288	40%
Total	151	100%	215	100%	277	100%	112	100%	716	100%

Indirect coverage of IMAM services increased from 58% in June 2022 to 60% in January 2023, a trend maintained from June 2021. This was below the proxy coverage from program data. Turkana West and North lead with the highest coverage while coverage was lowest in Turkana Central, which was below the SPHERE standards of >50% for rural areas.

Table 32: Indirect coverage of IMAM Programme- January 2023

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Turkana County**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
SFP	35	70.0%	81	60.4%	138	84.1%	70	87.5%	324	75.7%
OTP	15	30.0%	53	39.6%	26	15.9%	10	12.5%	104	24.3%
Total	50	100.0%	134	100.0%	164	100.0%	80	100.0%	428	100.0%

As was the case in June 2022, majority of the beneficiaries were in SFP at 75.7% a slight improvement from 74.7% While those in OTP marginally reduced from 25.3% to 24.3%.

3.3 Children's Morbidity and Health Seeking Behavior

The UNICEF conceptual framework of malnutrition classifies diseases ad immediate causes of malnutrition. Diseases worsens malnutrition because they affect food intake which has a vicious cycle kind of a relationship. Thus, this survey assessed morbidity and whether it had any effect on nutrition status of the vulnerable population in the survey zones.

3.3.1 **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.

There was a slight increase of children who reported being sick two week preceding the survey from 25.8% to 28.5%, changing the decreasing trend witnessed from June 2018. Unlike in June 2022 where Turkana North survey zone had the highest proportion f sick children, in January 2023, Turkana South led with 35% while Turkana North was the best at 20.8%. The detailed analysis is as shown in the table below.

Table 33: Children ill

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
Yes	187	29.7%	159	20.8%	281	35.0%	156	28.2%	783	28.5%
No	442	70.3%	607	79.2%	522	65.0%	398	71.8%	1969	71.5%
Total	629	100.0%	766	100.0%	803	100.0%	554	100.0%	2752	100.0%

The effects of COVID 19 containment measure continue to have effects on the health of Turkana population with January SMART survey having reported minimal bloody diarrhea cases. The proportion of children per survey zone suffering from specific ailments continued to increase, a trend witnessed since June 2019. The leading cause of child morbidity was ARI/Cough at 22.2%. Fever like malaria and diarrhea followed in that order. Studies have shown a positive correlation between child morbidity and malnutrition. The table below summarizes prevalence of child morbidity in the county.

Table 34: Prevalence of child morbidity 2 weeks prior to the January 2023 survey

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Fever with chills like malaria	92	14.6%	114	14.9%	142	17.7%	92	16.6%	440	16.0%
ARI /Cough	146	23.2%	140	18.3%	207	25.8%	117	21.1%	610	22.2%
Watery diarrhoea	29	4.6%	9	1.2%	27	3.4%	16	2.9%	81	2.9%
Bloody diarrhoea	0	0.0%	1	0.1%	1	0.1%	0	0.0%	2	0.1%
other	6	1.0%	4	0.5%	9	1.1%	2	0.4%	21	0.8%
n	629		766		803		554		2752	

3.3.2 **Therapeutic Zinc Supplementation during Watery Diarrhea Episodes**

Available evidence from efficacy studies shows zinc supplementation reduces the duration and severity of diarrhea. In the year 2004, WHO and UNICEF made a recommendation on incorporating zinc supplementation 20 mg/day for 10-14 days for children 6 months and older, 10 mg/day for children under 6 months of age as an adjunct treatment to low osmolality oral rehydration salts (ORS), and continuing child feeding for managing acute diarrhea[3]. In her policy guideline on control and management of diarrheal diseases in children below five years. Kenya adopted these recommendations. This guideline states that all under-fives with diarrhea should be given zinc supplements as soon as possible.

The January SMART survey had an objective to establish the number of children who suffered from watery diarrhea and whether they were supplemented with zinc. The findings are illustrated in the figure below.

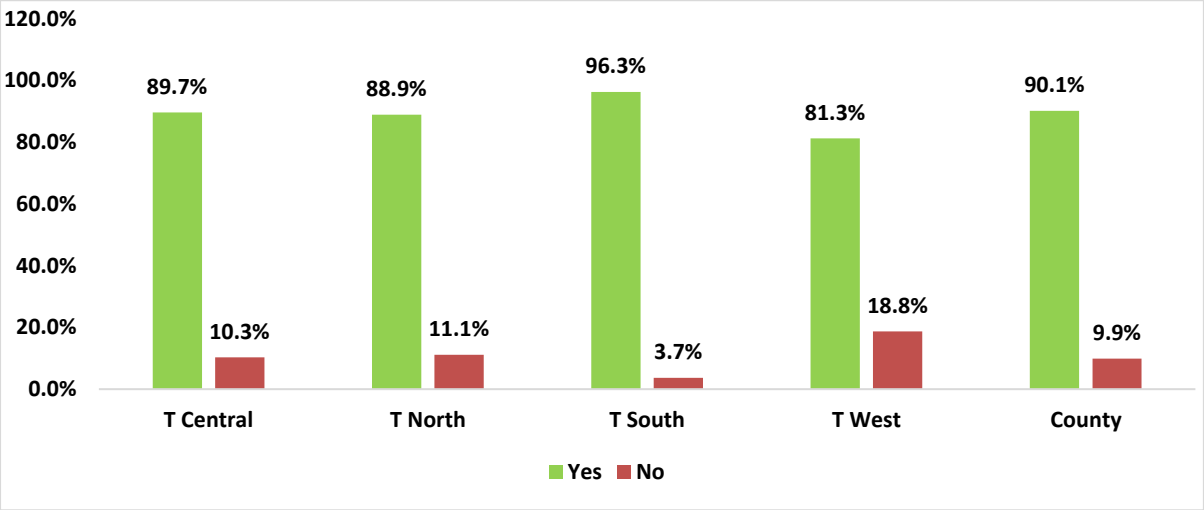


Figure 2:Therapeutic Zinc supplementation-January 2023

There was generally an improving use of zinc to treat diarrhea across the survey zones in January 2023 SMART survey though it deteriorated in Turkana West survey zone compared to June 2022. Turkana West has had a poor performance in zinc use over time which need a follow up to establish the reasons why.

3.3.3 **Health Seeking Behavior**

The survey sought to establish whether the care givers of those children who were reported to have been sick in the last two week sought any assistance. A marginal decline was recorded in the county proportion of children who sought assistance when sick from 91.7% June 2022 to 91.2% in January 2023.

Table 35: Those who sought health assistance- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
No	18	9.6%	17	10.7%	19	6.8%	15	9.6%	69	8.8%

[3] 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.

Yes	169	90.4%	142	89.3%	262	93.2%	141	90.4%	714	91.2%
n	187		159		281		156		783	

One of the objectives of the January 2023 SMART survey was to establish where caregivers of children who were sick in the past two weeks prior to the survey first sought assistance. It was established most care givers public health facilities, a trend maintained from the previous surveys, though it continued to reduce. This could be attributed to increase in the proportion seeking care in mobile clinics due to scaled up response. Consequently, mobile clinic (integrated outreaches) and community health volunteers were the second and the third most popular places where care givers sought medical care. These continued to increase as observed from the June 202 SMART survey. Traditional healer and traditional herbs continue to be sources of health care though minimal. The table below summarizes the health seeking behavior per survey zone in Turkana County.

Table 36: First Point of seeking health assistance- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Public health facility	158	93.5%	116	81.7%	210	80.2%	117	83.0%	601	84.2%
Mobile clinic	3	1.8%	21	14.8%	61	23.3%	18	12.8%	103	14.4%
Community health worker	15	8.9%	8	5.6%	41	15.6%	10	7.1%	74	10.4%
Private clinic/ pharmacy	1	0.6%	0	0.0%	18	6.9%	1	0.7%	20	2.8%
Relative or friend	4	2.4%	0	0.0%	3	1.1%	1	0.7%	8	1.1%
Shop/kiosk	2	1.2%	2	1.4%	3	1.1%	0	0.0%	7	1.0%
Traditional healer	1	0.6%	2	1.4%	2	0.8%	2	1.4%	7	1.0%
NGO/FBO	0	0.0%	5	3.5%	0	0.0%	0	0.0%	5	0.7%
Local herbs	1	0.6%	0	0.0%	0	0.0%	1	0.7%	2	0.3%
n	169		142		262		141		714	

3.3.4 **Household visited by community health volunteers (CHVs)**

Turkana county has adopted the national community health strategy through a county specific act, the community health services act of 2018. Through the act the county has mapped out community unit across the entire cunty and routinely renumerates the contracted CHVs through monthly stipends. The county implements different health programs through the CHS where the CHV conducts monthly households' visits. Through the visit the CHVs are evaluated and renumerated as the give their monthly reports. This survey sought to assess the proportion households were visited by CHVs.

Table 37: Household visit by CHVs

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Turkana County**	
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Yes	366	58.2%	541	70.6%	494	61.5%	408	73.6%	1809	65.7%
No	263	41.8%	225	29.4%	309	38.5%	146	26.4%	943	34.3%

Total	629	100.0%	766	100.0%	803	100.0%	554	100.0%	2752	100.0%

Slightly more than half of the households surveyed had been visited by a CHV in the last two weeks preceding the survey. Turkana West and North led with CHVs home visits. Despite NICHE program where household visits by CHVs is compensated, Turkana Central and South where the program is being implemented performed poorly.

3.4 Childhood Immunization, Vitamin A Supplementation and Deworming

3.4.1 Childhood Immunization

The Kenya immunization target for children under the age of one year in the third medium term plan (2018- 2022) was 95%. The country had achieved 83% by 2020, a rise from 66% in 2017. A fully immunized child is defined 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 (Kenya guideline on immunization). The Turkana January 2023 SMART survey assessed the coverage of 4 vaccines namely, BCG, OPV1, OPV3, and measles at 9 and 18 months in addition to vitamin A supplementation.

Almost all (99.2%) children in the survey had a BCG scar and improvement from 94.9% recorded in June 2022 survey, a confirmation immunization coverage is improving in Turkana County and the recovery from the effect of COVID 19 containment have been acted on. The immunization coverage for the assessed antigens is summarized in the tables below per survey zone and the county.

Table 38: Child BCG immunization Coverage- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Scar	628	99.8%	754	98.4%	799	99.5%	550	99.3%	2731	99.2%
No scar	1	0.2%	12	1.6%	4	0.5%	4	0.7%	21	0.8%
Total	629		766		803		554		2752	

Improvement in BCG coverage was in all survey zones with each recording over 90% coverage.

Table 39: Child OPV 1 coverage-January 2023

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Turkana County**	
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Yes, Recall	33	5.2%	182	23.8%	38	4.7%	144	26.0%	397	14.4%
Yes, Card	596	94.8%	565	73.8%	755	94.0%	397	71.7%	2313	84.0%
No	0	0.0%	7	0.9%	8	1.0%	5	0.9%	20	0.7%
Do not know	0	0.0%	12	1.6%	2	0.2%	8	1.4%	22	0.8%
No	629		766		803		554		2752	

Generally, OPV 1 coverage improved across the survey zones in January 2023 when compared to June 2022. Those confirming immunization by recall reduced from 16.3% to 14.4%, though it increased in

Turkana South and North survey zones. This could be due to lack of mother child booklets in the sub-counties.

Table 40: OPV 3 Coverage- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes, Recall	38	6.0%	183	23.9%	39	4.9%	140	25.3%	400	14.5%
Yes, Card	591	94.0%	563	73.5%	747	93.0%	395	71.3%	2296	83.4%
No	0	0.0%	7	0.9%	15	1.9%	10	1.8%	32	1.2%
Do not know	0	0.0%	13	1.7%	2	0.2%	9	1.6%	24	0.9%
n	629		766		803		554		2752	

There was marked improvement OPV 3 coverage, the same as seen in OPV 1 though minimal. Turkana West and North survey zones led with those confirming by recall, a trend maintained from June 2022. Turkana Central had 100% of children confirming they had been immunized on OPV 3, an improvement from June 2022 survey.

Table 41: Child measles Vaccination coverage at 9 months – January 2023

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Turkana County**	
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Yes, Recall	35	5.9%	181	24.8%	33	4.5%	142	27.2%	391	15.2%
Yes, Card	555	93.8%	528	72.4%	676	92.1%	356	68.2%	2115	82.1%
No	2	0.3%	7	1.0%	21	2.9%	19	3.6%	49	1.9%
Do not know	0	0.0%	13	1.8%	4	0.5%	5	1.0%	22	0.9%
n	592		729		734		522		2577	

There was a positive deviation on this antigen coverage recorded in the January 2023 SMART survey, a trend observed from June 2022 survey. All survey zone had an improvement. Two sub-counties i.e., Turkana North and South showed deterioration in the use of mother child booklets.

Table 42: Child measles Vaccination coverage at 18 Months- January 2023

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Turkana County**	
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Yes, Recall	25	5.2%	164	26.1%	26	4.3%	116	27.6%	331	15.5%
Yes, Card	445	91.9%	443	70.5%	554	91.3%	256	60.8%	1698	79.3%
No	14	2.9%	9	1.4%	26	4.3%	42	10.0%	91	4.3%
Do not know	0	0.0%	12	1.9%	1	.2%	7	1.7%	20	.9%
n	484		628		607		421		2140	

All survey zones recorded a positive deviation in measles coverage at 18 months except Turkana central. The overall county coverage improved when January 2023 results were compared with June 2022. The coverage was above 90% except in Turkana West survey zone which was 88.4%.

3.4.2 **Vitamin A supplementation**

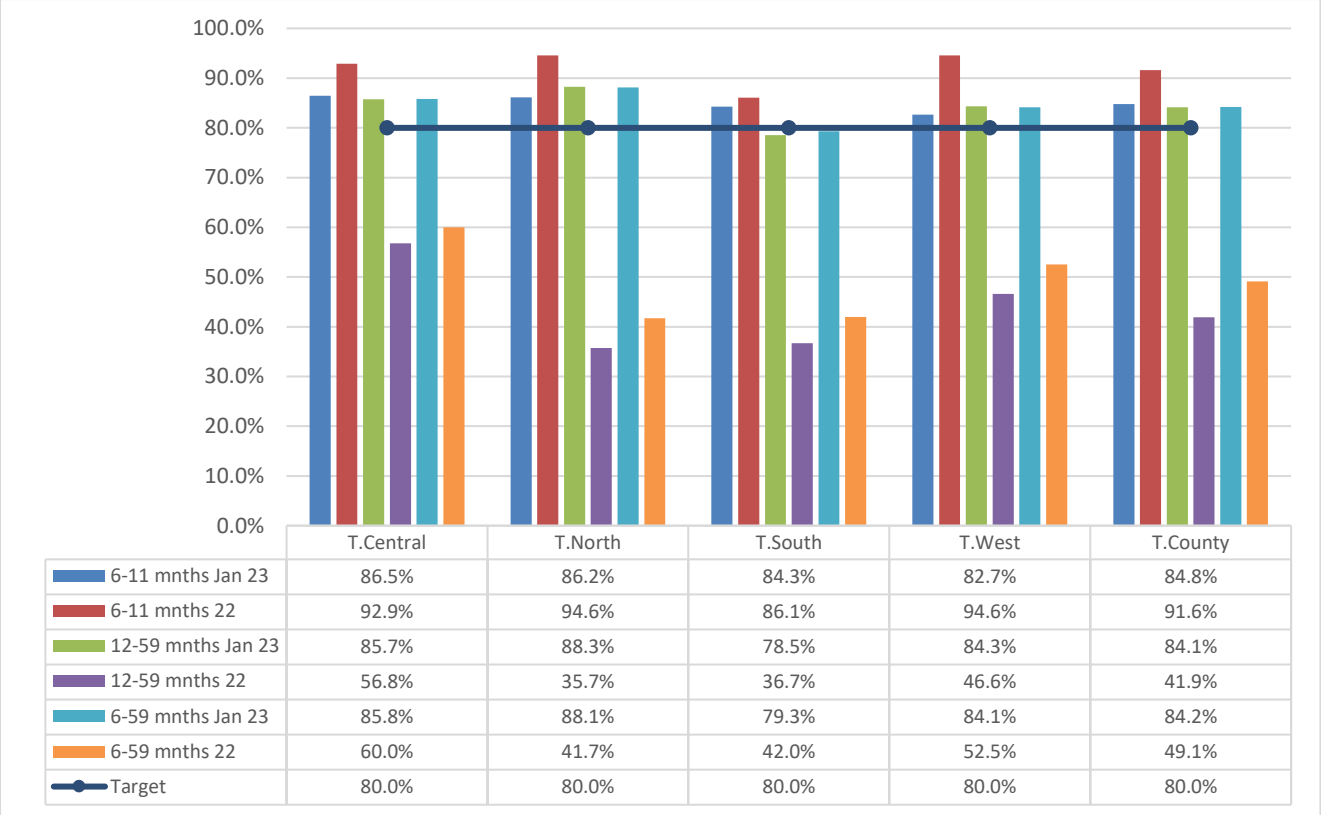
Vitamin A is among the elven high impact nutrition interventions which are recognized as the most cost-effective interventions for improving child survival. If implemented at scale vitamin A is proven to reduce the number of preventable child deaths each year[4]. Good vitamin, A supplementation status of malnourished children enhances their resistance to disease and can reduce mortality from all causes by approximately 23 per cent[5]. Thus, vitamin A supplementation is important, not only for eliminating vitamin A deficiency as a public-health problem, but also as a central element for child survival.

The January 2023 SMART survey sought to establish vitamin A supplementation coverage by asking caregivers whether their children had been supplemented and if yes for how many times in the past one year. Confirmation of the response was done through child health cards or recall in cases where the cards were not available. Samples of the capsules commonly used in the county were shown to the care givers/parents.

The results of the January 2023 SMART survey show all survey zones achieved the set target of 80% in all vitamin A age categories. All survey zones had over 80% except Turkana South which had 79%. This was a notable improvement from the June 2022 SMART survey results where the coverage was below 50% for both 12 to 59 months and 6 to 59 months categories. The improvement trend was witnessed from June 2022 survey. The overall coverage for the county was 84.2% as indicated by the children 6-59 months children, compared to 49.1% in June 2022. The figure below shows vitamin A supplementation coverage per survey zone in Turkana County.

[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



	T.Central	T.North	T.South	T.West	T.County
6-11 mnths Jan 23	86.5%	86.2%	84.3%	82.7%	84.8%
6-11 mnths 22	92.9%	94.6%	86.1%	94.6%	91.6%
12-59 mnths Jan 23	85.7%	88.3%	78.5%	84.3%	84.1%
12-59 mnths 22	56.8%	35.7%	36.7%	46.6%	41.9%
6-59 mnths Jan 23	85.8%	88.1%	79.3%	84.1%	84.2%
6-59 mnths 22	60.0%	41.7%	42.0%	52.5%	49.1%
Target	80.0%	80.0%	80.0%	80.0%	80.0%

Figure 3: Vitamin A supplementation coverage

3.7.3 De-worming

As a WHO recommendation, children in developing countries exposed to poor sanitation and poor availability of clean safe water should be de-wormed once every 6 months. Kenya adopted this recommendation through the Kenya National School Based Deworming Program. The recommendation is among the Kenya Vision 2030 flagship program, which has provided over 52 million treatments to school going children over nine years. Routine de-worming of the vulnerable population is important in controlling parasites such as helminthes, schistosomiasis (bilharzias) and prevention of anemia.

De-worming was one of the objectives assessed for all children aged 12-59 months old. Deworming coverage improved from 85.1% in June 2022 to 98.7% in January 2023 SMART survey results. All survey zones had above 80% coverage, the county set target. All survey zones showed improvement.

Table 43: De-worming coverage among children 12-59 months old -January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
No	76	13.7%	82	11.7%	47	6.8%	46	9.6%	251	10.3%
Yes	478	86.3%	619	88.3%	646	93.2%	434	90.4%	2177	89.7%
n	554		701		693		480		2428	

3.4.3 **Child disability**

Disability is defined by the Convention on the Rights of Persons with Disabilities as '*having a long-term physical, mental, intellectual or sensory impairment that when it interacts with the environment might hinders one's participation in society on an equal basis with others*.

UNICEF states that children with disabilities are among the most vulnerable people in any society due to marginalization. There is a rage of barriers which hinder children with disabilities from functioning properly and denies them equal access to social services like education and health care. It is with this in mind that the survey sought to assess the proportion of children suffering from disability and which form of disability. About 1.1% of the sampled children had disability with Turkana Central leading. This could be due to the fact that it hosts the largest urban center and disabled children might have been brought to the town to access services considering the rest of the areas are more pastoral.

Table 44: Children with disability

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	7	1.8%	5	1.0%	5	1.0%	3	0.9%	20	1.1%
No	385	98.2%	498	99.0%	490	99.0%	349	99.1%	1722	98.9%
n	392		503		495		352		1742	

Disability is closely related to child protection and knowing the type of disability will make duty bearers serve children better. The segregation of disability in the January 2023 SMART survey was as detailed in the table below:

Table 45: Type of children disability

		Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
		Count	%	Count	%	Count	%	Count	%	Count	%
Child wear glasses	No	7	100.0%	5	100.0%	5	100.0%	3	100.0%	20	100.0%
	n	7	100.0%	5	100.0%	5	100.0%	3	100.0%	20	100.0%
Child have difficulties seeing	No difficulty	5	71.4%	1	20.0%	4	80.0%	0	0.0%	10	50.0%
	Some difficulties	2	28.6%	4	80.0%	1	20.0%	3	100.0%	10	50.0%
	n	7	100.0%	5	100.0%	5	100.0%	3	100.0%	20	100.0%
Child use hearing aid	No	7	100.0%	5	100.0%	5	100.0%	3	100.0%	20	100.0%
	n	7	100.0%	5	100.0%	5	100.0%	3	100.0%	20	100.0%
Child have difficulties hearing sounds like people	No difficulty	6	85.7%	2	40.0%	5	100.0%	2	66.7%	15	75.0%
	Some difficulties	1	14.3%	3	60.0%	0	0.0%	1	33.3%	5	25.0%
	n	7	100.0%	5	100.0%	5	100.0%	3	100.0%	20	100.0%
Child uses any equipment or receive assistance for walking	No	7	100.0%	4	80.0%	5	100.0%	2	66.7%	18	90.0%
	Yes	0	0.0%	1	20.0%	0	0.0%	1	33.3%	2	10.0%
	n	7	100.0%	5	100.0%	5	100.0%	3	100.0%	20	100.0%

Most children with disability had difficulties seeing though they were not using any visual aids, other had some difficulties hearing. About 10 % had difficulty walking and were using walking assistance.

3.4.4 **Mother led MUAC**

Family Mid Upper Arm Circumference (MUAC) (also referred to as Mother MUAC) is a community screening approach which aims to empower mothers, caregivers and other family members to screen their own children for acute malnutrition. The Family MUAC approach trains mothers, caregivers and other family members on how to use color-coded MUAC tapes to check the nutritional status of their children. It has many benefits and it is regarded as part of the simplified approach in tackling childhood malnutrition. Among the advantages are: it is simple to understand and use, better identifies children at highest risk of death from malnutrition and regular screening in the community has been shown to improve early diagnosis while decreasing risk of medical complication or death. The January SMART survey assessed several aspects of family MUAC approach. Among which was the proportion of care givers who had ever seen the tape.

Table 46: Seen the MUAC tape

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
No	370	68.5%	391	54.9%	520	72.9%	375	69.8%	1656	66.2%
Yes	170	31.5%	321	45.1%	193	27.1%	162	30.2%	846	33.8%
n	540		712		713		537		2502	

About a third of the care givers had seen the tape. More than half of the community units in Turkana County have been trained on the approach and are reported to be using it as guided by the program data. However, the survey found a slightly lower proportion had ever seen the tape with Turkana North leading and Turkana South has the least. This could be attributed to the low proportion of CU implementing the approach in Turkana East which is part of Turkana South survey zone. This shows efforts are needed to reach all care givers with the approach.

3.4.4.1 Caregivers' sensitization on family MUAC

For care givers to effectively use family MUAC, they need initial sensitization and regular capacity building through OJT and mentorship by CHVs and health workers. Among the 846 (33.8%) of care givers who had reported having seen the tape, slightly more than half (59%) had ever been sensitized on its use. Considering the literacy level of caregivers of children under five years in Turkana county where more than 80% have no formal education, it will be important to continually build their capacity on the strategy.

Table 47: Sensitized on how to use Family MUAC tape

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
No	96	56.5%	60	18.7%	97	50.3%	94	58.0%	347	41.0%
Yes	74	43.5%	261	81.3%	96	49.7%	68	42.0%	499	59.0%
n	170	100.0%	321	100.0%	193	100.0%	162	100.0%	846	100.0%

3.4.4.2 Family led MUAC ownership

The survey sought to establish among the care givers who reported having seen the family MUAC tapes, how many owned one. Half of them had the tape, a good indicator. The county government and supporting partners should strive to distribute the tapes to all caregivers.

Table 48: Family MUAC tape ownership

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
No (if they don't show you the tape)	105	61.8%	94	29.3%	99	51.3%	125	77.2%	423	50.0%
Yes (if they show you the family MUAC tape)	65	38.2%	227	70.7%	94	48.7%	37	22.8%	423	50.0%
n	170	100.0%	321	100.0%	193	100.0%	162	100.0%	846	100.0%

3.4.4.3 Use of family MUAC tapes

Evidence shows there is a correlation between knowledge and practice. Caregivers with family MUAC tapes were asked if they knew how to use the tape. Almost (95%) all caregivers with family MUAC tapes reported they could use the tape.

Table 49: Use of Family MUAC tape

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
No	102	60.0%	113	35.2%	117	60.6%	112	69.1%	444	52.5%
Yes	68	40.0%	208	64.8%	76	39.4%	50	30.9%	402	47.5%
n	170	100.0%	321	100.0%	193	100.0%	162	100.0%	846	100.0%

3.4.4.4 Demonstrating how to use family led MUAC tapes

Among those who reported they knew how to use the tape, 83.8% correctly demonstrated its use. This confirms effectiveness of the sensitization sessions. Majority of those with family MUAC tapes who could not correctly use them were in Turkana Central.

Table 50: Demonstrate use of family MUAC

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Can not demonstrate how to use MUAC	26	38.2%	17	8.2%	13	17.1%	9	18.0%	65	16.2%
Can demonstrate well how to use MUAC	42	61.8%	191	91.8%	63	82.9%	41	82.0%	337	83.8%
n	68	100.0%	208	100.0%	76	100.0%	50	100.0%	402	100.0%

3.4.4.5 Self-referral from family led MUAC screening

The rationale for teaching mothers, caregivers and family members to measure MUAC and classify acute malnutrition is to enhance detection of cases at community level and to increase the number of referrals of acute malnutrition to the health facility or medical outreach sites for treatment. By broadening the scope of people involved in child screening at community level, it is anticipated that referrals for treatment will be enhanced and contribute to increase in coverage of IMAM program. Slightly less than half of the children were referred after measurement. This could be because not all were identified to be malnourished.

Table 51: Children referral for treatment after using MUAC tape

	Turkana Central	Turkana North	Turkana South	Turkana West	Turkana County

	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	18	26.5%	117	56.3%	39	51.3%	18	36.0%	192	47.8%
No	50	73.5%	91	43.8%	37	48.7%	32	64.0%	210	52.2%
Total	68	100.0%	208	100.0%	76	100.0%	50	100.0%	402	100.0%

3.4.4.6 Place of self-referrals

Majority of referrals were made to the CHVs. This is an indication of the trust caregivers had on CHV; a key component of community health strategy. Health facilities followed with popularity for referrals as expected. Of concern was the small number referred to outreach considering the survey was done at the pick of response and outreach coverage was highest during the assessment. However, family MUAC remain an important component of prevention and treatment of wasting in Turkana County.

Table 52: Place of referral of children detected using family MUAC

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Nearest health center/dispensary	9	50.0%	52	44.4%	16	41.0%	6	33.3%	83	43.2%
Outreach site	0	0.0%	4	3.4%	3	7.7%	0	0.0%	7	3.6%
To CHV	9	50.0%	61	52.1%	20	51.3%	12	66.7%	102	53.1%
n	18	100.0%	117	100.0%	39	100.0%	18	100.0%	192	100.0%

4.0 MATERNAL NUTRITION

It is recommended that maternal nutrition should be addressed during pregnancy for the child's first 1,000 days of life. Nutritional status of women before pregnancy influences their 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. Women should receive optimal nutrition for a successful pregnancy, child delivery and lactation. Under nutrition prior and around pregnancy makes the placenta fail to develop fully therefore it cannot optimally nourish the fetus. Under nourished and over nourished women experience more complications during pregnancy and delivery than normal women. For instance, anemic women are more likely to deliver low birth weight infants while low folic acid levels are associated with an increased risk of low birth weight and birth defects. Optimum weight gain during pregnancy is a good indicator of good nutrition for the women and is essential for invitro growth. Desired weight gain is based on pre-pregnancy weight using BMI criteria and pre-conception nutritional status of the woman.

4.1 Women physiological status

The January 2023 SMART survey sought to assess the physiological status of the interviewed women. Interviewers asked women their current physiological status. Most female caregivers were breastfeeding 54.2% as has been the case in the last surveys though a reduction from 57.0% in June 2022chnaging the increasing trend recorded from June 2021. Proportion of pregnant caregivers remained basically the same; 10.7% as compared to 10.8% in June 2022 however proportion of caregivers who were both pregnant and lactating increased to 0.7%. All survey zones recorded this indicator except Turkana Central. The table below details the physiological status of women of reproductive age across the four survey zones and a proxy for the county.

Table 53: Women Physiological status January 2023

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	count	%	count	%	count	%	count	%	count	%
Pregnant	47	9.2%	76	14.0%	62	9.3%	49	10.8%	234	10.7%
Lactating	278	54.3%	318	58.6%	347	51.9%	237	52.1%	1180	54.2%
Pregnant and Lactating	0	0.0%	3	0.6%	6	0.9%	6	1.3%	15	0.7%
None of the above	187	36.5%	146	26.9%	254	38.0%	163	35.8%	750	34.4%
n	512		543		669		455		2179	

4.2 Acute Malnutrition

4.2.1 Nutrition status of women of reproductive age

The January 2023 SMART survey also assessed maternal nutrition status. This was through MUAC measurement administration to all women of reproductive age (15 to 49 years) in all sampled households, irrespective of their physiological status. There was a reduction in the proportion of women of reproductive age who were malnourished in the January 2023 SMART survey from 14.8% in June 2022 to 10.5% in January 2023. This reduction cut across all the survey zone with the largest decrease being in Turkana South survey zone.

Turkana South was the most affected zone with 12.3% of women having malnutrition compared to June 2022 one of 19.0%.

Table 54: Nutrition status of women reproductive age - January 2023

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Malnourished (<210 mm)	51	10.0%	62	11.4%	82	12.3%	34	7.5%	229	10.5%
Not malnourished (>210mm)	461	90.0%	481	88.6%	587	87.7%	421	92.5%	1950	89.5%
n	512		543		669		455		2179	

4.2.2 **Nutrition status of pregnant and lactating women**

The survey further analyzed the MUAC measurements for women who reported they were pregnant or /and lactating.

Table 55: Nutrition status of Pregnant and lactating women- January 2023

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Malnourished (<210 mm)	30	9.2%	38	9.6%	48	11.6%	16	5.5%	132	9.2%
Not malnourished (>210mm)	295	90.8%	359	90.4%	367	88.4%	276	94.5%	1297	90.8%
n	325		397		415		292		1429	

This cohort also showed improved nutrition status and they were better off than all women centrally to the expectation that they would be poorly nourished considering the nutritional needs. Improvement was noted in all survey zones with the overall county level having improved by 6% i.e., from 15.2% to 9.2%. Turkana South had the highest proportion of malnourished women, the same case witnessed in June 2022.

Table 56: Non-Pregnant/ lactating women - January 2023

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Malnourished (<210 mm)	21	11.2%	24	16.4%	34	13.4%	18	11.0%	97	12.9%
Not malnourished (>210mm)	166	88.8%	122	83.6%	220	86.6%	145	89.0%	653	87.1%
n	187		146		254		163		750	

Despite the non-pregnant/and lactating women having lower nutrition expectation than pregnant/ and lactating women, they were more malnourished with a county prevalence of 12.9% though an improvement from 13.9% in June 2022. Despite the overall reduction in women malnutrition, there was an increase in malnutrition in Turkana Central and West.

4.3 Iron and Folic Acid Supplementation (IFAS)

The current WHO (2012) guideline recommends a daily Iron and Folic Acid Supplementation (IFAS) for pregnant women during 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. The same guidelines direct all Pregnant Women to be supplemented with Iron and Folic Acid (IFAS) regardless of anaemia

status in countries where anaemia is >40%. Kenya being a high burden country adopted the WHO guidelines and it is a component in the Focused Antenatal Care (FANC). The current IFA formulations are: 60mg iron /400µg folic acid and should be given as a combined pill throughout pregnancy in accordance with WHO 2012 recommendations. IFAS has been proved 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.

Mothers of children below 2 years were asked if they had consumed iron folate in their most recent pregnancy and yes for how long. On average 40.9% of the sampled household had a child below years. This cut across all the survey zones with Turkana North having the highest proportion.

Table 57: Caregivers of children with children below 2 years

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Yes	303	59.2%	316	58.2%	399	59.6%	269	59.1%	1287	59.1%
No	209	40.8%	227	41.8%	270	40.4%	186	40.9%	892	40.9%
n	512		543		669		455		2179	

About 96.3% of women with children below 2 years across the county had been supplemented with iron folate supplements during their last pregnancy. This was an increase from the June 2022 SMART survey where 91.9% had been supplemented. The improvement was noted in all survey zones with Turkana West leading. The improvement was attributed to scaled up response.

Table 58: Caretakers with children aged 24 months and below who were supplemented with Iron Folic acid in their last pregnancy- January 2023

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Yes	290	95.7%	302	95.6%	390	97.7%	258	95.9%	1240	96.3%
No	6	2.0%	10	3.2%	9	2.3%	8	3.0%	33	2.6%
Don't Know	7	2.3%	4	1.3%	0	0.0%	3	1.1%	14	1.1%

There was a significant improvement of number of days women were taking IFAS from 66.3 days to 120.8 days; a 54.5 days difference, though there was 8 days reduction in Turkana South survey zone which was leading in June 2022. Most women took IFAS for 90 to >= 180 days at 74%. Improved Access due to the ongoing emergency response could have led to the improvement. However, the proportion meeting the government recommendation of 270 days reduced from 7.7% to 5.3%. The poor length of taking IFAS could be attributed to the later first ANC visit as reported by the health workers. There is need to create more demand for IFAS among pregnant women through behavior change communication approaches.

Table 59: Number of days caretakers with children aged 24 months and below consumed IFAS in their last pregnancy – January 2023

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Below 90 Days	95	32.8%	69	22.8%	34	8.7%	59	22.9%	257	20.7%
90 to >= 180	172	59.3%	224	74.2%	330	84.6%	191	74.0%	917	74.0%

Above 180 Days	23	7.9%	9	3.0%	26	6.7%	8	3.1%	66	5.3%
n	290		302		390		258		1240	
Average Number of Days	111.96		116.04		141.82		104.74		120.85	

4.3.1 **Ante Natal Care (ANC) attendance**

ANC attendance for pregnant women was good at 97.3% for county with all survey zones having over 90%.

Table 60: ANC attendance

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Yes	298	98.3%	305	96.5%	391	98.0%	258	95.9%	1252	97.3%
No	5	1.7%	11	3.5%	8	2.0%	11	4.1%	35	2.7%
n	303		316		399		269		1287	

4.3.1.1 Duration of Ante Natal Care (ANC) attendance

Slightly less than half of the women were making their first ANC visit in the 1st and 3rd month which is good indicator as it is the MOH recommendation, though in Turkana Central and South survey zones more women attended their first visit in the 4th and 6th month. It is worrying there is a considerable proportion who visited the ANC clinic for the first time in the 7th to 9th month. These women are likely to miss most of the intended benefits.

Table 61: First Visit to ANC

Indicator	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Month 1 to Month 3	116	38.9%	150	49.2%	158	40.4%	139	53.9%	563	45.0%
Month 4 to Month 6	157	52.7%	124	40.7%	178	45.5%	82	31.8%	541	43.2%
Month 7 to Month 9	20	6.7%	27	8.9%	50	12.8%	36	14.0%	133	10.6%
Don't Know	5	1.7%	4	1.3%	5	1.3%	1	0.4%	15	1.2%
n	298		305		391		258		1252	

4.4 Mosquito Nets Ownership and Utilization

4.4.1 **Mosquito nets ownership**

Turkana county is regarded a low malaria burden county, though malaria is endemic in Loima sub-county which is part of Turkana Central survey zone. The January 2023 SMART survey recorded an increase in the proportion of household owning mosquito nets from 29.8% to 32.6% changing the decline recorded in 2021 to 2022 surveys. There are malaria interventions across the county targeting pregnant women and more so in Loima sub-county which could be seen in the high proportion of households owning mosquito nets. Turkana North had the least mosquito nets ownerships.

Table 62: Mosquito nets ownership

	Turkana Central	Turkana North	Turkana South	Turkana West	Turkana County

No	286	53.0%	500	70.2%	547	76.7%	354	65.9%	1687	67.4%
Yes	254	47.0%	212	29.8%	166	23.3%	183	34.1%	815	32.6%
n	540		712		713		537		2502	

4.4.2 **Mosquito nets utilization**

Mosquito net utilization continued to decline as observed in the table below. This trend was observed from the June 2021 SMART survey. Turkana South was the lowest user of mosquito nets unlike in June 2022 when Turkana West had the lowest proportion using mosquito nets.

Table 43: Mosquito nets utilization

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	n	%	n	%	n	%	n	%	n	%
Yes	822	71.2%	683	79.7%	483	54.1%	518	59.5%	2506	66.4%
No	332	28.8%	174	20.3%	409	45.9%	353	40.5%	1268	33.6%
n	1154		857		892		871		3774	

5.0 WATER SANITATION& HYGIENE

Clean and safe environment is every child's right. Access to water and good sanitation are basic human right.[6] All individuals are entitled to have access to a specified amount of safe drinking water and to basic sanitation facilities. Water and sanitation are highly interrelated. Good access to clean water, basic toilets, and good hygiene practices keeps children thriving as well as gives them a healthier start in life. Sanitation is essential for the conservation and sustainable use of water resources, while access to water is required for sanitation and hygiene practices. The realization of other human rights, such as the right to the highest attainable standard of health, the right to food and good nutrition, 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 water and sanitation (WASH) indicators are linked to under nutrition and more so on stunting levels. Diarrhea, one of the leading killers of young children is closely linked to poor/inadequate WASH (Pruss-Ustun et al, 2014), which often causes under nutrition. This 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).

5.1 Main Source of Water

The January 2023 SMART survey had an objective to establish where households were currently obtaining water for their use. Then proportion of households using safe water sources (piped water systems, borehole, protected well, water kiosk, tanker truck, and hand pump) slightly increased from 60% in June 2022 to the current 64.2%. This changed the declining trend witnessed in the June 2022 SMART survey. Turkana central led with the proportion of households using piped water systems and tube wells, the safe water sources. Turkana West was the lowest user of safe water sources. The unsafe water sources were mostly co-shared with the livestock further increasing chances of contamination.

Health and sanitation education is highly needed in all survey zones considering the high proportion of the population relying on unsafe water sources which pauses an eminent danger to the population. There is need to sensitize the community on water treatment while ensuring access to water treatment chemicals. The table below summarizes main sources of water per survey zone.

Table 63: **Main current sources of water**

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Piped water system	100	18.5%	70	9.8%	119	16.7%	24	4.5%	313	12.5%
Public tap / standpipe	119	22.0%	86	12.1%	102	14.3%	58	10.8%	365	14.6%
Tube well/borehole	88	16.3%	209	29.4%	94	13.2%	117	21.8%	508	20.3%
Protected well	0	0.0%	4	0.6%	70	9.8%	1	0.2%	75	3.0%
Unprotected well	88	16.3%	132	18.5%	161	22.6%	103	19.2%	484	19.3%
Protected spring	0	0.0%	1	0.1%	0	0.0%	0	0.0%	1	0.0%
Unprotected spring	30	5.6%	34	4.8%	0	0.0%	0	0.0%	64	2.6%
Surface water (river, dam, lake, pond, stream, canal, irrigation channel)	51	9.4%	88	12.4%	52	7.3%	114	21.2%	305	12.2%
Water trucking / Boozer	0	0.0%	1	0.1%	0	0.0%	15	2.8%	16	0.6%
Water vendor/Kiosk	62	11.5%	49	6.9%	115	16.1%	105	19.6%	331	13.2%
Harvested water	11	2.0%	17	2.4%	0	0.0%	0	0.0%	28	1.1%

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

Cart with small tank	0	0.0%	1	0.1%	0	0.0%	0	0.0%	1	0.0%
Others	1	0.2%	38	5.3%	0	0.0%	0	0.0%	39	1.6%
Rain Water	0	0.0%		0.0%	0	0.0%	0	0.0%	0	0.0%
n	540		712		713		537		2502	

5.1.1 **Type of Piped water**

The January 2023 SMART survey also sought to establish the type of piped water the households who had reported using piped water as the main current source of water were using. The proportion using public tap/stand pipe increased to 53.8%, the same level it was in June 2021. Turkana North led with use of public taps unlike in June 2021 when Turkana West led. Those with water piped into their dwellings slightly increased from 11.6% in June 2021 to 16.2% in June 2022. Turkana West led with use of public tap, while Turkana South had the lowest proportion. Turkana west had the lowest proportion of households with water piped into their dwellings.

Table 64: Type of piped water

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Piped into dwelling	41	18.7%	31	19.9%	39	17.6%	1	1.2%	112	16.5%
Piped to yard / plot	28	12.8%	27	17.3%	17	7.7%	10	12.2%	82	12.1%
Piped to neighbour	31	14.2%	12	7.7%	63	28.5%	13	15.9%	119	17.6%
Public tap / standpipe	119	54.3%	86	55.1%	102	46.2%	58	70.7%	365	53.8%
n	219		156		221		82		678	

5.1.2 **Type of Dug Well Used**

The proportion of households relying on unprotected reduced to 86.6%, a 4.1% improvement from 90.7%, a trend maintained from June 2019 SMART survey. However, this proportion is still unacceptably high using unsafe water sources.

Table 65: Type of dug well used

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Protected well	0	0.0%	4	2.9%	70	30.3%	1	1.0%	75	13.4%
Unprotected well	88	100.0%	132	97.1%	161	69.7%	103	99.0%	484	86.6%
	88		136		231		104		559	

5.2 Distance to Water Source and Queuing Time

The maximum distance from any household to the nearest water point according to the SPHERE standards handbook for WASH is 500 meters. The same handbook gives the maximum queuing time at a water point as not more than 15 minutes and should not take more than three minutes to fill a 20-litre container.

5.2.1 **Distance to water sources**

The survey sought to establish the distances covered by households to access water. The analysis revealed a reduction of the proportion of households accessing water from the acceptable recommended distance of less than 500m. The reducing trend has been witnessed from June 2021 to present having

reduced from 64.6% to present 52.7%. This could be attributed to the ongoing drought. The table below shows distance to water sources per survey zone in Turkana County.

Table 66: Distance to water sources January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Less than 500m (Less than 15 minutes)	274	50.7%	379	53.2%	383	53.7%	282	52.5%	1318	52.7%
More than 500m to less than 2km (15 to 1 hour)	204	37.8%	260	36.5%	239	33.5%	192	35.8%	895	35.8%
More than 2 km (1 – 2 hrs)	45	8.3%	73	10.3%	86	12.1%	47	8.8%	251	10.0%
Others	17	3.1%	0	0.0%	5	0.7%	16	3.0%	38	1.5%
n	540		712		713		537		2502	

5.2.2 **Queuing time to water sources**

There was a reduction in the proportion of households who were not queuing for water in January 2023 survey when compared to June 2022; from 67.4% to 63.4%, a trend witnessed in the last surveys. This shows a continuous deterioration from successive SMART surveys.

Table 67: Proportion of Households Queuing for water

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Yes	224	41.5%	218	30.6%	213	29.9%	261	48.6%	916	36.6%
No	316	58.5%	494	69.4%	500	70.1%	276	51.4%	1586	63.4%
n	540		712		713		537		2502	

Turkana South was the best at 70.1% while West was the worst at 51.4%. Among those who queued, about half queued for less than 30 minutes though a 5.7% deterioration from June 2022. The table below details the analysis.

Table 68: Queuing time at water source-January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Less than 30 minutes	149	66.5%	57	26.1%	146	68.5%	112	42.9%	464	50.7%
30-1 hr	52	23.2%	118	54.1%	57	26.8%	109	41.8%	336	36.7%
More than 1 hr	23	10.3%	43	19.7%	10	4.7%	40	15.3%	116	12.7%
n	224		218		213		261		916	

5.3 Methods of drinking water treatment and storage

5.3.1 **Household water treatment**

Majority (88.5%) of households were not treating drinking water despite the high proportion of household obtaining water from unsafe sources. This was a deterioration from last survey's 87%. Most Survey zones had a no treatment proportion of more than 90% except Turkana North which led with water treatment at 24.7%. Efforts are needed to improve water treatment across the county considering the poor water treatment prevalence. The table below details the analysis.

Table 69: Drinking Water treatment- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Water Treatment	31	5.70%	176	24.70%	42	5.90%	38	7.10%	287	11.50%
No treatment	509	94.3%	536	75.3%	671	94.1%	499	92.9%	2215	88.5%
n	540		712		713		537		2502	

The proportion of household treating water by boiling increased considerably to 72.8% from 47.2%, though it was almost half of the households in Turkana West and South who were treating water by boiling. However, the proportion treating water by chemicals increased considerably. Throughout the four survey zones, only a small proportion was treating water despite the low latrine coverage and high proportion accessing water from unsafe sources. The poor WASH indicators could be among the leading contributors to the high levels of undernutrition especially when he relationship between WASH and undernutrition is considered.

Table 70: Methods used for treating drinking water

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Boiling	28	90.3%	144	81.8%	20	47.6%	17	44.7%	209	72.8%
Chemicals	12	38.7%	103	58.5%	17	40.5%	21	55.3%	153	53.3%
Traditional Herbs	1	3.2%	12	6.8%	14	33.3%	1	2.6%	28	9.8%
Pot filters	0	0.0%	4	2.3%	0	0.0%	0	0.0%	4	1.4%
n	31		176		42		38		287	

Traditional herbs use remained at the same proportion as the June 2022 SMART survey results. During the January 2023 SMART survey period, the use of traditional herbs cut across all survey zones with highest increase in Turkana South.

5.3.2 **Storage of Drinking water**

There was 5.7% increase in the proportion of households using closed containers to store drinking water; which has an effect to the prevention of water contamination. This was a change in trend from decline to increase which could be attributed to the distribution of WASH NFIs in the integrated outreach clinics during the current response. There is still need to support households with water storage can which can be closed.

Table 71: Storage of drinking water -January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Open Container/Jerrican	148	27.4%	342	48.0%	152	21.3%	109	20.3%	751	30.0%
Closed Container/Jerrican	392	72.6%	370	52.0%	561	78.7%	428	79.7%	1751	70.0%

5.4 Water Payment

The proportion of household paying for water increased from June 2022 to January 2023. There was 0.9% increase when June 2022 survey was compared with January 2023. Turkana North had the highest proportion of households paying for water, at 40.3%, a 13,2% increase while Turkana West had the lowest.

Table 72: **Payment for water – January 2023**

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Yes	177	32.8%	287	40.3%	267	37.4%	160	29.8%	891	35.6%
No	363	67.2%	425	59.7%	446	62.6%	377	70.2%	1611	64.4%
n	540		712		713		537		2502	

5.5 Household water consumption

A target of 15 liters and above daily water consumption per person is given as the SPHERE standard globally. About 32.7% of the interviewed households were consuming adequate water in the January 2023 SMART survey, a deterioration from the June 2022 survey where 97% of the interviewed households were consuming adequate water quantity. This could be attributed to the current drought. The deterioration cut across all the four-survey zone with Turkana central being the best while Turkana North was the poorest. The table below details sub-county specific analysis.

Table 73: household water consumption per day per survey zone

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Household using <=15litres per day	336	62.2%	542	76.1%	462	64.8%	344	64.1%	1684	67.3%
Household using >15 liters per day	204	37.8%	170	23.9%	251	35.2%	193	35.9%	818	32.7%
n	540		712		713		537		2502	

5.6 Hand washing

Hand washing with soap and running water has been proven as the single most cost-effective public health intervention in preventing diarrehea diseases [7]. Moments, like after visiting the toilet/latrine, before cooking, before eating and after taking children to the toilet/latrine are described by the MOH as the four critical hand washing moments. The table below illustrate similar proportion of households who were aware of hand washing practices in January 2023 compared to June 2022. Turkana Central was the best in knowledge while Turkana South was the poorest.

Table 74: Awareness of hand washing practices

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Yes	496	91.9%	462	64.9%	445	62.4%	399	74.3%	1802	72.0%
No	35	6.5%	135	19.0%	231	32.4%	114	21.2%	515	20.6%
Don't Know	9	1.7%	115	16.2%	37	5.2%	24	4.5%	185	7.4%
	540		712		713		537		2502	

[7]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.

Most of the interviewed households were washing hands before eating (91.6%), the same as the one recorded in June 2022. Those washing hands after visiting toilet decreased from 88.4% in June 2022 to 83.3% in January 2023 an indication that the COVID 19 containment measure might be wearing out. The January survey saw Turkana West being the poor performer unlike June 2022 where Turkana North was the worst. Still efforts need to be put in place to have care givers wash hands after taking their children to the toilet which significantly reduced. Generally handwashing practices are on improvement path across the survey zones.

Table 75: Hand washing at critical times- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
After Toilet	419	84.5%	440	95.2%	413	92.8%	229	57.4%	1501	83.3%
Before cooking	277	55.8%	375	81.2%	329	73.9%	217	54.4%	1198	66.5%
Before Eating	452	91.1%	415	89.8%	406	91.2%	378	94.7%	1651	91.6%
After taking children to the toilet	123	24.8%	188	40.7%	192	43.1%	22	5.5%	525	29.1%
	496		462		445		399		1802	

5.6.1 **Hand washing at all four critical times**

Hand washing with soap and on running water as per guidelines and more so at the four critical times breaks the key contamination routes in the body. Contamination is defined as the transmission of disease-causing germs from one human to another or via contact with human or animal faeces. A single gram of human faeces can contain up to one trillion germs.[8] Adults and children who practice proper hand washing enjoy direct health benefits and other benefits.

Handwashing at all four critical instances (before eating, before cooking, after visiting the toilet, after changing the baby diaper) deteriorated in January 2023 SMART survey from 41.2% to 24%, a trend recorded in June 2022. This is an indication the good practices attributed to COVID 19 containment measure on WASH are slowly wearing out. Turkana West survey zone was the poorest having deteriorated from 35.6% in June 2022 to 2.3% in January 2023. Turkana North continued to improve as it was the case in June 2022. It is important to note all survey zones had less than half of the population washing hands to all four critical instances an indication the larger proportion is exposed to contamination. The results show a dire need to improve the hygiene practices across the county for better nutrition outcomes for the vulnerable population.

Table 76: Hand washing at all the four critical times- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
All 4 Instances	89	17.9%	165	35.7%	169	38.0%	9	2.3%	432	24.0%
< 4 Instances	407	82.1%	297	64.3%	276	62.0%	390	97.7%	1370	76.0%
n	496		462		445		399		1802	

[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.

5.6.2 **Hand washing with soap**

Research has shown that handwashing with soap and water 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] There was reduction of the population washing hands with soap and water from 50.7%in June 2022 to 45.9% in January 2023 a trend recorded in from June 2021. Those washing hands with only water increased from 33% to 39%. Again, two survey zones recorded hand washing using traditional herbs though on decline. Sustained bbehaviour change communication is needed to have the right practice. As it was a recommendation in the last survey, still there is need to test if the specific herbs have the necessary antimicrobial effects as soap.

Table 77: What is used for hand washing- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
	n	%	n	%	n	%	n	%	n	%
Only Water	153	30.8%	231	50.0%	113	25.4%	220	55.1%	717	39.8%
Soap and Water	219	44.2%	193	41.8%	285	64.0%	131	32.8%	828	45.9%
Soap when l can afford it	123	24.8%	37	8.0%	47	10.6%	48	12.0%	255	14.2%
Traditional Herbs	1	0.2%	1	0.2%	0	0.0%	0	0.0%	2	0.1%
	496		462		445		399		1802	

Caregivers' knowledge is corelated to the practices, hence the reason the survey sought to test caregivers' knowledge on infant feeding. The knowledge level of caregivers of children 0-23 months old continued to decreases from 75.2% in June 2022 to the current 73.7%, a trend recorded from June 2019 survey. Turkana Central survey zone was the best and had the highest improvement while Turkana North and South had the worst knowledge. Much effort is needed to improve hygiene and sanitation indicators in Turkana in general. There was an indication the gains made with the COVID 19 containment measures on WASH are wearing out and there is need to strengthen hygiene and sanitation intervention through community health strategies.

Table 78: Hand washing in HH with Children 0-23 Months – January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Proxy County	
Practice	n	%	n	%	n	%	n	%	n	%
Awareness of handwashing	256	95.5%	200	64.3%	232	64.1%	179	76.2%	867	73.7%
Handwashing moments	n	%	n	%	n	%	n	%	n	%
After Toilet	219	85.5%	194	97.0%	217	93.5%	105	58.7%	735	84.8%
Before cooking	151	59.0%	179	89.5%	176	75.9%	97	54.2%	603	69.6%
Before Eating	235	91.8%	178	89.0%	207	89.2%	165	92.2%	785	90.5%
After taking children to the toilet	67	26.2%	80	40.0%	92	39.7%	12	6.7%	251	29.0%
All 4 critical moments	54	20.1%	72	36.0%	78	33.6%	4	2.2%	208	23.7%

[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.

Below 4 critical moments	214	79.9%	128	64.0%	154	66.4%	175	97.8%	671	76.3%

5.7 Latrine Utilization

The proportion of households without a latrine decreased from 79.7% in June 2022 to 77.3% in January 2023, a 2.4-points improvement. Thus, the overall sanitation status for Turkana County improved. The county latrine coverage was 22.7% an improvement from 20.3%. Open defecation was highest in Turkana North and Turkana South survey zones and was on increase on Turkana South. There is an urgent need to strengthen CLTS efforts to improve the household's sanitation facility coverage. The table below shows latrine ownership and utilization per survey zone.

Table 79: Latrine ownership and utilization – January 2023

	Turkana Central		**Turkana North**		**Turkana South**		**Turkana West**		**Proxy County**	
	Count	%	Count	%	Count	%	Count	%	Count	%
Flush to piped sewer system	1	0.2%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
Flush to septic tank	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ventilated improved pit latrine	26	4.8%	7	1.0%	27	3.8%	7	1.3%	67	2.7%
Pit latrine with slab	84	15.6%	36	5.1%	110	15.4%	82	15.3%	312	12.5%
Pit latrine without slab /open pit	24	4.4%	2	0.3%	7	1.0%	71	13.2%	104	4.2%
Composting toilet	1	0.2%	2	0.3%	8	1.1%	4	0.7%	15	0.6%
Hanging toilet / hanging latrine	4	0.7%	48	6.7%	15	2.1%	1	0.2%	68	2.7%
Bucket			1	0.1%	0	0	1	0.2%		
No facility / bush / field	400	74.1%	616	86.5%	546	76.6%	371	69.1%	1933	77.3%
n	540		712		713		537		2502	

6.0 FOOD SECURITY

Food and Nutrition security is defined by FAO as the 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. The July 2022 LRA report recorded a total of 87,880 children 6 to 59 months and 29,184 pregnant and lactating women were acutely malnourished in Turkana County (KFSSG, 2022). Turkana County is ranked as one of the most foods insure counties in Kenya. The county is also classified as a high malnutrition burden county in Kenya.

6.1 Cash transfer

Cash transfers are defined as direct payments of money to people, either as an alternative or in addition to distributing items such as food, blankets and shelter kits. It is usually done through physically giving cash, mobile money, vouchers for local suppliers or smart card transfers. Cash transfers can be either conditional or unconditional cash transfers. Kenya's cash transfer program offers a model for affordable and well-targeted social protection, facilitated by deep government commitment and sensible donor support. Kenyan government through Kenya Social Inclusion and Economic Program (KSIEP) in the state department of Social Security and protection has an established social protection program costing KSh.30 billion annually and covers 1,338,000 people. Turkana County has over 60,000 households on cash transfer targeting different groups. In Turkana County several modalities of cash transfer are implemented including the Nutrition Improvement through Cash and Health Education (NICHE), a health program incorporated in the routine government supported cash transfer through the ministry of labour and social protection and Ministry of Devolution and ASAL (NDMA) targeting pregnant women and children below 24 months. Currently NICHE is implemented in four priority sub-counties of Turkana South, Central, Loima and Turkana west. The county through support of several partners and different government departments has been using cash transfer to respond in the ongoing drought emergency.

Available evidence shows 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. The January 2023 SMART survey had an objective of seeking to establish what proportion of the interviewed households was enrolled in any cash transfer program implemented in the county.

Table 80: Household enrolled in cash transfer-January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
No	462	85.6%	608	85.4%	467	65.5%	498	92.7%	2035	81.3%
Yes	78	14.4%	104	14.6%	246	34.5%	39	7.3%	467	18.7%
n	540		712		713		537		2502	

Though there was an improvement on the proportion of the interviewed households reporting to have been enrolled on cash transfer, the proportion was still too low at 18.7% from June 2022 one of 11.8%. This changed the declining trend from June 2019. The low coverage could be attributes to the perception that the survey teams could be enrolling for more support thus household felt they would be left out by responding on the affirmative.

Table 81: Household enrolled which cash transfer program -January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	count	%	count	%	count	%	count	%	count	%
Hunger Safety net Program	49	62.8%	43	41.3%	137	55.7%	21	53.8%	250	53.5%
Older persons program	6	7.7%	15	14.4%	28	11.4%	10	25.6%	59	12.6%
OVC program	8	10.3%	2	1.9%	35	14.2%	8	20.5%	53	11.3%
WFP Linda Lishe Bora	4	5.1%	19	18.3%	21	8.5%	0	0.0%	44	9.4%
People with severe disabilities	1	1.3%	2	1.9%	2	0.8%	0	0.0%	5	1.1%
Other Emergency Cash Transfer (Specify)	10	12.8%	23	22.1%	23	9.3%	0	0.0%	56	12.0%
n	78		104		246		39		467	

As it has been in the last two surveys, the main cash transfer was HSNP followed by Inua Janii. These are the main government cash transfer to a wide range of beneficiaries. There was a reduction in the proportion of households receiving HSNP cash transfer when January 2023 SMART survey results were compared to June 2022 results. There was a notable increase in the proportion of household enrolled on emergency cash transfers a proof of the current response.

6.2 Food access and consumption

6.2.1 **Dominant foods and food groups consumed by households and women**

The major food groups consumed in the January 2023 SMART survey were Cereals, Pulses/legumes oils/fats condiments and sweet in that order. This has been the case in the last surveys. The elevated consumption of low nutrients foods like sweets and condiments was worrying and it is an indication of poor food feeding practices. Eggs, fruits, roots and tubers were the list consumed across the zones. Turkana produces a considerable number of fish, yet it was among the least consumed food groups which needs promotion. The detailed analysis across different survey zones is shown in the table below.

Table 82 : Food groups consumed by respondents in the last 24 hours- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Cereals	354	65.6%	236	33.1%	541	75.9%	200	37.2%	1331	53.2%
Roots and Tubers	37	6.9%	8	1.1%	32	4.5%	2	0.4%	79	3.2%
Veg	73	13.5%	0	0.0%	48	6.7%	4	0.7%	125	5.0%
Fruit	24	4.4%	1	0.1%	9	1.3%	10	1.9%	44	1.8%
Meats	153	28.3%	54	7.6%	50	7.0%	3	0.6%	260	10.4%
Eggs	13	2.4%	1	0.1%	17	2.4%	1	0.2%	32	1.3%
Fish	66	12.2%	28	3.9%	4	0.6%	2	0.4%	100	4.0%
Pulses/Legumes	272	50.4%	137	19.2%	437	61.3%	170	31.7%	1016	40.6%
Dairy	118	21.9%	38	5.3%	132	18.5%	20	3.7%	308	12.3%
Oils/|Fats	361	66.9%	171	24.0%	373	52.3%	77	14.3%	982	39.2%
Sweets/Sugars	262	48.5%	114	16.0%	444	62.3%	60	11.2%	880	35.2%
Condiments	275	50.9%	74	10.4%	434	60.9%	119	22.2%	902	36.1%
n	540		712		713		537		2502	

6.2.2 **Household Dietary Diversity (HDD)**

The January 2023 Smart survey sought to understand the household dietary diversity using the 24 hours recall period. Data was collected on 16 food group as described in the FAO 2021 guideline. During the analysis, the 16 food groups were compressed into 10 food groups.

Household Dietary Diversity (HDD) provides an of household economic access to food. As a results items requiring household resources to obtain like condiments, sugar and sugary foods, and beverages, form part of the score. On the centrally, individual dietary diversity scores aim to reflect nutrient adequacy. Previous studies in different age groups show an increase in individual dietary diversity score is related to an increase in specific diet nutrient adequacy. There are validated dietary diversity scores for different age/sex groups as a proxy measure for macro and/or micronutrient adequacy of the diet.

Despite the improved nutrition status across the four survey zones, overall Turkana County dietary diversity generally worsened with proportion of households consuming less than 3 food groups (poor households dietary diversity- HDD) increasing by 6.5 points. At the same time the population consuming more than 5 food groups decreased by half. Turkana North and West led with poor household dietary diversity a trend maintained from last survey. Thes results are an indication the maternal infant and you child nutrition situation is still dire and the community resilience is low, that is the improved nutrition situation is likely to deteriorate if no action is taken.

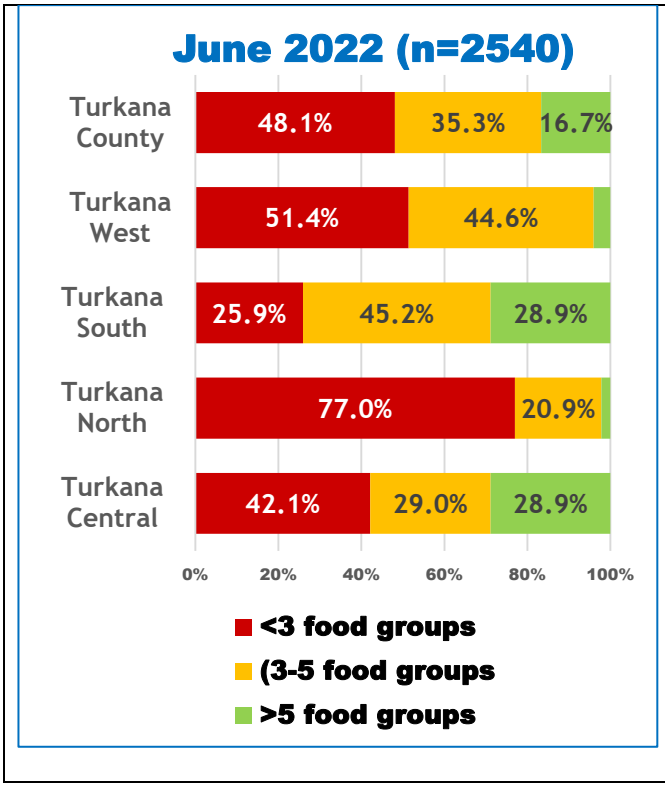


Figure 4: Household Dietary Diversity Score based on 24 hours recall for June 2022(n=2540)

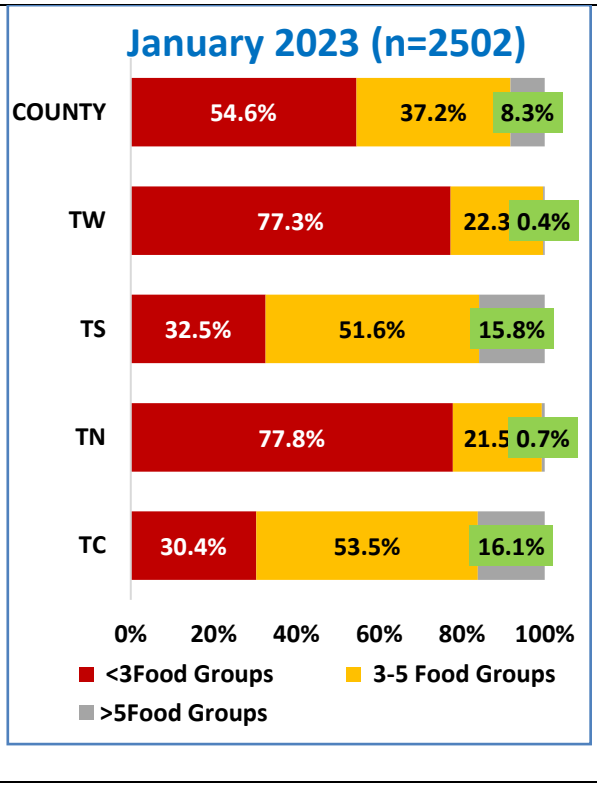


Figure 5 Household Dietary Diversity Score based on 24 hours recall for January 2023 (n=2502)

6.2.3 **Women dietary diversity score (MDD-W)**

The January SMART survey sought to assess the Minimum Dietary Diversity for women of reproductive age (MDD-W). The indicator reflects one key dimension of det quality which is micronutrient adequacy. It is a two-level indicator showing 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 Research has

shown elevated nutrients requirement for pregnant and lactating women than for adult men (National Research Council, 2006). 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 the specified dietary diversity minimum in a population are usually used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality.

The proportion of women 15 -49 years consuming 5 and more food groups improved across the survey zones with overall improvement in the county from 7% to 25.1%. Turkana North was the worst at 4.1% while Turkana Central crossed the 50% mark. Still WRA in Turkana County are unlikely to meet their micronutrients intake requirements as seen in the results.

Table 83: Minimum MDD-W January 2022

Survey zone	<5 food groups			5 and more food groups		
	June 2021	June 2022	June 2023	June 2021	June 2022	June 2023
Turkana Central	66.4%	86%	46.5%	33.6%	14%	53.5%
Turkana North	88.7%	100%	95.9%	11.3%	0%	4.1%
Turkana South	56.2%	87%	80.4%	43.8%	13%	19.6%
Turkana West	55.8	99%	73.6%	44.2%	1%	26.4%
Turkana County	66.9%	93%	74.9%	33.1%	7%	25.1%

All starchy staples, pulses/legumes, vitamin A rich dark green vegetables, flesh foods, other vegetables were the leading food groups consumed across the survey zones. This has been the trend in past surveys. Variation was seen across survey zones though a common trend could be seen. As has been the case in the past surveys, Turkana North was the worst affected which could be attributed to the poor access by the households in the survey zone

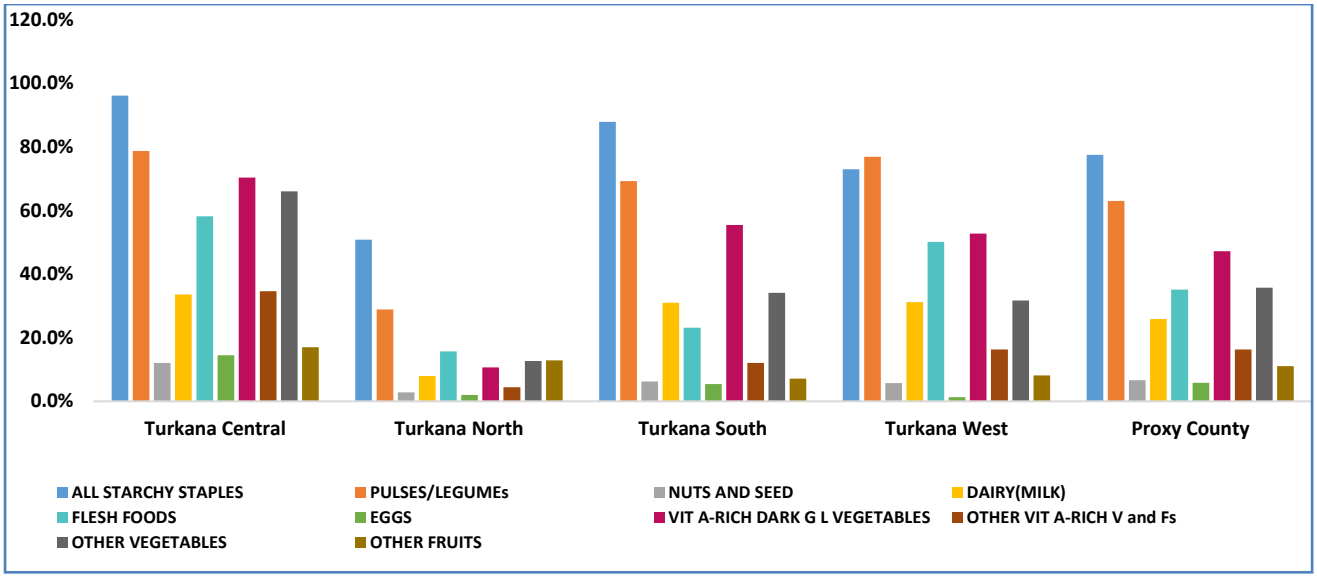


Figure 6: Food groups consumed (Women)

6.2.4 **Food Consumption Score Classification**

Another indicator assessed in the January 2023 SMART survey was the households' Food Consumption Score (FCS). WFP defines FCS as a composite score based on dietary diversity, food frequency and relative nutrition importance of different food group (WFP, 2015). This is a proxy measure of household's food security and is designed to reflect the quality of people's diet and it is considered as an outcome measure of household food security. Households are classified in three categories according to food consumption score; namely, poor, borderline and acceptable. The figures below detail a comparison between the June 2022 SMART with the January 2023 SMART survey results.

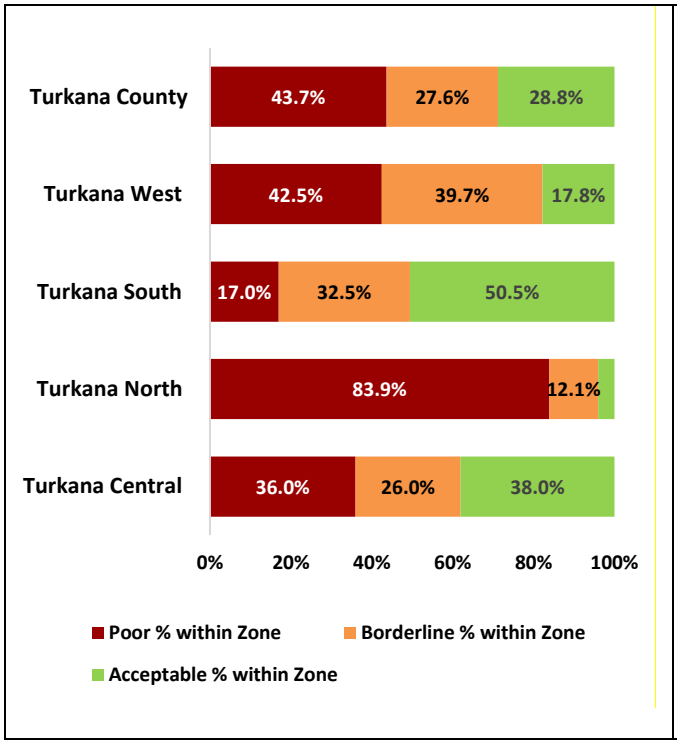


Figure 7:Jun 2022 Food Consumption Score (n=2540)

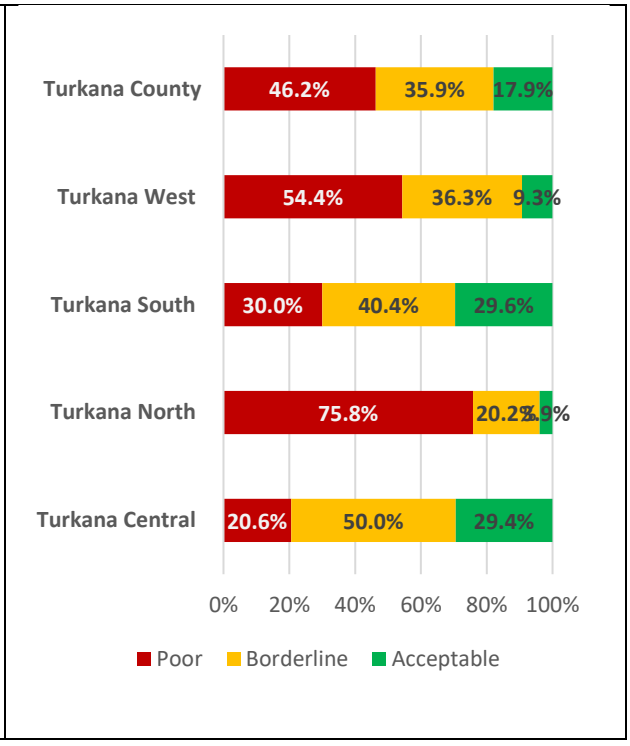


Figure 8:Jun 2023 Food Consumption Score (n=2502)

Generally, the county food security indicators improved though some survey zones experienced deterioration. The worsening survey zones were Turkana South and west. Turkana North had the poorest food security indicators while Turkana Central had the best as seen above.

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

Micronutrients are essential in the human body for thriving. Micronutrients are vitamins and minerals needed by the body in very small amounts. Micronutrient deficiencies are also referred as hidden hunger and can cause visible and dangerous health conditions, as well as lead to less clinically notable reductions in energy level, mental clarity and overall body incapacity. Micronutrients deficiencies are known to lead to reduced educational outcomes, reduced work productivity and increased risk from other diseases and health conditions (WHO, 2021). The January 2023 SMART survey analysed the diet quality of the respondents based on vitamin A rich, iron rich and protein richness.

Majority of the assessed households classified as poor consumed none of vitamin A rich (66.6%), and heme iron (75.9%) food sources. This was a worsening trend compare to the June 2022 SMART survey. There was noted improvement in those households classified as borderline though majority of them didn't consume the heme protein sources. Turkana North survey zone contributed most of the poor status followed by Turkana South. There is still dire need to promote dietary diversity among the residents of Turkana County. The table below details the analysis.

Table 84: Consumption of protein, Vitamin A and Hem iron rich foods per food groups (n=2502)-Jan 2023

		Turkana Central			Turkana North			Turkana South			Turkana West			Turkana County		
		FCS Categories			FCS Categories			FCS Categories			FCS Categories			FCS Categories		
		Poor	Borderline	Acceptable	Poor	Borderline	Acceptable	Poor	Borderline	Acceptable	Poor	Borderline	Acceptable	Poor	Borderline	Acceptable
Protein Rich	0 days	6.3%	0.0%	0.0%	71.9%	0.0%	0.0%	36.9%	0.7%	0.0%	7.5%	0.0%	0.0%	42.9%	0.2%	0.0%
	1-6 Days	67.6%	43.0%	0.6%	23.0%	40.3%	3.6%	54.2%	62.2%	3.3%	83.2%	42.6%	0.0%	48.2%	48.6%	2.0%
	7 times or more	26.1%	57.0%	99.4%	5.2%	59.7%	96.4%	8.9%	37.2%	96.7%	9.2%	57.4%	100.0%	8.9%	51.2%	98.0%
Vitamin A Rich	0 days	45.9%	13.3%	0.0%	85.6%	31.9%	7.1%	46.7%	11.8%	.5%	54.1%	20.0%	2.0%	66.6%	17.3%	0.9%
	1-6 Days	48.6%	48.9%	6.9%	13.7%	47.2%	32.1%	47.7%	66.3%	16.1%	42.1%	60.0%	16.0%	30.5%	56.6%	13.8%
	7 times or more	5.4%	37.8%	93.1%	.7%	20.8%	60.7%	5.6%	21.9%	83.4%	3.8%	20.0%	82.0%	2.9%	26.1%	85.3%
Heme Iron	0 days	35.1%	34.1%	8.2%	84.4%	42.4%	7.1%	79.9%	61.5%	41.7%	72.6%	51.3%	12.0%	75.9%	47.9%	24.3%
	1-6 Days	62.2%	54.1%	25.8%	13.5%	39.6%	32.1%	16.8%	32.6%	45.5%	27.4%	47.2%	76.0%	22.3%	43.4%	41.1%
	7 times or more	2.7%	11.9%	66.0%	2.0%	18.1%	60.7%	3.3%	5.9%	12.8%	0.0%	1.5%	12.0%	1.8%	8.7%	34.6%

Unlike in the previous surveys where staples were the most consumed food sources, the January 2023 SMART survey established protein source foods where the most consumed followed by staples. Fruits and vegetable foods sources consumption improved across the survey zones though it remained low in Turkana North; the same case as the previous survey. Vitamin A rich sources where the least consumed across the survey zones. This analysis answers the question of low micronutrients consumption in Turkana County. There was visible improvement of the number of days different sources were consumed across the survey zones when comparing June 2022 and January 2023 survey results. The figure below details the analysis.

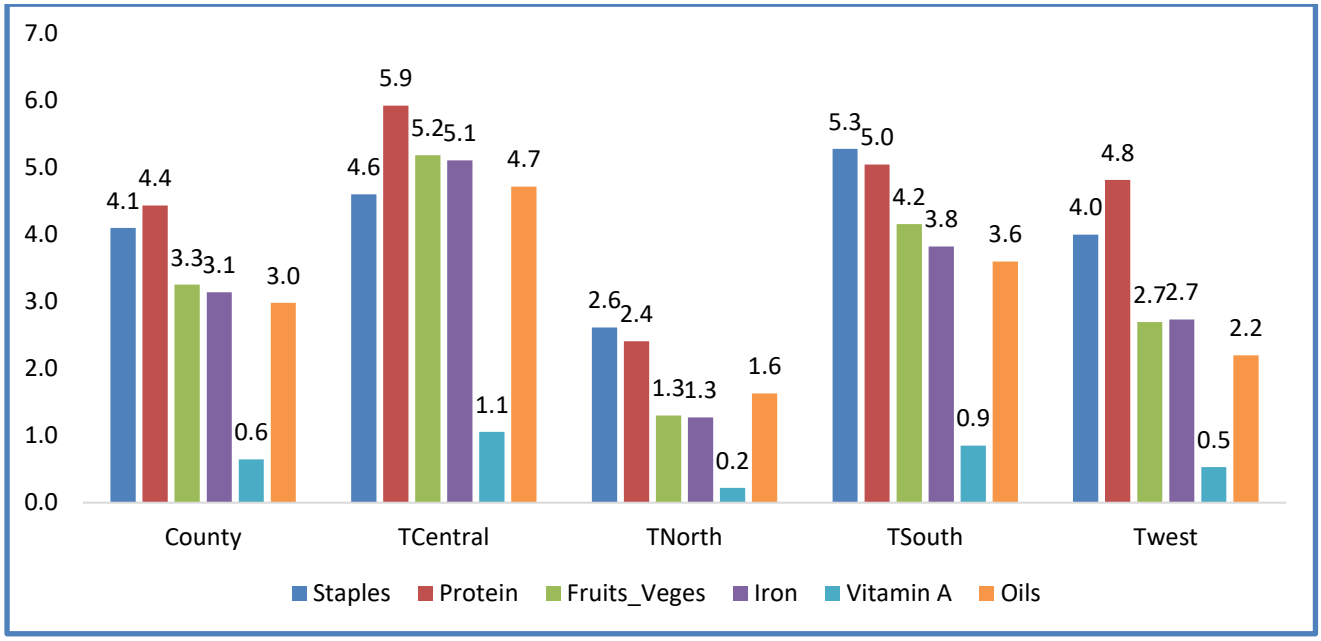


Figure 9: Number of days food was consumed showing micronutrient consumption- January 2023

6.2.6 **Hunger scale**

The January SMART survey sought to establish the extend of hunger being experienced by the household members in the survey zones. Respondent were asked if they had had any instances in the last one month preceding the survey when they had to go without food and if yes how many times.

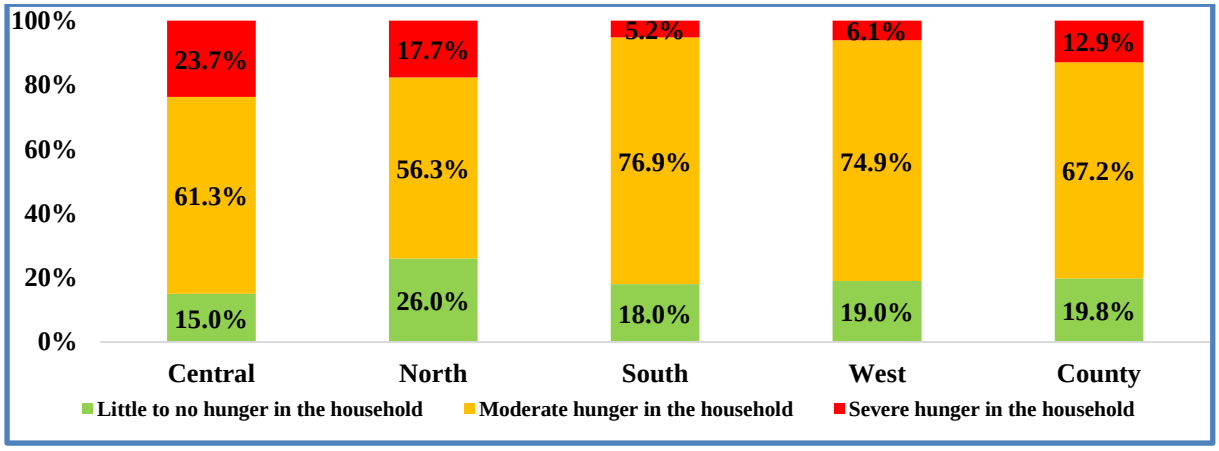


Figure 10: Households Hunger scale

Majority of household were experiencing moderate scale of hunger. There was a worrying level of extreme hunger in some in two survey zones; Turkana North and Central. For Turkana central it could be attributed to the high number of the urban poor population while in Turkana North it could be attributed to poor access.

6.2.7 **Coping Strategy Index (CSI)**

The survey also assessed county food security was also assessed through the Coping Strategy Index (CSI). CSI 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 to a single question: "What do you do when you don't have adequate food, and don't have the money to buy food?" 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).

The January SMART survey established there was improvement in the instances where the sampled households applied copying strategy because of lack of food or money to buy food from 78.3% to 77.4%. This was still high compared to 66% reported in June 2021. This indicates food insecurity across the sub-counties. A summary of the coping strategies adopted by the households in such instances per survey zone is presented below. The county CSI deteriorated in January 2023 compared to June 2022 SMART survey, a trend maintained from June 2021 as seen below.

Table 85: Coping strategy index

Coping strategy	Proportion of HHs (N= 1937)		Frequency score (0-7)	Severity score (1-3)	Weighted score=Freq*weight			
	n	%			2019	2021	2022	2023
Rely on less preferred & less expensive food	1924	99.3%	3.22	1	3.06	2.95	3.33	3.22
Borrow food	1746	90.1%	2.26	2	4.59	3.94	4.6	4.52
Limit portion sizes	1799	92.9%	2.77	1	2.68	2.22	2.61	2.77
Restrict consumption of food by adults for young children to eat	1757	90.7%	2.73	3	7.75	6.24	7.44	8.19
Reduced number of meals	1806	93.2%	2.86	1	2.97	2.7	2.66	2.86
Total weighted Coping Strategy Score					21.06	18.05	20.64	21.56

6.2.8 **Food fortification**

Food fortification is defined by WHO as the practice of deliberately increasing the content of one or more micronutrients (vitamins and minerals) in a food to improve the nutritional quality of the food and provide a public health benefit with minimal risk to health. The purpose of the practice is to increase

the nutritional content of foods, more so the staples. Food fortification can also help to restore the micronutrient content lost during processing.

There are considerable achievements made by Kenya in achieving global commitments including the World Health Assembly 2025 targets, like the reduction in stunting and wasting and improving exclusive breastfeeding levels. However, this achievement is varied across the counties with some counties like Turkana having very poor indicators (Kenya Food fortification strategy 2018-2022, 2018). Kenya has an approved Food Fortification strategic plan 2018- 2022 to guide in program.

6.2.8.1 Food fortification awareness

This survey sought to understand the awareness level of the Turkana population on food fortification. A slight improvement was noted in awareness of food fortification from 6.1% in June 2022 to the current 7.2% a trend maintained from June 2019. Turkana Central survey zone as expected led while Turkana North had the highest improvement. Efforts are needed in Turkana South. The county needs to continue with the sensitization strategy to make the community aware of the strategy.

Table 86: Heard about food fortification

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
No	490	90.7%	655	92.0%	681	95.5%	496	92.4%	2322	92.8%
Yes	50	9.3%	57	8.0%	32	4.5%	41	7.6%	180	7.2%
n	540	100.0%	712	100.0%	713	100.0%	537	100.0%	2502	100.0%

Further analysis of the sources of information on food fortification to the sampled households was done. Training emergent the most common source overall followed by Radio though this varied per survey zone. Radio emerged as the most preferred source followed by TV show in Turkana Central, while in Turkana North and South training was the most common source with Turkana South having a balance of all as common sources.

Table 87: Source of food fortification information- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Radio	36	72.0%	14	24.6%	12	37.5%	3	7.3%	65	36.1%
Road show	17	34.0%	5	8.8%	4	12.5%	0	0.0%	26	14.4%
Training	2	4.0%	49	86.0%	9	28.1%	34	82.9%	94	52.2%
On TV show	19	38.0%	0	0.0%	9	28.1%	3	7.3%	31	17.2%
Others	3	6.0%	1	1.8%	3	9.4%	1	2.4%	8	4.4%
n	50		57		32		41		180	

Kenya has a specific food fortification logo which is also specified in the food fortification strategy. This logo should be put as a label in all fortified foods. The survey wanted to establish whether the community can identify the log. For those who had information about food fortification, only 7.2% could recognize the food fortification logo, a big drop from 69.8% reported in June 2022. The low coverage cut across all survey zones with none going above 10%. This meant majority of the households could not use the food fortification logo to make decision about their food purchase.

Table 88: Know the food fortification logo-January 2023

	Turkana Central	Turkana North	Turkana South	Turkana West	Turkana County

	Count	%	Count	%	Count	%	Count	%	Count	%
No	501	92.8%	649	91.2%	687	96.4%	485	90.3%	2322	92.8%
Yes	39	7.2%	63	8.8%	26	3.6%	52	9.7%	180	7.2%
n	540	100.0%	712	100.0%	713	100.0%	537	100.0%	2502	100.0%

6.2.8.2 Access to fortified foods

The government of Kenya, through the operationalization of the Kenya food fortification strategy specifies certain food for mandatory fortification with set standards already in place. These include maize meal/flour, fats/oils and table salt. This survey investigated whether the sampled households were accessing the know fortified products.

Table 89: Main Source of maize flour/meal- January 2023

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Food aid	55	10.2%	130	18.3%	55	7.7%	24	4.5%	264	10.6%
Other	9	1.7%	8	1.1%	7	1.0%	79	14.7%	103	4.1%
Own production	0	0.0%	1	0.1%	10	1.4%	2	0.4%	13	0.5%
Purchase	476	88.1%	573	80.5%	641	89.9%	432	80.4%	2122	84.8%
n	540	100.0%	712	100.0%	713	100.0%	537	100.0%	2502	100.0%

Majority of households were purchasing their maize flour/meal, an indication it could be fortified, though this needed further verification to establish whether the brands were fortified. Only a small proportion (9.4%) of the households could know if the maize flour was fortified or not.

Table 90: Know if the maize flour/meal is fortified

	Turkana Central		Turkana North		Turkana South		Turkana West		Turkana County	
	Count	%	Count	%	Count	%	Count	%	Count	%
Do not know	231	42.8%	425	59.7%	190	26.6%	137	25.5%	983	39.3%
No	256	47.4%	226	31.7%	477	66.9%	324	60.3%	1283	51.3%
Yes	53	9.8%	61	8.6%	46	6.5%	76	14.2%	236	9.4%
n	540	100.0%	712	100.0%	713	100.0%	537	100.0%	2502	100.0%

CONCLUSION

The Turkana County nutrition situation slightly improved in January 2023 compared to June 2022 across all the survey zones and was consistent with KDHS 2022. However, GAM levels remain above 15 percent WHO standards emergency cut-off with extremely critical GAM in Turkana South survey zone. The county weighted global acute malnutrition significantly improved to critical level 27.0% from 34.8% in June 2022. The improvement was witnessed across the four survey zones and in all the indices, though it was significant in Turkana North.

The proportion of children reporting to be sick in the last two weeks preceding the survey increased from 25.8% to 28.5%, changing the decreasing trend witnessed from June 2018. Unlike in June 2022 where Turkana North survey zone had the highest proportion of sick children, in January 2023, Turkana South led with 35% while Turkana North was the best at 20.8%. The decrease was noted in all survey zones. The leading morbidity causes remained similar like the last survey, mainly ARI/Cough, fever like malaria, watery diarrhea and lastly bloody diarrhea. Morbidity is a direct cause of acute malnutrition and its increase can be linked to the high malnutrition levels. A little decline was recorded in the county proportion of children who sought assistance when sick from 91.7% June 2022 to 91.2% in January 2023. Majority of caregivers sought assistance in public health facilities, a tend maintained from previous surveys though reducing. Integrated outreaches increased as the source of places where households sought assistance due to the ongoing response. Community health volunteers continued being trusted by the community as they were the third most popular sources of giving assistance to children caregivers. Traditional healer and traditional herbs continue to be sources of health care though minimal.

Age verification for children in Turkana County by health cards slight decreased from 81.5% in June 2022 to the current 80.8%; being in the same range as in 2021. Turkana North and West survey zones led with recall the same case as in 2022. Notable improvement was noted in all antigens in January SMART survey compared to June 2022 SMART survey with BCG having improved from 94.9% to 99.2%. All vitamin A categories met the national and county targets with aall survey zones achieving over 80% except Turkana South which had 79%. The improvement trend was witnessed from June 2022 survey. The overall coverage for the county was 84.2% as indicated by the children 6-59 months children, compared to 49.1% in June 2022. Deworming coverage also improved in all survey zones with the overall county coverage improving from 85.1% in June 2022 to 98.7% in January 2023 SMART survey results. All survey zones had above 80% coverage, the county set target. There was general improvement in the use of zinc to treat diarrhea across the survey zones in January 2023 SMART survey though it deteriorated in Turkana West survey zone compared to June 2022. All survey zone had more than 80% of children with diarrhea being treated with zinc.

There was reduction in the proportion of women of reproductive age who were malnourished by MUAC in the January 2023 SMART survey from 14.8% in June 2022 to 10.5%. This reduction cut across all the survey zone with the largest decrease being in Turkana South survey zone. Turkana South had the highest women malnutrition with 12.3% of women having malnutrition compared to June 2022 one of 19.0%. Improvement was noted in pregnant and lactating women category with the overall county level having improved by 6% i.e., from 15.2% to 9.2%. Non- pregnant women were more malnourished than pregnant and lactating women with the county weighted average of 12.9% though an improvement from 13.9% in June 2022.

The current WHO guidelines recommend all pregnant women be supplemented with Iron and Folic Acid (IFAS) regardless of anemia status in countries where anemia is >40% where Kenya adopted this in her Focused Antenatal Care (FANC). On average 40.9% of the sampled household had a child below years. About 96.3% of women with children below 2 years across the county had been supplemented with iron folate supplements during their last pregnancy. This was an increase from the June 2022

SMART survey where 91.9% had been supplemented. There was a significant improvement in the number of days women were taking IFAS from 66.3 days to 120.8 days; a 54.5 days difference, though there was 8 days reduction in Turkana South survey zone which was leading in June 2022. Most women took IFAS for 90 to >= 180 days at 74%. Improved Access due to the ongoing emergency response could have led to the improvement. However, the proportion meeting the government recommendation of 270 days reduced from 7.7% to 5.3%. ANC attendance for pregnant women was good at 97.3% for county with all survey zones having over 90% coverage. Slightly less than half (45%) of the women were making their first ANC visit in the 1st and 3rd month though about 10% were visiting ANC for the first time in their 7th and 8th month.

The January 2023 SMART survey recorded an increase in the proportion of household owning mosquito nets from 29.8% to 32.6% changing the decline recorded in 2021 to 2022 surveys. Mosquito net utilization continued to decline a trend was observed from the June 2021 SMART survey.

Indirect coverage of IMAM services increased from 58% in June 2022 to 60% in January 2023, a trend maintained from June 2019. This was below the proxy coverage from program data. Turkana West and North lead with the highest coverage while coverage was lowest in Turkana Central, which was below the SPHERE standards of >50% for rural areas. Majority of the beneficiaries were in SFP at 75.7% a slight improvement from 74.7% While those in OTP marginally reduced from 25.3% to 24.3%.

The proportion of households using safe water sources (piped water systems, borehole, protected well, protected spring, water kiosk, tanker truck, and hand pump) slightly increased from 60% in June 2022 to the current 64.2% in January 2023. The proportion using public tap/stand pipe increased to 53.8%, the same level it was in June 2021. Turkana central led with the proportion of households using piped water systems and tube wells, the safe water sources while Turkana West was the lowest user of safe water sources. There was a reduction of the proportion of household accessing water from the recommended distance of less than 500m from 64.6% to present 52.7%. the ongoing drought was a major contributor to the increase in distance. There was a reduction in the proportion of households who were not queuing for water in January 2023 survey compared to June 2022; from 67.4% to 63.4%, a trend witnessed in the last surveys. Majority (88.5%) of households were not treating drinking water, a deterioration from the last survey despite the high proportion of household obtaining water from unsafe sources. The proportion of household treating water by boiling increased considerably to 72.8% from 47.2%. There was 5.7% increase in the proportion of households using closed containers to store drinking water; which has an effect to the prevention of water contamination while those paying for water increased considerably. About 32.7% of the interviewed households were consuming adequate water in the January 2023 SMART survey, a deterioration from the June 2022 survey where 97% of the interviewed households were consuming adequate water quantity.

There was no change in the proportion of households' awareness on handwashing from June 2022 to January 2023 remaining the same at 72.1%. Handwashing at all four critical instances (before eating, before cooking, after visiting the toilet, after changing the baby diaper) deteriorated in January 2023 SMART survey from 41.2% to 24%, a trend recorded in June 2022. There was reduction of the population washing hands with soap and water from 50.7% in June 2022 to 45.9% in January 2023 a trend recorded in from June 2021. Those washing hands with only water increased from 33% to 39%. The overall sanitation status for Turkana County improved in the January survey with the county latrine coverage being 22.7% an improvement from 20.3%. Open defecation was highest in Turkana North and Turkana South survey zones and was on increase on Turkana South.

Though there was an improvement on the proportion of the interviewed households reporting to have been enrolled on cash transfer, the proportion was still too low at 18.7% from June 2022 one of 11.8%. There was a notable increase in the proportion of household enrolled on emergency cash transfers a proof of the current response. The major food groups consumed in the January 2023 SMART survey were Cereals, Pulses/legumes oils/fats condiments and sweet in that order though low nutrient foods like condiments and sweets were too high. Fruits and vegetables consumptions remained too low across the four survey zones. Despite the improved nutrition status across the four survey zones, overall Turkana County dietary diversity generally worsened with proportion of households consuming less than 3 food groups (poor households' dietary diversity- HDD) increasing by 6.5 points.

The proportion of women 15 - 49 years consuming 5 and more food groups improved across the survey zones with overall improvement in the county from 7% to 25.1%. Turkana North was the worst at 4.1% while Turkana Central crossed the 50% mark. Still WRA in Turkana County are unlikely to meet their micronutrients intake requirements based on the results. Majority of the assessed households classified as poor consumed none of vitamin A rich (66.6%), and heme iron (75.9%) food sources though generally food security situation improved. The January 20-23 SMART survey established there was improvement in the instances where the sampled households applied copying strategy because of lack of food or money to buy food from 78.3% to 77.4% though too high. The county CSI deteriorated in January 2023 compared to June 2022 from 20.6 to 21.6.

A slight improvement was noted in awareness on food fortification from 6.1% in June 2022 to the current 7.2% a trend maintained from June 2019. Turkana Central survey zone as expected led while Turkana North had the highest improvement. Training emergent the most common source overall followed by Radio though this varied per survey zone. only 7.2% could recognize the food fortification logo, a big drop from 69.8% reported in June 2022. Only a small proportion (9.4%) of the households could know if the maize flour was fortified or not.

From this survey, it was evident nutrition situation by WHZ in the county had slightly improved across the four survey zones compared to June 2022. The point prevalence was as follows: Turkana Central 24.2%, Turkana North 28.6%, Turkana South 35.2% and Turkana West 20.3% while the weighted county prevalence being 27%. The January 2023 SMART survey, confirmed the acute malnutrition levels slightly improved in the 4 Turkana survey zones compared to June 2022; Turkana Central 24.2%, Turkana North 28.6%, Turkana South 35.2% and Turkana West 20.3%. Turkana South remained the most affected remaining in the extremely critical level this is still critical with Turkana South being extremely critical.

The persistent poor nutrition status is consistent with poor Food security indicator status; that is HDDS/ FCS. The key drivers to high undernutrition in the county are worsening leading to deteriorating trend of malnutrition. The malnutrition levels across the four survey zones are attributed to worsening food insecurity resulting from successive failed rains leading to drought and rapid increase in food prices, loss of livestock, poor coping mechanisms. Other drivers include 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.

7.0 RECOMMENDATIONS

Table 91: Recommendation- January 2023

	Action	By whom	By when	Current Status
1	Conduct exhaustive mass screening in all hot spots to ensure all malnourished women and children access treatment in all service delivery points	MoH, NDMA and nutrition partners	Immediately	
2	Remap and scale-up a sustainable strategy for integrated outreaches in hard-to-reach areas	MoH and nutrition partners	immediately	
3	Strengthen Quality of care for malnourished children through mentorship and training especially for severely malnourished children in inpatient care.	Moh and partners	immediately	
4	Manage and strengthen supply chain to ensure appropriate nutrition commodities are consistently available at health facility level	MoH (nutrition& public health), UNICEF-KEMSA, KRCS, WFP and nutrition partners	Continuous	
5	Launch Blanket supplementary feeding programme (BSFP)	WFP and partners	Immediately	
6	Launch the General food assistance programme in areas where food markets are dysfunctional.	WFP/ TCG/National government and partners	Immediately	
7	Continue with creation of linkages for acutely malnourished children and women to existing social safety net programs – Scale-up cash transfer and stabilize food markets in hard-to-reach areas	MoH, NDMA and nutrition partners	Immediately	
8	Conduct peace building in most affected areas of Turkana south, Turkana North, T. west and Loima for improved humanitarian access.	TCG, National government and local leadership	Immediately	
9	Activate one health program for cross border programing	TCG, Partners	Immediately	
10	Scaling up of school feeding programme for school going children	TCG/MoE/Partners	Immediately	
11	Initiate food for Assets (FFA) to compliment cash transfer	TCG/Partners	Immediately	
12	Rehabilitation of boreholes to minimize trekking distance	TCG/MoW/partners	immediately	
13	Enhance water tracking technology	TCG/Partners	immediately	
14	Stimulate markets across the county	TCG, Partners	Immediately	
15	There should be plans to introduce adult education among the care- givers	TCG/MoE/Partners		

8.0 APPENDIX

8.1 Appendix 1: Mapped out hotspots- June 2022 & January 2023

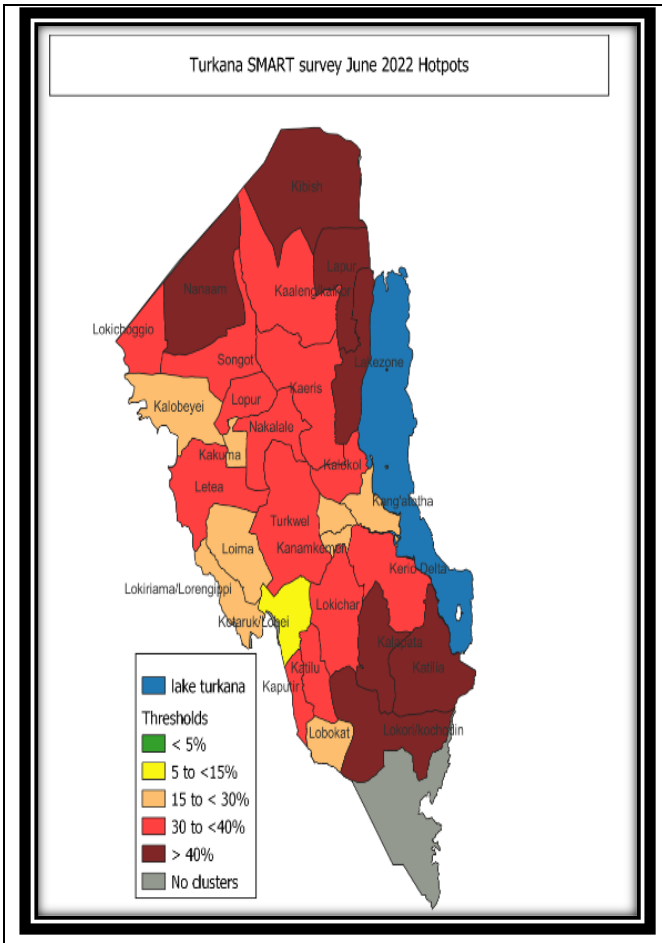


Figure 11: Turkana county June 2022 SMART survey hot spots

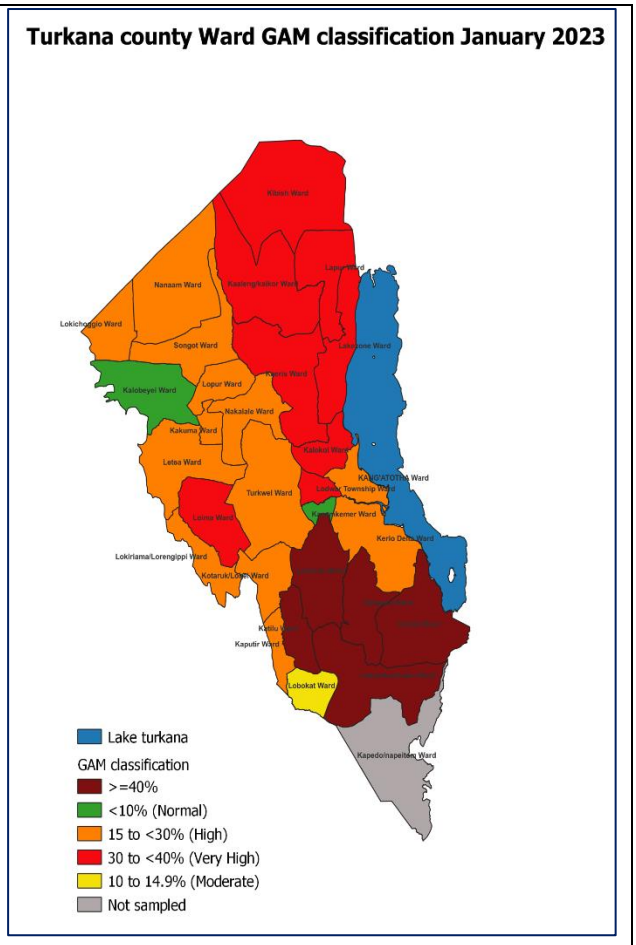


Figure 12: Turkana county January 2023 SMART survey hot spots

8.2 Appendix 2: Plausibility Summary report

Table 92:Turkana January 2023 SMART survey Plausibility summary report

	Indicator	Acceptable values/range	CENTRAL	NORTH	SOUTH	WEST
1	Flagged data (% of out-of-range subjects)	<7.5	**0** (0.8 %)	**0** (1.7 %)	**0** (1.4 %)	**0** (0.2 %)
2	Overall sex ratio (significant CHI square)	>0.001	**2** (p=0.086)	**0** (p=0.129)	**0** (p=0.572)	**2** (p=0.089)
3	Age ratio (6-29vs 30-59) Significant CHI square	>0.001	**4** (p=0.013)	**0** (p=0.661)	**2** (p=0.083)	**2** (p=0.097)
4	Dig. prevalence score-weight	<20	**0** (5)	**0** (4)	**0** (3)	**0** (3)
5	Dig. prevalence score-height	<20	**0** (5)	**0** (7)	**0** (6)	**0** (6)
6	Dig. prevalence score-MUAC	<20	**0** (7)	**0** (6)	**0** (5)	**0** (6)

7	Standard Dev. Height WHZ	>0.80	**0** (0.98)	**0** (1.03)	**0** (1.01)	**0** (0.94)
8	Skewness WHZ	<±0.6	**0** (-0.09)	**0** (0.02)	**0** (0.05)	**0** (-0.10)
9	Kurtosis WHZ	<±0.6	**1** (0.25)	**0** (-0.09)	**0** (-0.00)	**0** (-0.02)
10	Poisson WHZ -2	>0.001	**5** (p=0.000)	**0**(p=0.322)	**5** (p=0.000)	**0** (p=0.913)
11	**OVERALL**	**<24**	**12** % Good	**0% excellent**	**7** % Excellent	**4** % **Excellent**

8.3 Appendix 3: Sampled clusters per survey zone- January 2023

Table 93:Sampled clusters Turkana Central survey zone

Subcounty	Division	Location	Sublocation	Villages	Geographical unit	Cluster
Turkana Central	Central	Lodwar Township	Lodwar Township	CARLIFONIA	CARLIFONIA	1
Turkana Central	Central	Lodwar Township	Lodwar Township	CHUKULTOM	CHUKULTOM	2
Turkana Central	Central	Lodwar Township	Nakwamekwi	ELUKTOLIASI	ELUKTOLIASI	3
Turkana Central	Central	Lodwar Township	Nakwamekwi	NGASAJA	NGASAJA	4
Turkana Central	Central	Lodwar Township	Napetet	NATOTOL	NATOTOL	5
Turkana Central	Central	Kanamkemer	Kanamkemer	Hewan	Hewan	6,RC
Turkana Central	Central	Kanamkemer	Nawaitorong	CHOKOCHOK	CHOKOCHOK	7
Turkana Central	Kerio	Kerio	Kerio	NAKWAPOO	NAKWAPOO	8
Turkana Central	Kerio	Kerio	Nakurio	LOUWAE	LOUWAE	9
Turkana Central	Kerio	Kerio	Nadoto	KURA	KURA	10
Turkana Central	Kerio	Kerio	Nadoto	NANGOLEKURUK	NANGOLEKURUK	11
Turkana Central	Kerio	Kangirisae	Nakoret	NAKORET	NAKORET	12
Turkana Central	Kerio	Lorengelup	Kakimat	KAKIMAT	KAKIMAT	13
Turkana Central	Kalokol	Kalokol	Kalokol	LOWOIANGIKENY	LOWOIANGIKENY	14
Turkana Central	Kalokol	Kalokol	Namadak	NGIKALALIO - ALORU	NGIKALALIO - ALORU	15
Turkana Central	Kalokol	Namukuse	Namukuse	AKWAMEKWI	AKWAMEKWI	16
Turkana Central	Kalokol	Namukuse	Lochere Ekeny	NAKURIO	NAKURIO	17
Turkana Central	Kalokol	Kangatosa	NAOROS	NAMERESIAE	NAMERESIAE	18
Loima	Loima	Loima	Lochor Ekunyen	KALAPATA	KALAPATA	19
Loima	Loima	Loima	Puch	KALELAKOL	KALELAKOL	20
Loima	Loima	Loima	Puch	PUCH	PUCH	21
Loima	Loima	Lorengippi	Lorengippi	Lorengippi Centre	Lorengippi Centre	22
Loima	Loima	Lorengippi	Loya	LOYA	LOYA	23

Loima	Loima	Lokiriama	Lochor Lomala	LOCHOR- ALOMALA	LOCHOR- ALOMALA	24
Loima	Loima	Lokiriama	Atala Kamusio	DIDINGA	DIDINGA	25
Loima	Turkwel	Turkwel	Lorugum	LORUGUM CENTER	LORUGUM CENTER	26
Loima	Turkwel	Turkwel	Turkwel	TURKWEL	TURKWEL	27
Loima	Turkwel	Turkwel	Kalemnyang	KANGALITA	KANGALITA	28
Loima	Turkwel	Turkwel	Lobei	LOBEI CENTRE	LOBEI CENTRE	29
Loima	Turkwel	Nadapal	Tiya	KAITESE	KAITESE	30
Loima	Turkwel	Nadapal	Napeikar	NAOYAWOI	NAOYAWOI	31
Loima	Turkwel	Lomeyan	Lomeyan	LOKORIKIPI	LOKORIKIPI	32
Loima	Turkwel	Lomeyan	Nachuro	KANGATARUK	KANGATARUK	33
Loima	Turkwel	Lomeyan	Kaapus	KAEKOROENGOROK	KAEKOROENGOROK	34
Loima	Turkwel	Kotaruk	Kotaruk	KOTARUK	KOTARUK	35,36

Table 94: Sampled clusters Turkana North survey zone

Subcounty	Division	Location	Sublocation	Geographical unit	Population size	Cluster
Turkana North	Lokitaung	Lokitaung	Nakalale	LOLUPE	1645	1
Turkana North	Lokitaung	Lokitaung	Kachoda	APOKORIT	189	2
Turkana North	Lokitaung	Lokitaung	Natoo	KANGARUKIA	939	3
Turkana North	Lokitaung	Kataboi	Kataboi	KAMBI SAFI	1020	4
Turkana North	Lokitaung	Kataboi	Katiko	LOCHORANGIDOMO	636	5
Turkana North	Lokitaung	Kataboi	Lomekwi	LOTIRMOE	1937	6
Turkana North	Lokitaung	Riakomor	Riakomor	KEKOROPUS	2254	7
Turkana North	Lokitaung	Riakomor	Kokiselei	KOBOSAN	390	8
Turkana North	Lokitaung	Ngissinger	Lowarengak	KAMBI MITI	720	9
Turkana North	Lokitaung	Ngissinger	Lowarengak	NASIA/NAKITOE	386	10
Turkana North	Lokitaung	Ngissinger	Kanamukuny	KARE-EDOME	3041	11
Turkana North	Lokitaung	Ngissinger	Nachukui	NGIBURIN	918	12
Turkana North	Kaaleng	Yapakuno	Milima tatu	ELELEA	531	13
Turkana North	Kaaleng	Yapakuno	Milima tatu	LOWOYAKASIWAN	844	14
Turkana North	Kaaleng	Yapakuno	Kaalem	EPETA	654	15
Turkana North	Kaaleng	Yapakuno	Kaalem	LOKUMAE 2	1331	16
Turkana North	Kaaleng	Loruth	Loruth esekon	LORUTH/ESEKON	3754	17
Turkana North	Kaaleng	Loruth	Katome	ALIDAT	796	18
Turkana North	Kaaleng	Loruth	Karach	KARACH	2056	19
Turkana North	Kaaleng	Kaeris	Kanakurudio	LOTOROB	518	20
Turkana North	Kaaleng	Kaeris	Kaeris	KALAPATA	2619	21
Turkana North	Kaaleng	Kaeris	Kaeris	NABULON	269	22
Turkana North	Kaaleng	Kaeris	Nadunga	KAKALEPUS	573	23
Turkana North	Kaaleng	Kaeris	Nadunga	NGAURIENDIRIA	1036	24
Turkana North	Kaaleng	Kaeris	Kangakipur	NAUKOMORU	699	25
Kibish	Lapur	KAREBUR	Nabulukok	LOTORONGORUK	873	26
Kibish	Lapur	Meyan	Lewan	LEWAN	3927	27
Kibish	Lapur	Meyan	Napeikar	MORUTORONG	1666	28
Kibish	Lapur	Kokuro	Kokuro	NATETE	709	29

Kibish	Lapur	Kokuro	Sesame	KITALE	2004	30
Kibish	Kibish	Kibish	Lokomarinyang	NACHOTOI	856	31
Kibish	Kibish	Kibish	Lokomarinyang	NATODOMERI MOBI	2738	32
Kibish	Kibish	Naita	Naita	Naita	3837	33
Kibish	Kibish	Natapar	Karach(1)	KARACH	3430	34
Kibish	Kibish	Natapar	Karach(1)	KARACH 1	2859	35
Kibish	Kibish	Natapar	Kaitede	NAPAK CENTRE	2467	36
Kibish	Kibish	Natapar	Kaitede	NGIPUCHO	822	37
Kibish	Kaaleng	Kaikor	Loitanit	NAKULULUNG	1784	38
Kibish	Kaaleng	Kaikor	Nalita	EKOOPUS	1001	39
Kibish	Kaaleng	Kaikor	Lokolio	LONGOLEMWAR	1437	40
Kibish	Kaaleng	Kaikor	Lokolio	NAKILINGA	2422	41
Kibish	Kaaleng	Yapakuno	Kakelae	ETELITE	1018	42

Table 95: Sampled clusters Turkana South survey zone

SUB COUNTY	WARD	SUB LOCATION	UNIT NAME	Geographical unit	Population size	Cluster
TURKANA EAST	KATILIA	PARAKATI	LOMUNYENAKWAAN	NAKORIO	450	1
TURKANA EAST	KATILIA	KATILIA	LOKORKOR	LOKORKOR	222	2
TURKANA EAST	KATILIA	KATILIA	KATILIA	CANAAN	468	3
TURKANA EAST	KATILIA	KATILIA	KATILIA	NAMEYANA	468	4
TURKANA EAST	KATILIA	KATILIA	KATILIA	ALAMACH	468	5
TURKANA EAST	KATILIA	ELELEA	ELELEA	NAYANAEKATWAAN	258	6
TURKANA EAST	KATILIA	PARAKATI	LOPEDRU	NAUKOTLEM	324	7
TURKANA EAST	LOKORI/KOCHODIN	LOTUBAE	LOTUBAE CHU	NAOYATIRA	648	8
TURKANA EAST	LOKORI/KOCHODIN	LOTUBAE	LOTUBAE CHU	NAKWAMEKWI	666	9
TURKANA EAST	LOKORI/KOCHODIN	LOPII	LOPII CHU	KOCHODIN	222	10
TURKANA EAST	LOKORI/KOCHODIN	KOCHODIN	NAKUKULAS CHU	LOCHER-RENGAN	210	11
TURKANA EAST	LOKORI/KOCHODIN	LOKORI	LOKORI PHC CHU	AKATORONGOTA	390	12
TURKANA EAST	LOKORI/KOCHODIN	LOKORI	LOKORI AIC CHU	NANYANGASEKON	396	13
TURKANA EAST	LOKORI/KOCHODIN	LOKWAMOSING	LOKWAMOSING CHU	MILIMANI A	90	14
TURKANA EAST	LOKORI/KOCHODIN	KANGITIT	MORULEM B CHU	NAKWAMOMWA	396	15
TURKANA EAST	LOKORI/KOCHODIN	KANGITIT	MORULEM A CHU	NAKWAKUNYUK	504	16
TURKANA EAST	LOKORI/KOCHODIN	LOTUBAE	LOKWII B CHU	KAMBI-LAM	390	17
TURKANA EAST	LOKORI/KOCHODIN	LOTUBAE	LOKWII A CHU	EPETAMUGE A	354	18
Turkana south	Katilu	Katilu	Korinyang	ALIGOI D	384	19
Turkana south	KATILU	KATILU	LOPUR	SIMAILELE	480	20

Turkana south	KATILU	KATILU	NAMAKAT	NAMAKAT B	168	21
Turkana south	KATILU	KATILU	KATILU	APLINE/HOSPITAL	726	22
Turkana south	KATILU	KATILU	KATILU	LOMOONYANG	750	23
Turkana south	KATILU	KATILU	KATILU	YERIKO B	288	24
Turkana south	KATILU WARD	LOKAPEL	LOKAPEL	KAIBACHAL	504	25
Turkana south	KATILU WARD	LOKAPEL	LOKAPEL	NAWEPETO	306	26
Turkana south	KATILU WARD	KANAODON	KANAODON	KANAODON A	420	27
Turkana south	LOBOKAT	KAINUK	NAKULULUMAET	LOCHIPKOR A	522	28
Turkana south	LOBOKAT	KAKONG'U	KAKONG'U	KADENGOI B	516	29
Turkana south	Kaptir)	Kalomwae	Juluk	LOMOKOMOL	120	30
Turkana south	KAPUTIR	NAKWAMORU	KAPUTIR	AIRPORT	102	31
Turkana south	KAPUTIR	NAKWAMORU	NAKWAMORU	NAWOITORONG	354	32
Turkana south	LOKICHAR	KAPESE	LOKABURU	ASAJAIT	1482	33
Turkana south	LOKICHAR	KAPESE	KAPESE	NGIMEYANA	348	34
Turkana south	Lokichar	Lochwaa	Locheremoit	LOCHEREMOITA	528	35
Turkana south	Lokichar	Lochwaa	Locheremoit	MORULINGAKIRION	522	36
Turkana south	kalapata	Nakaalei	Nakaalei	NAKIRIA	552	37
Turkana South	Lokichar	Napusmoru	Napusmoru	NATORUBEI	372	38
Turkana south	Lokichar	Napusmoru	Napusmoru	NAKIPI	408	39
Turkana south	kalapata	kalapata	kangakipur	KAAKALEL	534	40
Turkana south	LOKICHAR	LOKICHAR	KAMARESE	KANGISAJA	168	41
Turkana south	LOKICHAR	LOCHWAA	LOCHWAA	KANASUWAT	300	42
Turkana south	KATILU WARD	KATILU	NAKABOSAN	KANGIREGA	432	43

Table 96: Sampled clusters Turkana West survey zone

Subcounty	Division	Location	Sublocation	Geographical unit	Population size	Cluster
Turkana West	Oropoi	Letea	Loritit	NACHAKAMOR	702	1
Turkana West	Oropoi	Letea	Katelemot	KATELEMOT	5624	2
Turkana West	Oropoi	Letea	Lokipoto	LOKIPOTO	21666	3,4
Turkana West	Oropoi	Letea	Loito	LOITO	7562	5
Turkana West	Oropoi	Kalobeyyei	Nalapatui	NALAPATUI	5637	6
Turkana West	Oropoi	Kalobeyyei	Oropoi	LOKITOKIN	932	7
Turkana West	Oropoi	Kalobeyyei	Kalobeyyei	LOCHILETA	442	8
Turkana West	Oropoi	Loreng	Loreng	Loreng	4505	9
Turkana West	Kakuma	Kakuma	Lopur	Lopur	30873	10,11,12,13

Turkana West	Kakuma	Kakuma	Lopur	NALEMSEKON	22757	14,15
Turkana West	Kakuma	Kakuma	Nadapal	AKWANGA	1924	16
Turkana West	Kakuma	Kakuma	Nadapal	LOPACHO	1735	17
Turkana West	Kakuma	Kakuma	Nadapal	NGIKWAKAIS	2209	18
Turkana West	Kakuma	Kakuma	Namorungole	KABOKORIT	1119	19
Turkana West	Kakuma	Pekelech	Lokore	NAIVASHA	828	20
Turkana West	Kakuma	Pekelech	Lopusiki	LOPUSIKI CENTRE	490	21
Turkana West	Kakuma	Nakalale	Nakalale	Nakalale	5454	22
Turkana West	Kakuma	Nakalale	Kobwin	NADUAT	1857	23
Turkana West	Lokichoggio	Lokichoggio	Lokariwom	LOCHERAKAL	9065	24
Turkana West	Lokichoggio	Lokichoggio	Lokariwom	NABANGAKENY	839	25
Turkana West	Lokichoggio	Songot	Songot	NGARIEMETO	1502	26
Turkana West	Lokichoggio	Songot	Lopwarin	TEREMUKUS	504	27
Turkana West	Lokichoggio	Lorao	Lokangae	LOKANGAE B	8194	28
Turkana West	Lokichoggio	Lorao	Lotikipi	NASINYONO	5053	29
Turkana West	Lokichoggio	Mogila	Mogila	ARITAE	1948	30
Turkana West	Lokichoggio	Mogila	Mogila	KAPETADIE	6581	31
Turkana West	Lokichoggio	Mogila	Mogila	LORUS	8396	32
Turkana West	Lokichoggio	Mogila	Lopiding	TAMIL	1242	33
Turkana West	Lokichoggio	Nanam	Nanam	Lomeyan	13259	34,35
Turkana West	Lokichoggio	Loteteleit	Loteteleit	RUKRUK	1238	36

8.4 Appendix 4: Movement plans per survey zone- January 2023

Table 97: Movement plans Turkana Central

DATE	TEAM	**Location**	**Sub location**	**VILLAGE**	**Cluster**
20/I/2022		TRAVELLING			
21/1/2023	1	LODWAR TOWNSHIP	LODWAR TOWNSHIP	CARLIFONIA	1
	2	LODWAR TOWNSHIP	LODWAR TOWNSHIP	CHUKULTOM	2
	3	LODWAR TOWNSHIP	NAKWAMEKWI	ELUKTOLIASI	3
	4	LODWAR TOWNSHIP	NAKWAMEKWI	NGASAJA	4
	5	LODWAR TOWNSHIP	NAKWAMEKWI	NATOTOL	5
	6	KANAMKEMER	KANAMKEMER	HEWAN	6
22/1/2023	1	KANAMKEMER	NAWOITORONG	CHOKOCHOK	7
	2	KERIO	KERIO	NAKWAPOO	8

	3	KERIO	KAKURIO	LOUWAE	9
	4	KERIO	NADOTO	KURA	10
	5	KERIO	NADOTO	NANGOLEKURUK	11
	6	KANGIRISAE	NAKORET	NAKORET	12
23/1/2023	1	LORENGELUP	KAKIMAT	KAKIMAT	13
	2	KALOKOL	KALOKOL	LOWOIANGIKENY	14
	3	KALOKOL	NAMADAK	NGIKALALIO - ALORU	15
	4	NAMUKUSE	NAMUKUSE	AKWAMEKWI	16
	5	NAMUKUSE	LOCHOR EKENY	NAKURIO	17
	6	KANGATOSA	NAOROS	NAMERESIAE	18
24/1/2023	1	LOIMA	LOCHOR EKUYEN	KALAPATA	19
	2	LOIMA	PUCH	KALELAKOL	20
	3	LOIMA	PUCH	PUCH	21
	4	LORENGIKIPPI	LORENGIKIPPI	LORENGIKIPPI CENTER	22
	5	LORENGIKIPPI	LOYA	LOYA	23
	6	LOKIRIAMA	LOCHOR ALOMALA	LOCHOR-ALOMALA	24
25/1/2023	1	LOKIRIAMA	ATALOMUSIO	DIDINGA	25
	2	TURKWEL	LORUGUM	LORUGUM CENTER	26
	3	TURKWEL	TURKWEL	TURKWEL	27
	4	TURKWEL	KALEMNYANG	KANGALITA	28
	5	TURKWEL	LOBEI	LOBEI CENTRE	29
	6	NADAPAL	TIYA	KAITESE	30
26/1/2023	1	NADAPAL	NAPEIKAR	NAOYAWOI	31
	2	LOMEYAN	LOMEYAN	LOKORIKIPI	32

	3	LOMEYAN	NACHURO	KANGATARUK	33
	4	LOMEYAN	KAAPUS	KAEKOROENGOROK	34
	5	KOTARUK	KOTARUK	KOTARUK	35
	6	KOTARUK	KOTARUK	KOTARUK	36
		RC			
		KANAMKEMER	KANAMKEMER	HEWAN	RC
		KOTARUK	NAIPA	NARIAMAO	RC
		LODWAR TOWNSHIP	NAPETET	NATAMBUSIO	RC
		KALOKOL	KALOKOL	NARIAMAWOI	RC

Table 98: Movement plans Turkana West

DATE	TEAM NUMBER	LOCATION	SUB-LOCATION	VILLAGE	CLUSTER NUMBER
20/1/20223 TRAVELING DAY	ALL TEAMS	KAKUMA	KAKUMA	-	-
DAY1	1	KAKUMA	LOPUR	LOPUR	10
21th/1/2023	2	KAKUMA	LOPUR	LOPUR	11
	3	KAKUMA	LOPUR	LOPUR	12
	4	KAKUMA	LOPUR	LOPUR	13
	5	KAKUMA	LOPUR	LOPUR	14
	6	KAKUMA	LOPUR	LOPUR	15
DAY2					
22/1/2023					
	1	SONGOT	LOKANGAE	LOKANGAE B	28
	2	SONGOT	LOKANGAE	NASINYONO	29
	3	KAKUMA	NADAPAL	NGIKWAKAIS	18
	4	KAKUMA	MORUNGOLE	KABOKORIT	19
	5	KAKUMA	PELEKECH	NAIVASHA	20

	6	KAKUMA	LOPUSKI	LOPUSKI	21
DAY 3					
23/1/2023	1	LOKICHOGIO	LOKICHOGIO	LOCHORAAKAL	24
	2	LOKICHOGIO	LOKARWAN	NABANGAKENY	25
	3	SONGOT	LOPWARIN	TEREMKUS	27
	4	LOKICHOGIO	MOGILA	ARITAE	30
	5	LOKICHOGIO	MOGILA	KAPETADIE	31
	6	LOKICHOGIO	LOTETELEIT	LORUS	32
DAY4					
24/1/2023	1	NANAM	NANAM	LOMEYAN	34
	2	NANAM	NANAM	LOMEYAN	35
	3	LOKICHOGIO	LOTETELEIT	RUKRUK	36
	4	LOKICHOGIO	LOPIDING	TAMIL	33
	5	SONGOT	SONGOT	NGARIEMETO	26
	6	KALOBEYEI	KALOBEYEI	LOCHILETA	8
DAY 5					
25/1/2023	1	LETEA	LORITIT	NACHAKAMOR	1
	2	LETEA	KATELEMOIT	KATELEMOIT	2
	3	LETEA	LOITO	LOITO	5
	4	LETEA	LOKIPOTO	LOKIPOTO	3
	5	LETEA	LOKIPOTO	LOKIPOTO	4
	6	KALOBEYEI	NALAPATUI	NALAPATUI	6
DAY 6					
26/1/2023	1	KALOBEYEI	OROPOI	LOKITOKIN	7
	2	LORENG	LORENG	LORENG	9
	3	KAKUMA	NAKALALE	NAKALALE	22
	4	KAKUMA	NAKALALE	NADUAT	23
	5	KAKUMA	NADAPAL	AKWANGA	16

	6	KAKUMA	NADAPAL	LOPACHO	17

Table 99: Movement plans Turkana North

DATE	TEAM NO.	WARD	SUBLOCATION	VILLAGE	CLUSTER NO.
20/01/2023	ALL TEAMS				
TRAVELLING	DAY 1		LAKEZONE	KATABOI	
21/01/2023	1	LAKEZONE	KATABOI	KAMBI SAFI	4
	2	LAKEZONE	KATIKO	LOCHORANGIDOMO	5
	3	LAKEZONE	LOMEKWI	LOTIRMOE	6
	4	LAKEZONE	NACHUKUI	NGIBURIN	12
	5	LAKEZONE	LOWARENGAK	KAMBI MITI	9
	6	LAKEZONE	LOWARENGAK	NASIA	10
	7	LAKEZONE	KANAMKUNY	KAREEDOME	11
22/01/2023	DAY 2				
	1	LAKEZONE	KOKISELEI	KABOSAN	8
	2	LAKEZONE	RIOKOMOR	KEKOROPUS	7
	3	LAPUR	NATOO	KANGARUKIA	3
	4	LAPUR	KACHODA	APOKOROIT	2
	5	KAALENG/ KAIKOR	KAALEM	EPETA	15
	6	KAALENG/KAIKOR	KAALEM	LOKUMWAE	16
	7	KAREBUR	NABULUKOK	LOTORONGORUK	26
23/01/2023	DAY 3				
	1	LAPUR	MEYAN	LIWAN	27
	2	LAPUR	MEYAN	MORUTORONG	28
	3	LAPUR	KOKURO	NATETE	29
	4	KOKURO	SASAME	KITALE	30
	5	KIBISH	LOKAMARINYANG	NACHOTOI	31
	6	KIBISH	LOKAMARINYANG	NATODOMERI MOBILE	32
	7	KIBISH	NAITA	NAITA	33
24/01/2023	DAY 4				
	1	KIBISH	NATAPAR	KARACH	34
	2	KIBISH	NATAPAR	KARACH(1)	35
	3	KIBISH	KAITEDE	NAPAK CENTRE	36
	4	KIBISH	KAITEDE	NGIRUSIO	37
	5	KAIKOR	LOITANIT	NAKULULUNG	38
	6	KAIKOR	NALITA	EKOOPUS	39
	7	KAIKOR	LOKOLIO	LONGOLEMWAR	40
25/01/2023	DAY 5				
	1	KAIKOR	LOKOLIO	NAKILINGA	41
	2	KAIKOR/KAALENG	KAKELAE	ETELITE	42
	3	KAIKOR/KAALENG	LORUTH	ALIDAT	18
	4	KAIKOR/KAALENG	LORUTH	KARACH	19
	5	KAIKOR	LORUTH	LORUTH ESEKON	17
	6	KAERIS	MILIMATATU	ELELEA	13
	7	KAERIS	MILIMATATU	LOWOYAKASIWAN	14

26/01/2023	DAY 6				
	1	KAERIS	NADUNGA	NAURIENDIRIA	24
	2	KAERIS	NADUNGA	KAKALEPUS	23
	3	KAERIS	KAERIS	NABULON	22
	4	KAERIS	KAERIS	KALOPETA	21
	5	KAERIS	KANIKURUDIO	LOTOROB	20
	6	KAERIS	KANGAKIPUR	LOUKOMOR	25
	7	NAKALAE	NAKALALE	LOLUPE	1

Table 100: Movement plan Turkana South

TEAM		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
	20/01/2023	**21/01/2023**	**22/01/2023**	**23/01/2023**	**02/01/2023**	**25/01/2023**	**26/1/2023**	**27/1/2023**
TEAM 1	**TRAVELLING DAY**	NAKORIO **CL-1**	KAMBI LAMI **CL-17**	NGIMEYANA **CL-34**	KAIBACHAL **CL-25**	NAMAKAT-B **CL-21**	ALIGOI –D **CL-19**	LOCHEREMOIT-A **CL-7**
TEAM 2	**TRAVELLING DAY**	NAYANAEKATWAN **CL-6**	NAKWAKUNYUK **CL-16**	KOCHODIN **CL-10**	NAWEPETO **CL-26**	AIRPORT **CL-31**	SIMAILELE **CL-20**	
TEAM 3	**TRAVELLING DAY**	LOKORKOR **CL-2**	NANYANGASEKON **CL-13**	ASAJAIT **CL-33**	KANAODON –A **CL-27**	LOMOKOMOL **CL-30**	APLINE/HOSPITAL **CL-22**	
TEAM 4	**TRAVELLING DAY**	CANAAN **CL-3**	NAOYATIRA **CL-8**	MILIMANI-A **CL-14**	LOCHIPKOR-A **CL-28**	KANGIREGA **CL-43**	LOMONYANG **CL-23**	
TEAM 5	**TRAVELLING DAY**	NGIMEYANA **CL-4**	EPETAMUGE –A **CL-18**	AKATORONGOT-A **CL-12**	KADENGOI-B **CL-29**	NAKIRIA **CL-37**	YERIKO-B **CL-24**	
TEAM 6	**TRAVELLING DAY**	ALAMACH **CL-5**	NAKWAMEKWI **CL-9**	LOCHER-RENGAN **CL-11**	NATOROBEI **CL-38**	NAWOITORONG **CL-32**	MORULINGA KIRION **CL-36**	
TEAM 7	**TRAVELLING DAY**	NAUKOTOLEM **CL-7**	NAKWAMOMWA **CL-15**	KANGISAJA **CL-41**	NAKIPI **CL-39**	KAAKALEL **CL-40**	KANASWAAT **CL-42**	

8.5 Appendix 5: June 2021 SMART Survey Hot Spots

Table 101: Weight for Height Z scores ± SD-Malnutrition hot spots- January 2023

S/No	Sub-county	Ward	Location	Sublocation	Village	Cluster	n	% < -3SD	% < -2SD
1	T. North	Nakalale	Lokitaung	Nakalale	LOLUPE	1	13	0.00%	7.70%
2	T. North	Lapur	Lokitaung	Kachoda	APOKORIT	2	13	0.00%	38.50%
3	T. North	Lapur	Lokitaung	Natoo	KANGARUKIA	3	18	22.20%	33.30%
4	T. North	Lakezone	Kataboi	Kataboi	KAMBI SAFI	4	16	12.50%	25.00%
5	T. North	Lakezone	Kataboi	Katiko	LOCHORANGIDOMO	5	22	0.00%	13.60%
6	T. North	Lakezone	Kataboi	Lomekwi	LOTIRMOE	6	16	18.80%	43.80%
7	T. North	Lakezone	Riakomor	Riakomor	KEKOROPUS	7	23	4.30%	26.10%
8	T. North	Lakezone	Riakomor	Kokiselei	KOBOSAN	8	20	5.00%	25.00%
9	T. North	Lakezone	Ngissinger	Lowarengak	KAMBI MITI	9	13	7.70%	46.20%
10	T. North	Lakezone	Ngissinger	Lowarengak	NASIA/NAKITOE	10	16	6.30%	18.80%
11	T. North	Lakezone	Ngissinger	Kanamukuny	KARE-EDOME	11	18	11.10%	55.60%
12	T. North	Lakezone	Ngissinger	Nachukui	NGIBURIN	12	19	5.30%	21.10%
13	T. North	Kaeris	Yapakuno	Milima tatu	ELELEA	13	21	0.00%	14.30%
14	T. North	Kaeris	Yapakuno	Milima tatu	LOWOYAKASIWAN	14	21	4.80%	33.30%
15	T. North	Kaleeng/Kaikor	Yapakuno	Kaalem	EPETA	15	20	0.00%	10.00%
16	T. North	Kaleeng/Kaikor	Yapakuno	Kaalem	LOKUMAE 2	16	11	0.00%	54.50%
17	T. North	Kaleeng/Kaikor	Loruth	Loruth esekon	LORUTH/ESEKON	17	22	13.60%	45.50%
18	T. North	Kaleeng/Kaikor	Loruth	Katome	ALIDAT	18	22	9.10%	18.20%
19	T. North	Kaleeng/Kaikor	Loruth	Karach	KARACH	19	18	5.60%	27.80%
20	T. North	Kaeris	Kaeris	Kanakurudio	LOTOROB	20	19	10.50%	26.30%
21	T. North	Kaeris	Kaeris	Kaeris	KALAPATA	21	25	8.00%	20.00%
22	T. North	Kaeris	Kaeris	Kaeris	NABULON	22	24	0.00%	8.30%
23	T. North	Kaeris	Kaeris	Nadunga	KAKALEPUS	23	13	0.00%	30.80%
24	T. North	Kaeris	Kaeris	Nadunga	NGAURIENDIRIA	24	20	0.00%	10.00%

25	T. North	Kaeris	Kaeris	Kangakipur	NAUKOMORU	25	15	6.70%	33.30%
26	Kibish	Lapur	KAREBUR	Nabulukok	LOTORONGORUK	26	18	5.60%	16.70%
27	Kibish	Lapur	Meyan	Lewan	LEWAN	27	22	22.70%	50.00%
28	Kibish	Lapur	Meyan	Napeikar	MORUTORONG	28	16	12.50%	37.50%
29	Kibish	Lapur	Kokuro	Kokuro	NATETE	29	21	9.50%	23.80%
30	Kibish	Lapur	Kokuro	Sesame	KITALE	30	19	5.30%	21.10%
31	Kibish	Kibish	Kibish	Lokomarinyang	NACHOTOI	31	18	11.10%	33.30%
32	Kibish	Kibish	Kibish	Lokomarinyang	NATODOMERI MOBI	32	10	20.00%	20.00%
33	Kibish	Kibish	Naita	Naita	Naita	33	14	7.10%	50.00%
34	Kibish	Kibish	Natapar	Karach(1)	KARACH	34	17	0.00%	29.40%
35	Kibish	Kibish	Natapar	Karach(1)	KARACH 1	35	23	8.70%	34.80%
36	Kibish	Kibish	Natapar	Kaitede	NAPAK CENTRE	36	21	9.50%	47.60%
37	Kibish	Kibish	Natapar	Kaitede	NGIPUCHO	37	21	4.80%	28.60%
38	Kibish	Kaleeng/Kaikor	Kaikor	Loitanit	NAKULULUNG	38	17	0.00%	29.40%
39	Kibish	Kaleeng/Kaikor	Kaikor	Nalita	EKOOPUS	39	13	0.00%	38.50%
40	Kibish	Kaleeng/Kaikor	Kaikor	Lokolio	LONGOLEMWAR	40	11	0.00%	9.10%
41	Kibish	Kaleeng/Kaikor	Kaikor	Lokolio	NAKILINGA	41	18	0.00%	27.80%
42	Kibish	Kaleeng/Kaikor	Yapakuno	Kakelae	ETELITE	42	15	6.70%	40.00%
43	T. West	KALOYEI	Kalobeyyei	Nalapatui	NALAPATUI	6	12	16.70%	41.70%
44	T. West	NAKALALE	Nakalale	Nakalale	Nakalale	22	17	0.00%	35.30%
45	T. West	LOKICHOGIO	Mogila	Lopiding	TAMIL	33	19	0.00%	31.60%
46	T. West	Kakuma	Kakuma	Lopur	Lopur	12	16	6.30%	31.30%
47	T. West	Kakuma	Kakuma	Lopur	NALEMSEKON	14	16	12.50%	31.30%
48	T. West	NANAM	Nanam	Nanam	Lomeyan	35	17	5.90%	29.40%
49	T. West	NAKALALE	Pekelech	Lopusiki	LOPUSIKI CENTRE	21	14	14.30%	28.60%
50	T. West	Kakuma	Kakuma	Nadapal	NGIKWAKAIS	18	15	0.00%	26.70%
51	T. West	LOKICHOGIO	Mogila	Mogila	LORUS	32	12	8.30%	25.00%
52	T. West	SONGOT	Loteteleit	Loteteleit	RUKRUK	36	12	0.00%	25.00%

53	T. West	Kakuma	Kakuma	Lopur	NALEMSEKON	15	17	0.00%	23.50%
54	T. West	SONGOT	Songot	Lopwarin	TEREMUKUS	27	13	0.00%	23.10%
55	T. West	LOKICHOGIO	Mogila	Mogila	KAPETADIE	31	13	0.00%	23.10%
56	T. West	Kakuma	Kakuma	Lopur	Lopur	10	18	5.60%	22.20%
57	T. West	Kakuma	Kakuma	Namorungole	KABOKORIT	19	18	0.00%	22.20%
58	T. West	NAKALALE	Nakalale	Kobwin	NADUAT	23	14	0.00%	21.40%
59	T. West	SONGOT	Songot	Songot	NGARIEMETO	26	14	7.10%	21.40%
60	T. West	LOKICHOGIO	Mogila	Mogila	ARITAE	30	19	0.00%	21.10%
62	T. West	Letea	Letea	Loritit	NACHAKAMOR	1	15	0.00%	20.00%
63	T. West	LETEA	Loreng	Loreng	Loreng	9	15	0.00%	20.00%
64	T. West	Kakuma	Kakuma	Lopur	Lopur	13	20	5.00%	20.00%
65	T. West	Kakuma	Kakuma	Nadapal	LOPACHO	17	15	13.30%	20.00%
66	T. West	LOPUR	Lorao	Lotikipi	NASINYONO	29	15	0.00%	20.00%
67	T. West	LOKICHOGIO	Lokichoggio	Lokariwom	NABANGAKENY	25	11	0.00%	18.20%
68	T. West	LOPUR	Lorao	Lokangae	LOKANGAE B	28	17	0.00%	17.60%
69	T. West	NANAM	Nanam	Nanam	Lomeyan	34	17	5.90%	17.60%
70	T. West	NAKALALE	Pekelech	Lokore	NAIVASHA	20	13	0.00%	15.40%
71	T. West	Letea	Letea	Lokipoto	LOKIPOTO	3	20	0.00%	15.00%
72	T. West	LOKICHOGIO	Lokichoggio	Lokariwom	LOCHERAKAL	24	7	0.00%	14.30%
73	T. West	Letea	Letea	Lokipoto	LOKIPOTO	4	16	0.00%	12.50%
74	T. West	Letea	Letea	Katelemot	KATELEMOT	2	17	0.00%	11.80%
75	T. West	Letea	Letea	Loito	LOITO	5	22	0.00%	9.10%
76	T. West	KALOYEI	Kalobeyyei	Oropoi	LOKITOKIN	7	14	7.10%	7.10%
77	T. West	Kakuma	Kakuma	Nadapal	AKWANGA	16	15	0.00%	6.70%
78	T. West	KALOYEI	Kalobeyyei	Kalobeyyei	LOCHILETA	8	13	0.00%	0.00%
79	T. West	Kakuma	Kakuma	Lopur	Lopur	11	15	0.00%	0.00%
80	T. Central	kalokol ward	Namadak	NGIKALALIO - ALORU	NGIKALALIO - ALORU	15	17	29.40%	64.70%

81	Loima	Namoruputh ward	Puch	PUCH	PUCH	21	16	18.80%	62.50%
82	Loima	Turkwel ward	Nachuro	KANGATARUK	KANGATARUK	33	29	0.00%	44.80%
83	Loima	Turkwel ward	Kotaruk	KOTARUK	KOTARUK	35	14	28.60%	42.90%
84	Loima	Namoruputh ward	Puch	KALELAKOL	KALELAKOL	20	21	19.00%	38.10%
85	T.Central	kerio ward	Nakurio	LOUWAE	LOUWAE	9	19	0.00%	36.80%
86	Loima	lokiriama/lorengikippi ward	Lochor Lomala	LOCHOR- ALOMALA	LOCHOR- ALOMALA	24	29	0.00%	34.50%
87	T. Central	township	Nakwamekwi	ELUKTOLIASI	ELUKTOLIASI	3	12	8.30%	33.30%
88	T. Central	kalokol ward	Kalokol	LOWOIANGIKENY	LOWOIANGIKENY	14	18	0.00%	33.30%
89	T. Central	township	Lodwar Township	CHUKULTOM	CHUKULTOM	2	16	0.00%	31.30%
90	T. Central	kerio ward	Nadoto	KURA	KURA	10	21	0.00%	28.60%
91	Loima	Turkwel ward	Tiya	KAITESE	KAITESE	30	18	0.00%	27.80%
92	Loima	Turkwel ward	Napeikar	NAOYAWOI	NAOYAWOI	31	15	0.00%	26.70%
93	Loima	lokiriama/lorengikippi ward	Lorengippi	Lorengippi Centre	Lorengippi Centre	22	22	4.50%	22.70%
94	Loima	Turkwel ward	Turkwel	TURKWEL	TURKWEL	27	23	8.70%	21.70%
95	T . Central	Kangatosa ward	NAOROS	NAMERESIAE	NAMERESIAE	18	14	0.00%	21.40%
96	T . Central	township	Lodwar Township	CARLIFONIA	CARLIFONIA	1	19	0.00%	21.10%
97	T . Central	kerio ward	Nakoret	NAKORET	NAKORET	12	19	0.00%	21.10%
98	Loima	kotaruk ward	Kalemnyang	KANGALITA	KANGALITA	28	19	0.00%	21.10%
99	Loima	lokiriama/lorengikippi ward	Atala Kamusio	DIDINGA	DIDINGA	25	10	0.00%	20.00%
100	T. Central	kerio ward	Kakimat	KAKIMAT	KAKIMAT	13	16	6.30%	18.80%
101	T. Central	kalokol ward	Namukuse	AKWAMEKWI	AKWAMEKWI	16	16	6.30%	18.80%
102	Loima	Namoruputh ward	Lochor Ekunyen	KALAPATA	KALAPATA	19	11	0.00%	18.20%
103	T.Central	kerio ward	Kerio	NAKWAPOO	NAKWAPOO	8	17	0.00%	17.60%
104	Loima	Turkwel ward	Kaapus	KAEKOROENGOROK	KAEKOROENGOROK	34	23	4.30%	17.40%
105	Loima	loima ward	Lorugum	LORUGUM CENTER	LORUGUM CENTER	26	18	0.00%	16.70%
106	Loima	kotaruk ward	Lobei	LOBEI CENTRE	LOBEI CENTRE	29	19	0.00%	15.80%
107	T. Central	kerio ward	Lochere Ekeny	NAKURIO	NAKURIO	17	14	0.00%	14.30%

108	Loima	lokiriama/lorengikippi ward	Loya	LOYA	LOYA	23	15	6.70%	13.30%
109	T.Central	Kanam ward	Kanamkemer	Hewan	Hewan	6	13	7.70%	7.70%
110	T.Central	township	Napetet	NATOTOL	NATOTOL	5	15	0.00%	6.70%
111	Loima	Turkwel ward	Kotaruk	KOTARUK	KOTARUK	36	17	0.00%	5.90%
112	Loima	Turkwel ward	Lomeyan	LOKORIKIPI	LOKORIKIPI	32	19	5.30%	5.30%
113	T.Central	township	Nakwamekwi	NGASAJA	NGASAJA	4	11	0.00%	0.00%
114	T.Central	Kanam ward	kerio	CHOKOCHOK	CHOKOCHOK	7	16	0.00%	0.00%
115	T.Central	kerio ward	Nadoto	NANGOLEKURUK	NANGOLEKURUK	11	13	0.00%	0.00%
116	T. South	KATILU	LOKAPEL	LOKAPEL	KAIBACHAL	25	23	13.00%	60.90%
117	T. East	LOKORI/KOCHODIN	KANGITIT	MORULEM A CHU	NAKWAKUNYUK	16	15	6.70%	53.30%
118	T. East	LOKORI/KOCHODIN	LOTUBAE	LOKWII A CHU	EPETAMUGE A	18	15	13.30%	53.30%
119	T. South	KATILU	KATILU	KATILU	LOMOONYANG	23	17	5.90%	52.90%
120	T. South	KATILU	LOKAPEL	LOKAPEL	NAWEPETO	26	19	15.80%	52.60%
121	T.East	LOKORI/KOCHODIN	LOKORI	LOKORI PHC CHU	AKATORONGOT A	12	14	21.40%	50.00%
122	T.South	KATILU	KATILU	NAMAKAT	NAMAKAT B	21	20	5.00%	50.00%
123	T.South	LOKICHAR	Napusmoru	Napusmoru	NAKIPI	39	26	15.40%	50.00%
124	T.East	LOKORI/KOCHODIN	LOPII	LOPII CHU	KOCHODIN	10	21	23.80%	47.60%
125	T.East	LOKORI/KOCHODIN	KANGITIT	MORULEM B CHU	NAKWAMOMWA	15	21	0.00%	47.60%
126	T.East	KATILIA	ELELEA	ELELEA	NAYANAEKATWAAN	6	17	5.90%	47.10%
127	T.South	LOKICHAR	LOKICHAR	KAMARESE	KANGISAJA	41	26	15.40%	46.20%
128	T.South	LOKICHAR	kalapata	kangakipur	KAAKALEL	40	24	4.20%	45.80%
129	T.East	LOKORI/KOCHODIN	LOTUBAE	LOTUBAE CHU	NAKWAMEKWI	9	11	27.30%	45.50%
130	T.East	KATILIA	PARAKATI	LOPEDRU	NAUKOTLEM	7	25	8.00%	44.00%
131	T.East	KATILU	KANAODON	KANAODON	KANAODON A	27	32	9.40%	43.80%
132	T.East	KATILIA	KATILIA	KATILIA	NAMEYANA	4	12	0.00%	41.70%
133	T.South	LOKICHAR	Napusmoru	Napusmoru	NATORUBEI	38	24	4.20%	41.70%
134	T.East	LOKORI/KOCHODIN	LOTUBAE	LOTUBAE CHU	NAOYATIRA	8	22	13.60%	40.90%
135	T.East	LOKORI/KOCHODIN	LOKWAMOSING	LOKWAMOSING CHU	MILIMANI A	14	17	0.00%	35.30%
136	T.East	LOKORI/KOCHODIN	KOCHODIN	NAKUKULAS CHU	LOCHER-RENGAN	11	24	4.20%	33.30%

137	T.South	LOKICHAR	LOCHWAA	LOCHWAA	KANASUWAT	42	21	14.30%	33.30%
138	T.East	LOKORI/KOCHODIN	LOTUBAE	LOKWII B CHU	KAMBI-LAM	17	22	13.60%	31.80%
139	T.South	KATILU	KATILU	NAKABOSAN	KANGIREGA	43	27	0.00%	29.60%
140	T.South	KAINUK	Kalomwae	Juluk	LOMOKOMOL	30	17	5.90%	29.40%
141	T.South	KATILU	Katilu	Korinyang	ALIGOI D	19	21	9.50%	28.60%
142	T.East	LOKORI/KOCHODIN	LOKORI	LOKORI AIC CHU	NANYANGASEKON	13	25	8.00%	28.00%
143	T.South	KATILIA	KATILIA	LOKORKOR	LOKORKOR	2	18	5.60%	27.80%
144	T.South	KATILU	KATILU	LOPUR	SIMAILELE	20	22	4.50%	27.30%
145	T.South	LOKICHAR	KAPESE	KAPESE	NGIMEYANA	34	11	0.00%	27.30%
146	T.South	LOKICHAR	Lochwaa	Locheremoit	LOCHEREMOIT A	35	15	0.00%	26.70%
147	T.East	KATILIA	KATILIA	KATILIA	CANAAN	3	19	0.00%	26.30%
148	T.South	LOKICHAR	KAPESE	LOKABURU	ASAJAIT	33	24	8.30%	16.70%
149	T.South	LOKICHAR	Lochwaa	Locheremoit	MORULINGAKIRION	36	18	0.00%	16.70%
150	T.East	KATILIA	KATILIA	KATILIA	ALAMACH	5	13	0.00%	15.40%
151	T.South	KAINUK	KAKONG'U	KAKONG'U	KADENGOI B	29	7	0.00%	14.30%
152	T.South	KAINUK	KAINUK	NAKULULUMAET	LOCHIPKOR A	28	19	0.00%	10.50%
153	T.South	KAINUK	NAKWAMORU	KAPUTIR	AIRPORT	31	10	0.00%	10.00%
154	T.South	KAINUK	NAKWAMORU	NAKWAMORU	NAWOITORONG	32	20	0.00%	10.00%
155	T.South	KATILU	KATILU	KATILU	APLINE/HOSPITAL	22	13	0.00%	7.70%
156	T.South	KATILU	KATILU	KATILU	YERIKO B	24	13	7.70%	7.70%
157	T.South	LOKICHAR	Nakaalei	Nakaalei	NAKIRIA	37	10	0.00%	0.00%

8.6 Appendix 6: Word Questionnaire

Table 102: Revised January 2023 SMART survey questionnaire (June 2022 version)

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 _____	**Sex** 1= Male 2= Female	**If between 3 and 18 years old, Is the child attending school?** 1 = Yes 2 = No (If yes go to 2.8; If no go t o 2.7)	**Main reason for not attending school (Enter one code from list)** 1=Chronic Sickness 2=Weather (rain, floods, storms) 3=Family labour responsibilities 4=Working outside home 5=Teacher absenteeism/lack of teachers 6= Fees or costs 7=Household doesn't see	**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)	**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*
			Years	Months							

					specify			value of schooling 8 =No food in the schools 9 = Migrated/ moved from school area (including displacements) 10=Insecurity/ violence 11-No school Near by 12=Married 13. Pregnant/ taking care of her own child 14. attending Duksi/Madrasa 15. too young for school 13=others (specify)…… ……..		Go to question to 2.9 ↓	*not applicable) go to question 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.		2.5d Total number of children under 5		2.5e						

	Total number of ALL people in the Household including children ----------		years (0-59 months) _____	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**	
2.11	**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 |____|
2.13	Marital status of the respondent 1. = Married 2. = Single 3. = Widowed 4. = separated 5. = Divorced. |____|	**2.14. What is the residency status of the household**? 1. IDP 2.Refugee 3. Resident |____|
2.15	Are there children who have come to live with you recently? 1. YES 2. NO	2.15b If yes, why did the child/children come to live with you? 1= Did not have access to food 2=Father and Mother left home 3=Child was living on the street, 4=Care giver died 5= Other specify _____

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

3.	4.	5.	6.	7.	8. CHILD HEALTH AND NUTRITION (ONLY FOR CHILDREN 6-59 MONTHS OF AGE; IF N/A SKIP TO SECTION 3.6) **Instructions:** *The caregiver of the child should be the main respondent for this section* ***3.1 CHILD ANTHROPOMETRY*** ***3.2 and 3.3 CHILD MORBIDITY*** *(**Please** fill in **ALL REQUIRED** details below. Maintain the same child number as part 2)*

A Child No.	B	C	D	E	F	G	H	I	J	K	L	M	N	3.2 a	3.2 b	3.3 a	3.3 b	3.3 c
	what is the relationship of the respondent with the child/children 1=Mother 2=Father 3=Sibling 4=Grandmother	SEX Female……F Male ……M	Exact Birth Date	Age in months	Weight (KG) XX.X	Height (CM) XX.X	Oedema Y= Yes N= No	MUAC (cm) XX.X	Was child weighed at birth? 1. Yes 2. No 3. Don't know	How much did the child weigh? …… …… ……	Child's weight verified by: 1=Health card 2=Recall	Is the child in any nutrition program 1. Yes 2. No If no skip to questions 3.2	If yes to question J. which nutrition program? 1.OTP 2.SFP 3.BSFP Other Specify _____	Has your child (NAME) been ill in the past two weeks? 1.Yes 2. No If No, skip to 3.4	If YES, which illness (multiple responses possible) 1 = Fever with chills like malaria 2 = ARI /Cough 3 = Watery diarrhoea 4 = Bloody diarrhoea 5 = Other (specify) *See case definitions above*	**When the child was sick did you seek assistance?** 1.Yes 2. No	**If the response is yes to question # 3.2 where did you seek assistance? (More than one response possible-** 1. Traditional healer 2.Community health worker	If the child **had watery diarrhoea** in the last TWO (2) WEEKS, did the child get: 1. ORS 2. Zinc supplementation? *Show sample and probe further for this component* *check the remaining drugs(confirm from mother child booklet)*

	5=Other (specify)								If no or don't know skip to M								3. Private clinic/ pharmacy 4. Shop/kiosk 5.Public clinic 6. Mobile clinic 7. Relative or friend 8. Local herbs 9.NGO/FBO	
01															1, 2, 3			
02																		
03																		
04																		

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

03										
04										

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

	3.5 Enrolment in an MNP program		**3.6 Consumption of MNPs**			
	3.5.1.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 program?(show the example of the MNP sachet) ***(record the code in the respective child's number)*** Yes =1 No=0 **If no go to 3.5.2,**	3.5.2 If the child, 6-23months, is not enrolled for MNP, give reason. (***Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)*** Do not know about MNPs ……1 Discouraged from what I heard from others ……2 The child has not fallen ill, so have not gone to the health facility …. ……3	3.6.1 Has the child consumed MNPs in the last 7 days?(shows the MNP sachet) ***(record the code in the respective child's number)*** YES = 1 N0= 0	3.6.2 If yes, how frequent do you give MNP to your child? ***(record the code in the respective child's number)*** Every day ……1 Every other day ……2 Every third day ……3 2 days per week at any day ….4 Any day when I remember…..5	3.6.3 If no, since when did you stop feeding MNPs to your child? ***(record the code in the respective child's number)*** 1 week to 2 weeks ago ….1 2 week to 1 month ago ….2 More than 1 month ……3	3.6.4 What are the reasons to stop feeding your child with MNPs? (***Multiple answers possible. Record the code/codes in the respective child's number. DO NOT READ the answers)*** Finished all of the sachets ……1 Child did not like it ……2 Husband did not agree to give to the child ……3

	If yes go to section 3.6.1	Health facility or outreach is far ……4 Ch ild receiving therapeutic or supplementary foods .....5 Other reason, specify ……..……6 ***Skip to 3.7***	***If no skip to 3.6.3***			Sachet got damaged ……4 Child had diarrhea after being given vitamin and mineral powder ……..5 Child fell sick.....6 Forgot ……..7 Child enrolled in IMAM program …8 Other (Specify)_____ ..9
Child 1						
Child 2						
Child 3						
Child 4						

MATERNAL NUTRITION FOR WOMEN OF REPRODUCTIVE AGE (15-49 YEARS) *(Please insert appropriate number in the box)*									
3.7	**3.8**	**3.9**	**3.10**			**3.11**			
Woman ID. **(all women in the HH aged 15-49 years from the household demographics – section 2)**	What is the mother's / caretaker's physiological status **1. Pregnant** **2. Lactating** **3. not pregnant and not lactating** **4. Pregnant and lactating**	Mother/ caretaker's MUAC reading: ____.__**cm**	During the pregnancy of the (name of the youngest biological child below 24 months) did you take the following supplements? indicate **1. Yes** **2. No** **3. Don't know** **4. N/A**			If Yes, for how many days did you take? (***probe and approximate the number of days***)			
			Iron tablets syrup	Folic acid	Combined iron and folic acid supplements	Iron tablets syrup	Folic acid	Combined iron and folic acid supplements	

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

4.1 **What is the MAIN source of drinking water for the household <u>NOW</u>?**

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

tube well / borehole 21

dug well
- protected well 31
- unprotected well 32

spring
- protected spring 41
- unprotected spring 42

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

packaged water
- bottled water 91
- sachet water 92

1.

4.2 a What is the trekking distance to the current main water source?

1=less than 500m (Less than 15 minutes)
2=more than 500m to less than 2km (15 to 1 hour)
3=more than 2 km (1 – 2 hrs)
4=Other(specify)
|____|

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

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

4.2.2a **How long do you queue for water?**

1. Less than 30 minutes
2. 30-60 minutes
3. More than 1 hour
4. Don't que for water

1.

.3 Do you do anything to your water before drinking? (*MULTIPLE RESPONSES POSSIBLE) (Use 1 if YES and 2 if NO).* |____|

1. Nothing
2. Boiling…… ……
   |____|
3. Chemicals (*Chlorine,Pur,Waterguard*)……
   |____|
4. Traditional herb……...
   |____|
5. Pot filters……..
   |____|

5.

4.3a	|____|	**6.**
4.4	**Where do you store water for drinking?** 1. Open container / Jerrican 2. Closed container / Jerrican |____|	**4.5 How much water did your household use YESTERDAY (excluding for animals)?** *(Ask the question in the number of 20 liter Jerrican and convert to liters & write down the total quantity used in liters)* |____|
4.6	**Do you pay for water?** 1. Yes 2. No (**If No skip to Question 4.7.1**) |____|	**4.6.1 If yes, how much per 20 liters jerrican _____ KSh/20ltrs** **4.6.2 If paid per month how much** |____|
4.7.1a	We would like to learn about where members of this household wash their hands. Can you please show me where members of your household <u>most often</u> wash their hands? *Record result and observation.* **OBSERVED** FIXED FACILITY OBSERVED (SINK / TAP) IN DWELLING.....1 IN YARD /PLOT.....2 MOBILE OBJECT OBSERVED (BUCKET / JUG / KETTLE)..... 3 NOT OBSERVED NO HANDWASHING PLACE IN DWELLING / YARD / PLOT..... 4 NO PERMISSION TO SEE 5	4.7.1b Is soap or detergent or ash/mud/sand present at the place for handwashing? YES, PRESENT .....1 NO, NOT PRESENT ..... ……**2**
4.7.1	**Yesterday (within last 24 hours) at what instances did you wash your hands? (MULTIPLE RESPONSE-** (Use 1 if "Yes" and 2 if "No") 1. After toilet…… 2. Before cooking…….. |____| 3. Before eating…… 4. After taking children to the toilet…… |____| 5. Others…… |____| |____| |____|	
4.7.2	**If the caregiver washes her hands, then probe further; what did you use to wash your hands?** 1. Only water 2. Soap and water 3. Soap when I can afford it	**4.8 What kind of toilet facility do members of your household usually use?**

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

5.0: Food frequency and Household Dietary Diversity

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

yams, cassava, or foods made from roots														
5.4 Dark green leafy vegetables: Dark green leafy vegetables, including wild ones + locally available vitamin A rich leaves such as cassava leaves etc.														
5.5 Other vegetables *(e.g., tomatoes, egg plant, onions)?*														
5.6. Vitamin A rich fruits: + other locally available vitamin A rich fruits														
5.7 Other fruits														
5.8 Organ meat (iron rich): Liver, kidney, heart or other organ meats or blood based foods														
5.9. Flesh meats and offals: Meat, poultry, offal *(e.g. goat/camel meat, beef; chicken/poultry)?*														
5.10Eggs?														
5.11Fish: Fresh or dries fish or shellfish														
5.12a 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)?*														
5.14Oils/fats *(e.g. cooking fat or oil, butter, ghee, margarine)?*														

5.15 Sweets: Sugar, honey, sweetened soda or sugary foods such as chocolates, sweets or candies														
5.16 Condiments, spices and beverages:														

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

	4.1 FOOD FORTIFICATION (FF)/- *Please ask the respondent and indicate the appropriate number in the space provided*
1.1	**Have you heard about food fortification?** 1. Yes 2. No 3. Don't know
1.1.1	**If yes, where did you hear or learn about it? (MULTIPLE RESPONSE ARE POSSIBLE-** (Use 1 if "Yes" and 2 if "No") 6. Radio…… 7. Road show…….. |____| 8. In a training session attended……. 9. On a TV show…… |____| 10. Others……. |____| |____| |____|

1.2	**Respondent's knowledge on the food fortification logo (Show the food fortification logo to the respondent and record the response). Do you know about this sign?** 1. Yes 2. No 3. Don't know	|____|
1.3	**What is the MAIN source of Maize flour for the household <u>NOW</u>?** 2. Bought from the shops, supermarket e.t.c 3. Maize is taken for milling at a nearby Posho Mill 4. Bought from a nearby Posho Mill 5. Other *(Please specify)* |_____|	**1.1b Do you know if the maize flour you consume is fortified or not?** 1. Yes 2. No 3. Don't know
1.4	**What brands of the following foods does your household consume?** 1. Maize flour 2. Wheat flour 3. Margarine 4. Oils 5. Fats 6. Sugar	|_____| |_____| |_____| |_____| |_____| |_____|

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