ISIOLO COUNTY INTEGRATED SMART SURVEY

ACKNOWLEDGEMENT

The Nawiri we World WFP World Food Programme integrated SMART survey 2023 was made possible due to coordinated efforts by various health stakeholders. The ministry of health, Isiolo County acknowledges the following partners of their valuable contribution in the implementation of the entire survey process:

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- The entire Isiolo County community for allowing to be interviewed and allowing their children to be measured.
- And finally, the dedicated survey team members who worked tirelessly to ensure quality data was collected during this exercise.

LIST OF ABBREVIATIONS

AAH	Action Against Hunger
BCG	Bacillus Calmette–Guérin
CI	Confidence Interval
CSG	County Steering Group
CSI	Coping Strategy Index
ENA	Emergency Nutrition Assessment
EPI	Expanded Program on Immunization
EWS	Early warning System
FSL	Food Security and Livelihood
GAM	Global Acute Malnutrition
HAZ	Height for Age Z-score
IDP	Internally Displaced Persons
IFAS	Iron Folate Supplementation
IMAM	Integrated Management of Acute Malnutrition
IPC	Integrated Phase Classification
KNBS	Kenya National Bureau of Statistics
MAM	Moderate Acute Malnutrition
MUAC	Mid Upper Arm Circumference
NDMA	National Drought Management Authority
NIWG	Nutrition Information Working Group
ODK	Open Data Kit
OPV	Oral Polio Vaccine
PPS	Probability proportional to size
PLW	Pregnant and Lactating Women
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SMART	Standardized Monitoring and Assessment in Relief and Transitions
SPSS	Statistical package for the social science
UNICEF	United Nations Children's Fund
VAS	Vitamin A supplementation
WASH	Water Sanitation and Hygiene
WAZ	Weigh for Age Z-score
WFP	World Food Program
WHO	World Health Organization
WHZ	Weight for Height Z-score

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EXECUTIVE SUMMARY

Isiolo county is among the arid and semi-arid lands of Kenya covering 35,350km2 with an estimated population of 283,139 (Source: KNBS, Nov 2021). It is divided into 3 sub-counties; Isiolo Central, Garbatulla and Merti. In addition Cherab has been gazzetted to become a sub-county [31/2/2022]. Isiolo has 3 main livelihood zones; Pastoral, Agro-pastoral and firewood/ waged labour representing 67%, 26% and 7% respectively. The SMART survey was conducted in the whole county. The main objective of the survey was to determine the prevalence of malnutrition among children aged 6 - 59 months and women of reproductive age (15-49 Years) in Isiolo County. Specifically, the survey aimed at determining the nutrition status of children 6 to 59 months, the nutritional status of women of reproductive age (15-49 years) based on maternal mid upper arm circumference, immunization coverage; measles (9-59 months), OPV1/3 and Vitamin A supplementation for children aged 6-59months. The survey also was meant to determine deworming coverage for children aged 12-59 months, the prevalence of common illnesses as well as assess water, sanitation and hygiene (WASH) practices and the prevailing food security situation in the County.

Methodology

Standardized Monitoring and Assessment of Relief and Transition (SMART) methodology was adopted in the study using a two-stage cluster sampling.

The first stage involved random selection of clusters from the sampling frame based on probability proportion to population size (PPS)[1]. Emergency Nutrition Assessment (ENA) for SMART January 2020 was used in calculation of sample size. Using parameters from the previous 2022 SMART survey, a sample size of 467 children 6-59 moths from 732 households was obtained. Household was used as the sampling unit in the second stage sampling or basic Sampling Unit. From previous experience, a team could comfortably survey 15 households per day giving us 49 clusters from the 732 households.

The second stage involved selection of households (simple random sampling) using random number generator mobile application; and 15 households were randomly selected to be surveyed. Survey teams developed sampling frame in each of the village sampled by generating a list of all households with guidance from the village head (guide).

The standard SMART survey questionnaire was created using kobo toolbox and downloaded into the smart phones and tablets using open data kit mobile application. Daily plausibility check was performed to check for quality of anthropometric data and other datasets. Anthropometric data processing was done using ENA software while all the other quantitative data were analysed in Ms. Excel and the SPSS (Version 20) computer package.

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[1] In this method villages with more population are likely to be selected as compared to those with low population

Summary of findings

A total of 715 households were visited covering 521 children (6-59 months) from 49 selected clusters. The survey involved 3,556 members with an average household size of 5.0. The proportion of children 6-59 months was 15.3%. Out of the 735 households targeted, 1 household declined to participate in the survey and 16 households were reported as missing households due to the absence of household members even after repeated visits. The overall data quality for anthropometric measurements was 0% indicating excellent performance. Table 1 below show a summary of survey findings;

Table 1 *Summary findings, Isiolo County; SMART January/February 2022 Vs SMART January 2023*

INDEX	INDICATOR	February, 2022 SMART Findings	January, 2023 SMART Findings
WHZ[2]-scores	Global Acute Malnutrition Weight for height <-2 z and/oedema	17.8 % (14.5 - 21.6 95% C.I.)	**15.4 %** **(12.5 - 18.9 95% C.I.)**
	Severe Acute Malnutrition Weight for height <-3 z and/oedema	1.7 % (0.8 - 3.6 95% C.I.)	**3.1 %** **(1.8 - 5.2 95% C.I.)**
HAZ[3]-scores	Stunting (<-2 z-score)	12.2 % (9.1 - 16.2 95% C.I.)	**15.7 %** **(12.8 - 19.2 95% C.I.)**
WAZ[4]-scores	Underweight (<-2 z-score)	18.8 % (15.7 - 22.3 95% C.I.)	**20.0 %** **(16.2 - 24.4 95% C.I.)**
MUAC[5]	Global Acute Malnutrition MUAC <125 mm and/or edema	3.4 % (15.4 - 22.9 95% C.I.)	**2.5 %** **(1.5 - 4.3 95% C.I.)**
	Severe Acute Malnutrition MUAC <115 mm and/or edema	0.4 % (1.0 - 4.5 95% C.I.)	**0.4 %** **(0.1 - 1.5 95% C.I.)**

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[2]Weight for height Z scores

[3]Weight for age Z scores

[4]Weight for age Z scores

[5]Mid upper arm circumference

Measles immunization coverage	9 Months by card		78%	**65%**
	18 Months by card		65%	**54%**
Vitamin A coverage	6-11 months ones		55%	**67%**
	6-59 months at least ones		47.8%	**78%**
	12- 59 months more than ones		49.7%	**79%**
Morbidity Patterns for 6-59 months	Ill in the last 2 weeks		43.2%	**44%**
	Type of illness	Fevers with chills like malaria	20.1%	**22%**
		ARI/Cough	59.3%	**70%**
		Watery diarrhea	33.8%	**20%**
Maternal nutrition status by MUAC	Pregnant and lactating women with MUAC <21cm		5.3%	**12%**
IFAS intake	Over 90 days during pregnancy		24.4%	**47.9%**
WASH	Protected water sources		71%	**69.2%**
	Distance to Main Water source	≤ 500M	69.5%	**69.9%**
		>500M-≤2km	14%	**19%**
		>2km	10.7%	**11.0%**
	Hand washing during four critical times		42.8%	**27.8%**
	Latrine coverage/open defecation		21%	**24%**
Food security and livelihoods	Food consumption score (FCS)	Poor	3.8%	**23.9%**
		Borderline	17.9%	**37.2%**
		Acceptable	78.3%	**38.9%**
	Coping strategy index	Borrow food	2.58	**3.2**
		Restrict consumption for children to eat	3.63	**5.1**

		Total weighted coping strategy score	12.65	**15.6**

Conclusion

The nutrition Status of children in Isiolo County has slightly improved compared to the findings of a SMART survey conducted in the same season in 2022. The current nutrition status of children in the County however remains at *Critical* phase (IPC Phase 3) with a global and severe acute malnutrition prevalence of **15.4%** and **3.1%** respectively. There was no significant difference compared to global acute malnutrition prevalence of **17.8%** reported in 2022 (**P value=0.313**).

Morbidity patterns have been relatively stable with 44% of children under five years reported to have fallen sick within two weeks recall period compared to 43.2% reported ill in 2022. There was a slight decline in the health seeking behavior with **86.0%** of children who reported to be ill in the past 2 weeks seeking assistance compared to **88.2%** in 2022. **74.9%** caregivers mainly sought treatment for their ill children at public clinic, a slight decrease from **76.7%** in 2022. In 2023, among those who were sick in the past two weeks in the county, majority (70.0%) were affected by ARI-Cough, fever with chills like malaria at 22.0%, while 20.0% suffered from watery diarrhoea.

There was a notable increase in ARI/cough incidence from **59.3%** in 2022 to **70.0%** in 2023. Also, there was a decrease in watery diarrhea incidence from **33.8%** reported in 2022 to **20.0%.** Among the diarrhea cases reported 79.5% were reported to have been treated with ORS and Zinc an increase from 61.8% in 2022.

There was notable change in nutrition status of women of reproductive age and PLWs with those having MUAC less than 21cm increasing from 4.6% and 5.2% in 2022 to 8% and 11.5% in 2023. This can be attributed to the worsening drought situation. 47.9% of mothers of children 0-23 months consumed iron and folic acid supplements for more than ninety days in 2023, a significant increase from 24.4.3% in 2022.

Households consuming more than 5 food groups has slightly decreased from 55.1% in 2022 to 45.0% in 2023. Vitamin A and Iron rich foods were the least consumed at 1.5 and 3.2 days respectively which is a decrease from 3.5 and 2.3 days in 2022 owing to inaccessibility of these foods during the drought period. 63.9% and 22.8% of the households reported not to have consumed vitamin A rich foods and iron rich foods respectively in the 7 days preceding the survey.

Proportion of households within acceptable food consumption score significantly reduced from 78.3% in 2022 to 38.9% in 2023 while those within poor food consumption increased from 3.8% in 2022 to 23.9% in 2023. This can be attributed to household food insecurity due to failed rains for 5 consecutive seasons.

In conclusion the nutrition status of children 6-59 months in Isiolo County is in **Critical** phase according to WHO classification for severity of acute malnutrition. This is associated with many factors that range from poor socio-economic, household food insecurity, high morbidity, low water treatment, poor sanitation and hygiene leading to persistent poor nutrition status in the county. The integrated nutrition interventions that include integrated outreaches, active case finding and mass screening, household food security

interventions, Cash and voucher assistance, WASH among other projects might have mitigated the worsening and slight improvement of nutrition status of children 6-59 months.

1.0 INTRODUCTION

1.0.1 Background Information

Isiolo county lies within ASALs of Kenya covering 25,350 km2 with an estimated population of 283,139 (source: KNBS, Nov 2021). It has 3 main livelihood zones; pastoral , agro-pastoral and casual waged labor representing 52%, 33% and 15% respectively as shown in *figure 1.1 below.*. It consists of 3 sub-counties namely Isiolo, Garbatulla and Merti.
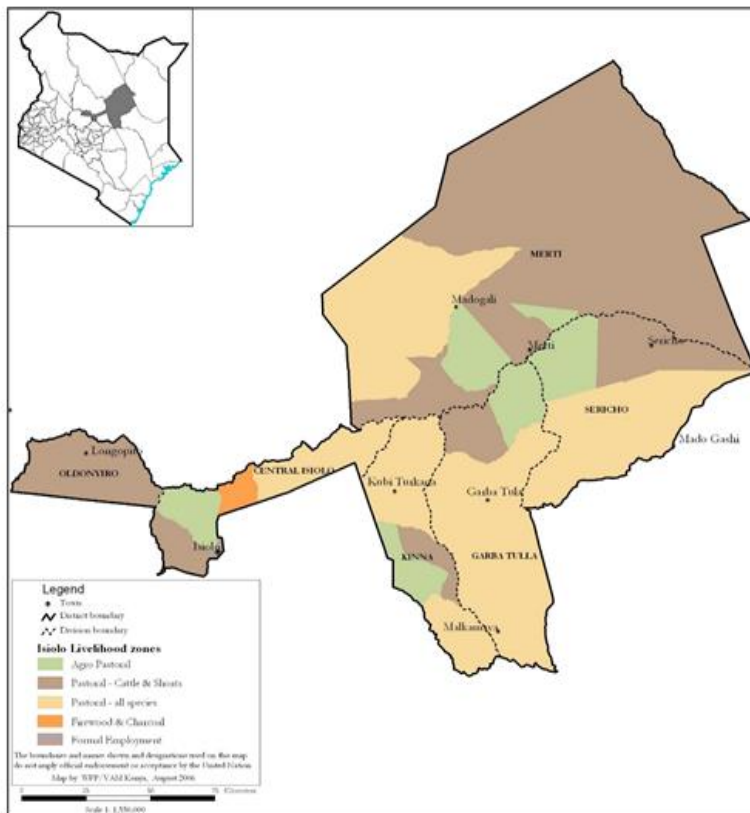
Figure 1: A map of Isiolo Livelihoods

The Department of Health with support from its partners conducted a county wide integrated health & nutrition survey in January 2023.

According to the NDMA updates, Isiolo County was already in the alarm drought stage with about 153,320 people in the County in need of food assistance due to the current prolonged drought in the region (Isiolo county drought status report, Nov 2022). Six wards, namely Cherab, Chari, Garbatulla, Ngaremara, Oldonyiro and Sericho were in extreme vegetation deficit while Kinna and Burat were in severe vegetation deficit. Most of the livestock species had migrated and it was estimated that 90%, 85% and 65% of cattle, sheep and goat and camel respectively had migrated either within or outside the county. Drought had negatively impacted the various livelihoods differently but ultimately compromised the household food security. Food insecurity had a direct bearing on the health and nutritional status of the communities especially vulnerable groups such as children (6-59 months of age), pregnant, and lactating mothers and the elderly.

Timing of the Survey

According to the nutrition survey guidelines, integrated SMART surveys should be conducted based on seasonal assessments. The seasonal assessments in Kenya conducted twice a year are based on the rainfall season; end of Short and Long Rains. The Isiolo Integrated SMART Survey timing was based on seasonality hence informing the performance of the short rains (Oct, Nov, Dec 2022).

Isiolo County Seasonal Calender

▪ Short rains end ▪ Short dry spell ▪ Reduced milk yields ▪ Migration to dry season area ▪ Land preparation	▪ Migration to wet grazing areas ▪ Long rains ▪ High Calving Rate ▪ Milk Yields ncrease ▪ Reduced pasture/water stress (Normal Scenario)	▪ Long rains harvests ▪ A long dry spell ▪ Increased distances to water and pasture ▪ Reduced water levels ▪ Kidding (Sept) ▪ Community/HH coping measures taken	▪ Short rains ▪ Planting in Agro-pastoral LZ ▪ Migration from dry season area ▪ Increased milk yield ▪ Reduced pasture/water stress (Normal scenario
Short dry period	Long rains period	Long dry spell	Short rains
22-Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	22-Dec

Figure 2: Isiolo County seasonal Calendar

1.0.2 Rationale of the survey

Acute Food Insecurity classification was classified as **Crisis** (IPC phase 3) and was projected to **worsen** in the period of August – October 2022 to IPC phase 4 (July, LRA 2022 report). The long rains of 2022 performed poorly impacting negatively on the livestock sector. The poor rain performance resulted to poor status of pasture and browse and thereby low livestock body condition score with a corresponding poor livestock productivity (July, LRA 2022 report). The short rains season performance for the month of December performed poorly at 19 percent below the long-term average with Sericho, Charri and Cherab wards having not received any rain by end of December. Overall vegetation condition remained in an extreme drought vegetation deficit (NDMA, Isiolo Drought early warning bulletin, Dec, 2022). Staple food prices especially maize have sharply increased as a result of limited availability of maize attributable to crop failure and subsequent poor harvests locally, around the region and country at large eroding the purchasing power of households who sell their livestock especially goats at the current market prices which is below normal.

The average milk production per household per day was 0.80 liters in December compared to about 2 liters normally while milk consumption per household per day was 0.6 liters compared to about 1.5 liters normally (NDMA, Isiolo Drought early warning bulletin, Dec, 2022). Household food consumption deteriorated considerably with proportion of households at poor and borderline food consumption increasing from 10.3% and 32.6% in May to 13.3% and 39.8% in December 2022 (NDMA, Isiolo Drought early warning bulletin, May and Dec 2022). According to Integrated Phase Classification (IPC) for acute malnutrition, Isiolo county was classified in a critical nutrition situation phase (IPC phase 4, GAM 15 – 29.9%), based on GAM by WHZ from exhaustive mass screening conducted in May 2022 at 16.3 % (15.7 – 16.9% C.I.) (July, LRA 2022 report)

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The results of this survey will provide updates of health, nutrition & food security situation in the county to inform interventions across the sectors. The SMART survey was based on seasonality trends and therefore, the need to track current health and nutrition situation in Isiolo county. The result of this survey was to provide data for the short rain assessment to be carried out in January – February 2023 and provide a snapshot on the impact of 2022 short rains season.

1.0.3 Objectives

Overall objective
The overall objective of the SMART Survey was to determine the prevalence of malnutrition amongst children aged 6-59 months and women of reproductive age 15 – 49 years in Isiolo County and the morbidity rates.

Specific objectives were;

- ❖ To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months
- ❖ To determine the immunization coverage for Measles (at 9, 18), Oral Polio Vaccines (OPV 1 and 3), deworming and vitamin A supplementation in children aged 6-59 months
- ❖ To determine whether children 24-59 months living with disability (Visual, hearing and walking) are reached with nutrition interventions
- ❖ To establish coverage of iron / folic acid supplementation during pregnancy among pregnant and lactating women
- ❖ To determine the nutritional status of women of reproductive age (15-49 years)
- ❖ To collect contextual information on possible causes of malnutrition such as household food security, water, sanitation, and hygiene (WASH) practices and   morbidity

2.0 METHODOLOGY

2.0.1 Survey area
One countywide survey was carried out that covered all the livelihood zones (Agro-Pastoral, Pastoral all species, and casual waged labour/ charcoal burning)

2.0.2 Survey Design
The survey applied a two-stage cluster sampling using the SMART methodology with the clusters being selected using the probability proportional to population size (PPS). Stage one sampling involved the sampling of the clusters to be included in the survey while the second stage sampling involved the selection of the households from the sampled clusters.

2.0.3 Study population
The target population for the study was children aged (6 – 59 months) for the anthropometric component and women of reproductive age (15 – 49 years) for the maternal nutrition component.

2.0.4 Sample size calculation

The anthropometric survey sample size was calculated using the SMART survey calculator. The parameters of interest were captured into ENA for SMART software (version 11th Jan, 2020) and the respective number of children and households required for the survey computed. The sampling frame for this survey was the updated list of villages (with current projected population) from the survey area

Table 2: Parameters for Sample size calculation

Parameter	Value	Rationale/ source
Estimated prevalence	17.8%	From contextual, (NDMA EWS) and mass screening data it's showing a stabilizing situation due to ongoing drought response interventions
±Desired precision	4%	This is adjusted in consideration of the rule of thumb based on the anticipated prevalence 15 – 20%
Design effect	1.22	Adjusted from the previous 2022 design effect of 1.0 in the county. This is sufficient to cater for any heterogeneity
Average household size	5	From KNBS 2019 Population data
Proportion of 6-59 months	14.6%	From KNBS Analytical report on population projections volume XVI
Non-response rate	3.0%	Based on previous assessments ongoing community mobilization is expected to create awareness of upcoming assessment. In addition, there is likely low migration of populations
Households	732	ENA for SMART household calculation for cross sectional anthropometric survey.
Children	467	ENA for SMART household calculation for cross sectional anthropometric survey.

2.0.5 Cluster and household selection

Stage 1 Sampling (Clusters Selection)

An updated sampling frame (list of communities) was developed based on secondary data and updated with the assistance of local authority and other resource persons. All the villages that were accessible were included in the sampling frame and alongside respective population estimates were entered onto ENA for SMART software January 2020 version on the planning tab for sampling.

Stage 2 Sampling (Households Selection)

Prior to the survey, a definition of a household was discussed (A group of people who lived together and shared a common cooking pot. In polygamous families with several structures within the same compound but with different wives having their own cooking pots, the structures were considered as separate households and assessed separately).

In cases where there was no eligible child, a household was still considered part of the sample since it was integrated survey; other household related information was collected. If a respondent or child was absent during the time of household visit, the teams left a message and re-visited later to collect data for the missing person, without substituting the selected households.

For clusters with more than 250HHs, segmentation was carried out and one segment was selected using PPS to represent the cluster. In the selected segment the households were then randomly selected using the random number generator.

2.0.6 Data collected
The following data was collected using quantitative data collection technique;

1. Anthropometric measurements (weight, height, edema, MUAC, age, sex) for children aged 6-59 months and MUAC for women of reproductive age.
2. Vaccination information (OPV1 and 3, measles, BCG, and Vitamin A supplementation).
3. Incidences of childhood illnesses in the last 2 weeks prior to the survey.
4. Food security information (Household Dietary Diversity Score, Women dietary Diversity Score, Food consumption Score, Food consumption Score-Nutrition and Coping strategy Index)
5. Water and sanitation Hygiene (Latrine access and coverage, water treatment and hand washing)

2.0.7 Survey organization

■ **Coordination/Collaboration:** Before the survey was conducted, meetings were held with the respective authorities and key stakeholders to brief them about the purpose, objectives and methods for the survey. The survey details were discussed with the County Health office and key partners on the ground (NGO and UN). The authorities were requested to officially inform the communities (villages) that were involved in the assessment. This included validation of the methodology at the National Nutrition Information Technical Working Group (NITWG).

■ **Recruiting the Survey Team:** Recruitment was done in collaboration with the Department of Health office at the County level in order to give ownership and participation in the assessment. To collect reliable and quality data, a clearly defined criteria for enumerators selection was developed. Enumerators were finally selected based on past experience, ICT knowledge and availability during training to the entire data collection period. Seven teams of four persons were selected to include two measurers, one enumerator and a team leader.

■ **Training of the Survey Team:** The teams were given 4-days training prior to fieldwork, including a standardization test to ensure standardization of measurement where ten children were measured twice by each of the enumerators. All data collectors were trained on taking anthropometric measurements, completion of questionnaires. On sampling method, the teams were trained on listing of all the households when they get to a cluster since the clusters had already been selected using ENA. From the list of all the households, simple random sampling was used to select 15 households through random number generator application.

- **Piloting:** The data collection tools were pilot tested in clusters not selected to be part of the larger survey, to ensure that the interviewers and respondents understood the questions and that interviewers follow correct protocols with each team visiting at least 2 households.
- **Team work in the field:** The survey was conducted by 8 team each covering a cluster (15 households) per day. A multi-stakeholder approach was used to ensure full participation of all stakeholders who included; county government line ministries led by MoH and NDMA, ACF, Concern Worldwide, Kenya Red Cross, NAWIRI, We World, UNICEF and community members. Each team was composed of 2 enumerators and one team leader. The selection of the enumerators was based on the past performance and experience in SMART survey. Maximum supervision of the survey teams was ensured to facilitate quality data. Supervisors included the SCNO, ACF, Concern Worldwide, UNICEF and representative from NITWG who closely supervised the teams throughout the survey. The overall coordination was done by County Nutrition Coordinator (CNC). In moving from one randomly selected household to another, a village leader, or a community volunteer guided the teams.

2.0.8 Data Collection Methods and Tools

Anthropometric and household questionnaire mounted on mobile phone application (ODK) was used to collect quantitative data. Qualitative data was collected through key informant interviews (from program staffs, MoH staff, community leaders and mothers during data collection. The questionnaires applied in this SMART survey are attached in annex 6.0.5 of this report.

2.0.9 Data Analysis, and Report

Anthropometric data collected using ODK mobile application was uploaded to the server on daily basis. Daily plausibility check was done to ensure quality. Anthropometric data was analyzed using ENA for SMART software version 2020 (11th January 2020), while other data sets was analyzed using SPSS software version 22 and Microsoft excel. Preliminary results and report were shared within the first week after data collection.

2.0.10 Referrals

During the survey, all severe and moderately malnourished children as per MUAC and Weight-for-Height cut offs were referred to the nearby health service delivery points offering IMAM services.

2.0.11 Ethical consideration

Verbal consent was obtained from all respondents within the sampled households. Only respondents who voluntarily accepted to participate in the survey were engaged in interview sessions. Privacy and confidentiality of survey respondent and data was protected.

3.0 SURVEY FINDINGS

3.1 Household Demographic

3.1.1 Sample size (Planned and achieved)
The planned and achieved sample size based on clusters, households and children (6-59 months) is illustrated in *table 3*. The survey involved 3,556 persons with an average population of 5.0 persons per household. The proportion of children less than 5 years was 16.6%. The teams were able to visit all the 49 sampled clusters as shown.

Table 3: Response rate

		n	%
Clusters	Planned	49	
	Visited	49	100%
HH data	Planned	732	
	Actual number of HHs to be visited	(15HHs*49 clusters)735	
	Visited	715	97.68%
6-59 Months	Planned	467	
	Achieved/Measured	521	111.10%
HH Members	Total	3556	
	Average HH size	5	
Gender of HH members	Male	1743	49.02%
	Female	1813	50.98%
Total number of 6-59 months including absentee	Total	543	
	Male	287	52.85%
	Female	256	47.15%
Age group	Less than 5 years	590	16.59%
	5 years to less than 18 years	1382	38.86%
	18 years and above (Adult)	1584	44.54%

3.1.2 Main Occupation of the household head
Majority (35.0%) of the household heads were practicing pastoralism followed closely with casual laborers (25.7%) an increase from 33.9% reported in 2022. There was a slight decline in the number of waged laborers from 28.6% in 202 to 25.7% in 2022. A notable increase in petty trading and a decline in those employed was also observed. This can be attributed to rural urban migration and households leaving livestock herding for more sustainable livelihoods activities.
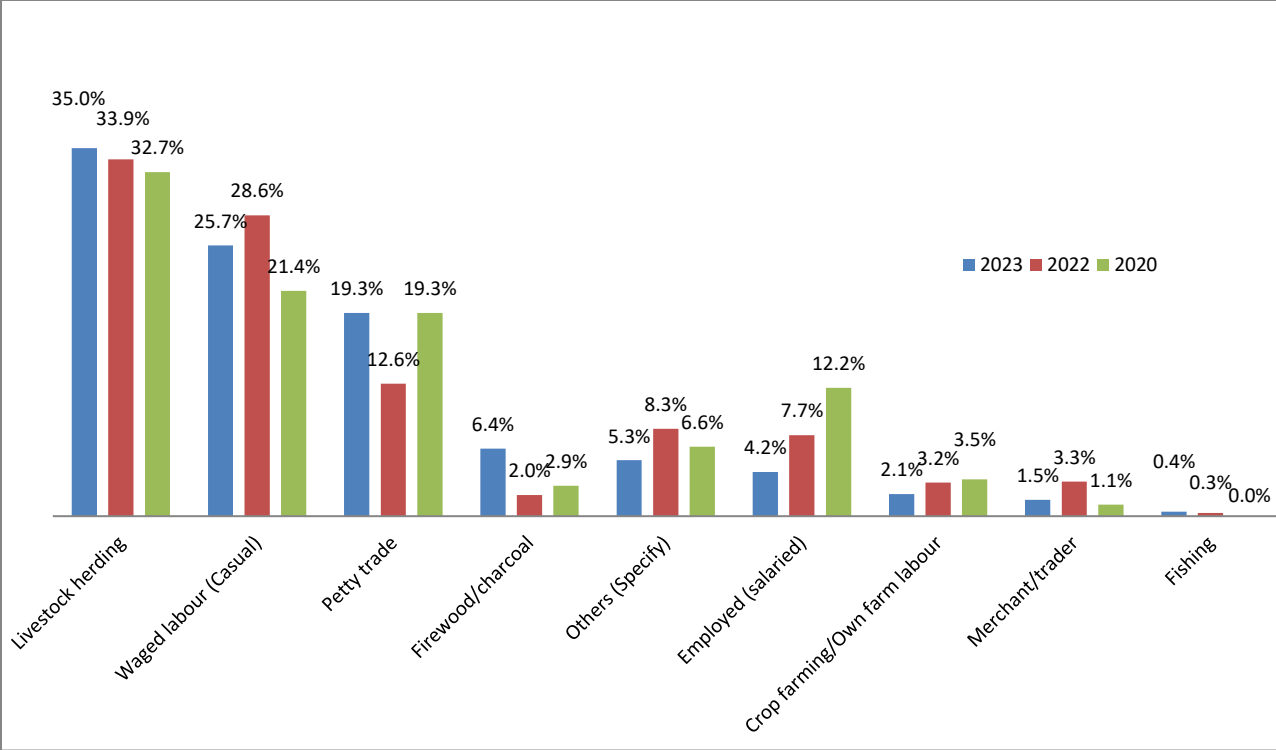
Figure 3: Main occupation of the household head

3.1.3 Main current source of income

Sale of livestock was reported as the main source of income at 27.7%, followed closely by casual labor at 27.3% with no significant change in 2022 which was at 28.5%. There is also a notable increase in petty trading from11.5% reported in 2022 to 23.5% as the community engages in more sustainable livelihood activities.
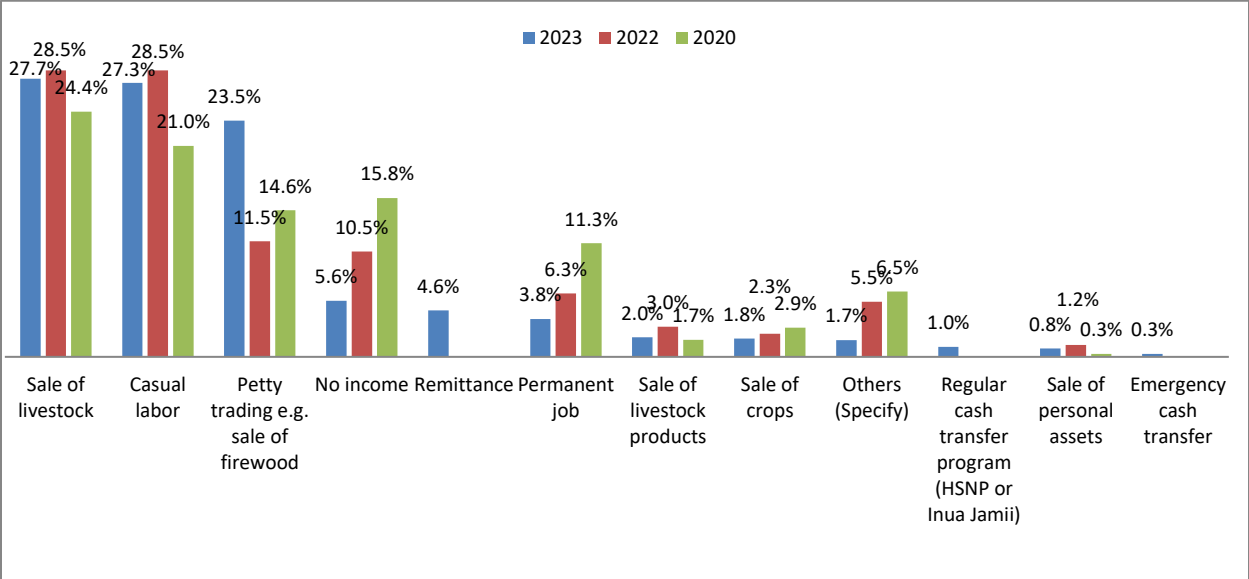
Figure 4: Main current source of income

3.1.4 Marital status of the household head and the resident status

Majority of the respondents (76.1%) reported to be married. The proportion of the windowed increased from 9% reported in 2022 to 11.3% this year. On residency status, 94.0% of the respondents reported to be permanent residents while 5.7% are nomadic pastoralists.
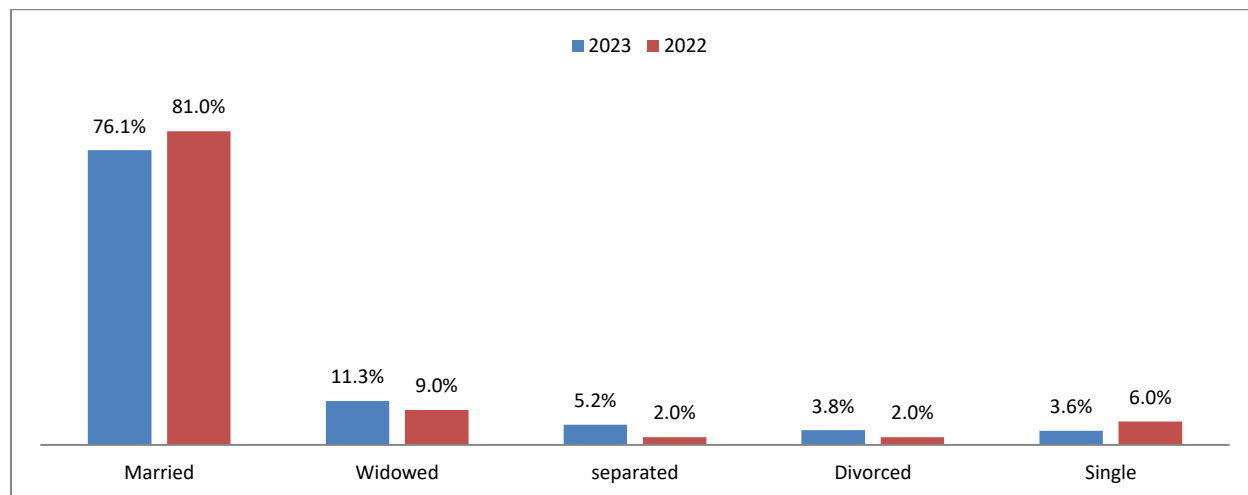
Figure 5: Marital status of the household head

3.1.5 School enrollment of children 4-<18 years

Majority (83.7%) of children 3-18 years, were already enrolled in school (N=771). Main reasons for those not attending school was; child too young (46%) and family labor responsibilities at 23.3% as illustrated in **Figure 6** below.
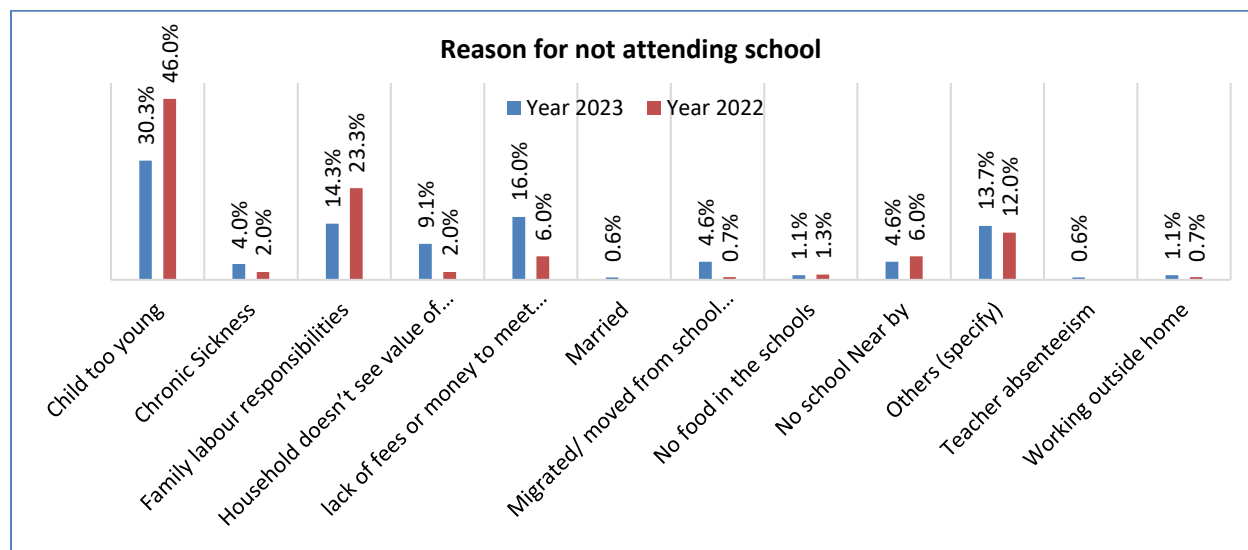
Figure 6:school enrollment of children 4-<18 years

3.1.6 Children who joined the HHs recently and the reason for their joining

Results of the survey indicated that 13% of children were reported to have joined the households. The main reason of children joining other HHs is to pay a visit at 22.6%. Moving to other HHs as a result of death of caregiver follows closely by 20.4%. Children lacking access to food comes 3rd at 18.3%
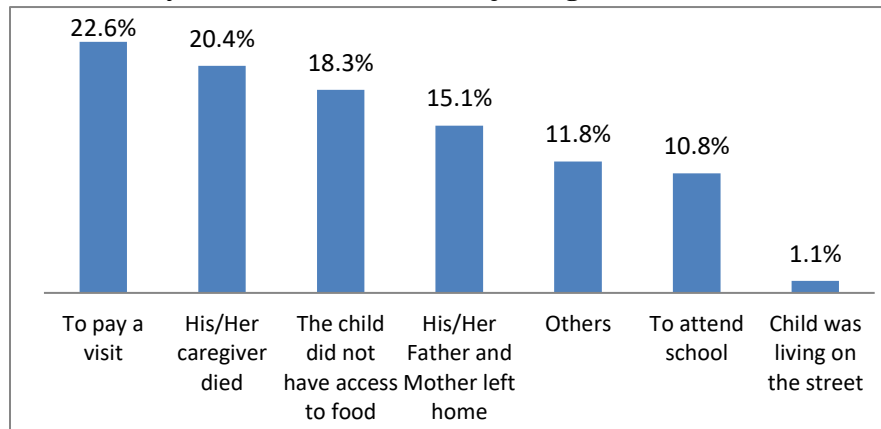
Figure 7: reason for children joining another household

3.1.7 Children currently not living with families and reasons for not living with their families

20% of Children were reported not living with their families. The main reason for children not living in their households is for them to marry or to be married (24.7%) followed by 22.6% attending boarding schools while 19.2% had been placed in the care of someone else.
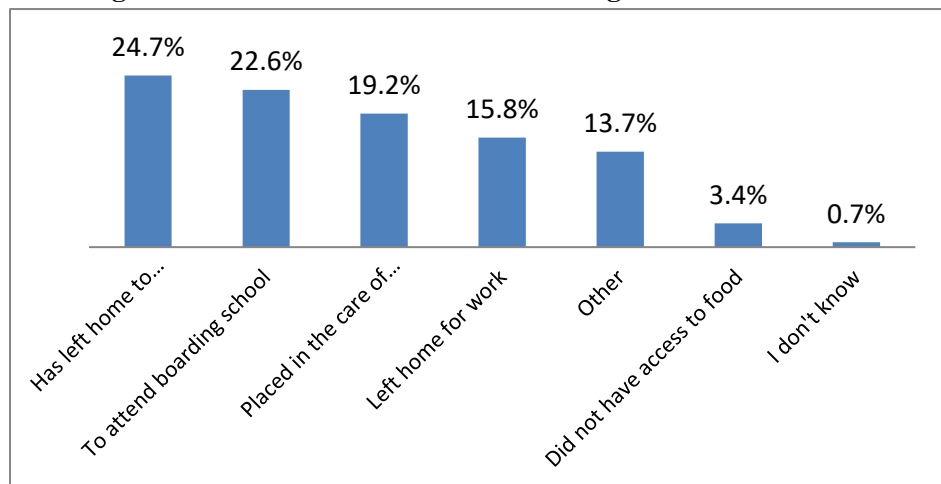
Figure 8:reasons for children not living with their families

3.1.8 Mosquito net ownership and utilization

67.1% of the HH reported owning at least one mosquito net. However, a significant number of family members within the HHs including 25.7% children less than 5 years did not sleep under a mosquito net.
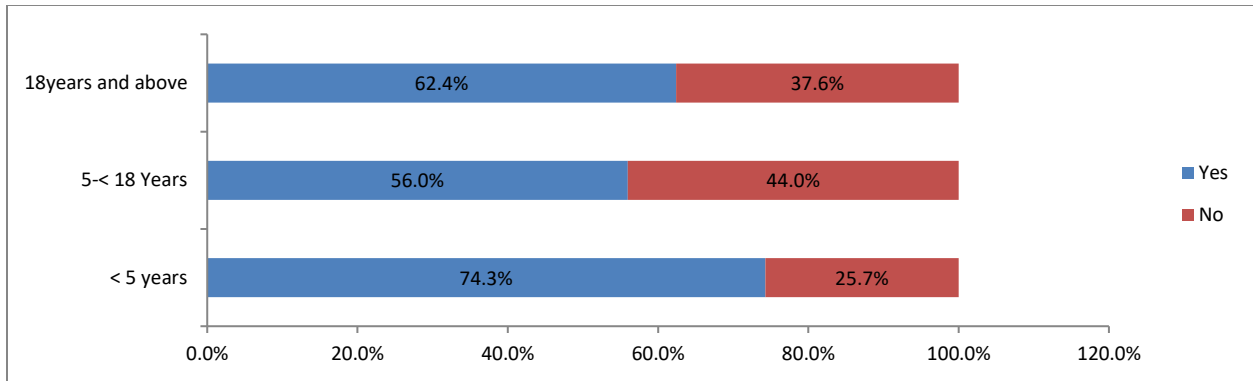
Figure 9: Mosquito net utilization by HH members

3.1.9 Highest level of education attained by adult household member

There is a slight increase in number of adult household members with no formal education from 34.4% in 2022 to 36.5% in 2023.
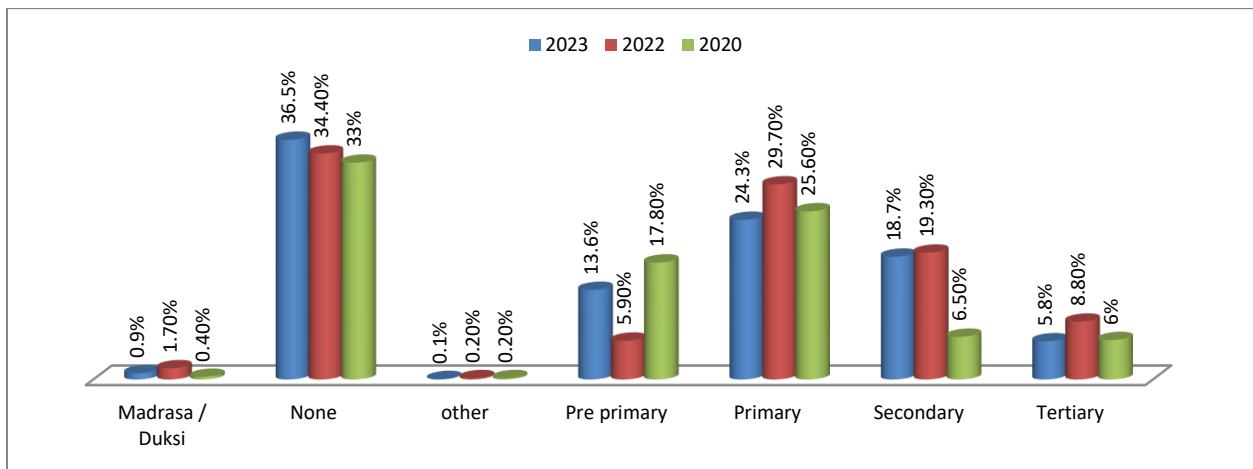
Figure 10: Highest level of education attained by adult household member

3.1.10 Household visit by Community Health Volunteers

66.8% of the households had been visited by community health volunteers
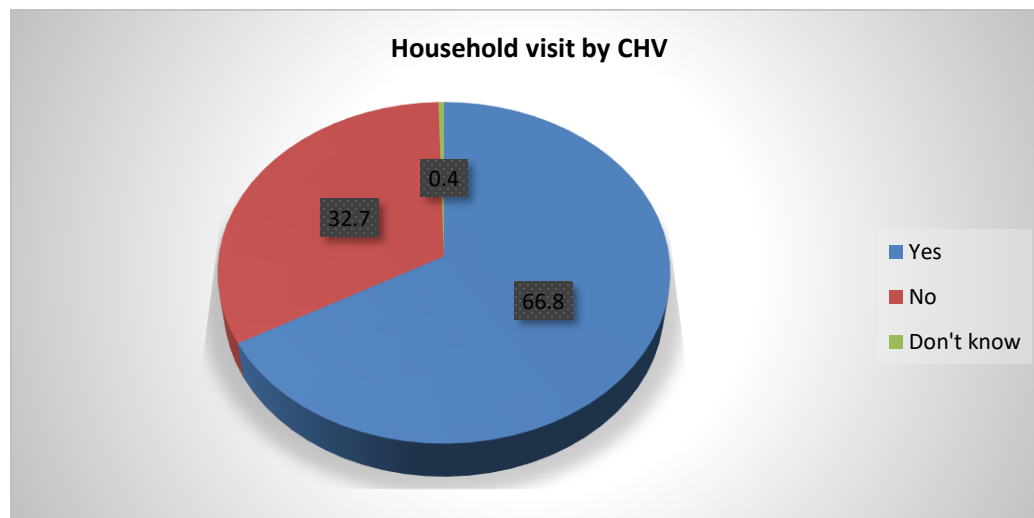
Figure 11: Community health services

There is a slight increase in number of adult household members with no formal education from 34.4% in 2022 to 36.5% in 2023.

3.2 Child health and nutrition

3.2.0 Child Morbidity and Health Seeking Practices

3.2.1 Incidence of disease among children 6 – 59 Months and Health Seeking Behavior

The UNICEF conceptual framework provides causal factors to child malnutrition and death with disease and inadequate food intake cited as immediate causal factors. The assessment on morbidity was derived from inquiring from caregivers of children aged (6-59 months) whether the child was ill two (2) weeks prior to the survey data collection. Those who confirmed illness in the past two weeks were further probed on the type of illness that affected their children based on the symptoms and whether or not they sought any assistance when their child/children were ill and where the assistance was sort. Those who indicated that their child/children suffered from watery diarrhea were probed further to ascertain on the kind of treatment that was given to them.

The survey findings indicated that 44% (n=227) of the children (6-59 months) were reported to have been ill within the past two weeks of survey in the county with no change from 2022 at 43.2%. This can be attributed to worsening hygiene and sanitation due to drought, compromised immunity due to malnutrition and migrations where communities have moved away from health facilities.

Figure 12: Morbidity patterns among under 5 years
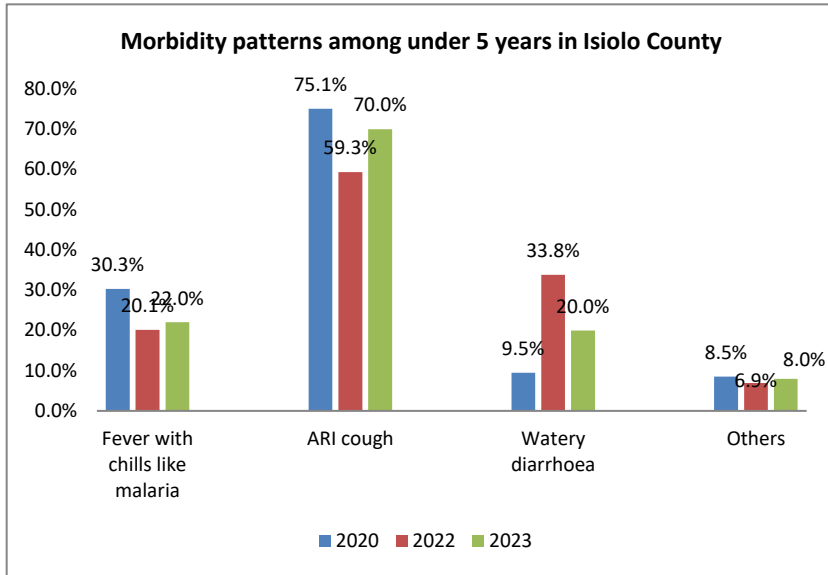
Majority (70.0%) of those who reported to be ill had ARI-Cough symptoms followed by fever with chills like malaria at 22.0%, while 20.0% suffered from watery diarrhoea. There was a notable increase of children with ARI and cough from **59.3%** in 2022 to **70.0%** in 2023. Also, there was a decrease of children suffering from watery diarrhea from **33.8%** to **20.0%. Other morbidities** reported include **allergic reactions, eye infections, ear infections and skin infections**.

3.2.2 Health Seeking Behavior

Healthcare-seeking behavior is defined as "any activity undertaken by individuals who perceived themselves to have a health problem or to be ill for purpose of finding an appropriate remedy. Healthcare-seeking behavior includes the timing and types of healthcare service utilization and may affect population health and nutrition outcomes. Delayed or lack of medical attention has been shown to associate with an increased risk of morbidity, malnutrition, and mortality among children 6-59 months. 85.9% of the children who were reported to be sick sort health services. Majority 74.9% (n=227) of caregivers sought treatment for their ill children from public health facilities, a slight decrease from **76.7%** in 2022. This could be attributed to the migrations away from the hospitals. There is however increase in proportion of children treated at the outreach or mobile clinics from 0.6% in 2022 to 7.2% in 2023. This is attributed to scaled up integrated outreaches in hard-to-reach areas and malnutrition hotspots in the County.
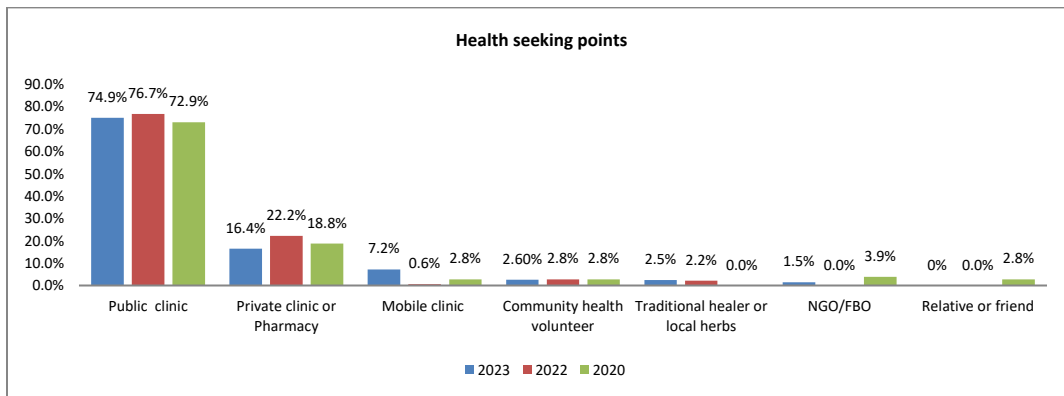
Figure 13: Health seeking behavior

3.2.3 Therapeutic Zinc Supplementation for watery diarrhea

Diarrhea causes a loss of body water and salt, which can lead to dehydration and death. The use of oral rehydration salts and zinc together is regarded as an effective treatment for diarrhea. The co-utilization of Zinc and ORS amongst episodes of watery diarrhea in the last two weeks was 71.1% (N=45) a slight increase from 64.7% reported in 2022. This can be attributed to scale-up integrated outreaches in hard to reach villages and community case management for diarrhea by community health volunteers.

3.3 Child Immunization, Vitamin A Supplementation and Deworming.

3.3.1 Immunization (BCG, OPV1 and OPV3) Coverage

WHO document immunization as a global health and development success story, saving millions of lives every year. Vaccines reduce risk of getting disease by working with our body's defenses to build protection. In Kenya, the ministry of health through the division of vaccines and immunization supports scale up of immunization through Expanded Programme on Immunization (EPI) vaccination service delivery, supply management, awareness campaigns through mass media and advocacy. This survey assessed the coverage of four (4) vaccines that comprised of BCG, OPV1, OPV3, and measles at 9 and 18 months.

From the assessment, 97.7% of children were confirmed to have been immunized with BCG evidenced by a card or a scar on the lower left arm. Those who were immunized (based on card and recall) with OPV1 and OPV3 were 97.9% and 95.8% respectively while 94.8% and 79.0% had been immunized for measles at 9 months and Measles at 18 months receptively. There has been sustained immunization coverage of 90% and above for OPV1, OPV3 and BCG attributed to high coverage of health facilities and outreach services across the county and routine campaigns. Existence of strong community referral mechanism and linkages with health facilities for immunization defaulters have also contributed to high coverage.
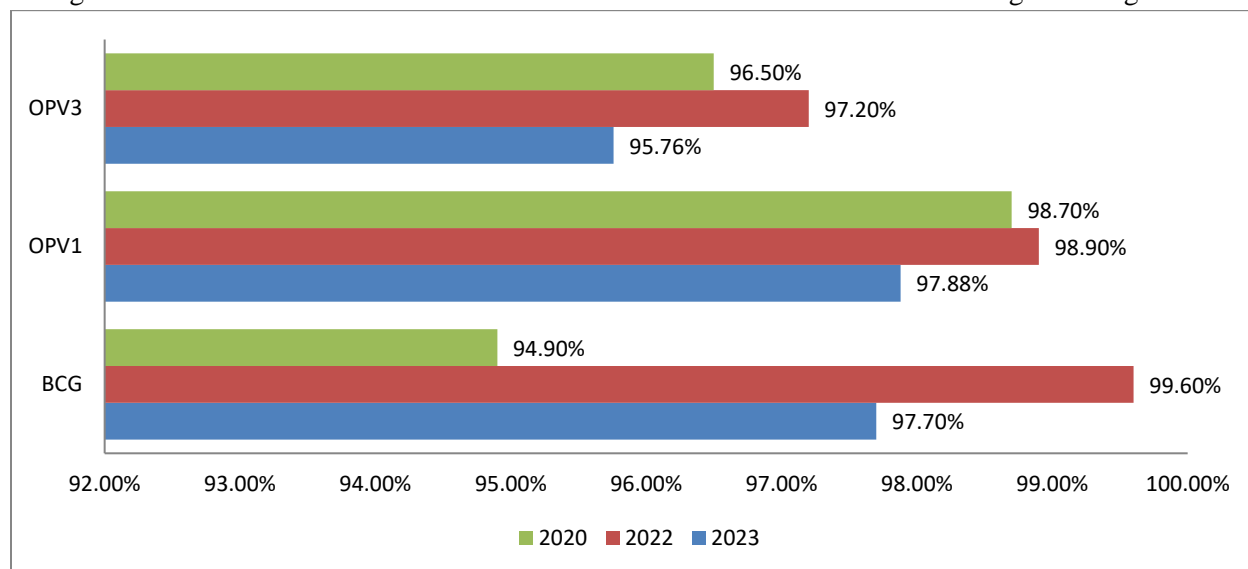
Figure 14: Trends in immunization coverage

Measles vaccination both at 9 months and 18 months remained relatively the same with measles at 9 months at 92% in 2022 and 94% in 2023 while measles at 18 months remained unchanged at 80% and 79% respectively.

3.3.2 Vitamin A supplementation and Deworming

Programmes to control vitamin A deficiency increase children's chances of survival, reduce the severity of childhood illnesses, ease the strain on health systems and hospitals, and contribute to the well-being of children, their families, and communities. Vitamin A is vital to child health and immune function; hence, in settings where vitamin A deficiency is a public health problem, vitamin A supplementation is recommended in infants and children aged 6-59 months as a public health intervention to reduce child morbidity and mortality. Measuring the proportion of children who have received two doses of vitamin A within the past year can be used to monitor coverage of interventions aimed at increasing child survival rates. Supplementation with vitamin A is a safe, cost-effective and efficient means for eliminating deficiency of this vitamin and improving child survival.[6]

Vitamin A assessment was through both card and recall where the caregivers were shown the samples. The source was also probed to ascertain if the children had received from facility or through campaigns and integrated medical outreach. There was an increase in VAS coverage for children 6 – 59 months receiving Vitamin A at least once from 47.8% in 2022 to 78.0% in 2023. This can be attributed to improved routine and supplementation during integrated medical outreaches and mass screening.
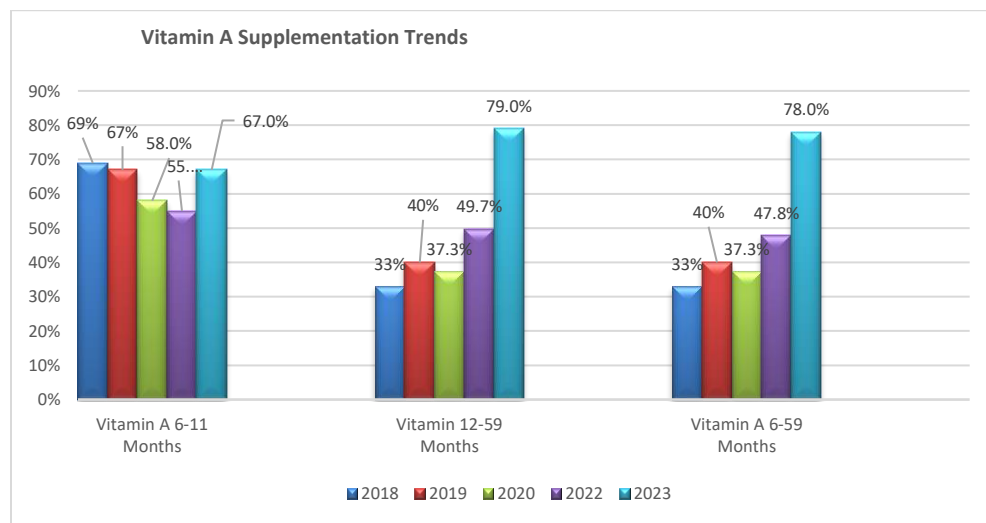
Figure 15: Vitamin A supplementation trends

3.3.3 Deworming for Children 12 – 59 Months

Delivering deworming treatments with Vitamin A supplements and other nutrition interventions has shown promising health outcomes, including reduced anemia, lower child mortality, improved child growth and development and overall improved nutrition.[7] Deworming is a low cost-effective high impact nutrition intervention proven to reverse malnutrition trends. Deworming for children 6-59 months for more than once

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[6] https://www.who.int/data/nutrition/nlis/info/children-6-59-months-receiving-vitamin-a-supplements
[7] https://reliefweb.int/report/world/linking-nutrition-and-deworming-interventions-improved-child-growth-and-development#:~:text=Delivering%20deworming%20treatments%20with%20Vitamin,development%20and%20overall%20improved%20nutrition.

reduced from 62.2% in 2022 to 24.8% in 2023 while those dewormed at least once slightly reduced from 76.1% to 72.5%. This attributed to integration of mass screening with Vitamin A supplementation only in May 2022 while integration with Vitamin A supplementation and Deworming was done in November 2022.
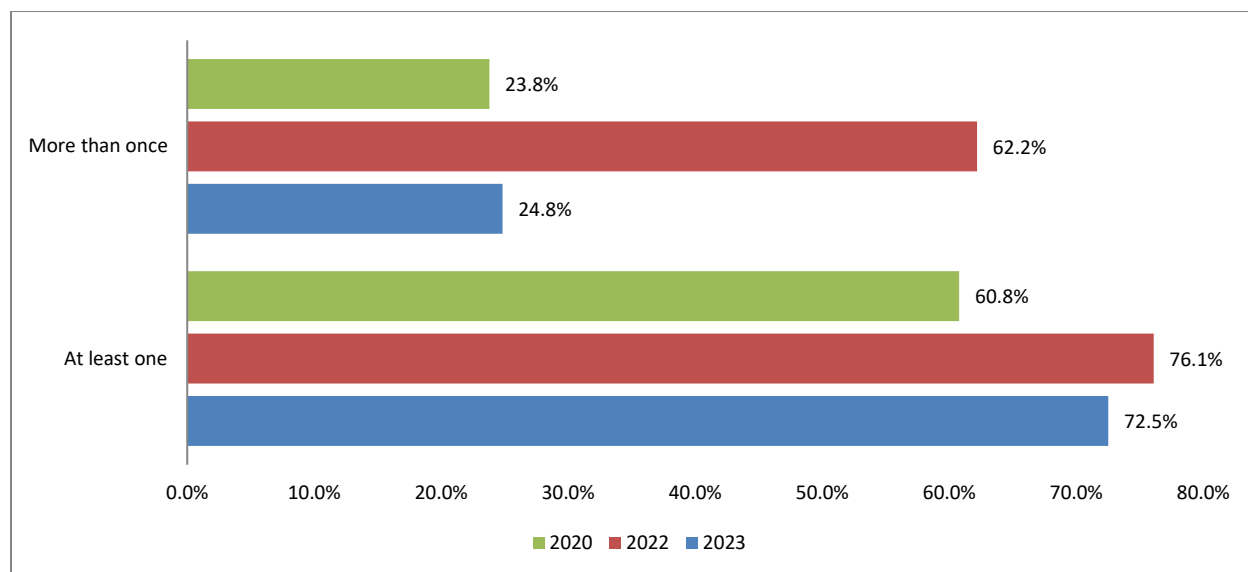
Figure 16: Trends in deworming among children 12-59 months

3.4 Disability and access to health services

One child was reported having **some hearing problems**. The child had received all immunization and vaccines signifying that the disability had not affected the nutrition and health services of the child. Similarly, another child was reported having **difficulty in walking** and could not do anything without assistance. The child had again received all immunization and vaccines.

3.4 Nutrition status of children aged (6-59) months

3.4.1 Anthropometric data quality

A total of 521 children aged (6-59 months) were assessed for anthropometric measurements representing 111.1% of planned/target. One child had disability hence height was not taken. The overall quality for anthropometric data interpreted as Data Plausibility Scores (DPS) was analyzed using ENA for SMART software. The overall DPS was 0% interpreted as excellent score as indicated in Table 5 below. The Anthropometric DPS interprets z score flags based on SMART flags (+/-3). The parameters to interpret data quality to include flagged data, age ratio, sex ratio, digit preference score (weight, height, MUAC), standard deviation, skewness, kurtosis and poisson distribution were all interpreted as excellent.

Table 4: Anthropometric data quality

Criteria	Score	Interpretation
Flagged data	**0** (0.4 %)	Excellent
Overall Sex ratio	**0** (p=0.105)	Excellent

Age ratio (6-29 vs 30-59)	**0** (p=0.834)	Excellent
Dig preference score - weight	**0** (4)	Excellent
Dig preference score - height	**0** (5)	Excellent
Dig preference score - MUAC	**0** (5)	Excellent
Standard Dev WHZ	**0** (0.94)	Excellent
Skewness WHZ	**0** (0.07)	Excellent
Kurtosis WHZ	**0** (-0.09)	Excellent
Poisson distribution WHZ-2	**0** (p=0.271)	Excellent
OVERALL SCORE WHZ	**0%**	Excellent

3.4.2 Distribution of age and sex of sample

The distribution of boys and girls were equally represented (P=0.105). Similarly, age ratio of 6-29 months to 30-59 months: 0.83 was uniformly distributed (P=0.834) (The value should be around 0.85).

Table 5: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	61	58.1	44	41.9	105	20.2	1.4
18-29	63	47.7	69	52.3	132	25.3	0.9
30-41	70	55.6	56	44.4	126	24.2	1.3
42-53	57	50.0	57	50.0	114	21.9	1.0
54-59	28	63.6	16	36.4	44	8.4	1.8
Total	279	53.6	242	46.4	521	100.0	1.2

3.4.3 Prevalence of acute malnutrition based on weight-for-height z-scores by sex and/or oedema

Wasting tells if a child's weight is appropriate for their height, and most commonly occurs due to acute/short-term undernutrition or illness. Wasted children or children with low MUAC are at the greatest risk of mortality[8]. Prevalence of acute malnutrition was based on WHO 2006 Growth Standards while

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[8] WHO. 2014 Global Nutrition Targets 2025: Wasting Policy Brief.
http://www.who.int/nutrition/publications/globaltargets2025_policybrief_wasting/en/

SMART flags (+/-3SD) was used as exclusion criteria. Survey results showed a global acute malnutrition (GAM) of **15.4%** [12.4-18.9 95% CI] by weight-for-height z-scores, while severe acute malnutrition (SAM) was high at 3.1% [1.8-5.2 95% CI]. The GAM prevalence remained at *critical* level with no significant change **(p value=0.313)** in GAM prevalence of **17.8%** reported in 2022. Boys and girls were equally malnourished.

Table 6: *Prevalence of acute malnutrition based on weight-for-height z-scores by sex and/or oedema*

	All n = 520	Boys n = 278	Girls n = 242
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(80) 15.4 % (12.4 - 18.9 95% C.I.)	(43) 15.5 % (12.0 - 19.7 95% C.I.)	(37) 15.3 % (11.0 - 20.9 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(64) 12.3 % (9.6 - 15.6 95% C.I.)	(33) 11.9 % (9.1 - 15.3 95% C.I.)	(31) 12.8 % (8.6 - 18.7 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(16) 3.1 % (1.8 - 5.2 95% C.I.)	(10) 3.6 % (1.7 - 7.4 95% C.I.)	(6) 2.5 % (1.1 - 5.3 95% C.I.)

The prevalence of oedema is 0.0%.

The Gaussian curve for weight-for-height has a mean of -1.10 and a standard deviation of 0.96. The design effect for WHZ is 1.02. Due to a high prevalence of SAM (3.1%), there is a noticeable bump in the left-tail of the curve. The surveyed population curve(indicated in red colour) deviated to the left of WHO reference curve (indicated in green colour) implying that we had many cases of acute malnourished within the surveyed population.
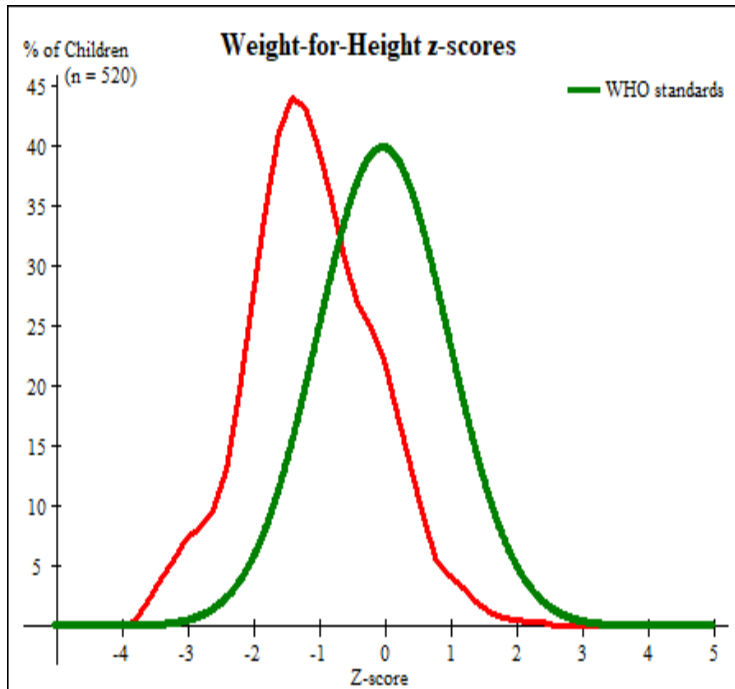
Figure 17: Gaussian Curve on distribution of acute malnutrition by WHZ among children aged (6-59) months

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

The distribution of severe and moderate acute malnutrition by WHZ was higher in older children aged (30-59) months when compared to children aged (6-29) months as illustrated in Table 8.

Table 7: *Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema*

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	105	4	3.8	10	9.5	91	86.7	0	0.0
18-29	132	0	0.0	11	8.3	121	91.7	0	0.0
30-41	125	5	4.0	23	18.4	97	77.6	0	0.0
42-53	114	4	3.5	13	11.4	97	85.1	0	0.0
54-59	44	3	6.8	7	15.9	34	77.3	0	0.0
Total	520	16	3.1	64	12.3	440	84.6	0	0.0

30

3.4.5 Trend in acute malnutrition prevalence by WHZ (<-2SD) among children aged (6-59 months) in Isiolo County

There was noted reduction in GAM prevalence in 2023 compared to 2022. GAM prevalence however remained at *critical* level for the third consecutive year owing to worsening drought situation aggravated by 5 failed rainy seasons. SAM prevalence however increased owing to insecurity in some villages hence not covered by integrated outreaches and active case finding interventions, high non-response and relapse rates due to worsening food security situation.
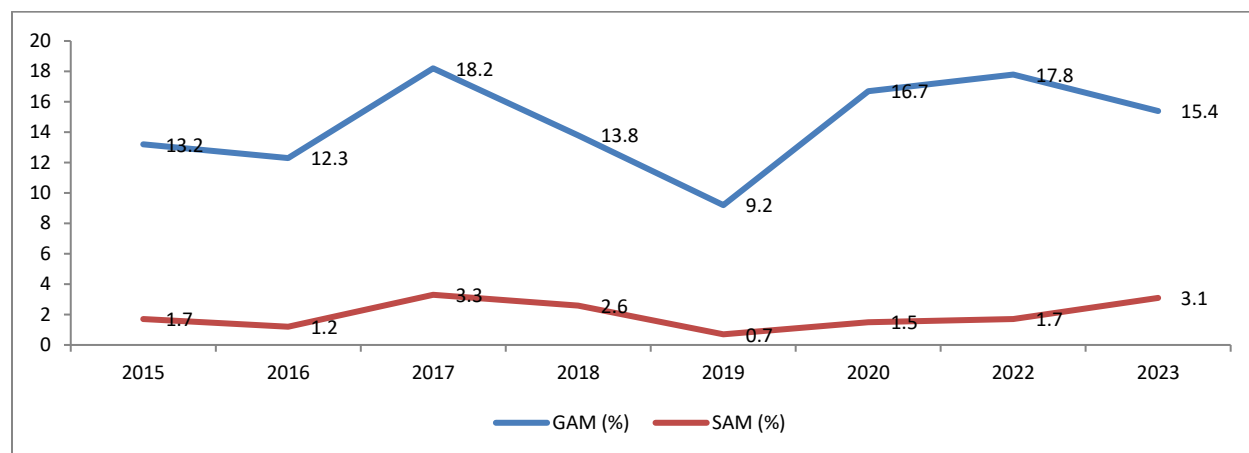
Figure 18: ***Trends in GAM and SAM prevalence among children aged (6-59 months)***

3.4.6 Prevalence of acute malnutrition based on MUAC cut-off's (and/or oedema) and by sex

The GAM prevalence by MUAC among children aged (6-59) months was 2.5% as illustrated in Table 9 below. This confirms the existence of acute malnutrition. The prevalence for GAM based on MUAC reduced slightly in 2022 at 3.4% compared to 2023 at 2.5%. this is attributed to ongoing household level screening for acute malnutrition by caregivers using family MUAC and routine household level screening by CHVs.

Table 8: Prevalence of acute malnutrition based on MUAC cut-offs (and/or oedema) and by sex

	All n = 521	Boys n = 279	Girls n = 242
Prevalence of global malnutrition (< 125 mm and/or oedema)	(13) 2.5 % (1.5 - 4.3 95% C.I.)	(5) 1.8 % (0.6 - 4.9 95% C.I.)	(8) 3.3 % (1.8 - 6.1 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(11) 2.1 % (1.2 - 3.7 95% C.I.)	(5) 1.8 % (0.6 - 4.9 95% C.I.)	(6) 2.5 % (1.1 - 5.3 95% C.I.)
Prevalence of severe malnutrition	(2) 0.4 % (0.1 - 1.5	(0) 0.0 % (0.0 - 0.0	(2) 0.8 % (0.2 - 3.2

(< 115 mm and/or oedema)	95% C.I.)	95% C.I.)	95% C.I.)

3.4.7 Prevalence of acute malnutrition based on WHZ and MUAC cut off's (and/or oedema) and by sex

The prevalence of combined GAM and SAM based on WHZ and MUAC was 15.7% and 3.5% respectively, as shown in Table 10 below. Thus, when estimating the SAM and MAM caseloads the consideration of both WHZ, MUAC and/or bilateral oedema offers a better snapshot of acute malnutrition cases at the County level.

Table 9: Prevalence of acute malnutrition by combined GAM and SAM based on WHZ and MUAC Cut-offs

	All n = 521	Boys n = 279	Girls n = 242
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	(82) 15.7 % (12.8 - 19.2 95% C.I.)	(43) 15.4 % (12.0 - 19.6 95% C.I.)	(39) 16.1 % (11.7 - 21.8 95% C.I.)
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema	(18) 3.5 % (2.0 - 5.8 95% C.I.)	(10) 3.6 % (1.7 - 7.4 95% C.I.)	(8) 3.3 % (1.6 - 6.7 95% C.I.)

3.4.8 Prevalence of underweight based on weight-for-age z-scores by sex

Underweight explains if a child has an appropriate weight for their age and can be due to either short-term or long-term inadequacy of energy and nutritional intake. The prevalence of underweight (WAZ<-2SD) was 20.0% with a prevalence of severe underweight of 2.7%. Boys were slightly more underweight. Underweight levels increased slightly from 18.8% in 2022 to 20.0% in 2023**.** The increase is attributed to prolonged drought worsening food consumption among children 6-59 months in the County.

Table 10: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 521	Boys n = 279	Girls n = 242
Prevalence of underweight (<-2 z-score)	(104) 20.0 % (16.2 - 24.4 95% C.I.)	(62) 22.2 % (16.6 - 29.1 95% C.I.)	(42) 17.4 % (13.0 - 22.8 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(90) 17.3 % (14.0 - 21.1 95% C.I.)	(55) 19.7 % (15.0 - 25.4 95% C.I.)	(35) 14.5 % (10.4 - 19.7 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(14) 2.7 % (1.4 - 5.2 95% C.I.)	(7) 2.5 % (0.9 - 6.5 95% C.I.)	(7) 2.9 % (1.4 - 5.8 95% C.I.)

3.4.9 Prevalence of stunting based on height-for-age z-scores and by sex

Stunting indicates if a child has an appropriate height compared to their age, and typically occurs due to chronic/long-term inadequacy of energy and nutritional intake or illness. Children with low height for age have been associated with more frequent illness, poor physical and cognitive development, and poorer productivity later in life[9]. The prevalence of stunting among children aged (6-59) months was based on weight for height z-scores. Stunting level was at 15.0% with severe stunting of 2.7%.

Stunting levels increased marginally from 12.2% in 2022 to 15.0% in 2023. The increase was however not statistically significant **(p=0.268).** The increase is attributed to prolonged drought worsening food consumption among children 6-59 months in the County.

Table 11: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 514	**Boys** n = 274	**Girls** n = 240
Prevalence of stunting (<-2 z-score)	(77) 15.0 % (11.7 - 18.9 95% C.I.)	(44) 16.1 % (11.5 - 21.9 95% C.I.)	(33) 13.8 % (10.1 - 18.4 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(63) 12.3 % (9.1 - 16.3 95% C.I.)	(34) 12.4 % (8.3 - 18.1 95% C.I.)	(29) 12.1 % (8.6 - 16.7 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(14) 2.7 % (1.6 - 4.6 95% C.I.)	(10) 3.6 % (1.8 - 7.1 95% C.I.)	(4) 1.7 % (0.6 - 4.3 95% C.I.)

3.4.10 Trend in prevalence of Wasting (WHZ<-2SD), underweight (WAZ<-2SD) & stunting (HAZ<-2SD) among children aged (6-59 months) in Isiolo County

There was slight improvement in prevalence of acute malnutrition as indicated by wasting while Chronic malnutrition as indicated by underweight and stunting increased as illustrated in figure 20 below.

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[9] WHO. 2014 Global Nutrition Targets 2025: Stunting Policy Brief.
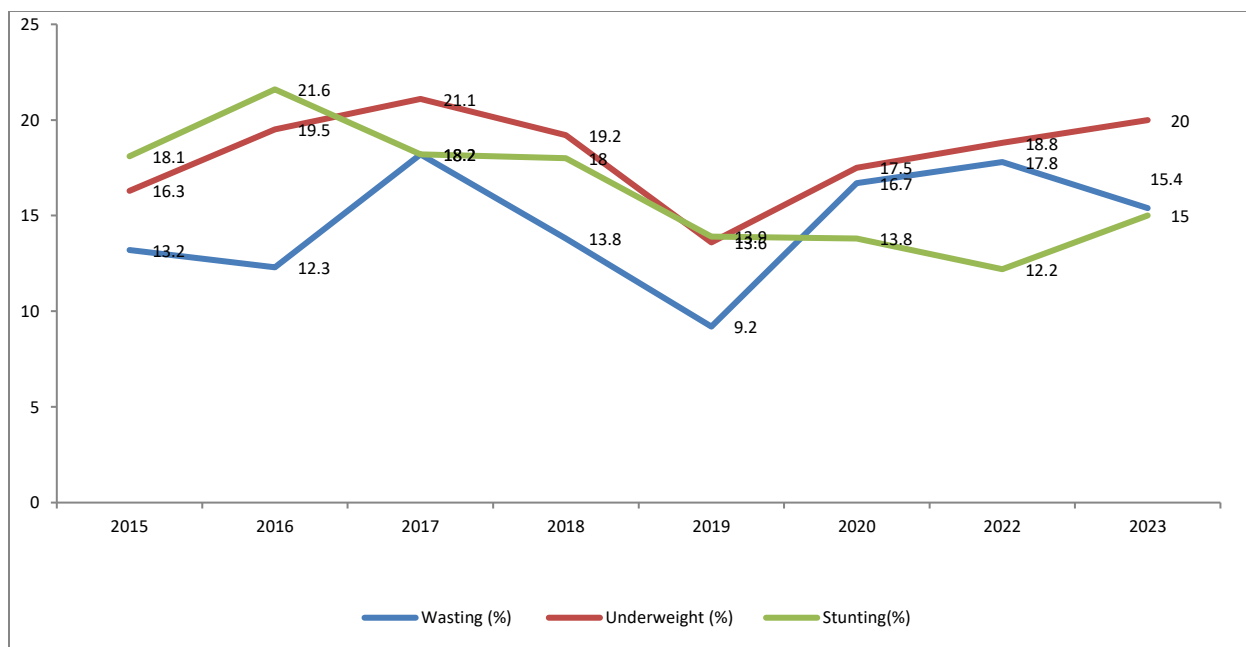http://www.who.int/nutrition/publications/globaltargets2025_policybrief_stunting/en/

Figure 19: ***Trends in Wasting, underweight and stunting prevalence among children aged (6-59 months)***

3.5 Maternal health and nutrition

Women have distinct nutritional requirements throughout their life – especially before and during pregnancy and while breastfeeding, when nutritional vulnerability is greatest. Ensuring women have nutritious diets and adequate services and care is fundamental for the survival and well-being of mothers and their children. Before pregnancy, women need nutritious and safe diets to establish sufficient reserves for pregnancy. During pregnancy and breastfeeding, energy and nutrient needs increase. Meeting them is critical for women's health and that of their child – in the womb and throughout early childhood[10].

Under-nutrition in pregnant women is directly linked to intrauterine growth retardation (IUGR), which results in low birth weight, pre-maturity, and low nutrient stores in infants.

3.5.1 Women physiological Status

Maternal nutrition of all women of reproductive age (15 to 49) was assessed by taking MUAC. All the WRA in the sampled household we assessed, the same analysis was further done for pregnant and lactating women.

The increase in malnutrition rate among women of reproductive age and lactating/pregnant women was largely as a result of poor food security situation experienced in the county.

During the survey women were asked their current physiological status on whether pregnant, lactating, pregnant and still lactating or none of them. The pregnant were 8.9%, lactating 23.1%, not pregnant or lactating 67.7% and pregnant and lactating were 0.35%.

3.5.2 Maternal Nutrition

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[10] https://www.unicef.org/nutrition/maternal

Securing access to nutritious, safe, affordable, and sustainable diets, along with essential nutrition services and positive nutrition practices, is fundamental to women's survival, health and well-being. Women's nutrition is also associated with the nutrition status, health, growth, and development of their children. Protecting women's nutrition at each phase of the life course is therefore extremely important – especially before and during pregnancy and while breastfeeding, when nutritional vulnerability is greatest[11]. Nutrition status was assessed for all women of reproductive age (15-49 years) based on MUAC. Prevalence of acute malnutrition among women of reproductive age increased marginally from 4.6% in 2022 to 7.8% in 2023 while prevalence among pregnant and lactating women increased from 5.2% in 2022 to 11.5% in 2023. The worsening nutrition status of pregnant and lactating women can be attributed to the worsening drought situation that has led to increased food insecurity at the household level.
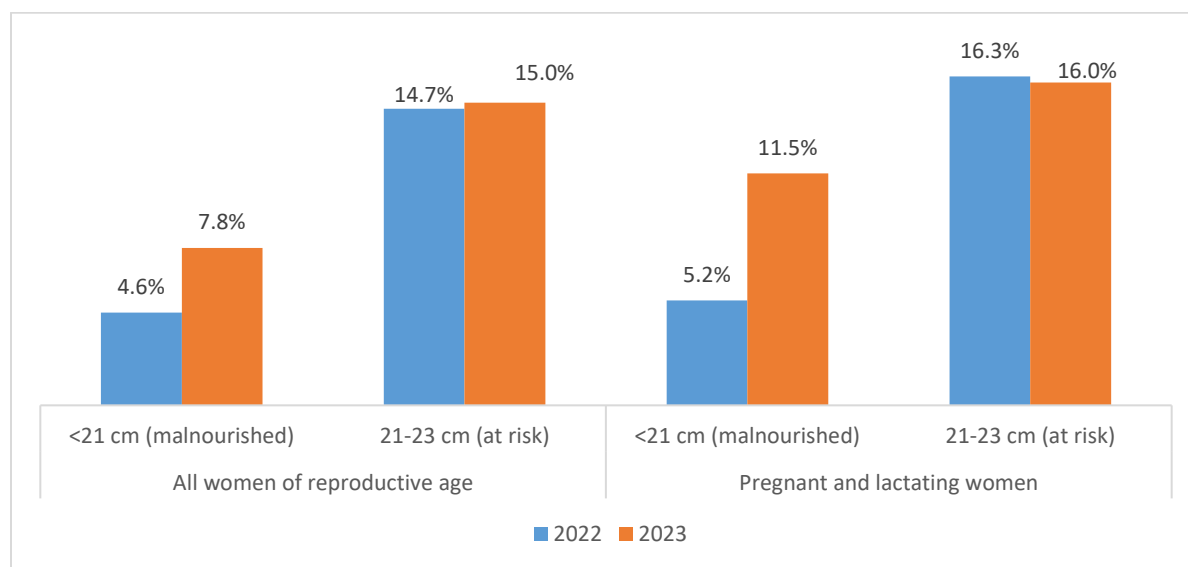
Figure 20: Nutrition status of women of reproductive age (WRA)

3.5.3 Iron folate supplementation during pregnancy

Iron folic acid supplementation during pregnancy reduces maternal anemia, risks of low birth weight, and neural tube defects in pregnancy and improve overall pregnancy outcomes. National policy guideline on combined iron and folic acid (IFA) for pregnant mothers in Kenya recommends consumption of one tablet daily of IFAS from conception to delivery. From the findings, ANC attendance was at 97% as reported by women with most recent pregnancy with majority having the first ANC attendance in the second trimester. Iron folate consumption for more than 90 days increased from 24.4% to 47.9% attributed to increased community level interventions like key messaging by CHVs at HH level and at mother support groups e.g during BFCI as well as supplementation during outreaches as illustrated in *Figure 23*.

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[11] UNICEF programing guidance; Prevention of malnutrition in women before and during pregnancy and while breastfeeding
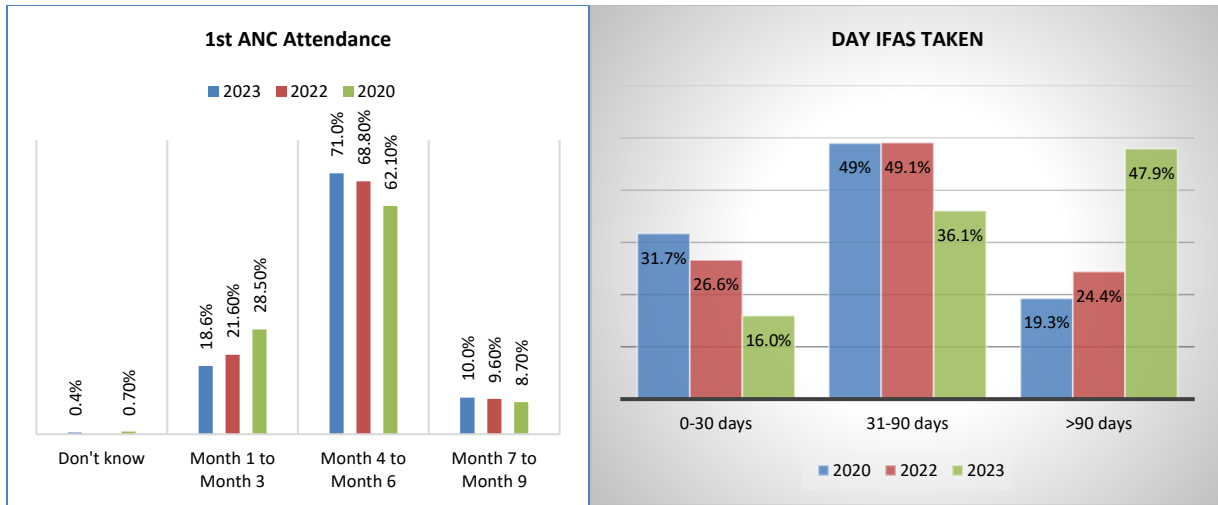
Figure 21: *1st ANC attendance and consumption period of iron folic acid supplementation*

3.5.4 Individual Dietary Diversity – WRA

There was a decline in the number of women consuming more than five food groups from 26.10% in 2022 to 9.7% in 2023 owing to reduced food insecurity at household level as illustrated in *Figure 25*.
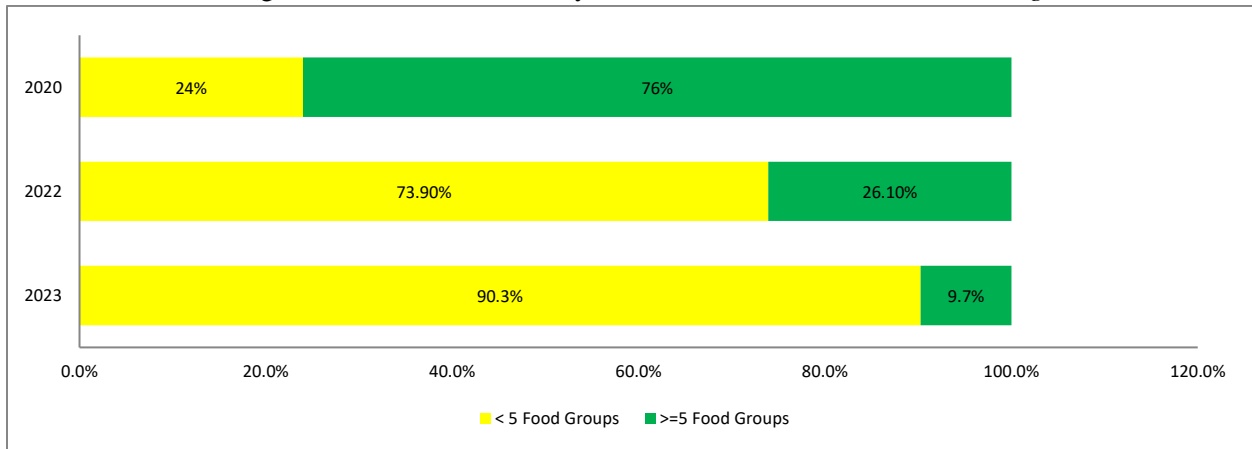
Figure 22: *Individual dietary diversity- Women of reproductive age*

3.5.5 Women Dietary Diversity based on 24-hour food Recall

Majority of women of reproductive age are consuming only two food groups (grains at 97.7% and pulses at 50.7%) with less than 50% of women of reproductive age consuming other food groups as illustrated in *Figure 26*.
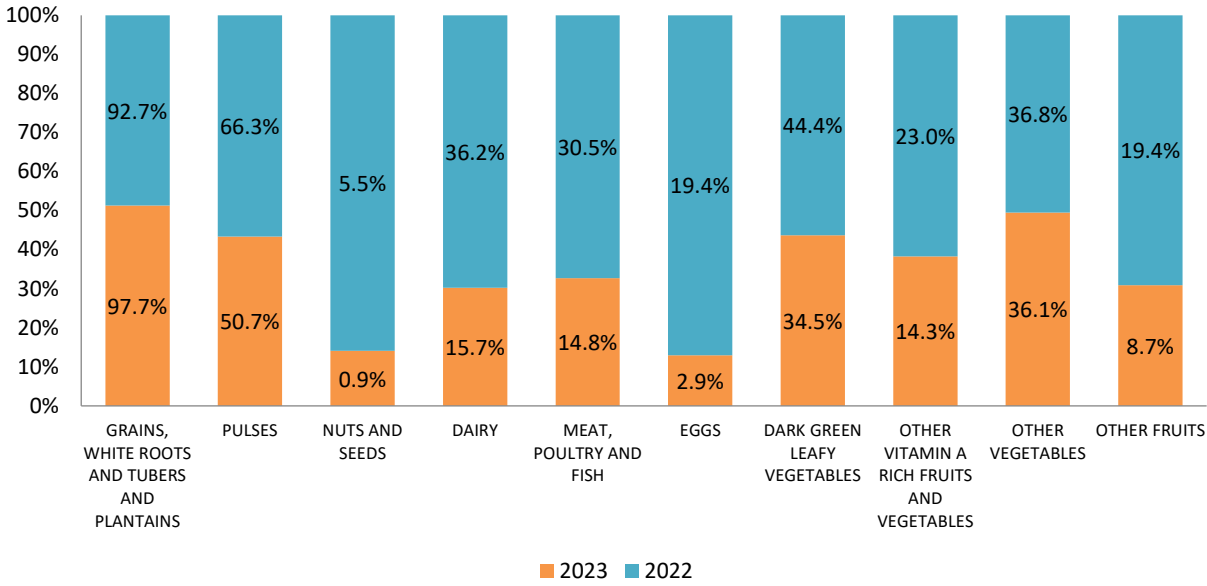
Figure 23: *Women dietary diversity based on 24-hour recall*

3.6 Water sanitation and hygiene

Safe drinking water, basic sanitation and good hygiene practices are essential for the survival of children. Global evidence shows that better water, sanitation, and hygiene could prevent the deaths of 297,000 children aged under five each year globally[12].

3.6.1 Main sources of drinking water

Piped water system is the main source of drinking water for Isiolo county at 52.0%, an increase from 51.3% in 2022. Proportion of HHs accessing water from protected sources remained unchanged between 2022 and 2023 at 71% and 69.2%.as illustrated in *Figure 27*.
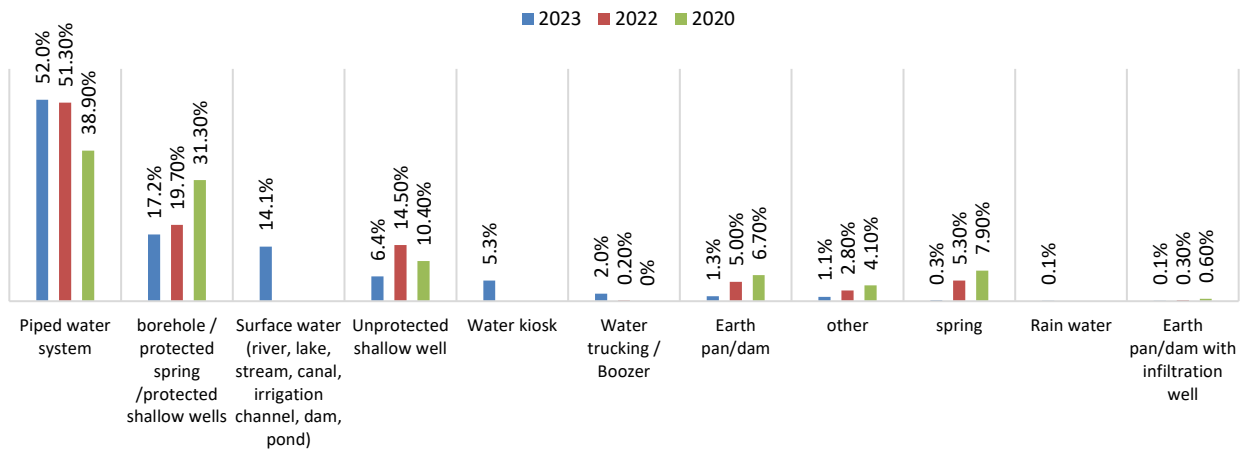
Figure 24: *Main sources of drinking water*

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[12] https://www.unicef.org/kenya/water-sanitation-and-hygiene

3.6.2 Trekking distances to water sources

The SPHERE standards recommend a maximum distance of 500 meters from any household to main water source. Trekking distances to water sources for less than 500m was reported at 69.9% compared with 69.5% in 2022. 11.0% of the households reported trekking more than 2 KM as shown in *Figure28*. This can be attributed to dried wells due to the prolonged drought.
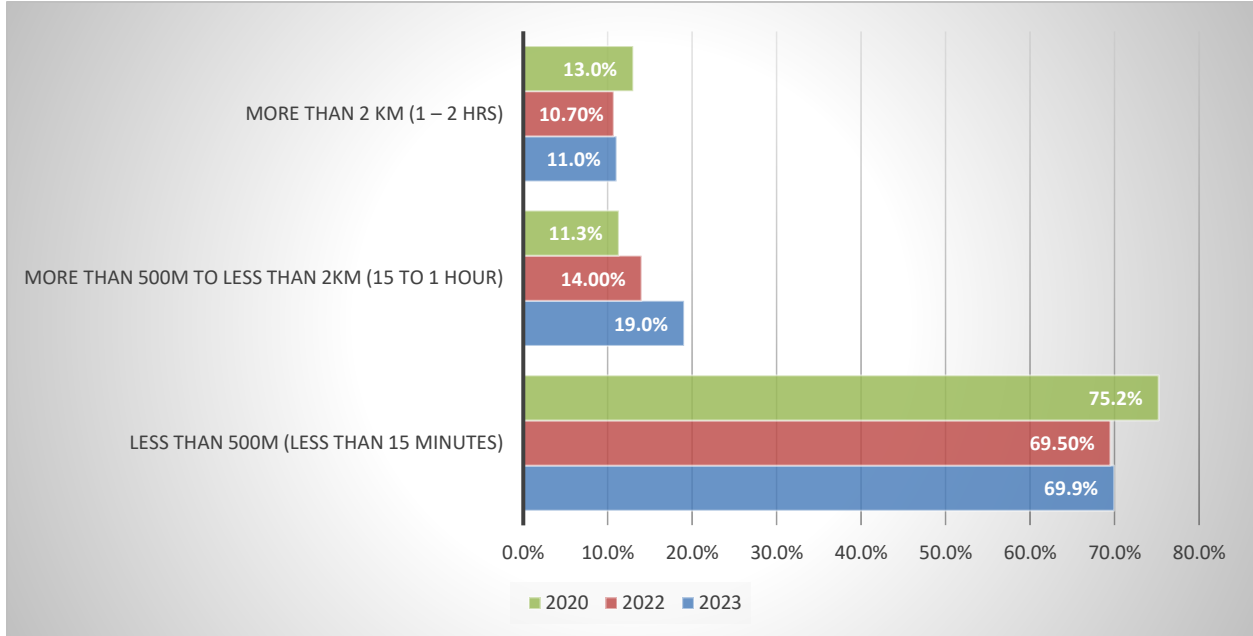
Figure 25: *Trekking distances to water sources*

3.6.3 Queuing at water sources

The minimum standards in water, hygiene and sanitation recommend that the maximum queuing time at a water source should be no more than 15 minutes. The survey findings indicate that majority of the households (41.4%) queue for less than 30minutes and 24.6%, for up to 1hr. Households queueing for water for more than one hour increased from 21.2% in 2022 to 34.0% in 2023 due to water scarcity because of the current drought as illustrated in the *figure below*.
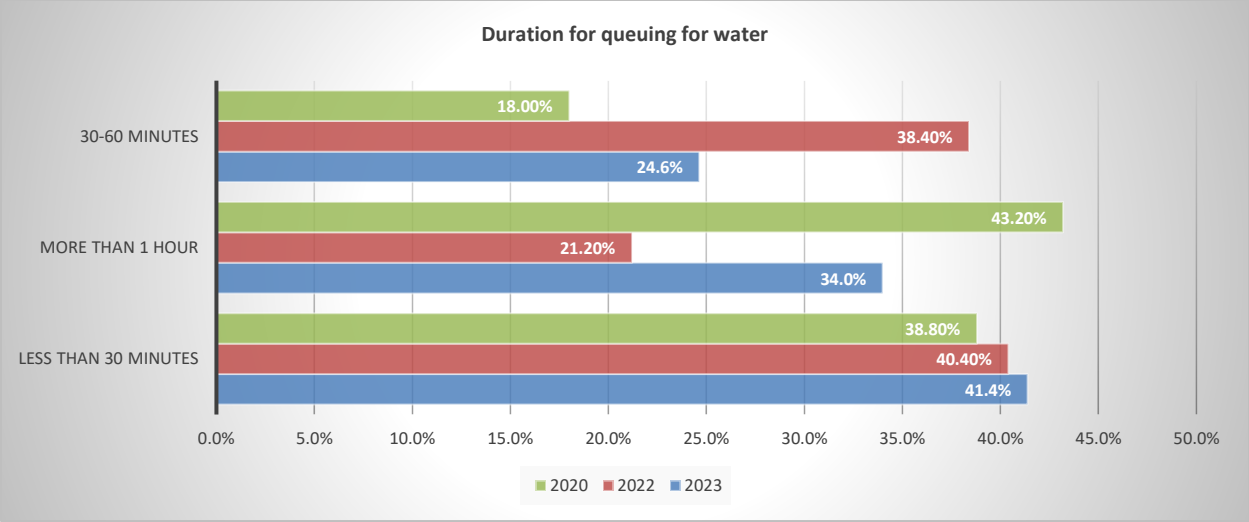
Figure 26: *Queuing period at water sources*

3.6.4   Water storage

Safe storage containers prevent contamination of safe water while the water is being transported and stored. When storing safe water, it is best to use a container that Is made of durable plastic, ceramic, or metal, has a single small (5–8 cm) opening that has a cover or can be closed tightly, has a narrow neck or opening so water can be poured out without hands or objects entering the container and the container should hold a standard volume of water (20 liters) and has a comfortable handle for easy carrying[13]

Water storage in closed container/jerrican increased significantly from 84% in 2022 to 92.46% in 2023. This is greatly attributed to the continuous hygiene promotion on safe water storage, distribution of WASH non-food items which includes a jerrican with lid by various partners and county government as shown in the *figure below*.
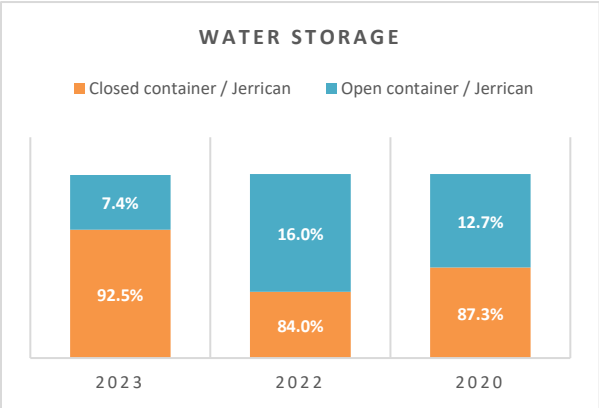
Figure 27: *Forms of Water storage*

3.6.5   Household per capita

The average water use for drinking, cooking and personal hygiene in any household should be at least 15 liters per person per day (Sphere Standards guidelines). The survey findings indicated a Per capita water

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[13] https://www.cdc.gov/healthywater/global/safe-water-storage.html

consumption in Isiolo was 17.61litres/person/day which is above the minimum standards of 15litres/person/day, and an increase from 11litres/person/day in 2022. The proportion of households meeting the minimum standards of per capita consumption was 53%.

3.6.6   Payment for water

The findings of this study indicate that 52.93% of the households pay for water. Majority (87.86%) of those who pay for water do so on monthly basis while 12.14% buy using the 20-litre jerrican. The average amount paid for the 20-litre jerrican is Ksh.12 with a maximum price of Ksh.100 per 20 L Jerrican while the average amount paid per month was Ksh. 517.22 for those paying on a monthly basis affecting both utilization and access to safe water.

3.6.7   Waste disposal

Sanitation refers to provision and use of facilities and services that safely dispose of human urine and excreta thereby preventing contamination of the environment. Inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both at households and across communities. People accessing latrine decreased from 68% in 2022 to 65.4% in 2023. The slab latrine was the main used at 73.29% as illustrated in *Figure 30.*

Open defecation slightly increased from 21% in 2022 to 24.4% attributed to migrations.
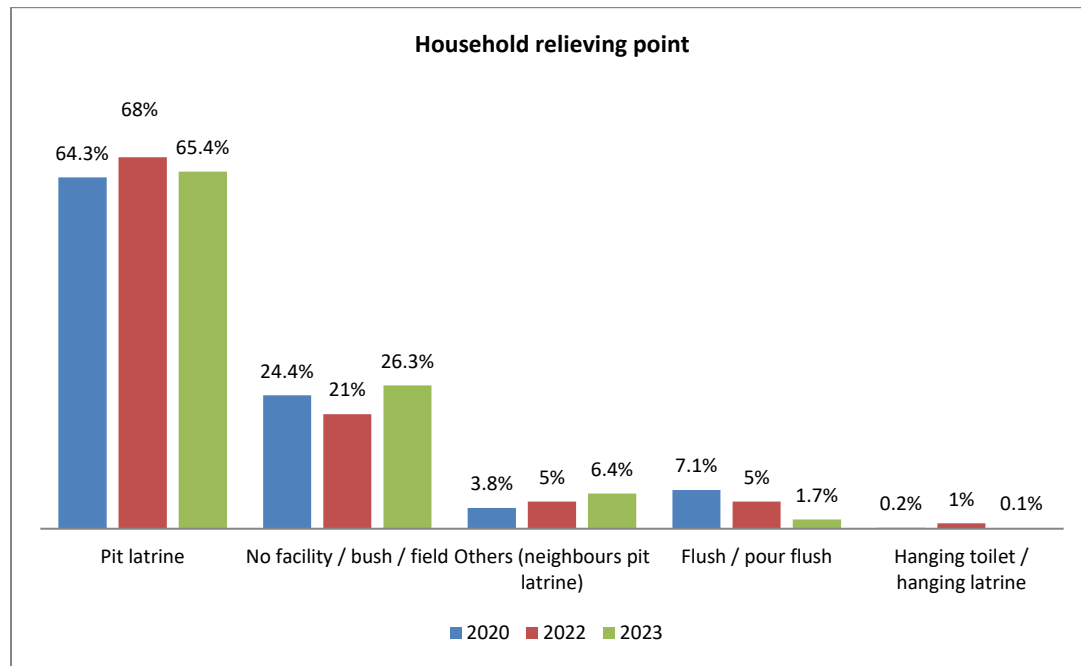
Figure 28: *Points of waste disposal*

3.6.8   Hand washing practices

Handwashing with soap is one of the most effective ways to prevent the spread of germs. Clean hands can help stop germs from spreading from one person to another and in our communities and hence preventing

spread of diarrheal diseases and pneumonia. The survey findings indicate that Handwashing awareness was at 91.9%, a decline from 96% in 2022. This can be attributed to improved hygiene promotion at the community. The proportion of those using soap and water during handwashing was 61.03%.
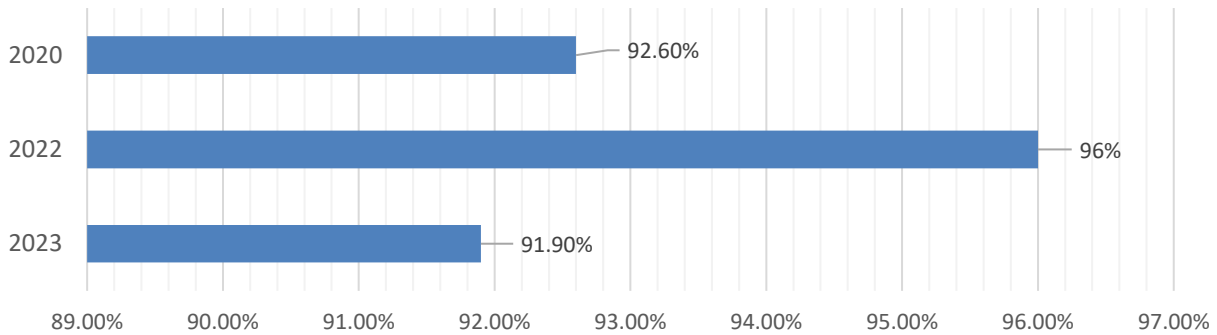
Figure 29: *Hand washing practices*

3.6.9   Hand washing instances at household level

Handwashing during the four critical moments was at 27.81% for all households a reduction form 42.8% reported in 2022. The poor hand washing can be attributed to scarcity of water at household level. There is notable decrease in two critical handwashing instances from 76.2% to 67.9% in the practice of handwashing before cooking and from 48% to 34.4% after taking children to the toilet as illustrated in *figure 32*.
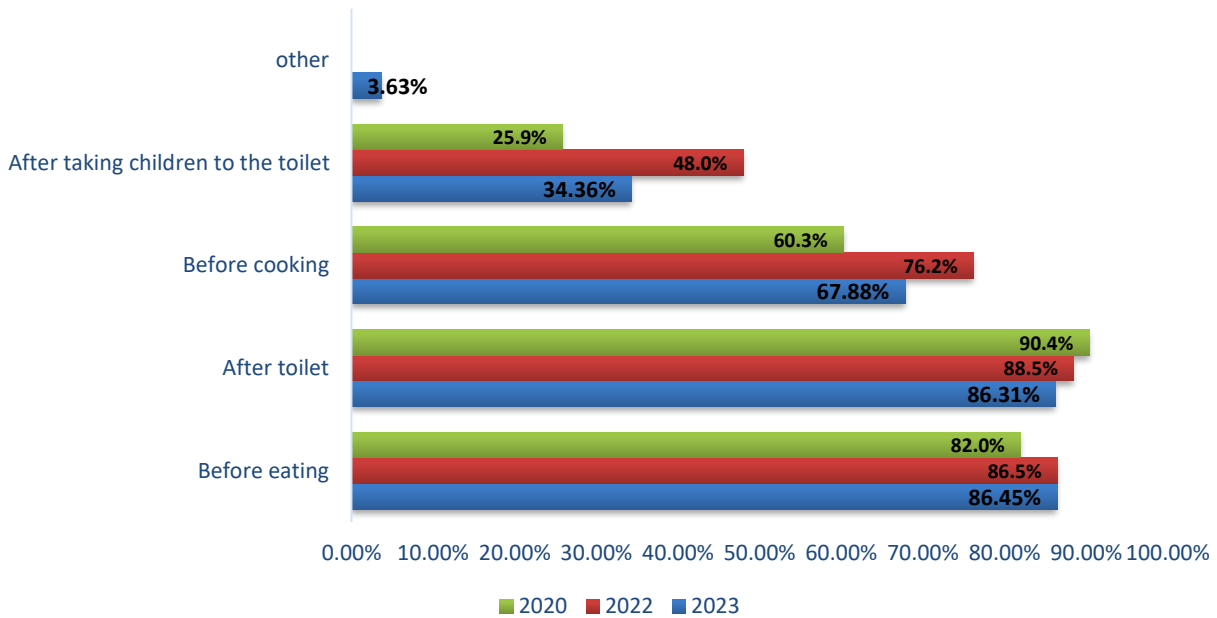
Figure 30: Handwashing instances at household level

3.6.10 Handwashing at HHs with 0-23 months

91.3% of caregivers with children 0-23 months reported to be aware of hand washing instances, an decrease from 2022 which was 95.3%. Those handwashing at four critical times decreased from 47.3% in 2022 to 34.1% in 2023.
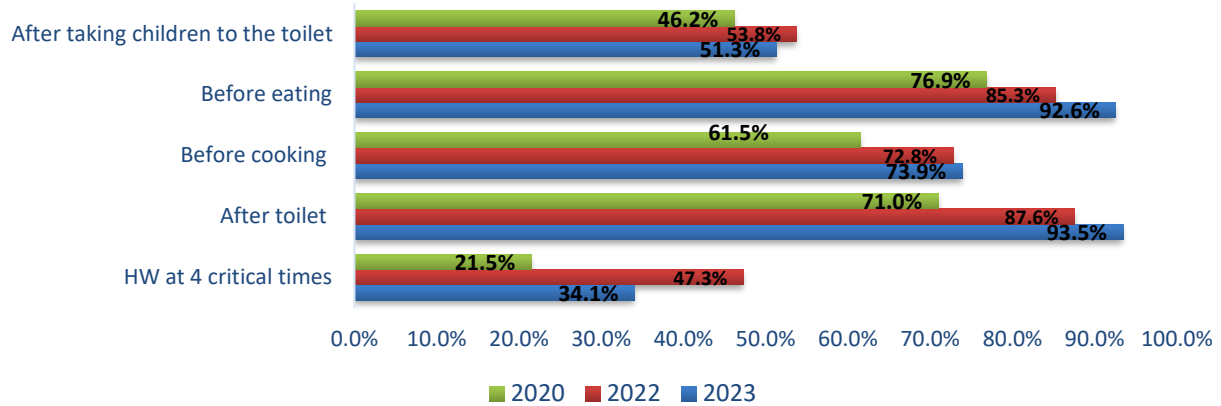
Figure 31: Handwashing at HHs with 0-23 months

3.6.11 Water treatment methods

The survey findings indicate that only 17.32% of HHs were reported to be treating water for drinking. Majority of the households (60.2%) used water treatment chemicals due to shortage of water treatment chemicals in the county as illustrated in *Figure 34*.

Water treatment

■ 2023 ■ 2022 ■ 2020
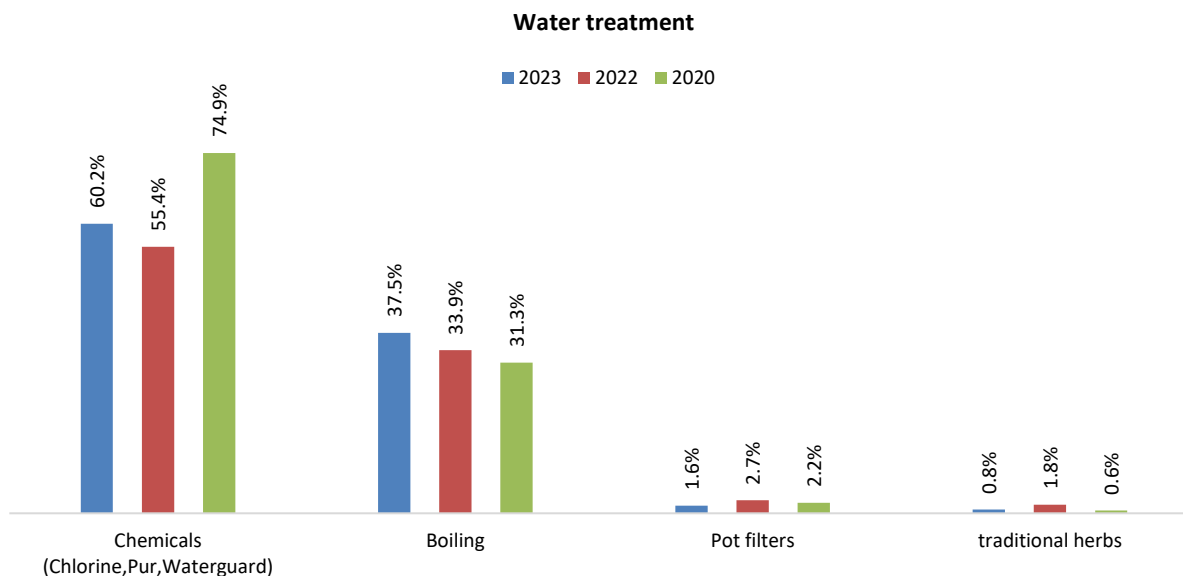
Figure 32: *Water treatment methods*

3.7 Food security and livelihood

3.7.1 Food security Situation

Food security is said to exist when 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. This requires a nutritionally diverse diet. The four dimensions of food security are: availability, accessibility, stability, and meeting nutritional requirements. The food security situation in the county is influenced by rainfall performance, resource-based conflicts, human-wildlife conflict, drought, floods and prevalence of livestock diseases. The 2022 short rains performance was poor in amount which worsened livestock body condition resulting from reduced pastures. The indicators used to measure food security in the survey included FCS, CSI, IDDS for WRA and HDDS.

3.7.2 Household dietary diversity

Household dietary diversity score (HDDS) is a measure of a household's access to a variety of foods, and can give proxy information on whether households are consuming a proper variety of micronutrients[14]. The average HDDS was 5.4, indicating that households on average ate 5 out of 12 recommended food groups in the past 24 hours from the survey. HHs consuming more than 5 food groups decreased from 55.1% in 2022 to 45.0% in 2023. The decrease can be attributed to poor household food security and low coverage of food security initiatives like cash transfer. Very low consumption was observed for sources of animal protein such as eggs, fish, meats and dairy. Cereals, fats and oils, sweet and vegetables were the most common item eaten as illustrated in *Figure 35* and *figure 36.* This can be attributed to low purchasing power of households for meat and eggs. The communities living in Isiolo have also not embraced consumption of fish

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[14] Anne Swindale; Paula Bilinsky. Food and Nutrition Technical Assistance. USAID. Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide. Version 2. September 2006.
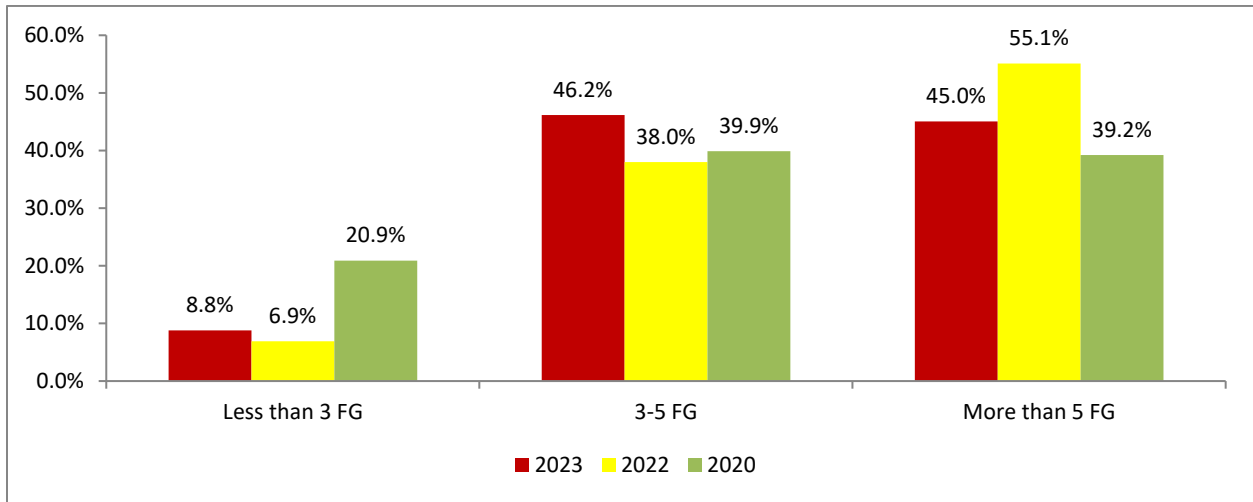
Figure 33: Household dietary diversity
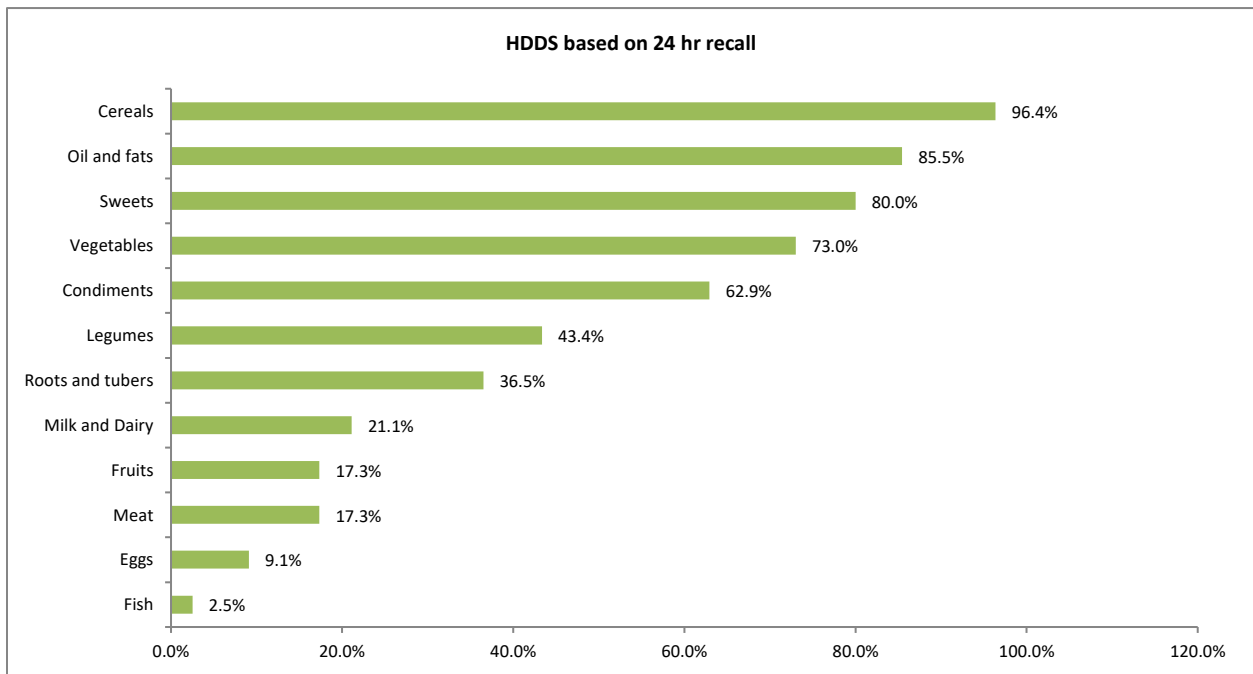
Figure 34: *Household Dietary diversity based on 24-hour Recall*

3.7.3 Average days foods are consumed showing consumption of micronutrients

Vitamin A and Iron rich foods were the least consumed at 1.5 and 3.2 days respectively to owing to inaccessibility of these foods during the drought period as indicated in the *Figure 37* below.
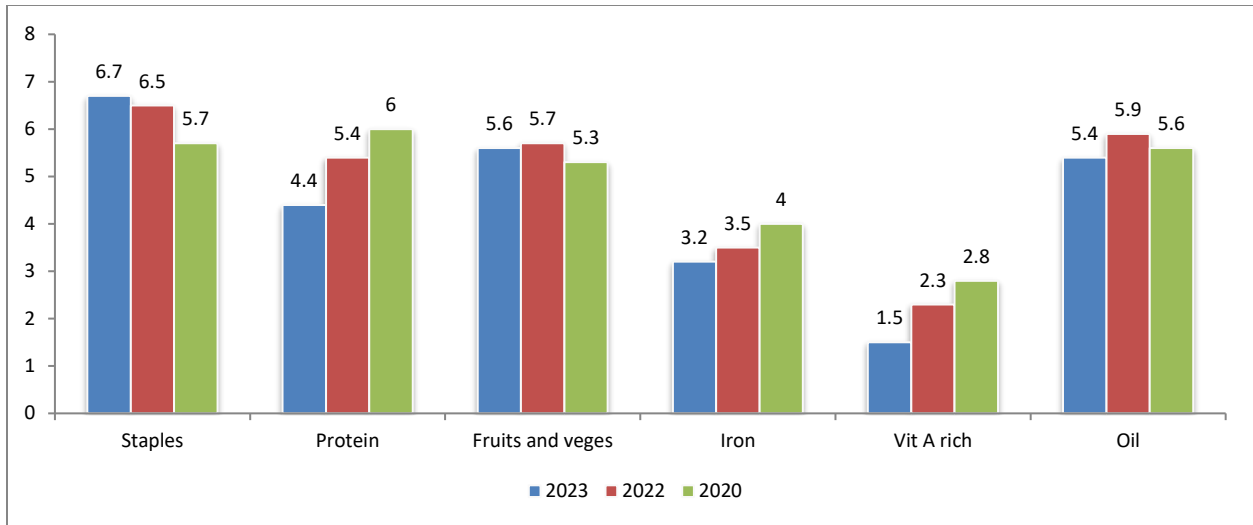
Figure 35: *Average days foods are consumed showing consumption of micronutrients*

3.7.4 Micronutrient consumption for household dietary diversity

Households consuming Vitamin A reach food decreased from 63.9% in 2022 to 46.2% in 2023 while those consuming iron rich foods decreased from 17.9% to 22.8%. This is attributed to poor access to foods rich in Vitamin A and iron due crop failure and poor purchasing power during this drought period as indicated in the *Figure 38* below.
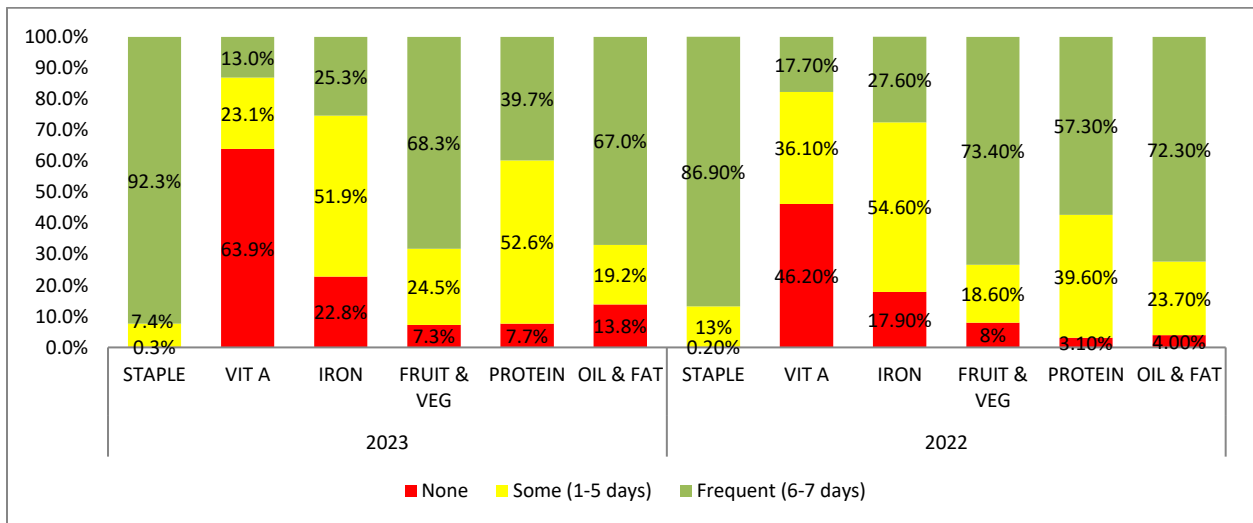
Figure 36*: Micronutrient consumption for household dietary diversity*

3.7.4 Food Consumption Score

The Food Consumption Score (FCS) provides a general overview of the acceptability of a household's dietary intake over the past 7 days, providing information on dietary diversity and frequency of foods consumed[15]. Households are given a weighted score based on the frequency of consumption of different

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[15] World Food Program. Technical Guidance Sheet: Food Consumption Analysis. Prepared by VAM unit HQ Rome. Version 1. February 2008

food groups. Proportion of households within acceptable food consumption score greatly reduced from 78.3% in 2022 to 38.9% in 2023 while those in the poor increased from 8% to 23.9%. This can be attributed to household food insecurity due to worsening drought situation as illustrated in *Figure 39*.
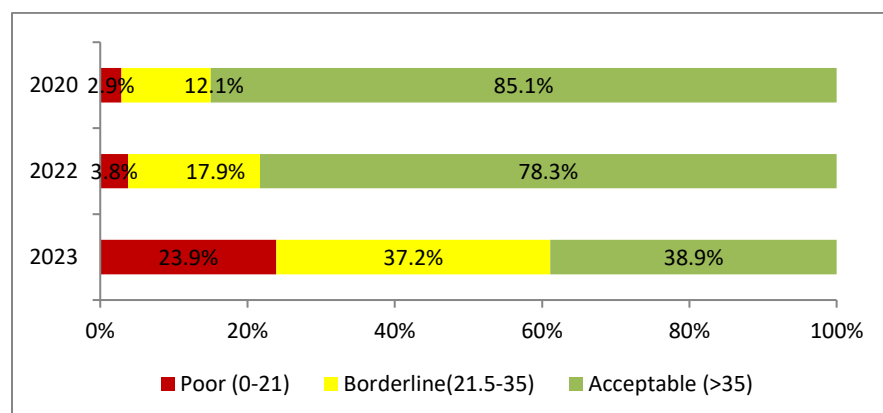
Figure 37: *Food consumption score*

3.7.5 Coping Strategy Index

Coping Strategy Index (CSI) is often used as a proxy indicator of household food insecurity[16]. When livelihoods are negatively affected by a shock /crisis, households may adopt various mechanisms which are not adopted in a normal day-to-day life, to cope with reduced or declining access to food. The survey indicated that **66.4%** of the household interviewed had experienced food insecurity during the 7 days preceding the survey. Coping strategy index was 15.6 an increase from 12.65 reported in 2022 indicating a worsening food security situation at the household level as illustrated in *Table 13*.

Coping Strategy	Mean	Severity score	Weighted Score		
			2020	2022	2023
Rely on less preferred and less expensive foods?	2.4	1	1.68	2.28	**2.4**
Borrow food, or rely on help from a friend or relative?	1.6	2	2.54	2.58	**3.2**
Limit portion size at mealtimes?	2.1	1	1.57	1.95	**2.1**
Restrict consumption by adults in order for small children to eat?	1.7	3	3.66	3.63	**5.1**
Reduce number of meals eaten in a day?	2.8	1	1.73	2.21	**2.8**
Total weighted score			11.18	12.65	**15.6**

Table 12: *Isiolo County coping strategy index (CSI)*

3.7.6 Reduced coping strategy index (r-CSI)

Households with high rCSI(=>10) was reported to be very high at **52.4%,** a significant increase from 27.5% in 2022 indicating that more households are employing severe coping mechanisms. Only 33.6% of the respondent reported not to be employing any form of coping mechanism as indicated in *figure 40*.

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[16] guidance_note_-_calculation_of_fcs_rcsi_hhs_and_dd
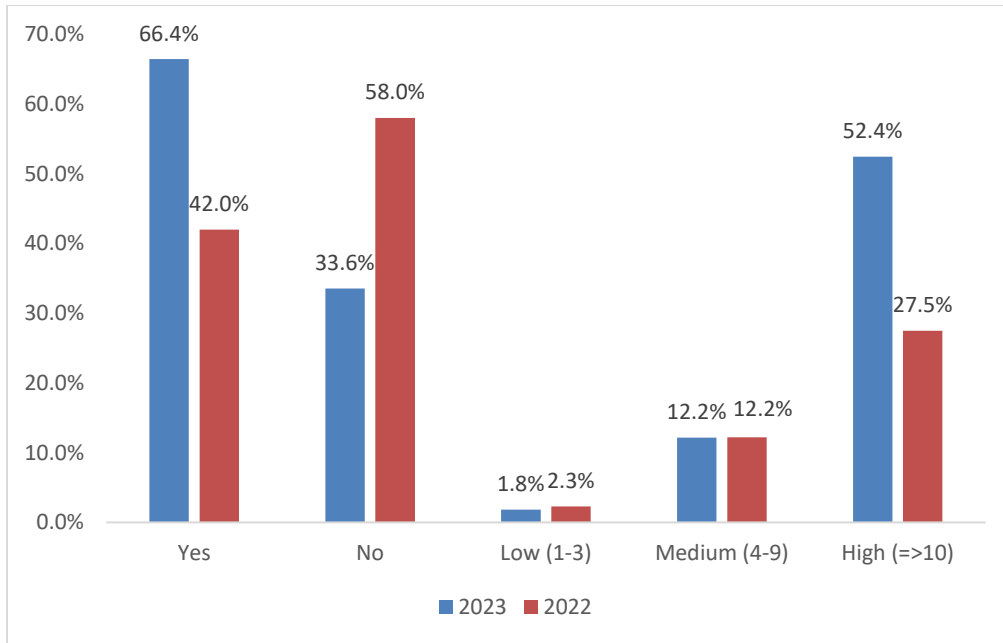
Figure 38: *Reduced coping strategy index category*

3.7.7 Household hunger scale

Household Hunger Scale (HHS) is a simple indicator to assess severe household hunger. The survey findings indicate that about 40% of the HHs were either in moderate or severe hunger with 1.96 reporting severe hinger as illustrated in *figure 41* below.
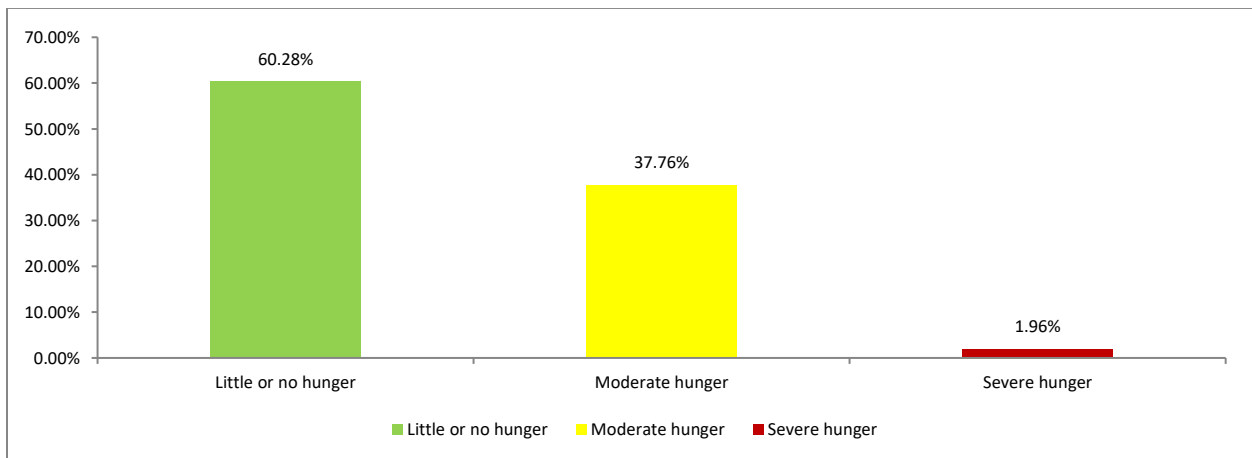
Figure 39: *Households hunger scale*

3.7.8 Food fortification

Food fortification is defined as the practice of adding vitamins and minerals to commonly consumed foods during processing to increase their nutritional value. It is a proven, safe and cost-effective strategy for improving diets and for the prevention and control of micronutrient deficiencies. In Kenya some food commodity such as Sugar, Maize flour, salts and cooking oils must be fortified with specific micronutrient. The government in collaboration with partners have developed policy to ensure adherence by manufacturers

and also create awareness to the public on the importance of food fortification. If fortified foods are regularly consumed in sufficient quantities, it has the advantage of maintaining steady body stores of the micronutrients. Only 10.2% (73) of the respondent reported to be aware of food fortification compared to 25.2% in 2022. The main source of information about food fortification was training session at 49.3% followed by TV shows and radio at 24.7% and 15.1% respectively. **The main source of maize flour was buying from shops/supermarket at 95.5% meaning majority are consuming fortified maize flour without their knowledge** as illustrated in *Figure 3.32*.
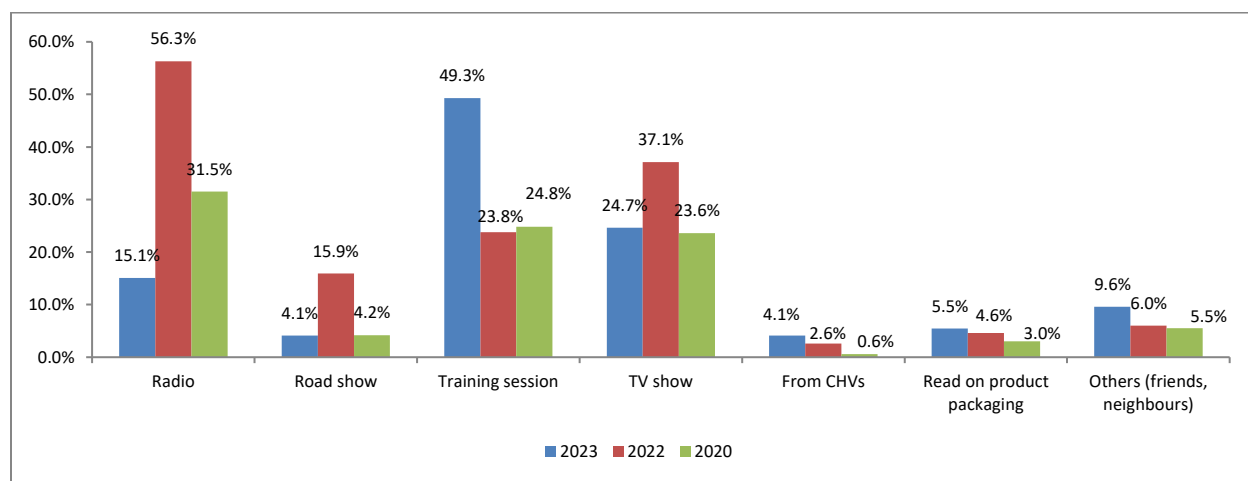
Figure 40: *Source of information on food fortification*

4.0 CONCLUSION

The nutrition Status of children in Isiolo County has slightly improved compared to the findings of a SMART survey conducted in the same season in 2022. The current nutrition status of children in the County is at *Critical* phase (IPC Phase 3) with a global and severe acute malnutrition prevalence of 15.4% and 3.1% respectively. There was no significant difference compared to global acute malnutrition prevalence of 17.8% reported in 2022 (P value=0.313).

Morbidity patterns have been relatively stable with 44% of children under five years reported to have fallen sick within two weeks recall period compared to 43.2% reported ill in 2022. There was a slight decline in the health seeking behavior with **86.0%** of children who reported to be ill in the past 2 weeks seeking assistance compared to **88.2%** in 2022. **74.9%** caregivers mainly sought treatment for their ill children at public clinic, a slight decrease from **76.7%** in 2022. In 2023, among those who were sick in the past two weeks in the county, majority (70.0%) were affected by ARI-Cough, fever with chills like malaria affected 22.0%, while 20.0% suffered from watery diarrhoea.

There was a notable increase of children suffering from ARI/cough from **59.3%** in 2022 to **70.0%** in 2023. Also, there was a decrease of children suffering from watery diarrhea from **33.8%** reported in 2022 to **20.0%.** Among the diarrhea cases reported 79.5% were reported to have been treated with ORS and Zinc an increase from 61.8% in 2022.

There was notable change in nutrition status of women of reproductive age with those having MUAC less than 21cm increasing from 4.6% in 2022 to 8% in 2023. This can be attributed to the worsening drought situation. 47.9% of mothers of children 0-23 months consumed iron and folic acid supplements for more than ninety days in 2023, a significant increase from 24.4.3% in 2022.

Household dietary diversity for households consuming 3-5 food groups has slightly increased from 38% reported in 2022 to 46.2% reported in 2023. However, households consuming more than 5 food groups decreased from 55.1% in 2022 to 45.0% in 2023. Vitamin A and Iron rich foods were the least consumed at 1.5 and 3.2 days respectively owing to inaccessibility of these foods during the drought period. 63.9% and 22.8% of the households reported not to have consumed vitamin A rich foods and iron rich foods respectively in the 7 days preceding the survey

Proportion of households within acceptable food consumption score significantly reduced from 78.3% reported in 2022 to 38.9% in 2023. This can be attributed to household food insecurity due to failed rains for 5 consecutive seasons

In conclusion the nutrition situation in Isiolo County is in **Critical** phase according to WHO classification for severity of nutrition situation. The nutrition status of the community is associated with many factors that range from poor socio-economic, food insecurity, high morbidity, water, sanitation and hygienic infrastructure leading to persistent poor nutrition status in the county. The integrated nutrition intervention programmes that include ICCM, food security, Cash transfers, WASH among other projects might have mitigated the nutrition situation from further deterioration.

CONCLUSION

Critical GAM(WHZ) prevalence at 15.4 % (12.5 – 18.9 95% C.I.)

Poor food/nutrient consumption/intake

Morbidity patterns have been relatively high with 44% of children reported to have been ill within the past two weeks of the survey.

Food insecurity
- **66.4%** of the HH had experienced food insecurity in 7 days preceding the survey.
- Coping strategy index was high at 15.6
- HH with acceptable FCS was only 38.9%
- HHs consuming more than 5 food groups was only 45.0%
- Only 10.2% (73) of the respondents reported to be aware of food fortification .

Maternal nutrition
- Women of reproductive age with MUAC less than 21cm was 8% in 2023 and PLW at 12%.
- IFAS consumption for more than 90 days was 47.9%
- Women consuming more than five food groups was 9.7%

Morbidity
- Children suffering from ARI/cough was **70.0%.**
- Health seeking from public health facilities was 74.9%.
- Deworming for children 6-59 months for at least once was only 24.8%.
- IFAS consumption for more than 90 days was only 47.9%

WASH
- The proportion of households meeting the minimum standards of 15 litres per person per day was 53%.
- Open defecation was 24.4% while is a slight increase from 21% reported in 2022.
- Handwashing during the four instances was low at 27.81%.
- Only 17.32% of households treat their drinking water.
- Households queueing for water for more than one hour was 34.0%.

Poor infrastructure, Cross border conflicts, low literacy and high level of poverty

Human , economic &political structures/potential resources (County/National level)

5.0 RECOMMENDATIONS

SURVEY FINDINGS	SHORT TERM RECOMMENDATIONS	MEDIUM TO LONG TERM	RESPONSIBLE
SECTOR: HEALTH AND NUTRITION			
High GAM prevalence of 15.4% High underweight prevalence at 20% High stunting prevalence at 15%	**Short term** • Scaling up of active case finding at the community through mass screening, family MUAC and routine screening. • Integrated outreaches to reach population not covered by health facilities • Strengthen coordination mechanisms for emergency response • Conduct bi-weekly emergency coordination • Periodically review and update health and emergency response to continue adopting the interventions to the worsening drought situation. • Training of health workers on the new IMAM guideline • Strengthen monitoring of nutrition programming through joint supportive supervision, conducting of DQA at the health facilities for improved quality • Implementation of nutrition surveillance through emergency	**Long term** • Strengthen nutrition advocacy for increased funding to nutrition • Strengthen multi-sectoral collaboration between nutrition sensitive and specific programming • Capacity building of caregivers/Mothers on good nutrition /healthy diets • Conduct regular nutrition technical forum at county and sub county levels	MOH, NDMA, Agriculture, livestock, Water, education sectors

	assessments and IMAM surge to track the nutrition status at the community for better response • Implementation of SBCC messages for improved nutrition outcomes among them, nutrition key messaging • Scale up capacity improvement initiatives at the health facility and community through mentorship and OJT to health workers and CHVs • Capacity building of health workers on beneficiary and commodities reporting to ensure proper reporting and commodities quantification to prevent stock outs due to poor reporting • Scale up integrated outreach services-New sites for 6 months • Procurement of basic human and animal drugs, and other commodities		
Vitamin A Supplementation (78%) and deworming coverage (62.2%). Deworming of children 12 – 59 months more once in the past one year was 24.8% , a decrease from 62.2% in 2022.	• Integrate Vitamin A supplementation and deworming during community activities like mass screening • Dissemination of Vitamin A strategies/guides to the health managers and workers • Strengthen routine supplementation by ensuring health workers take opportunities for VAS supplementation and deworm children coming to health facilties.	• Sustaining the CU activities that involves referrals for VAS routinely to avoid double supplementation during campaigns. • Sensitizing the CHVs on referral of eligible children to health facilities for vitamin A supplementation. • Roll-out of the new policy on vitamin A supplementation through the community health units.	MOH/All the partners

IFAS utilization for >90 days at 47.9%	• Strengthen SBCC for uptake of iron folate at the community level by CHVs • Conduct community level screening for malnutrition targeting PLW through mass screening and routine community screening	• Roll out BFCI in more community units • Develop social behaviour messages targeting the community on IFAS • Foster male involvement as means of reaching women on IFAS consumption.	MOH/All the partners
SECTOR: WATER, HYGIENE AND SANITATION			
Child morbidity at 44%. Children with watery diarrhoea was at 20%. Cases of watery diarrhoea treated with zinc and ORS was 73% and 76% respectively. Household water treatment at only 17.32% Latrine access at 65.4%. High open defecation at 24.4%. Handwashing at four critical times; At HH level- 27.81% Caregivers of children 0 -23 months at 34.1%.	• Procure and distribute water treatment chemicals. • Ensure availability of medical supplies at the health facilities and outreach sites • Scale up hygiene promotion activities at the community. • Conduct WASH sensitization meetings with different stakeholders at all levels • Promote water treatment at household level	• Promote adoption of appropriate hand washing practices at four critical times through radio, community gatherings, health facilities and schools • Upscale implementation of Community Led Total sanitation. • Integrating baby WASH in BFCI.	MoH, partners

Households queueing for water for more than one hour increased from 21.2% in 2022 to 34.0% in 2023 Proportion of households meeting the minimum standards of per capita water consumption was 53%.	• Solarization of boreholes to reduce fuel cost and ensure more working hours for increased water output. • Rehabilitation of broken down boreholes • Support Rapid Response teams to repair and maintain boreholes due to long working hours • Support setting up roof water catchment water storage tanks to the institutions like schools and health facilities • Connect the institutions like schools and health facilities with water from nearby boreholes and other water sources • Support with first moving parts for borehole repair and rehabilitations	• Install water meters to the boreholes to ensure accountability and sustainable use of water resources. • Enhance accessibility of clean safe drinking water by sinking borehole and pipeline extension to areas with poor access to water • Construction of more water pans • Create awareness on water harvesting technique during rainy season. • Repair of broken boreholes	County water department, NDMA, partners
SECTOR: FOOD SECURITY AND LIVELIHOOD			
Household dietary diversity (consuming 3-5 food groups) at 46.2%. Decline in proportion of women consuming more than five food groups from 26.10% in 2022 to 9.7% in 2023. Proportion of households within acceptable food consumption score	• Promotion of kitchen garden using new farming technologies that conserve water • Scale up of cash transfers to the vulnerable communities • Health education to community members on dietary diversity and preparation of quality diets • Support implementation of BFCI for adaptation of good feeding practices • Set up kitchen garden around water sources like boreholes, seasonal rivers and water pans	• Set up irrigation farms for access to vegetable at household and for the market. • Promote adoption of climate resilient land and water management technologies to improve smallholder food production (rehabilitating & expansion of irrigation schemes) • Customize and develop County food and nutrition policies and guidelines. • Develop ATC bill & regulation.	County agriculture department, County water department, NDMA, partners

| reduced from 78.3% reported in 2022 to 38.9% in 2023

Increase of coping strategy index from 12.65 in 2022 to 15.6 in 2023.

Households' rCSI increased from 27.5% in 2022 to 52.4% in 2023. | • Nutrition promotion on the need for the consumption of iron and vitamin A rich vegetables and fruits.
• Scale up hunger safety net program targeting most vulnerable households | • Lobby for more funds from National County governments and development partners towards sustainable food system | |

6.0 Annex

6.0.1 Anthropometric data plausibility report

Isiolo plausibility
report 2023.docx

6.0.2 Standardization test report

Standardisation
analysis.xlsx

6.0.3 Sampled clusters and reserve clusters

Sampling Jan
2023.xls

6.0.4 Survey team composition and roles

Smart Survey Teams
2023 Final 2.xlsx

6.0.5 SMART survey questionnaire & back-up forms

Integrated nutrition
SMART questionnaire