ISIOLO COUNTY INTEGRATED SMART SURVEY

JANUARY-FEBRUARY 2022

ACKNOWLEDGEMENT

Isiolo integrated SMART survey of 2022 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:

- Government ministries including ministry of Agriculture, ministry of health led County Nutrition Coordinator, and national drought management authority (NDMA) for their concerted efforts in planning and Implementation of the survey.
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- The National Information Technical Working Group (NITWG) for technical support during the review of SMART survey protocol, training, data collection, analysis and report writing.

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ABBREVIATIONS

AAH	Action Against Hunger
BCC	Behavior Change Communication
BCG	Communication Bacillus Calmette–Guérin
BFCI	Baby Friendly Community Initiative
CI	Confidence Interval
CLTS	Community Led Total Sanitation
CNC	County Nutrition Coordinator
COVID 19	Corona Virus Disease of 2019
CSA	Climate Smart Agriculture
CSI	Coping Strategy Index
ENA	Emergency Nutrition Assessment
EPI	Expanded Programme on Immunization
FCS	Food Consumption Score
GAM	Global Acute Malnutrition
HFA	Height for Age
HHs	Households
IFAS	Iron and Folic Acid Supplementation
ILRI	Integrated Livestock Research Institute
IMAM	Integrated Management of Acute Malnutrition
IPC	Integrated Phase Classification
IPs	Implementing partners
KRCS	Kenya Red Cross Society
MOA	Ministry of Agriculture
MOH	Ministry of Health
MUAC	Mid Upper Arm Circumference
NDMA	National Drought Management Authority
NITWG	Nutrition Information Technical working group
OPV	Oral Polio Vaccine
ORS	Oral Rehydration Solution
PLW	Pregnant and lactating women
PPS	Probability Proportional to Population Size
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Program
UNICEF	United Nations Children's Fund
VAS	Vitamin A Supplementation
WASH	Water Hygiene and Sanitation
WFA	Weight for Age
WFH	Weight-for-Height
WFP	World Food Program
WHO	World Health Organizations
WRA	Women of Reproductive Age

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 nutrition SMART survey was conducted in the whole county

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. The specific objectives were to determine the prevalence of acute and chronic malnutrition among children aged (6-59) months, assess immunization coverage for Measles (at 9,18 months), Oral Polio Vaccines (OPV 1and 3), deworming and vitamin A supplementation in children aged 6-59 months; to establish coverage of iron/ folic acid supplementation during pregnancy among pregnant and lactating women; to determine 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.

Methodology

A one county wide survey was carried out and the sample size was determined using ENA for SMART software 2020 (version January 11, 2020), in consideration to other parameters giving a sample size of 594. A two-stage cluster sampling was used. Stage 1; determination of clusters, whereby the previous survey indicated that a team could cover 15 households per day hence (594/15=39.6), having 40 clusters which were randomly sampled. Stage 2; included household selection (simple random sampling) using random number generator mobile application; and 15 households were randomly selected for anthropometry. The standard SMART survey questionnaire was created using kobo toolbox and downloaded into the smart phones and tablets using open data kit mobile application. The nutritional anthropometric data was collected using the ODK mobile application which was uploaded to the server on daily basis. Daily plausibility check was done to check for quality of anthropometric data and other datasets.

Summary of findings

A total of 600 households were visited covering 472 children (6-59 months) and 40 clusters. The survey involved 2,751 members with an average population of 4.5 persons per household. The proportion of children 6-59 months was 17.2%. However, 2 households declined to participate in the survey and 12 households were reported to have missed due to the absence of household members after repeated visits.. The overall data quality for anthropometric measurements was 1% indicating excellent performance. Table 1 below show a summary of survey findings based on the set indicators.

Table 1: *Summary of Results, Isiolo County; February 2019 to January 2022*

INDEX	**INDICATOR**	**February, 2020 (SMART)**	**February, 2022 (SMART)**
WHZ[1]-scores	Global Acute Malnutrition Weight for height <-2 z and/oedema	16.7% (13.4- 20.6, 95% C.I)	**17.8 % (14.5 - 21.6 95% C.I.)**
	Severe Acute Malnutrition Weight for height <-3 z and/oedema	1.5% (0.7-3.4, 95% C.I.)	**1.7 % (0.8 - 3.6 95% C.I.)**
HAZ[2]-scores	Stunting (<-2 z-score)	13.8 % (10.4 - 18.1 95% C.I.	**12.2 % (9.1 - 16.2 95% C.I.)**
WAZ[3]-scores	Underweight (<-2 z-score)	17.5 %(13.8 - 22.1 95% C.I.)	**18.8 % (15.7 - 22.3 95% C.I.)**
MUAC[4]	Global Acute Malnutrition MUAC <125 mm and/or edema	4.2% (2.8- 6.3, 95% C.I.)	**18.9 % (15.4 - 22.9 95% C.I.)**
	Severe Acute Malnutrition MUAC <115 mm and/or edema	0.7% (0.3- 1.9, 95% C.I.)	**2.1 % (1.0 - 4.5 95% C.I.)**
Measles immunization coverage	9 Months by card	61%	**78%**
	18 Months by card	36%	**65%**
Vitamin A coverage	6-11 months ones	58%	**55%**
	6-59 months at least ones	37.3%	**47.8%**
	12- 59 months more than ones	37.3%	**49.7%**

[1]Weight for height Z scores

[2]Weight for age Z scores

[3]Weight for age Z scores

[4]Mid upper arm circumference

Morbidity Patterns for 6-59 months	Ill in the last 2 weeks		36.9%	**43.2%**
	Type of illness	Fevers with chills like malaria	30.3%	**20.1%**
		ARI/Cough	75.1%	**59.3%**
		Watery diarrhea	9.5%	**33.8%**
Maternal nutrition status by MUAC	Pregnant and lactating women with MUAC <21cm		7.8%	**5.3%**
IFAS intake	Over 90 days during pregnancy		19.3%	**24.4%**
WASH	Protected water sources		31.3%	**19.7%**
	Distance to Main Water source	≤ 500M	75.2%	**69.5%**
		>500M-≤2km	11.3%	**14%**
		>2km	13.0%	**10.7%**
	Hand washing during four critical times		27.6%	**42.8%**
	Latrine coverage/open defecation		24.4%	**21%**
Food security and livelihoods	Food consumption score (FCS)	Poor	2.9%	**3.8%**
		Borderline	12.1%	**17.9%**
		Good	85.1%	**78.3%**
	Coping strategy index	Borrow food	2.54	**2.58**
		Restrict consumption for children to eat	3.66	**3.63**
		Total weighted coping strategy score	11.18	**12.65**

Conclusion

The nutrition Status of children in Isiolo County worsened compared to the outcome of a SMART survey conducted in the same season in 2020. 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 17.8% and 1.7% respectively with no significant difference with p value of **0.663** (GAM) compared to global acute malnutrition prevalence of 16.7% in 2020.

There was an increase in the number of children under fives reported to have fallen sick within two weeks recall period from 36.9% in 2020 to 43.2% in 2022. A Slightly higher number of children sought help from public health facilities in 2022 at 76.7% compared to 72.9% in 2020. Acute respiratory tract infections and watery diarrhea were the main morbidity at 59.3% and 33.8% respectively with notable upsurge diarrhea in 2022 compared to 9.5% in 2020. Among the diarrhea cases reported 61.8% were reported to have been treated with ORS and Zinc a decrease from 94.7% in 2020. There was also a notable improvement in Vitamin A Supplementation among children 6-59 months and deworming among children 12 to 59 months more than once from 37.3% and 23.8% in 2020 to 47.8% and 62.2% in 2022 respectively. The increased morbidity among under fives specifically prevalence of watery diarrhea illnesses, poor household dietary diversity and food consumption can be linked with increased wasting in Isiolo County. The increased number of diarrhea cases can be attributed to consumption of dirty water from the unprotected water sources during the drought period. It is also attributed to inadequate water treatment chemicals in the affected wards like Cherab, Sericho, Garbatula and Kinna wards. Flooding during the short rain in season in Iresaboru, Gafarsa, Muchuro, Kombola and Badana led to the communities drinking unsafe water leading to increased diarrhea cases.
Maternal nutrition status based on MUAC measurement among all women of reproductive age also showed an improvement with those having MUAC of <21cm at 4.6% respectively in 2022 an improvement from 5.4% in 2020. 24.4% of mothers of children under two years consumed iron and folic acid supplements for more than ninety days in 2022, an increase from 19.3% in 2020.
There was a notable improvement in household dietary diversity with the proportion of households consuming more than 5 food groups increasing from 39.2% in 2020 to 55.1% in 2022. Iron and Vitamin A rich foods were the least consumed at 2.3 and 3.5 days respectively to owing to inaccessibility of these foods during the drought period. The county Food Consumption Score, which combines frequency of food intake and relative importance of each food, indicated a worsening food security situation with 78.3% of the Households at acceptable levels in 2022 compared to 85.1% in 2020.

In conclusion it can be noted that the key drivers of poor nutrition status in Isiolo County include; Chronic food insecurity, High prevalence of childhood illness, Inadequate dietary diversity, Poor access to safe water, Poor hygiene and sanitation practices, and Inadequate basic structures (incomes and assets for the households).

***Table 2**: A Summary of the recommendations based on the survey findings*

-Improve coverage of integrated medical outreaches to ensure population in hard to reach areas get nutrition services and conducting exhaustive mass screening.	-Capacity building of existing nutrition staff and Community health volunteers on BFCI/CBFCI/IMAM surge/Family MUAC/IMAM and hiring of more nutrition officers.

-Conduct health education at health facilities and community level on the importance of vitamin A supplementation and deworming.	-Sustaining the CU activities that involve referrals for VAS routinely to avoid double supplementation during campaigns.
-Sustained health education at the health facilities, outreach sites and community dialogues on consumption of iron folate during pregnancy.	-Foster male involvement as means of reaching women on IFAS consumption. -Develop social behavior messages targeting the community on IFAS.
-Procurement and distribution of water treatment chemicals to community during outreaches and routine household visits by CHVs and demonstration on how to use them. -Emergency support to repair of broken boreholes through the County Rapid Response during this drought period through water trucking. -Design assessments and Rehabilitation of water systems. -Water supply extensions to unserved areas -Increase hygiene and sanitation promotion activities at the community -Mapping of villages to establish their OD status	-Ensure water sources are well protected to ensure safety of water for human consumption -Upscale implementation of Community Led Total sanitation -Implementation of sanitation road map

-Upscale cash and voucher assistance to vulnerable drought affected households. -Scale up cBFCI in households with children 0-23 months.	-Lobby for more funds from National County governments and development partners towards sustainable food system
- Promote adoption of climate resilient land and water management technologies to improve smallholder food production.	-Support the platforms for Climate Smart Agriculture(CSA) stakeholders to collaborate and participate in developing and implementing policies and strategies that promote CSA

1.0 INTRODUCTION

1.0.1 Background Information

Isiolo county lies within the arid and semi-arid lands (ASALs) of Kenya, covering 25,350km^2 with an estimated population of 283,139 (source: KNBS, Nov 2021). It consists of 3 sub-counties namely Isiolo, Garbatulla and Merti. In addition Cherab has been gazzetted to be a sub-county [31/2/2022].Isiolo has 3 main livelihood zones; pastoral, agro-pastoral and casual waged labour representing 67%, 26% and 7% respectively as shown in *figure 1.1 below.*

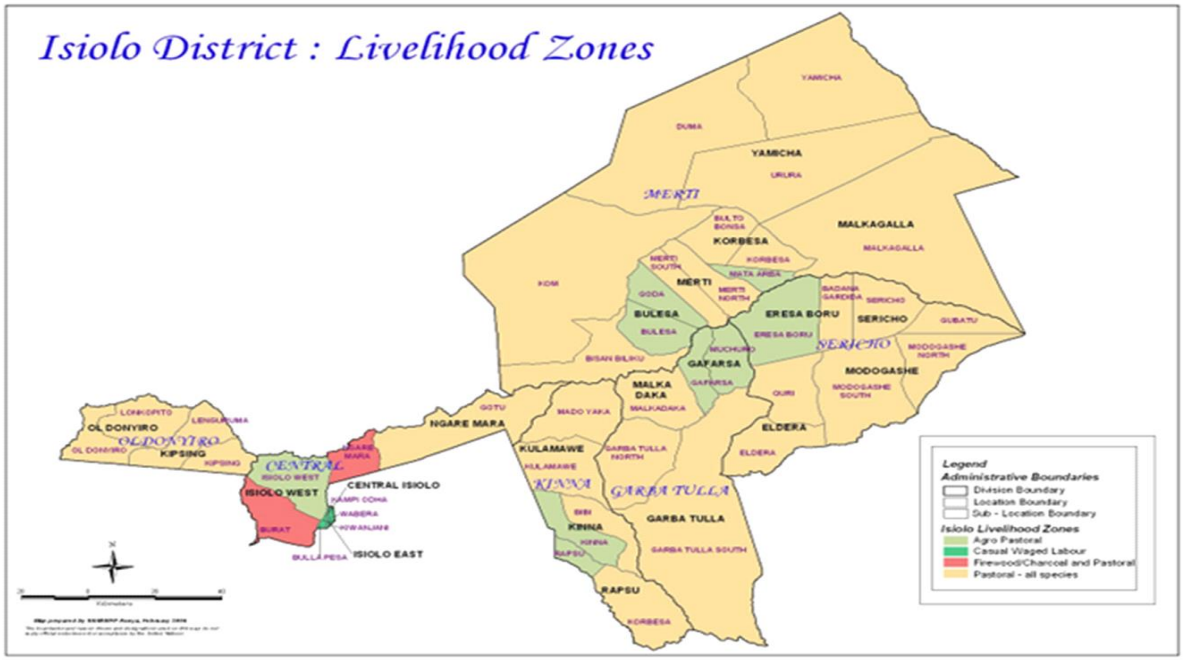


Figure 1.1: A map of Isiolo livelihoods zones

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 2021).

Isiolo County Seasonal Calender

<table>
<tr><td colspan="2">▪ Short rains starts
▪ Short dry spell
▪ Reduced milk yields
▪ Migration to dry season area
▪ Land preparation</td><td colspan="2">▪ Migration to wet grazing areas
▪ Long rains
▪ High Calving Rate
▪ Milk Yields Increase
▪ Reduced pasture/water stress (Normal Scenario)</td><td colspan="5">▪ Long rains harvests
▪ A long dry spell
▪ Increased distances to water and pasture
▪ Reduced water levels
▪ Kidding (Sept)
▪ Community/HH coping measures taken</td><td colspan="3">▪ Short rains
▪ Planting in Agro-pastoral LZ
▪ Migration from dry season area
▪ Increased milk yield
▪ Reduced pasture/water stress (Normal scenario</td></tr>
<tr><td colspan="2">Short dry period</td><td colspan="2">Long rains period</td><td colspan="5">Long dry spell</td><td colspan="3">Short rains</td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sept</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
</table>

Figure 1.2: Isiolo County Seasonal Calender

1.0.2 Justification

The Acute Food Insecurity classification was classified as Crisis (IPC phase 3) and was projected to worsen in the period of August-October 2021 to IPC phase 4 (July, LRA 2021 report). The Drought Early Warning phase was at *Alarm and Worsening* (NDMA bulletin, December 2021). This was as a result of poor rainfall performance and delayed onset of the short rains in November. The County Vegetation Index indicated extreme drought at 10.3 compare to 32.5 LTA (NDMA bulletin, December 2021). In addition, the rains received during March, April, May (MAM) season were depressed. The pasture and browse were poor and fair respectively, and were projected to last for two months. The average milk production was at 1.6 liters per HH which was below the LTA of 2 litres. Resulting into low consumption, which was at 0.9 liters thus below the LTA (NDMA Early Warning Bulletin, December 2021). The Integrated Phase Classification for Acute Malnutrition classified the county as Crisis (IPC AMN phase 3) and was projected to deteriorate to Emergency in August- October 2021. The proportion of households with poor food consumption score (FCS) increased from 10.9% to 13.0% in December 2021, attributed to limited food intake. The poor food consumption score in pastoral livelihood zone was at 16.2% of the total households (NDMA, EW bulletin December 2021). The SMART survey in February 2022 was based on seasonality trends and therefore, tracking the current health and nutrition situation at the county. The results of the survey provide updates of health, nutrition & food security situation in the county to inform programming. It also provides data for the short rain assessment carried out in January-February 2022 and provides a snapshot on the impact of 2021 short rains season.

COVID-19 Measures

The interim guidance on restarting population level surveys and household level data collection in humanitarian situations during covid-19 pandemic (8th October 2020) guided the survey. Experienced enumerators were recruited to shorten training time to observe the COVID 19 protocols. The SMART training included COVID-19 safety procedures whereby; all the teams and survey households' members were provided with masks and trained on use and disposal. All the anthropometric equipment were disinfected during and after use.

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 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 Sample size calculation

The sample size was determined using ENA for SMART software 2020 (version January 11, 2020). The factors considered while determining the sample size are outlined in the *Table 3* below.

Table 3: *Sampling Methodology for Anthropometric Survey*

Data entered in ENA for SMART	**Anthropo-metric survey**	**Rationale**
Estimated prevalence	16.7%	From contextual data (DHIS, NDMA EWS) it's showing a stabilizing situation
±Desired precision	4%	As a rule of thumb for prevalence 15 – 20%
Design effect	1.22	Obtained from nutrition SMART survey 2020 results; to cater for heterogeneity within the County
Average household size	5	From KNBS 2019 Population data
Proportion of U5s	17.1%	From DHIS, Nov 2021.
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	594	ENA for SMART household calculation for cross sectional anthropometric survey.
Children	444	ENA for SMART household calculation for cross sectional anthropometric survey.

2.0.3 Sampling Procedures

A two-stage cluster sampling was used. Stage 1; include determination of clusters from the population data (Census 2019) generated from ENA for SMART software (April 2015). The villages were the primary sampling unit. The village names, their respective population sizes and the required number of clusters was entered into ENA for SMART software 2020 (version January 11, 2020); probability proportion to size (PPS) was used. A total of 40 clusters were randomly sampled. This was informed by the previous survey's experience that showed each team could cover 15 households per day (594/15=39.6). While Stage 2; included household selection (simple random sampling) using random number generator mobile application. An updated list of households was obtained at the village from the community leaders; then 15 households were randomly selected for anthropometry.

2.0.4 Survey Team Composition

The survey was conducted by 8team 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, 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. The number of people who participated in the SMART survey and the respective actors are represented in *Table 4*

Table 4: *Individuals involved in the SMART Survey*

Group classification	Number	Actors
Team leaders	8	MoH; MoALF; NDMA
Survey Enumerators	16	From community and NDMA field monitors
Supervision	6	UNICEF, ACF, MOH, partners
Village guides	44	From community (40 during data collection and 4 during pretest)

2.0.5 Survey Team Training

A 4 days comprehensive training for the survey teams was carried in Isiolo town. The training entailed sampling methods; anthropometric measurements; interviewing techniques; completion of questionnaires and taking of photos of Oedema cases by use of tablets. Standardization tests and pilot test were part of the training: The standardization involved each Enumerator taking the anthropometric measurements of 10 children twice during the training. While the pre-test entailed each enumerator completing two questionnaires in purposively selected villages that were not part of the sampled clusters. Standardization test report is attached in annex 6.0.2 of this report.

2.0.6 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.

2.0.7 Data Entry and 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 2, Epi info and Microsoft excel. Preliminary results and report were shared within the first week after data collection.

2.0.8 Organization of the Survey

The *Table 5 below* represents activities that were carried out, the people responsible of ensuring the completion of the activity and the deadlines of submission.

Table 5: *Activities carried out during the SMART Survey*

Activity	**By**	**Proposed timeline**
County initial planning meeting	MOH/Partners	4th Jan, 2022
Resource Mobilization	MOH/Partners	4th to 14th Jan, 2022
Sharing of Methodology with NITWG	MOH/Partners	12th Jan, 2022
Presentation of methodology with NITWG	MOH/CIWG	13th Jan, 2022
Recruitment of survey team	MOH/NDMA	17th to 21st Jan, 2022
Community Mobilization	MOH/ACF/NDMA	17th to 27th Jan, 2022
Training survey team	MoH, NIWG/ Partners/ Line Ministries and NDMA	25th to 28th Jan, 2022
Field data collection	MoH, Partners, Line Ministries and NDMA	29thJan- 2nd Feb, 2022
Data analysis	MOH/IWG/Partners	2nd-3rd Feb, 2022
Presentation of the Preliminary findings with CIWG	MOH/IWG/Partners	4th Feb, 2022
Addressing inputs from CIWG members	MOH/CIWG	5th- 6th Feb, 2022
Presentation of the preliminary findings to CSG	MOH/CIWG	7th Feb, 2022
Presentation of the preliminary findings to NITWG	MoH	10th Feb, 2022
Draft survey Report sharing	MOH/CIWG	15th March, 2022

3.0 SURVEY FINDINGS

3.1 Household Demographic

3.1.1 Household characteristics

The survey involved 2,751 persons with an average population of 4.5 persons per household. The proportion of children aged (6-59) months was 17.2%. The teams were able to visit all the 40 sampled clusters as illustrated in *Table 6* below.

Table 6: *Response rate*

PLANNED			**ACHIEVED**		
No. of HHs	No. of Children (Sample Size)	No. of Clusters	No. of HHs	No. of Children (Sample Size)	No. of Clusters
600	444	40	600(100%)	472 (106.3%)	40

3.1.2 Main Occupation of the household head

There was a slight increase in the number of waged laborers from 21.4% in 2020 to 28.6% in 2022. A decline in petty trading and those employed during the same period was also observed. This was due to rural urban migration and households leaving livestock herding for more sustainable livelihoods such as irrigation fed agriculture. In addition, more youths were involved in crop production as a source of livelihood. Livestock herding has increased from 32.7% to 33.9% from 2020 to 2022.

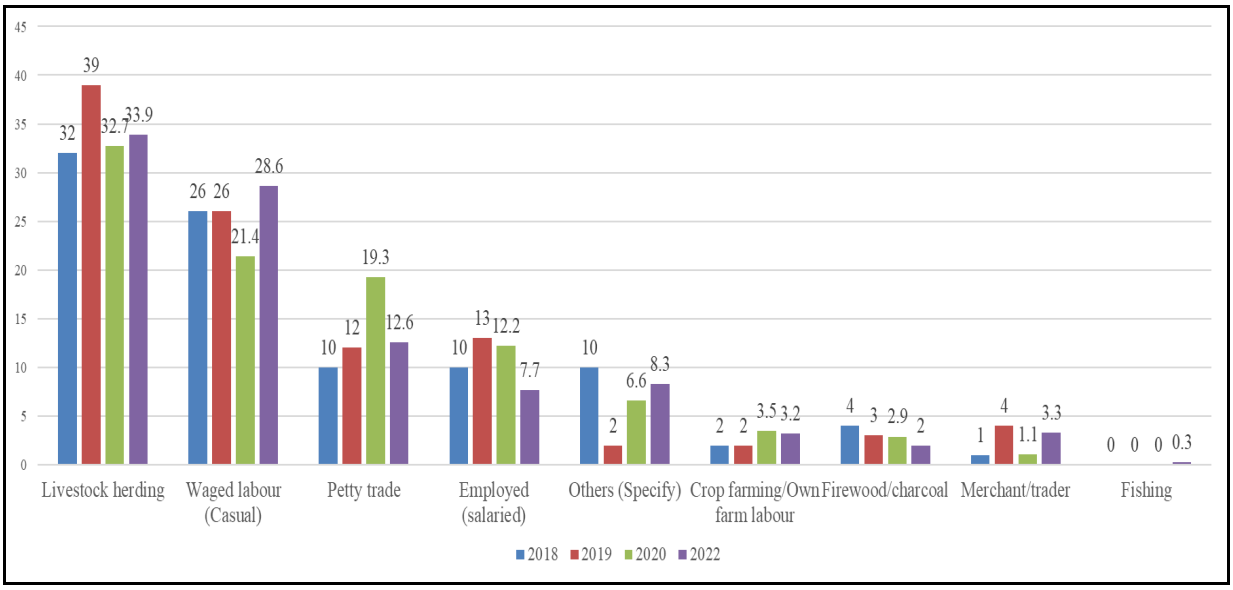


Figure 3.1: Main Occupation of the household head

3.1.3 Main current source of income

Sale of livestock in 2022 increased slightly as the main current source of income as communities increased off-take of livestock as a way of mitigating drought effect at the household level. There is also a notable increase in casual laborer as household members moved to towns to seek for casual jobs. Permanent jobs have reduced by almost half, from 11.3% to 6.3% in 2020 to 2022.

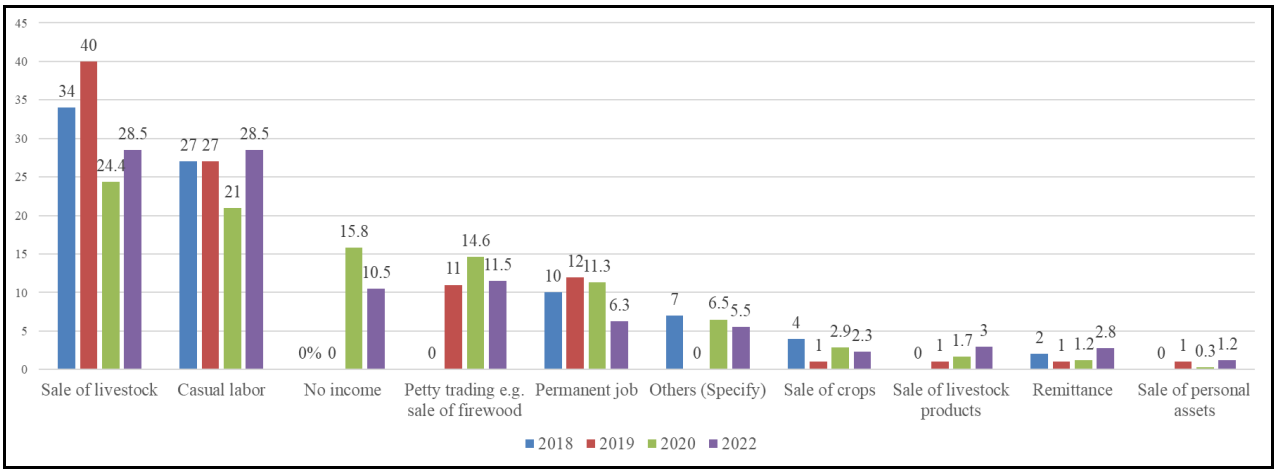


Figure 3.2: Main current source of income

3.1.4 Marital status of the household head

Majority of the respondents (81%) reported to be married with 9% coming second as widowed as indicated in the pie chart below.

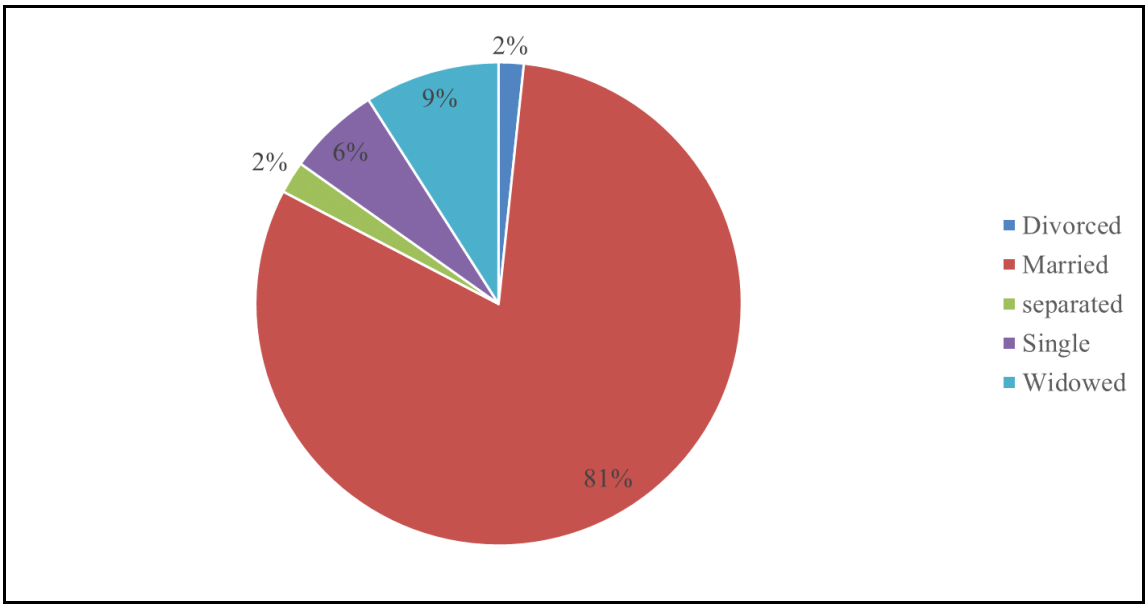


Figure 3.3: Marital status of the household head

3.1.5School enrollment of children 3-18 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%.

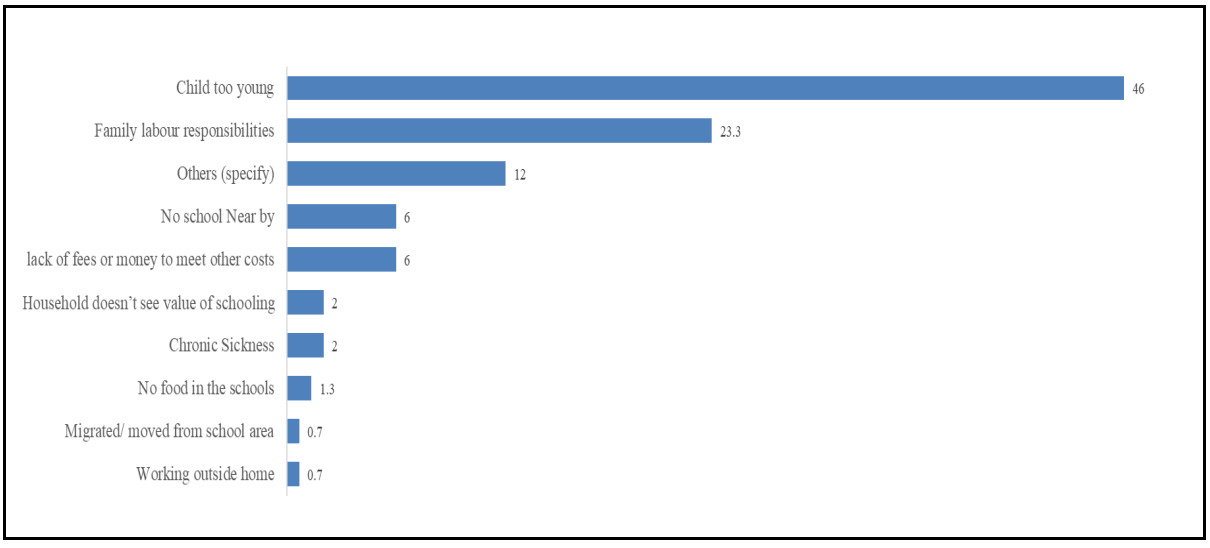
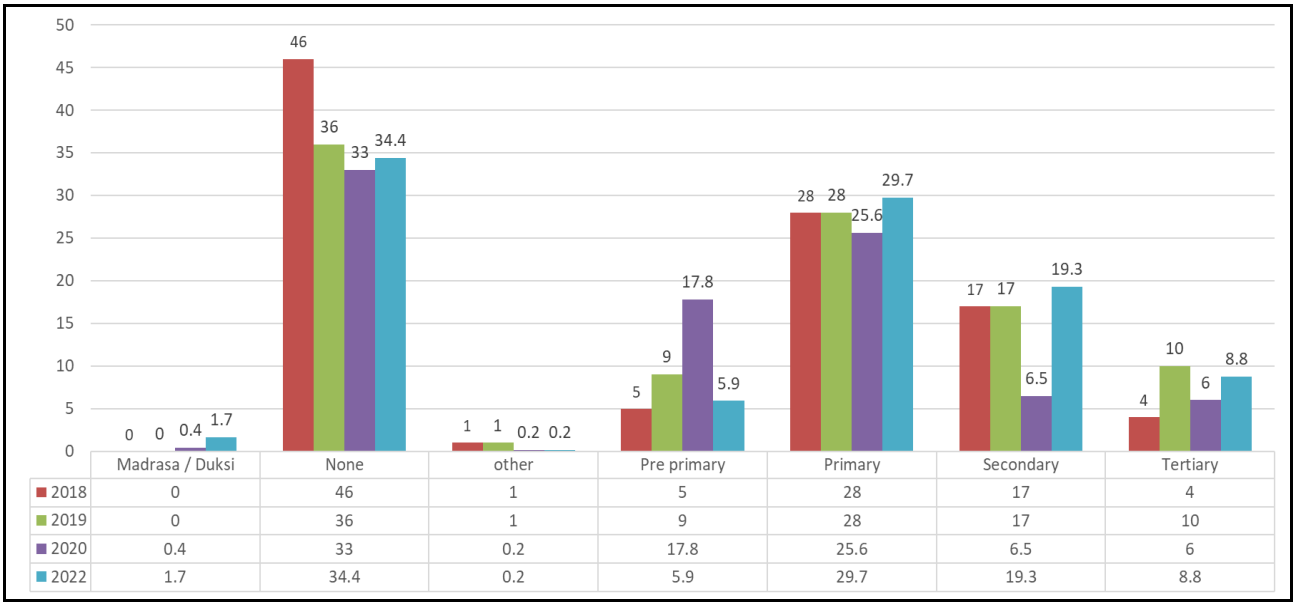


Figure 3.4: School enrollment of children 3-18 years

3.1.6 Highest level of education attained by adult household member

There was no notable change in persons with no formal education between 2020 (33%) and 2022 (34.4%)



	Madrasa / Duksi	None	other	Pre primary	Primary	Secondary	Tertiary
2018	0	46	1	5	28	17	4
2019	0	36	1	9	28	17	10
2020	0.4	33	0.2	17.8	25.6	6.5	6
2022	1.7	34.4	0.2	5.9	29.7	19.3	8.8

Figure 3.5: Highest level of education attained by adult household member

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

Malnutrition makes a person susceptible to infections; infections may also contribute to malnutrition, which causes a vicious cycle of malnutrition and infections. The presence of diarrhea, mal – absorption, loss of appetite and diversion of nutrients for immune response further aggravate a sick person's nutrition status as they lead to nutrient losses further damaging the defense mechanism. These, in turn, cause reduced dietary intake. The causes of malnutrition and disease operate at different levels. The factors responsible are household food availability, personal health, health services, and the psychosocial care environment. The existing primary health care infrastructure includes the types of services provided and the accessibility of health care (distance and affordability) .It was important therefore to assess morbidity and whether it had some effect on nutrition status of the vulnerable.

To assess child morbidity mothers/caregivers of children aged 6 to 59 months were asked to recall whether their children had been sick in the past 2 weeks prior to the survey. Those who confirmed illness in the past two weeks were further probed on the type illness that affected their children and whether or not they sought any assistance when their child/children were ill and where. Those who indicated that their child/children suffered from watery diarrhea were probed on the kind of treatment that was given to them.

The survey findings indicated that 43.2% of children were reported to have been ill in the past two weeks out of which 88.2% had sought for health services, an increase from 89.6% in 2020. Most of the caregivers of the children who had been ill sought for help from Public Clinics (76.2%) followed by private clinics (22.2%). The leading incidence of illnesses was ARI/Cough at 59.3% as indicated in figure 8. This is a slight decrease from the previous year (75.1%).

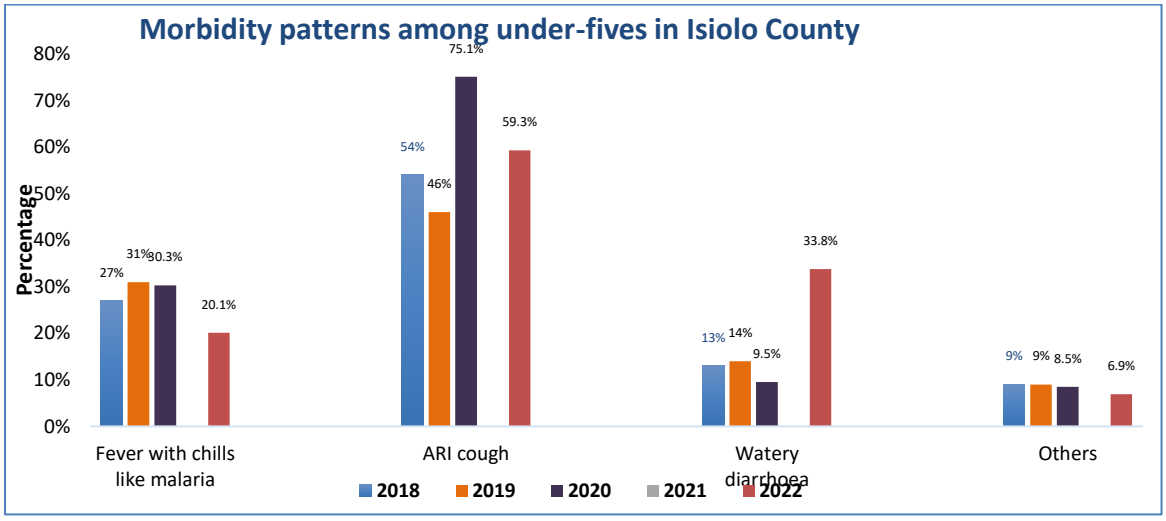


Figure 3.6: Morbidity patterns among under-fives in Isiolo County

3.2.2 Health Seeking Behavior

A larger proportion (88.2%) of children who had reported to be ill in the past two weeks sought assistance compared to 89.6% in 2020. 76.7 percent sought help from public health facilities.

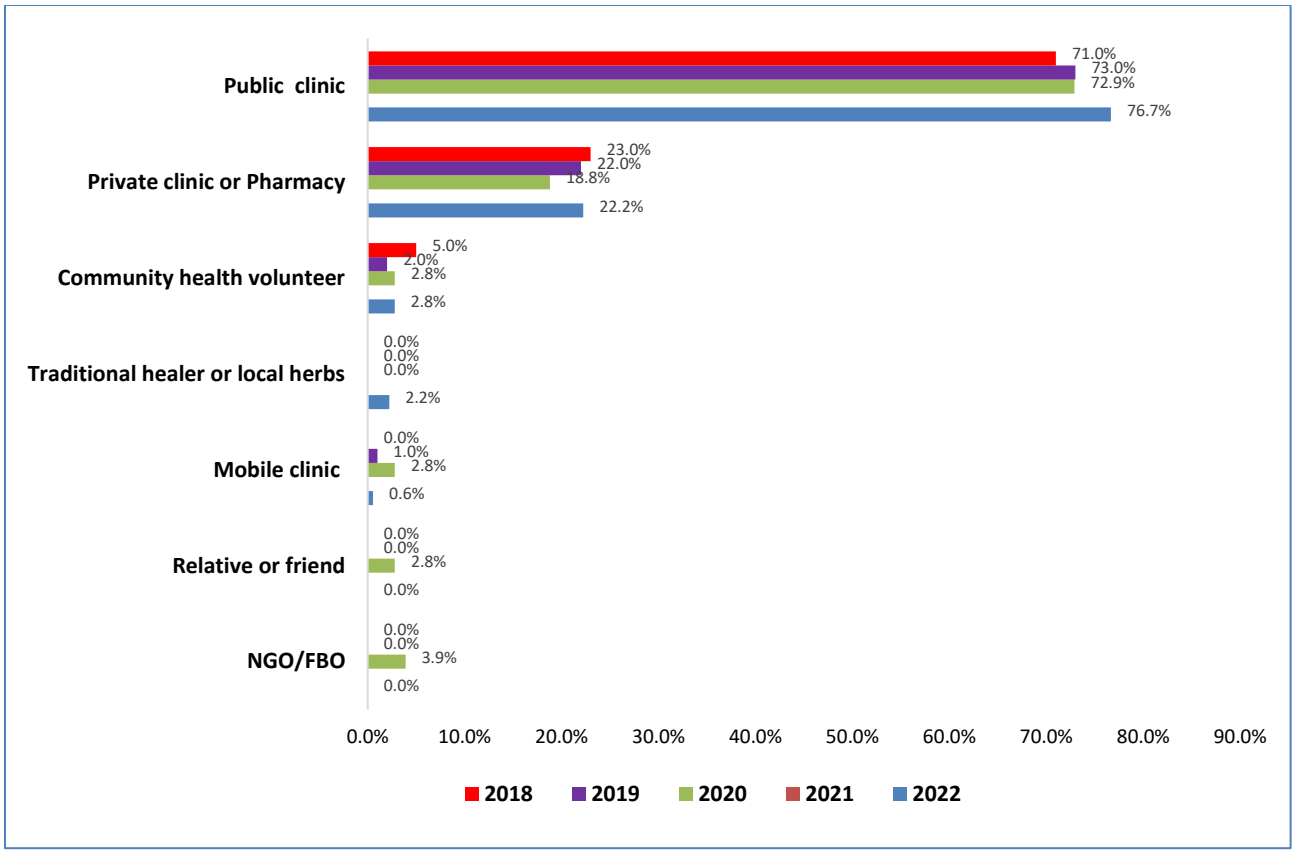


Figure 3.7: Health Seeking Behavior

3.2.3 Therapeutic Zinc Supplementation for watery diarrhea

Diarrhea associated with malnutrition is the most likely commonest cause of death in children under five years globally. The importance of zinc in the pathophysiology of acute diarrhea is highlighted by the significantly higher daily fecal losses during acute diarrheal episode that renders the body stores depleted (Patel et al, 2009). Most episodes of diarrhea are infectious and are caused by a variety of bacteria, viruses, and parasites. Studies showed that 50% of deaths related to diarrhea linked to persistent diarrhea (>14 duration); about 10% of diarrhea cases lead to persistent diarrhea. Under-nutrition increases the incidence and severity of diarrhea. Diarrhea is detrimental to nutritional status (acute weight loss, malnutrition and stunting). Diarrheal diseases account for 10-80% of growth retardation in the first few years of life worldwide, affected by: etiology and clinical type of diarrhea, the source and adequacy of dietary intake, -treatment and feeding practices. The case fatality rate is highest among children aged 6-12 months because dehydration is the most direct effect of diarrhea, accounting for the majority of deaths. The widespread adoption of oral rehydration therapy (ORT) has greatly reduced the mortality related

to diarrhoea.2 WHO and UNICEF recommend the therapeutic use of zinc for 10-14 days at a daily dose of*10 mg* in infants less than 6 months old and *20 mg daily* in older children.

Amongst the cases reported to have suffered episodes of watery diarrhea in the last two weeks, 61.8% (N=42) of the cases reported to have been treated with ORS and Zinc, a decrease from 94.7% in 2020. This can be attributed to stock outs of zinc supplements in the health facilities.

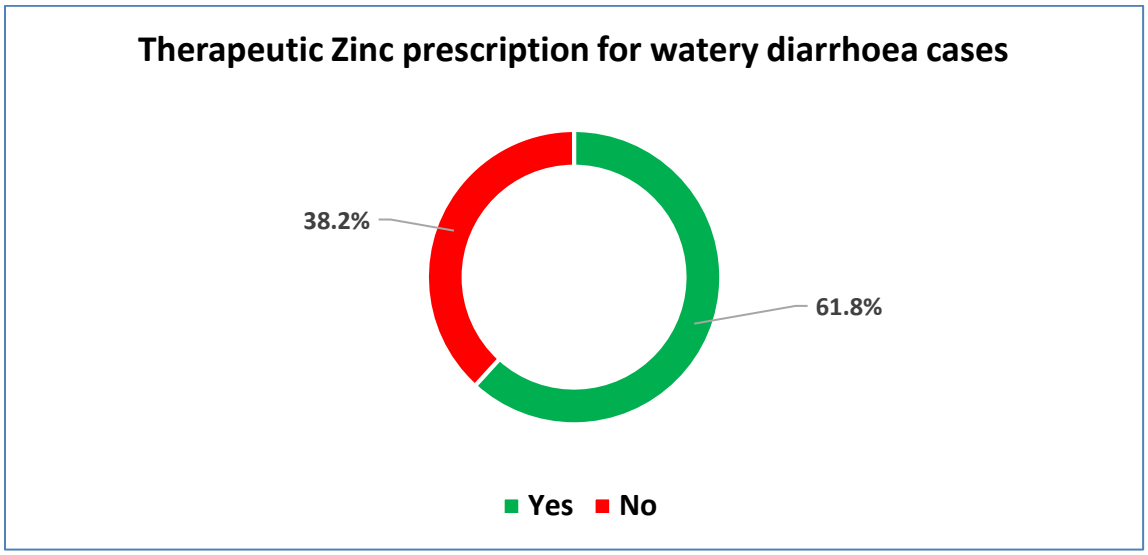


Figure 3.8: Therapeutic Zinc prescription for watery diarrhoea cases

3.3 Child Immunization, Vitamin A Supplementation and Deworming.

3.3.1 Immunization (BCG, OPV1 and OPV3) Coverage

Immunization is the process in which a person is made immune or resistant to an infectious disease by the administration of a vaccine8. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. Immunization is designed to protect infants and children early in life, when they are most vulnerable and before they are exposed to potentially life-threatening diseases. 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.

Bacillus Calmette–Guérin (BCG) vaccination against tuberculosis coverage verified by presence of scar in the lower left arm was at 99.6%, a slight increase from 94.9% in 2020. Oral Polio vaccine 1 (OPV 1) coverage was 84.9% by card and 14.2% by recall while Oral polio vaccine 3 was at

83.2% and 14.2% by card and recall respectively as indicated in *figure 3.9*. Measles at 9 months was at 78.4% and 15.2% by card and recall respectively. The second measles vaccine at 18 months was at 66.7% and 15.9% by card and recall respectively. However, there is an increase in proportion of children who have received measles vaccines at 18 months from 36.2% in 2020 to 66.7% in 2022 as indicated *Table 7*. This can be attributed to intensified outreaches targeting immunization.

Table 7: *Immunization (BCG, OPV1 and OPV3) Coverage*

		Yes by Card		Yes by Recall		No		Do not know		Card + Recall	
	N	**n**	**Percent**	**n**	**Percent**	**n**	**Percent**	**n**	**Percent**	**n**	**Percent**
OPV 1	471	400	84.93%	67	14.23%	3	0.64%	1	0.21%	467	99.15%
OPV3	471	392	83.23%	67	14.23%	9	1.91%	3	0.64%	459	97.45%
Measles at 9	454	356	78.41%	69	15.20%	27	5.95%	2	0.44%	425	93.61%
Measles at 18	352	235	66.76%	56	15.91%	60	17.05%	1	0.28%	291	82.67%

An increase was noted among the proportion of children immunized with BCG as confirmed by presence of scar. OPV 1and 3 increased due to scale up of integrated medical outreaches.

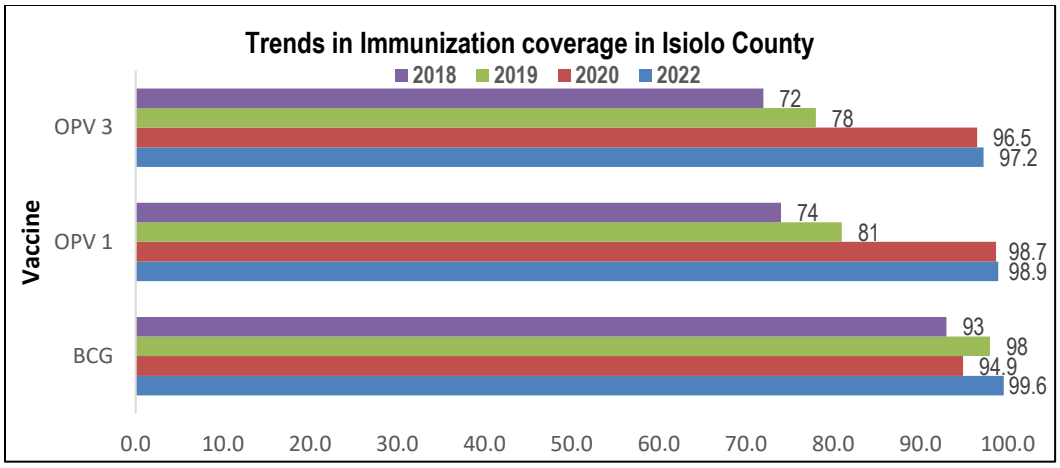


Figure 3.9: Trends in Immunization coverage in Isiolo County

There was an increase in measles coverage by card at 9 and 18 months from 61% to 72% and 36% to 65% respectively, which was attributed to improved documentation and use of MCH booklets at health facilities and outreach sites.

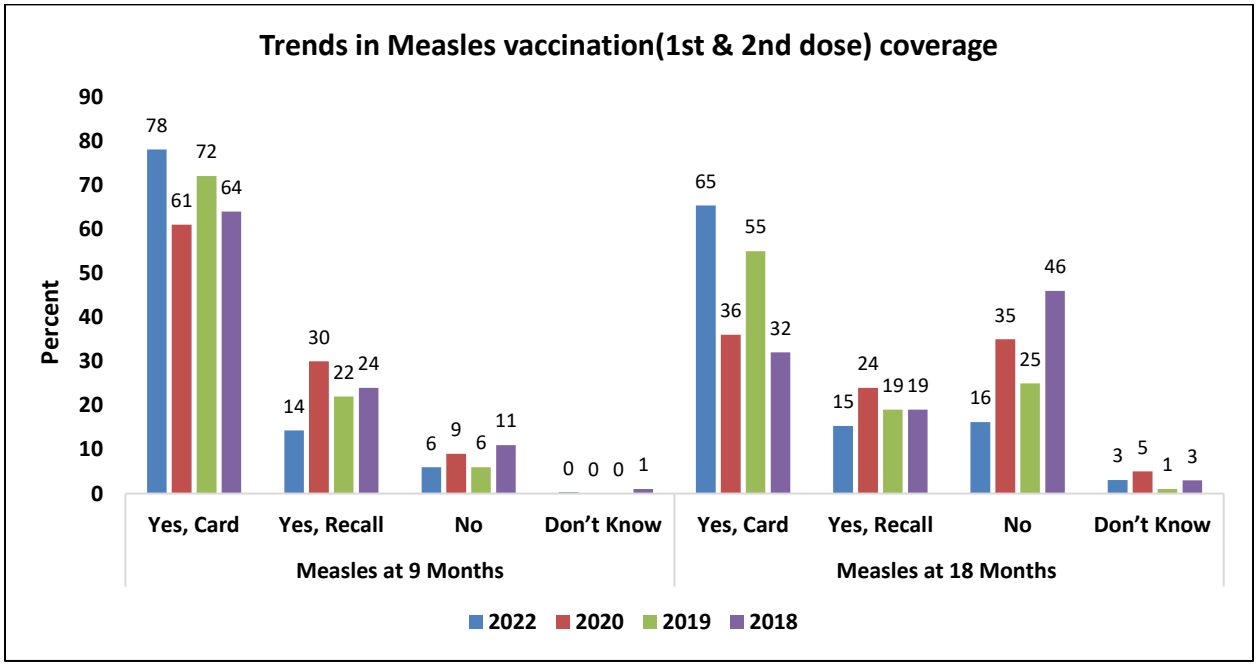


Figure 3.10: Trends in Immunization coverage in Isiolo County

3.3.2 Vitamin A supplementation and Deworming

Vitamin A supplementation among children 6-59 months improves their vitamin A status which enhances their resistance to disease and can reduce mortality from all causes by approximately 23%. Guaranteeing high supplementation coverage is therefore critical, not only to eliminating

vitamin A deficiency as a public-health problem, but also as a key element of the child survival agenda 9. Globally, 190 million children under five years of age are affected by vitamin A deficiency. These children suffer an increased risk of visual impairment (night blindness), illness and death from childhood related illnesses such as measles and those causing diarrhea.

The county vitamin A coverage remained below the national target with 47.8% of children having received vitamin A at least once in the previous year. This is a slight improvement from the previous year's coverage of 37.3% which is attributed to supplementation efforts done at community level during Malezi Bora campaigns. However, documentation of supplementation done remains a challenge.

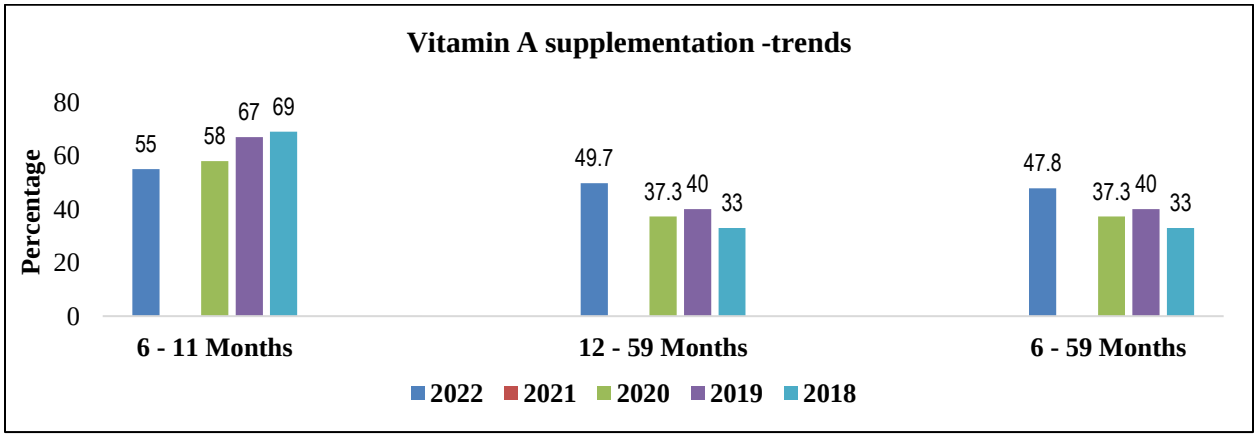


Figure 3.11: Vitamin A supplementation trends

3.3.3 Deworming for Children 12 – 59 Months

Soil transmitted helminth infections are among the most common infections in humans, caused by a group of parasites commonly referred to as worms. People living in poverty are the most vulnerable to infections which can impair nutritional status by causing; internal bleeding which can lead to loss of iron and anemia. Deworming is a low cost effective high impact nutrition intervention proven to reverse malnutrition trends. In total, 76.1% of children aged 12 – 59 months were dewormed at least once in the past one year, an increase compare to the previous year of 60.8%.

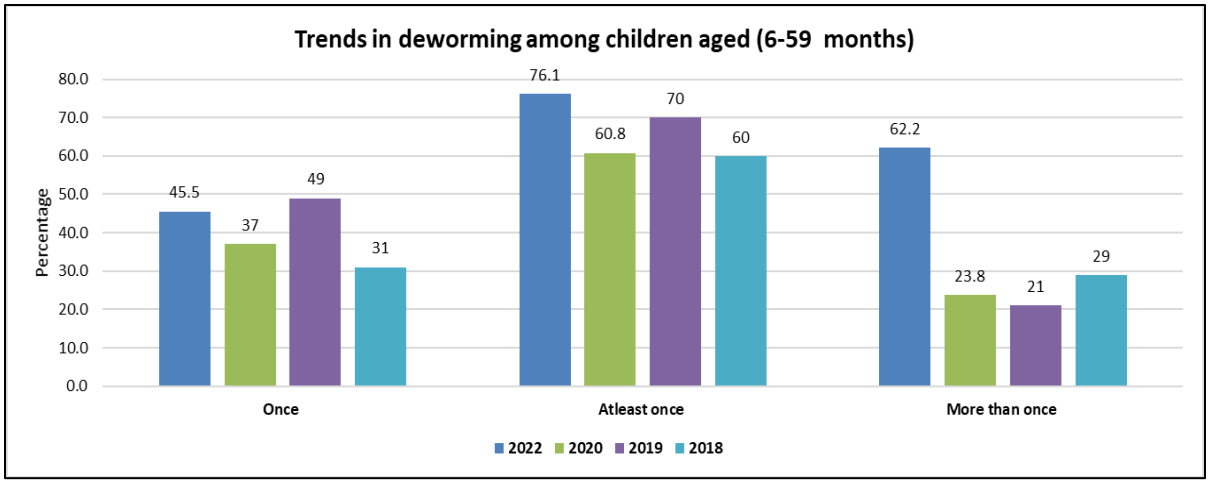


Figure 3.12: Trends in deworming among children 12-59 months

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

3.4.1 Anthropometric data quality

The total children aged (6-59 months) assessed for anthropometric measurements in Isiolo County was 472 which represent 106.3% of planned/target. The overall quality for anthropometric data interpreted as Data Plausibility Scores (DPS) was analyzed using ENA for SMART software. The overall DPS was 1% interpreted as excellent score as indicated in *Table 8*. The Anthropometric DPS interprets z score flags based on SMART flags (+/-3). The parameters to interpret data quality to include flagged data, sex ratio, digit preference score (weight, height, MUAC), standard deviation, skewness and poisson distribution was interpreted as excellent. Age ratio was interpreted as acceptable with percentage of younger children (6-29 months) higher than older children (30-59 months) but not statistically significant (*P=0.162*). Kurtosis was 1%(-0.31) however it was interpreted as good.

Table 8: *Anthropometric Data Plausibility Score (DPS)*

Criteria	Score	Interpretation
Flagged data	**0** (2.1 %)	Excellent
Overall Sex ratio	**0** (p=0.854)	Excellent
Age ratio(6-29 vs 30-59)	**0** (p=0.162)	Acceptable
Dig preference score - Weight	**0** (4)	Excellent
Dig preference score - Height	**0** (7)	Excellent
Dig preference score - MUAC	**0** (3)	Excellent
Standard Dev WHZ	**0** (1.05)	Excellent
Skewness WHZ	**0** (0.19)	Excellent
Kurtosis WHZ	**1** (-0.31)	Good
Poisson distribution WHZ	**0** (p=0.346)	Excellent
Overall score WHZ[5]	**1** %	Excellent

[5] [5] *Interpretation of anthropometric data quality score; Excellent(0-9), Good(10-14), Acceptable (15-24), Problematic(>25)*

Mean z-scores, Standard Deviation, Design Effects and excluded subjects

The *table3.3* provides summary findings on mean z-scores, standard deviation, design effect and excluded subjects for nutrition indices namely; WHZ, HAZ and WAZ. The standard deviation was within the range (0.8-1.2) across the nutrition indices. The distribution of acute, chronic or acute & chronic malnutrition was homogenous among surveyed children aged (6-59 months) as illustrated in *Table 9*. The children aged (6-59 months with z-scores out of range for WHZ, WAZ and HAZ was 10, 8 and 13 respectively.

Table 9: *Mean Z-scores, design effects and excluded subjects*

Indicator	n	Mean z-scores ± SD	Design Effect (z-score <-2SD)	z-scores not available*	z-scores out of range
Weight-for-Height	461	-1.00±1.05	1.00	1	10
Weight-for-Age	464	-1.14±1.02	1.00	0	8
Height-for-Age	458	-0.75±1.04	1.29	1	13

3.4.2 Distribution of age and sex of sample

The distribution of boys and girls were equally represented (P=0.854). Similarly, the age distribution was slightly uniformly distributed (P=0.162) as indicated in *table 10*. The younger age groups (6-29 months) were higher when compared to older age groups (30-59 months) attributed to confirmation of age of a number of the children through estimation using event calendar that present a likelihood of recall bias in confirming actual age of eligible child.

Table 10: *Distribution of age and sex of sample*

	Boys		Girls		Total		Ratio
Age (month)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	55	48.7	58	51.3	113	23.9	0.9
18-29	54	45.4	65	54.6	119	25.2	0.8
30-41	56	48.3	60	51.7	116	24.6	0.9
42-53	42	49.4	43	50.6	85	18.0	1.0
54-59	27	69.2	12	30.8	39	8.3	2.3
Total	234	49.6	238	50.4	472	100.0	1.0

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

The findings on prevalence of Global Acute Malnutrition (GAM), Moderate Acute Malnutrition (MAM) and Severe Acute Malnutrition (SAM) in Isiolo County based on Weight for Height Z-scores (WHZ) is illustrated in *Table 11*. The distribution of acute malnutrition based on (WHZ<-2SD) by sex as indicated in *Table 11* unveiled boys were slightly wasted than girls. The WHO growth standard of 2006 was used as reference standard while SMART flags (+/-3SD) was used as exclusion criteria for WHZ-scores.

The GAM prevalence based on (WHZ<-2SD) in Isiolo County was 17.8%, interpreted as very high (>15%) based on new UNICEF thresholds while it was interpreted as critical (15.0%-29.9%) based on IPC AMN classification.

There was no statistical significance difference (*P-value=0.663*) between GAM prevalence (WHZ) derived in 2020 (16.7%) and 2022 same season at 17.8%.

Table 11: *Prevalence of acute malnutrition based on weight-for-height z-scores by sex and/or oedema*

	All n = 461	**Boys n = 228**	**Girls n = 233**
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(82) 17.8 % (14.5 - 21.6 95% C.I.)	(46) 20.2 % (15.2 - 26.2 95% C.I.)	(36) 15.5 % (10.9 - 21.4 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(74) 16.1 % (12.9 - 19.8 95% C.I.)	(45) 19.7 % (14.7 - 26.0 95% C.I.)	(29) 12.4 % (8.2 - 18.4 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(8) 1.7 % (0.8 - 3.6 95% C.I.)	(1) 0.4 % (0.1 - 3.2 95% C.I.)	(7) 3.0 % (1.3 - 6.6 95% C.I.)

The prevalence of oedema is 0.0%.

The Gaussian curve illustrated in *figure 3.13* indicates the surveyed population curve(indicated in red colour) deviated to the left of WHO reference curve (indicated in green colour) at a mean of (-1.00). This implied that we had many cases of acute malnourished within the surveyed population that made the survey curve to deviate to the left of the reference curve.

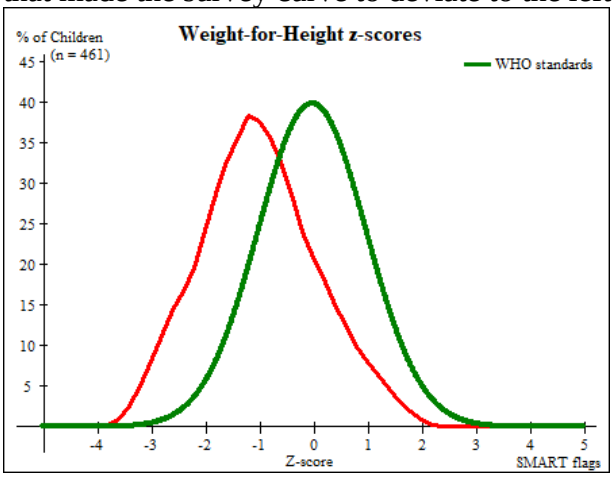


Figure 3.13: Gaussian Curve on distribution of acute malnutrition by WHZ among children aged (6-59) months

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 12*.

Table 12: *Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema*

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	108	0	0.0	15	13.9	93	86.1	0	0.0
18-29	116	2	1.7	11	9.5	103	88.8	0	0.0
30-41	115	2	1.7	20	17.4	93	80.9	0	0.0
42-53	84	2	2.4	18	21.4	64	76.2	0	0.0
54-59	38	2	5.3	10	26.3	26	68.4	0	0.0
Total	461	8	1.7	74	16.1	379	82.2	0	0.0

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

The trend in GAM and SAM prevalence based on (WHZ-2SD) in Isiolo County has been on an increasing trend since 2019 as illustrated in *figure 3.14*. This was attributed to increased morbidity reported among under-fives and household food insecurity mainly caused by failure of more than three consecutive rainfall seasons.

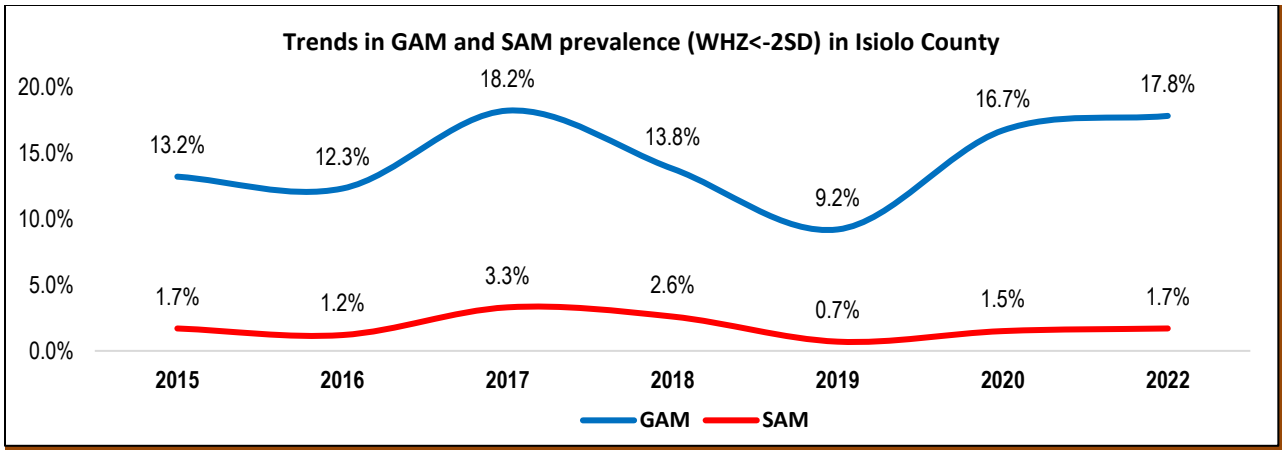


Figure 3.14: Trends in GAM and SAM prevalence among children aged (6-59 months)

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 3.4% as illustrated in *Table 13* This confirms the existence of acute malnutrition. The prevalence for acute malnutrition based on MUAC reduced slightly in 2020 at 4.2% compared to 2022 at 3.4%. There was no statistical significance difference between GAM prevalence by (MUAC) in 2020 same season with current (*p value=0.534*). This was attributed to ongoing family MUAC roll-out in screening of acute malnutrition cases, which has been conducted in 29 of the 50 CUs in the County. Girls were slightly acute malnourished by MUAC when compared to boys but this was not statistically significant (*p value=0.381*).

Table 13: *Prevalence of acute malnutrition based on MUAC cut-offs (and/or oedema) and by sex*

	All n = 472	**Boys** n = 234	**Girls** n = 238
Prevalence of global malnutrition **(< 125 mm and/or oedema)**	(16) 3.4 % (1.9 - 6.0 95% C.I.)	(6) 2.6 % (1.2 - 5.5 95% C.I.)	(10) 4.2 % (2.0 - 8.4 95% C.I.)
Prevalence of moderate malnutrition **(< 125 mm and >= 115 mm, no oedema)**	(14) 3.0 % (1.7 - 5.2 95% C.I.)	(5) 2.1 % (0.9 - 5.0 95% C.I.)	(9) 3.8 % (1.9 - 7.5 95% C.I.)
Prevalence of severe malnutrition **(< 115 mm and/or oedema)**	(2) 0.4 % (0.1 - 1.7 95% C.I.)	(1) 0.4 % (0.1 - 3.2 95% C.I.)	(1) 0.4 % (0.1 - 3.1 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 18.9% and 2.1% respectively, as illustrated in *Table 14*. 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 14: *Prevalence of acute malnutrition by combined GAM and SAM based on WHZ and MUAC Cut-offs*

	All n = 472	**Boys** n = 234	**Girls** n = 238
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	(89) 18.9 % (15.4 - 22.9 95% C.I.)	(49) 20.9 % (15.9 - 27.0 95% C.I.)	(40) 16.8 % (12.1 - 22.9 95% C.I.)
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema	(10) 2.1 % (1.0 - 4.5 95% C.I.)	(2) 0.9 % (0.2 - 3.4 95% C.I.)	(8) 3.4 % (1.5 - 7.5 95% C.I.)

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

The prevalence of underweight among children aged (6-59) months was based on weight for age z-scores. WHO Standard of 2006 was used as reference standard while SMART flags (+/-3SD) was used as exclusion criteria for WAZ<-2SD. The summary prevalence of severe and moderate underweight in Isiolo County is illustrated in *Table 15*.

The prevalence of underweight (WAZ<-2SD) in Isiolo County was interpreted as medium (20-29) based on new UNICEF thresholds. There was no statistical significance difference in prevalence of underweight between 2020(17.5%) and 2022(18.8%) same season (*p value=0.618*).

Table 15: *Prevalence of underweight based on weight-for-age z-scores by sex*

	All n = 464	**Boys** n = 230	**Girls** n = 234
Prevalence of underweight (<-2 z-score)	(87) 18.8 % (15.7 - 22.3 95% C.I.)	(50) 21.7 % (16.8 - 27.6 95% C.I.)	(37) 15.8 % (12.2 - 20.3 95% C.I.)

Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(70) 15.1 % (12.3 - 18.3 95% C.I.)	(42) 18.3 % (13.8 - 23.8 95% C.I.)	(28) 12.0 % (8.8 - 16.0 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(17) 3.7 % (2.2 - 6.1 95% C.I.)	(8) 3.5 % (1.7 - 6.9 95% C.I.)	(9) 3.8 % (2.0 - 7.3 95% C.I.)

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

The prevalence of stunting among children aged (6-59) months was based on weight for height z-scores. WHO Standard of 2006 was used as reference standard while SMART flags (+/-3SD) was used as exclusion criteria for HAZ<-2SD. The summary prevalence of severe and moderate stunting in Isiolo County is illustrated in *table 16*.

There was no statistical significance difference in prevalence of stunting between 2020(14.6%) and 2022(12.2%) same season (*p value=0.360*).

Table 16: *Prevalence of stunting based on height-for-age z-scores and by sex*

	All n = 458	**Boys** n = 223	**Girls** n = 235
Prevalence of stunting (<-2 z-score)	(56) 12.2 % (9.1 - 16.2 95% C.I.)	(31) 13.9 % (9.7 - 19.6 95% C.I.)	(25) 10.6 % (7.2 - 15.5 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(46) 10.0 % (7.5 - 13.3 95% C.I.)	(28) 12.6 % (8.3 - 18.5 95% C.I.)	(18) 7.7 % (4.9 - 11.9 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(10) 2.2 % (1.2 - 4.0 95% C.I.)	(3) 1.3 % (0.4 - 4.2 95% C.I.)	(7) 3.0 % (1.3 - 6.7 95% C.I.)

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

The trend in stunting prevalence in Isiolo County has been on a decreasing trend since 2019 as illustrated in *figure 3.15*. However the trend in underweight prevalence in Isiolo County has been on increasing trend.

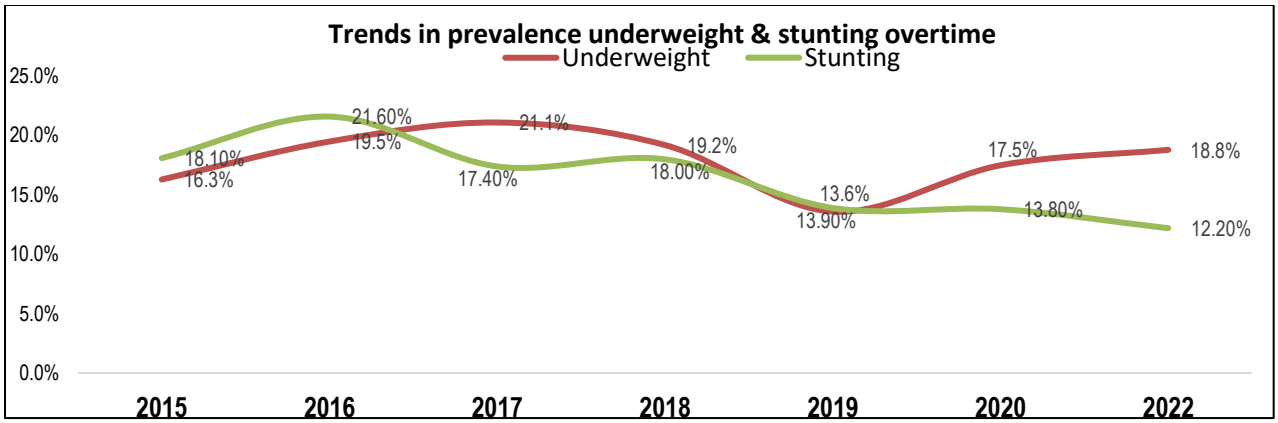


Figure 3.15: Trends in underweight and stunting prevalence among children aged (6-59 months)

3.5 Maternal health and nutrition

Good maternal nutrition is important for a successful pregnancy, child delivery and lactation. Pre-pregnancy nutrition influences a woman's ability to conceive, determines the fetal growth and development and the size of the fetus and its overall health as well as the health of the mother. Malnutrition prior and around pregnancy makes the placenta fail to develop fully therefore it cannot optimally nourish the fetus. Underweight and overweight women experience more complications during pregnancy and delivery than normal women. Anemic women are more likely to deliver low birth weight infants and low folic acid levels are associated with an increased risk of low birth weight and birth defects. Adequate weight gain during pregnancy is essential for foetal growth and desired weight gain is based on pre-pregnancy weight using BMI criteria and pre-conception nutritional status of the woman. Maternal health is defined as the wellbeing of a woman during pregnancy, childbirth and 42 days after delivery.

3.5.1 Women physiological Status

During the survey women were asked their current physiological status on whether pregnant, lactating, pregnant and still lactating or none of them. It was found out that; pregnant, lactating, not pregnant or lactating, and pregnant and lactating were 10.1%, 40.0%, 49.3% and 0.6% respectively as shown in *figure 3.18*.

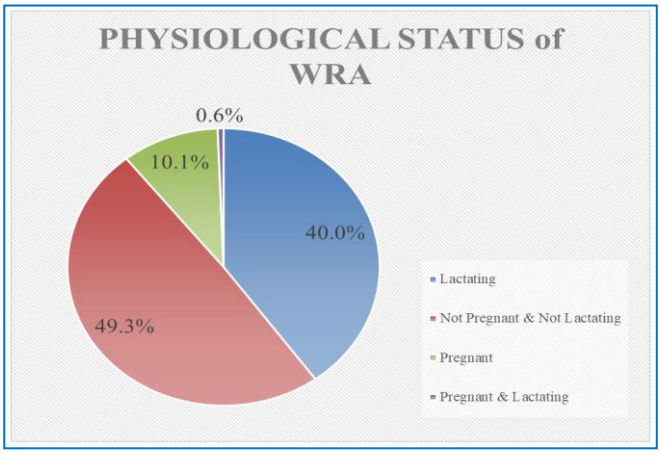


Figure 3.16: Physiological status of women of reproductive age

3.5.2 Maternal Nutrition

Nutrition status was assessed for all women of reproductive age (15-49 years) based on MUAC. The findings showed a change with the two categories of all WRA and PLWs having MUAC of <21cm at 4.6% and 5.2% respectively in 2022 from 5.3% and 4.7% of all WRA and PLWs in 2020 respectively. The worsening nutrition status of pregnant and lactating women can be attributed to poor performance of the 2021 long rains that worsened livestock and crop production hence reducing access and availability of food at the household level as illustrated in *Figure 3.17*.

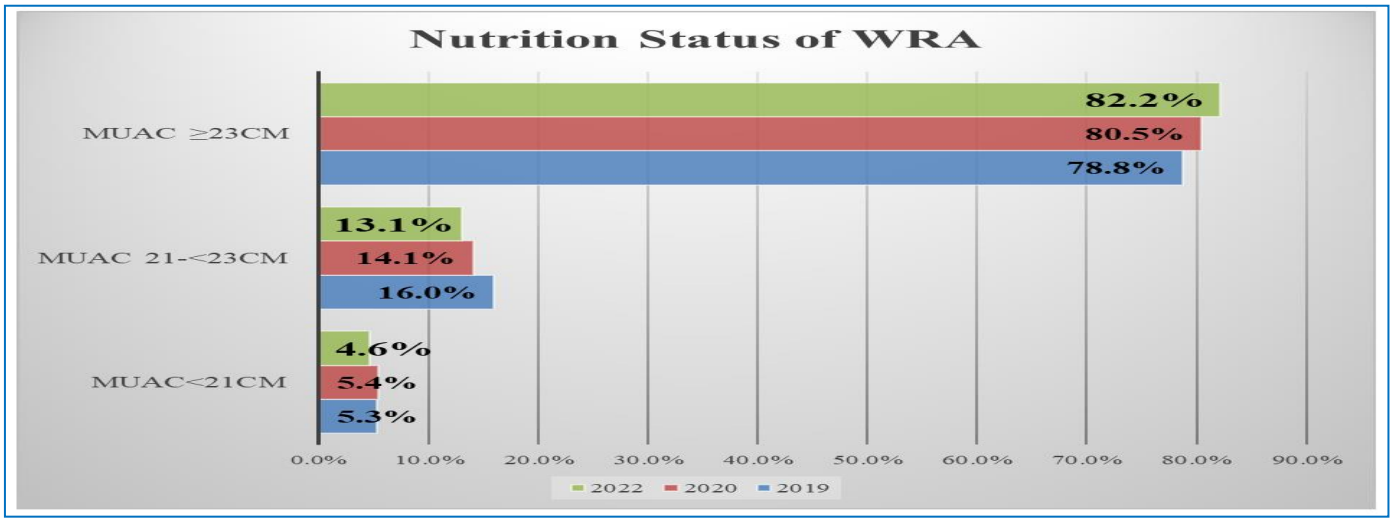


Figure 3.17: Nutrition status of women of reproductive age (WRA)

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. The survey assessed first ANC attendance and consumption of Iron and folic acid supplements during

pregnancy among women with children below 24 months. From the survey, it was observed that although 98.6% of women reported having attended ANC clinic in the most recent pregnancy, majority (68.8%) of the them attended ANC clinics during the second trimester. About half (49.1%) of pregnant mothers consumed IFAS for 31-90 days during pregnancy with a notable increase in proportion of pregnant women consuming IFAS for more than 90 days from 19.3% in 2020 to 24.4% in 2022 as illustrated in *Figure 3.18*. This was attributed to key IFAS messaging at the health facility and community level.

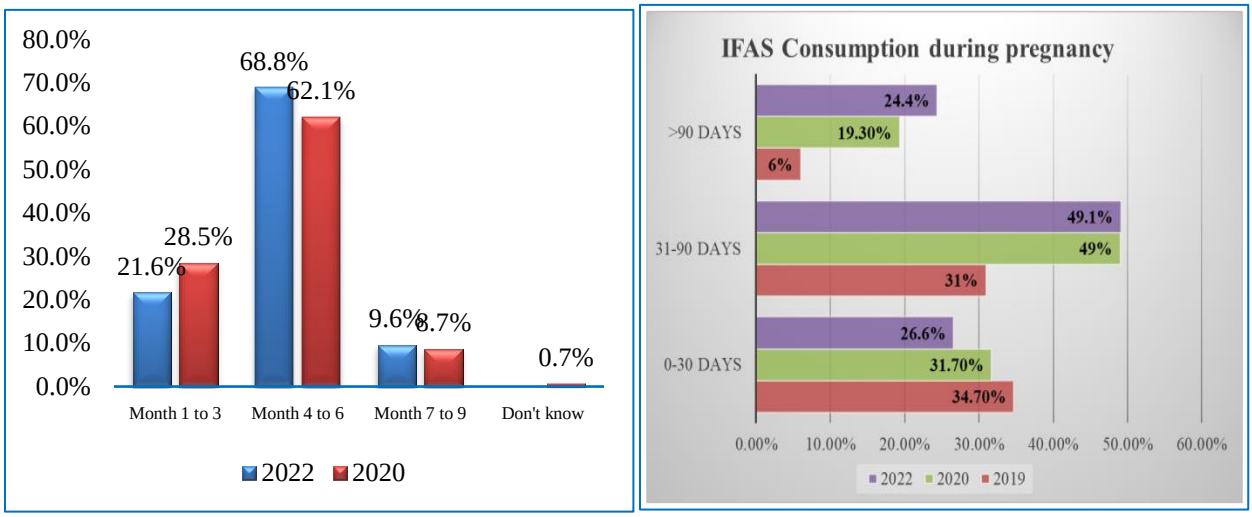


Figure 3.18: 1st ANC attendance and consumption period of iron folic acid supplementation

3.5.4 Individual Dietary Diversity – WRA

There is decline in number of women consuming more than 5 food groups observed between 2020 (76%) and 2022 (26.1%). This is evident from observation of the food groups consumed by women with less than 50% of the women consuming other food groups, except at 92.7% starchy and pulses at 66.3% as illustrated in *Figure 3.19*.

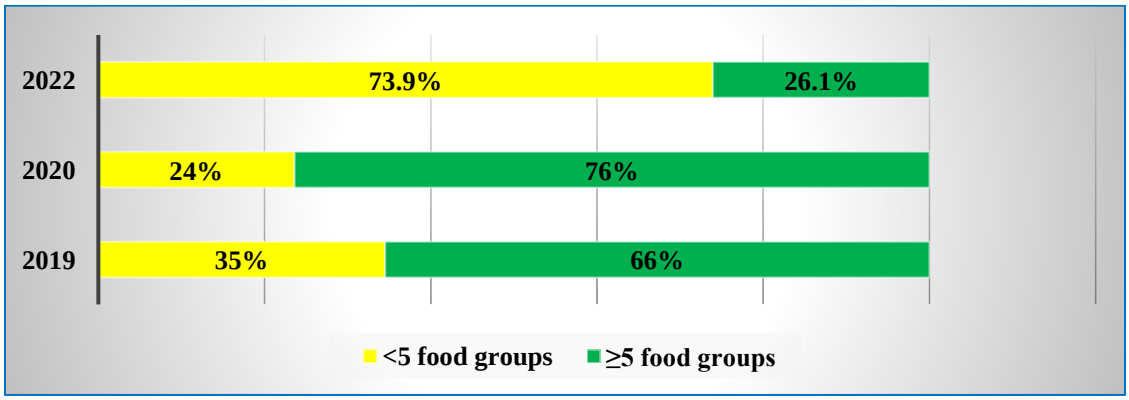


Figure 3.19: Individual dietary diversity- Women of reproductive age

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 92.7% and pulses at 66.3%) with less than 50% of women of reproductive age consuming other food groups as illustrated in *Figure 3.20.*

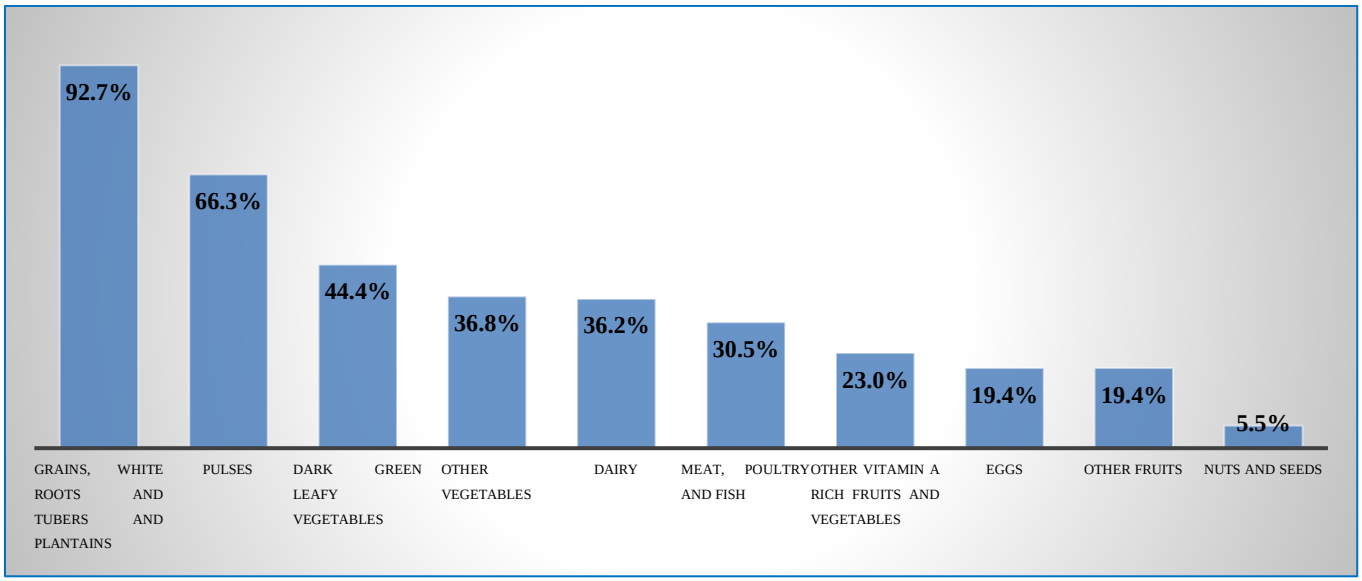


Figure 3.20: Women dietary diversity based on 24-hour recall

3.6 Water sanitation and hygiene

Access to water is considered a human right by the international. On 28 July 2010, through Resolution 64/292, the United Nations General Assembly explicitly recognized the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realization of all human rights. Everyone is entitled to water that is

- **Sufficient**. The water supply for each person must be sufficient and continuous for personal and domestic uses. These uses ordinarily include drinking, personal sanitation, washing of clothes, food preparation, personal and household hygiene.
- **Safe**. The water required for each personal or domestic use must be safe, therefore free from micro-organisms, chemical substances and radiological hazards that constitute a threat to a person's health.
- **Acceptable**. Water should be of an acceptable colour, odour and taste for each personal or domestic use.
- **Physically accessible**. Everyone has the right to a water and sanitation service that is physically accessible within, or in the immediate vicinity of the household, educational institution, workplace or health institution. According to WHO, the water source has to be within 1,000 metres of the home and collection time should not exceed 30 minutes.
- **Affordable.** Water, and water facilities and services, must be affordable for all.

Hygiene and Sanitation is a critical element in disease prevention. Access to water is crucial for ensuring optimal sanitation and hygiene practices. Diarrhea, the leading killer of young children is

closely linked to poor/inadequate WASH, which often causes under nutrition, which in turn reduces a child's resistance to subsequent infections, thus creating a vicious circle. Poor access to water may impact the nutrition status indirectly by necessitating walking long distances/ long queuing time, diverting a caregiver's time away from child care. Below are the survey findings on WASH.

3.6.1 Main sources of drinking water

The survey findings indicated that (51.3%) of the sample (n=600) consume water from piped water system. This was an increase from 38.9% in 2020. A small proportion (0.2%) depend on water bowser / water trucking for their water supply as illustrated in *Figure 3.21*.

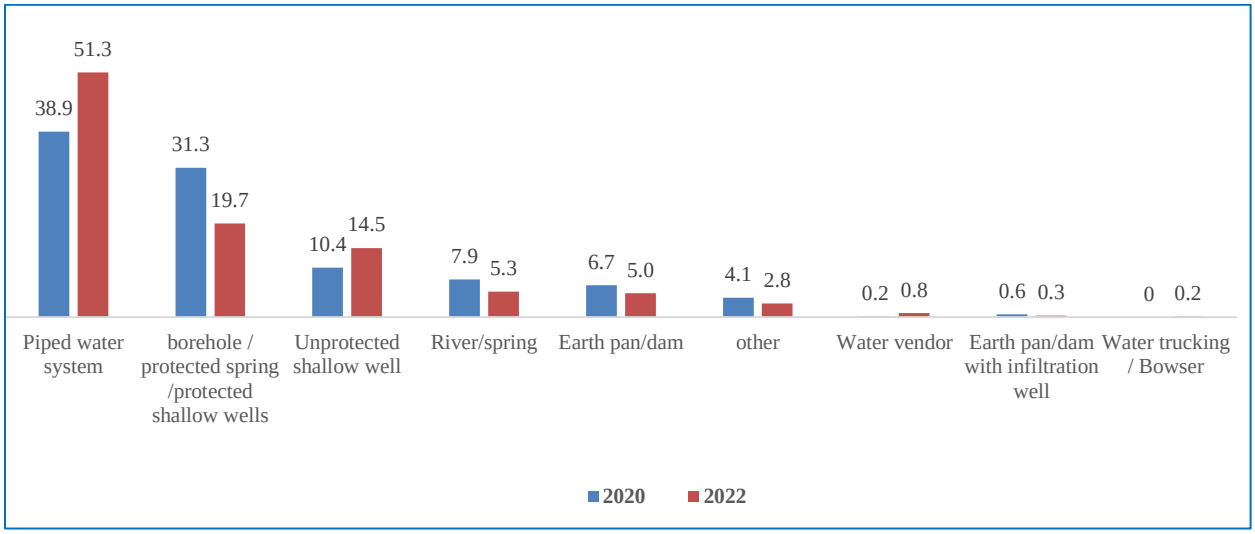


Figure 3.21: Main sources of drinking water

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. Majority of the sampled households (69.5%) are walking less than 500m to fetch water which is a slight decrease from 75.2% in 2020 as illustrated in *Figure 3.22*. 5.8% of the sample reported to be trekking 3kms and above (More than 2hours) to their water sources. This can be attributed to dried wells and frequent break down of boreholes.

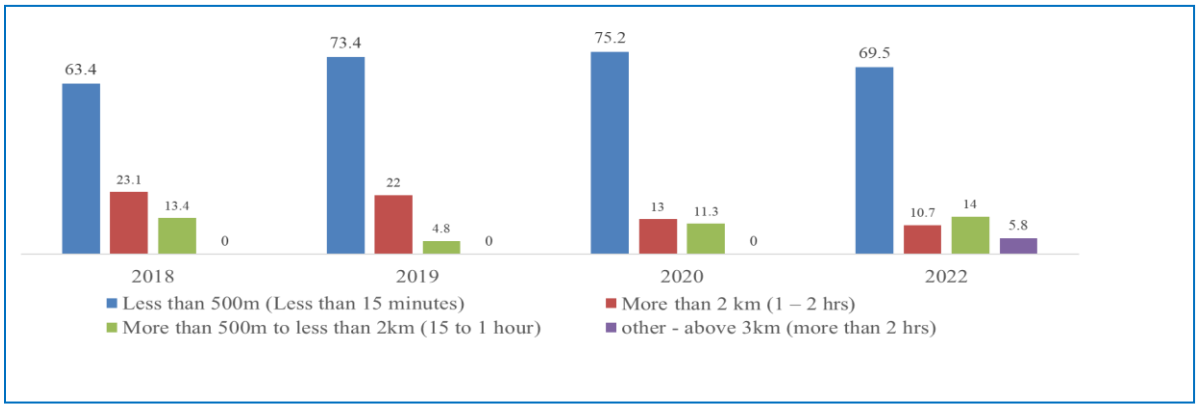


Figure 3.22: Trekking distances to water sources

3.6.3 Queuing at water sources

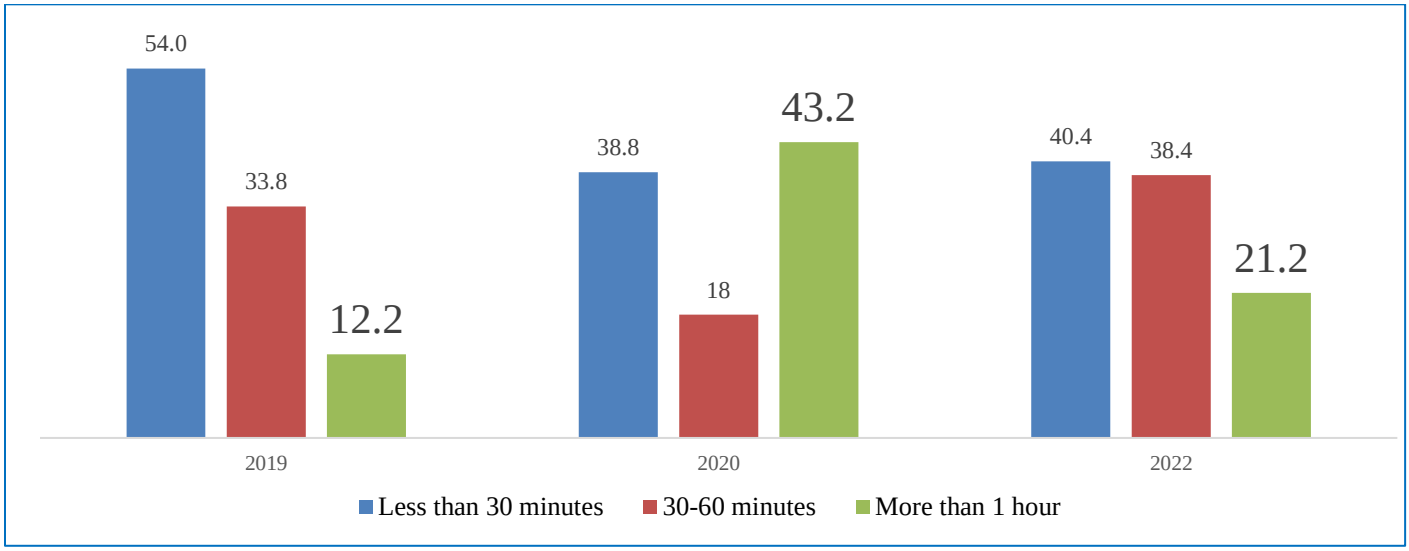


Figure 3.23: Queuing period at water sources

The minimum standards in water, hygiene and sanitation recommend that the minimum queuing time at a water source should be no more than 15 minutes. The survey findings indicate that majority of the sampled households (40.4% queue for less than 30minutes and 38.4%, for up to 1hr.) This was an increase from 38.8% and 18% respectively in 2020 as illustrated in *Figure 3.23*. 21.2% reported to queue for more than 1 hour, which could be attributed to scarcity of water during the prolonged drought.

3.6.4 Water storage

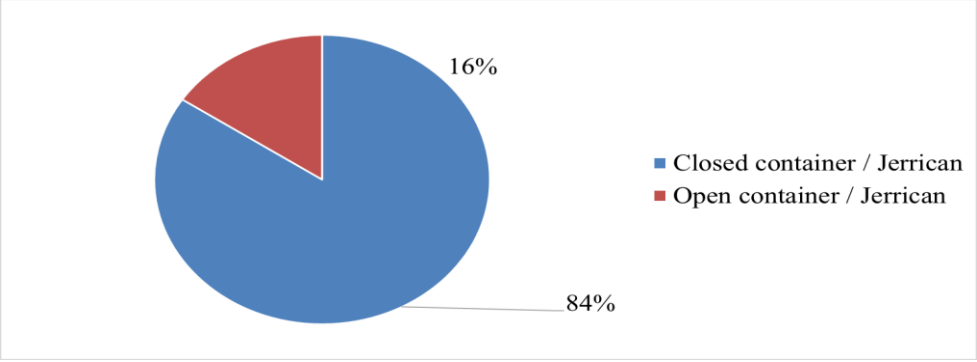


Figure 3.24: Forms of Water storage

There is risk of waterborne infectious diseases associated with inadequately stored water as compared to water stored in an improved vessel (closed container). Higher levels of microbial contamination and decreased microbial quality are associated with storage vessels having wide openings (e.g. buckets and pots), vulnerability to introduction of hands, cups and dippers that can carry contaminants. The findings indicated that 84% of households reported to be storing water in closed containers attributed to various hygiene promotion interventions in the county (*Figure 3.24*).

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 consumption was 11l/person/day which is below the minimum standards. This is a reduction from 18l/person/day in 2020 and can be attributed to water scarcity during the drought.

3.6.6 Waste disposal

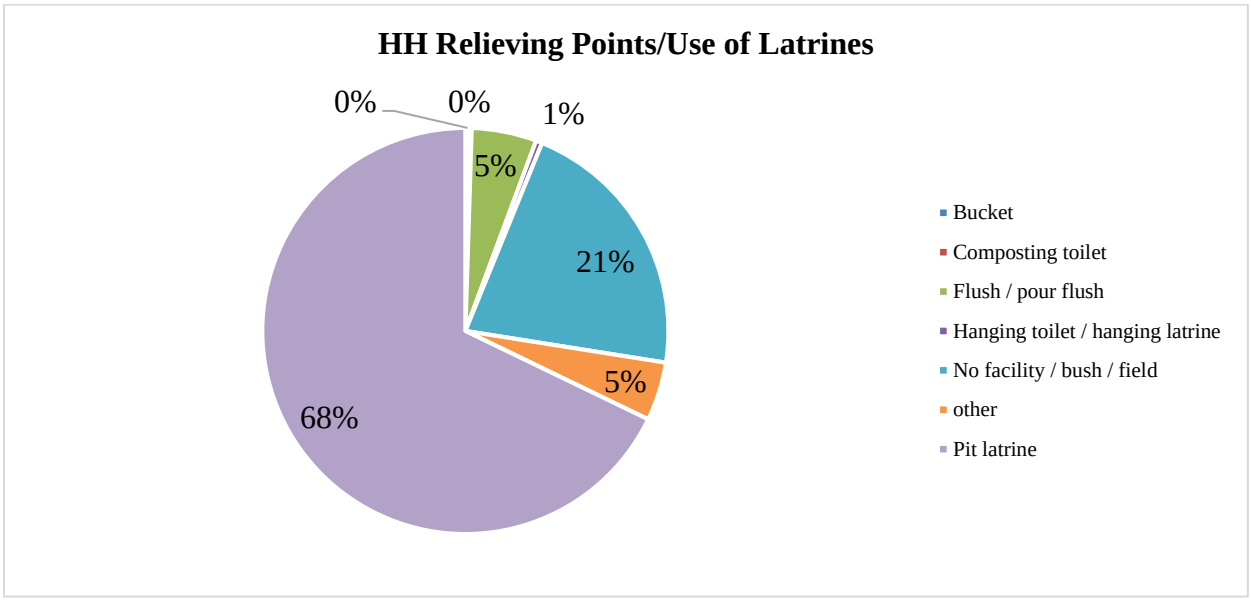


Figure 3.25: Points of waste disposal

Basic sanitation services should include safely managing excreta, which could be done through sewers or transportation and treatment at off-sites. Poor management of excreta is linked to transmission of diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid and polio. A large proportion of the sampled household (68%) reported to be using pit latrines as illustrated in *Figure 3.25*. There was also a notable reduction in proportion of households practicing open defecation from 24.4% in 2020 to 21% in 2022, which can be attributed to continued WASH messaging on use of latrines. During the survey period, there was no reported destruction of toilets due to floods as compared to 2020 where some areas e.g. Iresaboru, experienced flooding that destroyed latrines.

3.6.7 Hand washing practices

Handwashing with soap is one of the most effective and inexpensive interventions for preventing diarrheal diseases and pneumonia, which together account for 3.5 million child deaths annually worldwide, (Cairncross& Valdmanis, 2006). Handwashing facilities should be positioned in a way that handwashing happens before touching food (eating, preparing food or feeding a child) and after contact with excreta (after using the toilet or cleaning a child's bottom). The survey findings indicate that 96% of sampled households are aware of handwashing practices as illustrated in *Figure 3.26*. This could be attributed to increased WASH messaging at the community especially during COVID-19 prevention measures that included handwashing.

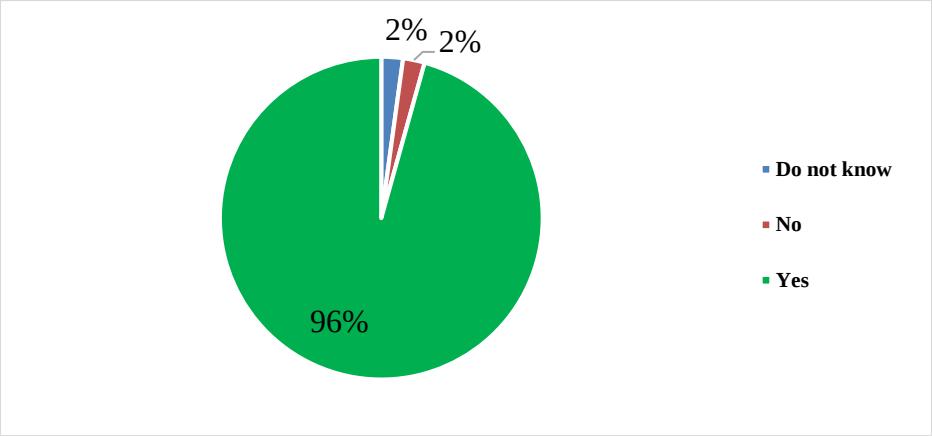


Figure 3.26: Hand washing practices

The findings also show that 42.8% of respondents practice handwashing at 4 critical times, an increase from 27.6% 2020. There is notable increase in handwashing practices from the previous years, across three critical times, with a slight decrease from 90.4 to 88.5% in the practice of handwashing after visiting the toilet. The increase was attributed to continued WASH sensitization and interventions at the household level.

3.6.8 Water treatment methods

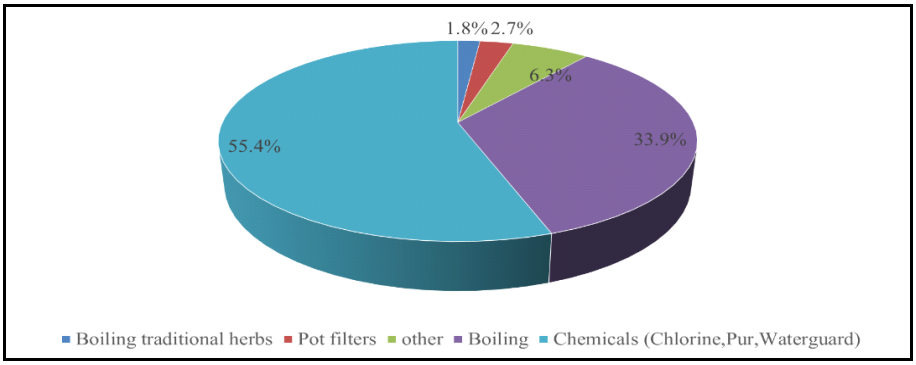


Figure 3.27: Water treatment methods

The survey findings indicated a notable decrease in the number of HHs treating water from 27.2% in 2020 to 17.2% in 2022. Of the 17.2% of households reported to be treating water before drinking 55.4% were using treatment chemicals as illustrated in *Figure 3.27*.

3.7 Food security and livelihood

3.7.1 Food security Information

Food security exists 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. A person is considered nutrition secure when she or he has a nutritionally adequate diet and the food consumed is biologically utilized such that adequate performance is maintained in growth,

resisting or recovering from disease, pregnancy, lactation and physical work. 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 is defined as the number of unique foods consumed by household members over a given period. The household dietary diversity was assessed based on 24-hour recall. Household dietary diversity increased with households consuming more than 5 food groups increasing from 39.2% in 2020 to 55.1% in 2022 as illustrated in *Figure 3.28*. This can be attributed to ongoing cash and voucher assistance programs in the County cushioning the households from the effects of the ongoing drought.

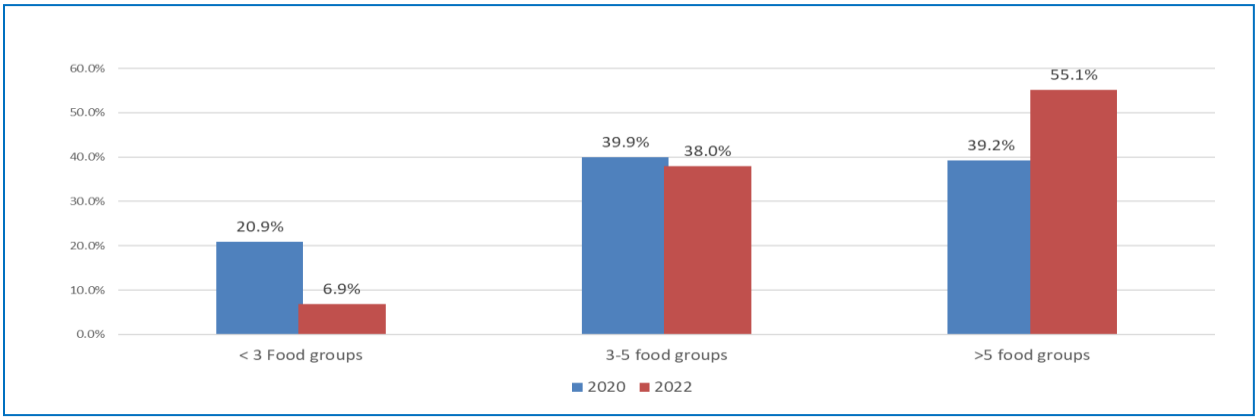


Figure3.28: Household Dietary diversity based on 24 hour Recall

Iron and Vitamin A rich foods were the least consumed at 2.3 and 3.5 days respectively as indicated in the *Figure 3.29* below. This was attributed to inaccessibility of these foods during the drought period.

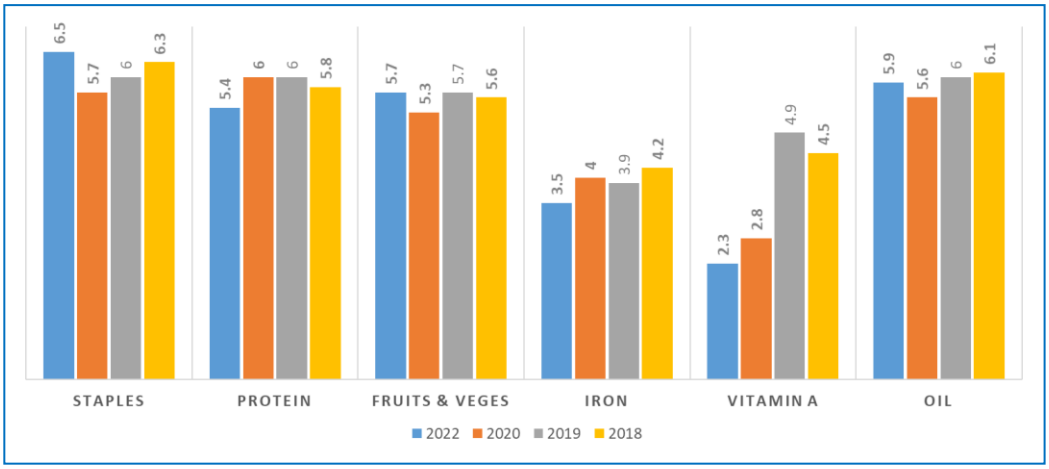


Figure 3.29: Average days foods are consumed showing consumption of micronutrients

3.7.3 Micronutrient consumption for household dietary diversity

Vitamin A and iron rich foods are the least consumed in the County with 46.2% of the households reporting not to have consumed vitamin A rich foods and 54.6% of the households consuming iron

rich foods for less than 5 days as indicated in the *Figure 3.30* below. This was attributed to inaccessibility of these foods during the drought period.

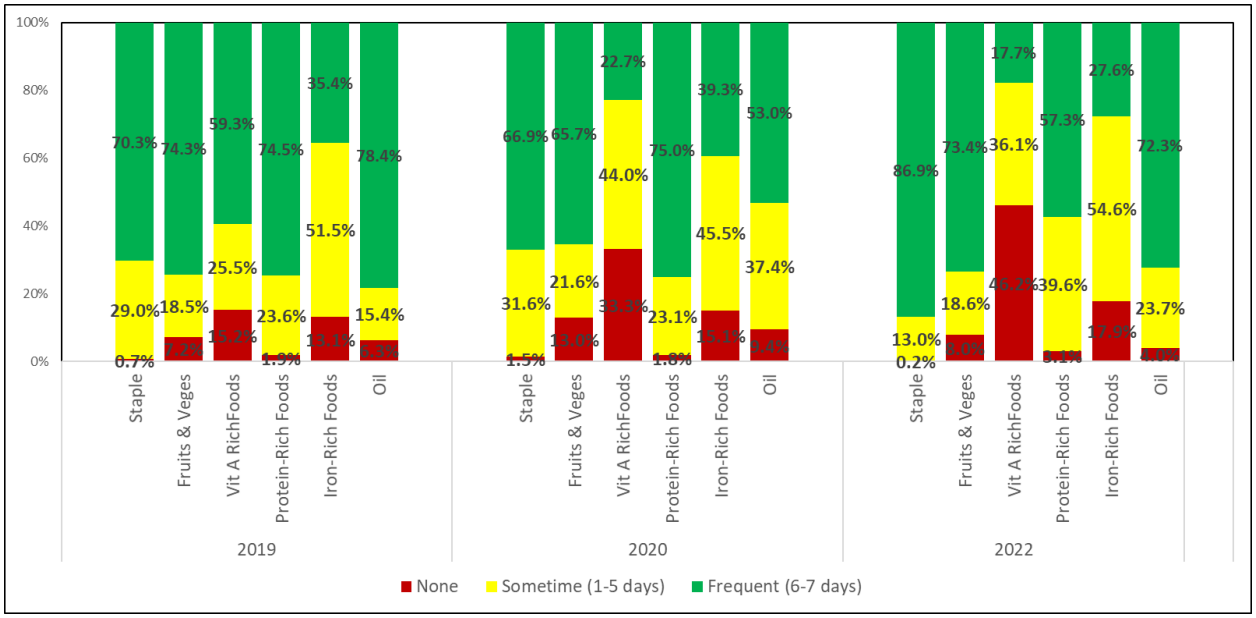


Figure 3.30: Micronutrient consumption for household dietary diversity

3.7.4 Food Consumption Score

Food Consumption Score (FCS) combines frequency of food intake and relative importance of each food. Proportion of households within acceptable food consumption score decreased from 85.1% in 2020 to 78.3% in 2022 as illustrated in *Figure 3.31*. This is can be attributed to household food insecurity due to failed rains for three consecutive seasons. This has led to declining accessibility and availability of basic food stuffs across the livelihoods in Isiolo County.

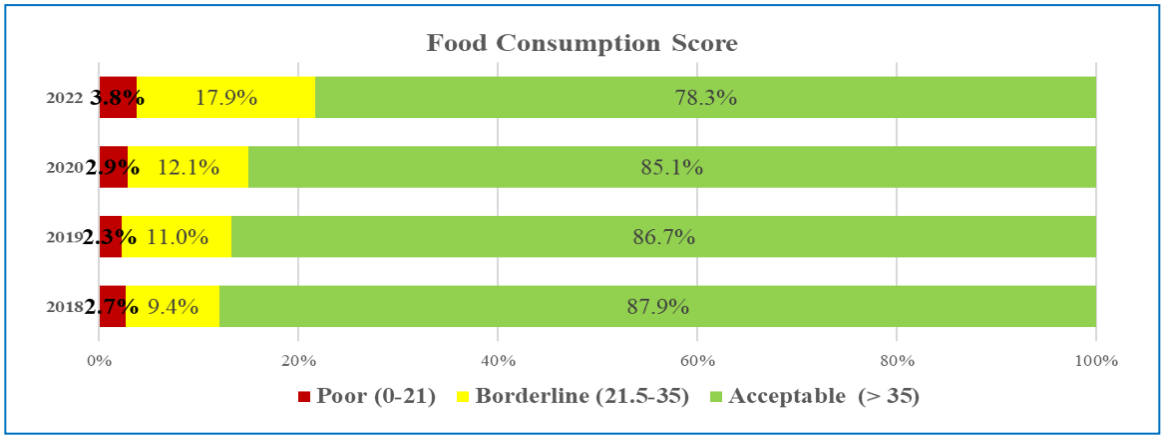


Figure 3.31: Food consumption score

3.7.5 Coping Strategy Index

Coping Strategy Index (CSI) measures behaviors: the things that people do when they cannot access enough food. The survey indicated that **42.2%** of the household interviewed experienced

food insecurity in seven days preceding the survey. Coping strategy index increased from 11.18 in 2020 to 12.65 in 2022 indicating a worsening food security situation at the household level as illustrated in *Table 17*.

Table 17: *Isiolo County coping strategy index (CSI)*

Coping Strategy	Mean	Severity score	Weighted Score			
			2018	2019	2020	2022
Rely on less preferred and less expensive foods	2.28	1	3.09	2.8	1.68	2.28
Borrow food, or rely on help from a friend or relative	1.29	2	3.16	3.8	2.54	2.58
Limit portion size at mealtimes	1.95	1	2.77	2.3	1.57	1.95
Restrict consumption by adults in order for small children to eat	1.21	3	5.73	6.6	3.66	3.63
Reduce number of meals eaten in a day	2.21	1	3.02	3.1	1.73	2.21
Total weighted coping strategy score			17.8	18.7	11.18	12.65

3.7.6 Reduced coping strategy index (r-CSI)

Households reduced coping strategy index also worsened with households with high CSI(=>10) increasing from 25.1% in 2020 to 27.5% in 2022 indicating that more households are employing severe coping mechanisms as indicated in the *Table18*.

Table 18: *Reduced coping strategy index category*

rCSI category	n	Percent
None	348	58.0%
Low CSI (1-3)	14	2.3%

Medium CSI (4-9)	73	12.2%
High CSI (=>10)	165	27.5%
Total	**600**	**100.0%**

3.7.7 Food fortification

Food fortification is addition of vitamins and minerals, in commonly consumed staple foods to make the food a superior source of these micronutrients. Compared to other interventions, food fortification is assumed to be more cost-effective. It is also considered a more sustainable intervention because it can reach wider populations without changes in existing consumption patterns. If fortified foods are regularly consumed in sufficient quantities, it has the advantage of maintaining steady body stores of the micronutrients. 25.2% (n=151) of the respondents reported to be aware of food fortification in the County. The main source of information about fortification was radio representing (56.3%) as illustrated in *Figure 3.32*.

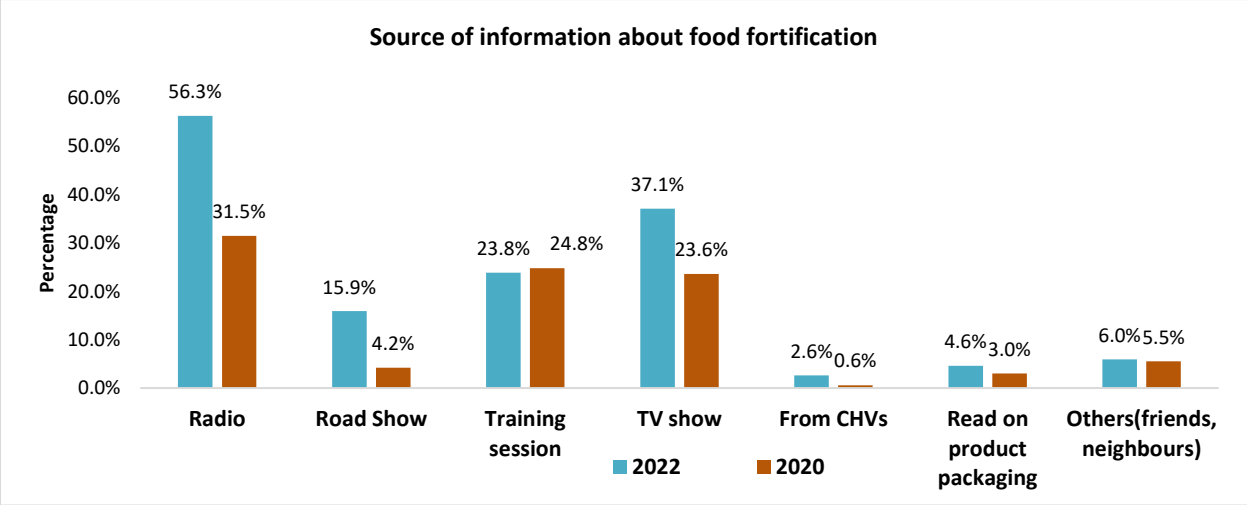


Figure 3.32: Source of information on food fortification

4.0 CONCLUSION

The nutrition Status of children in Isiolo County worsened compared to the outcome of a SMART survey conducted in the same season in 2020. 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 17.8% and 1.7% respectively with no significant difference with p value of **0.663** (GAM) compared to global acute malnutrition prevalence of 16.7% in 2020.

There was an increase in the number of children under-five reported to have fallen sick within two weeks recall period from 36.9% in 2020 to 43.2% in 2022. A Slightly higher number of children sought help from public health facilities in 2022 at 76.7% compared to 72.9% in 2020. Acute

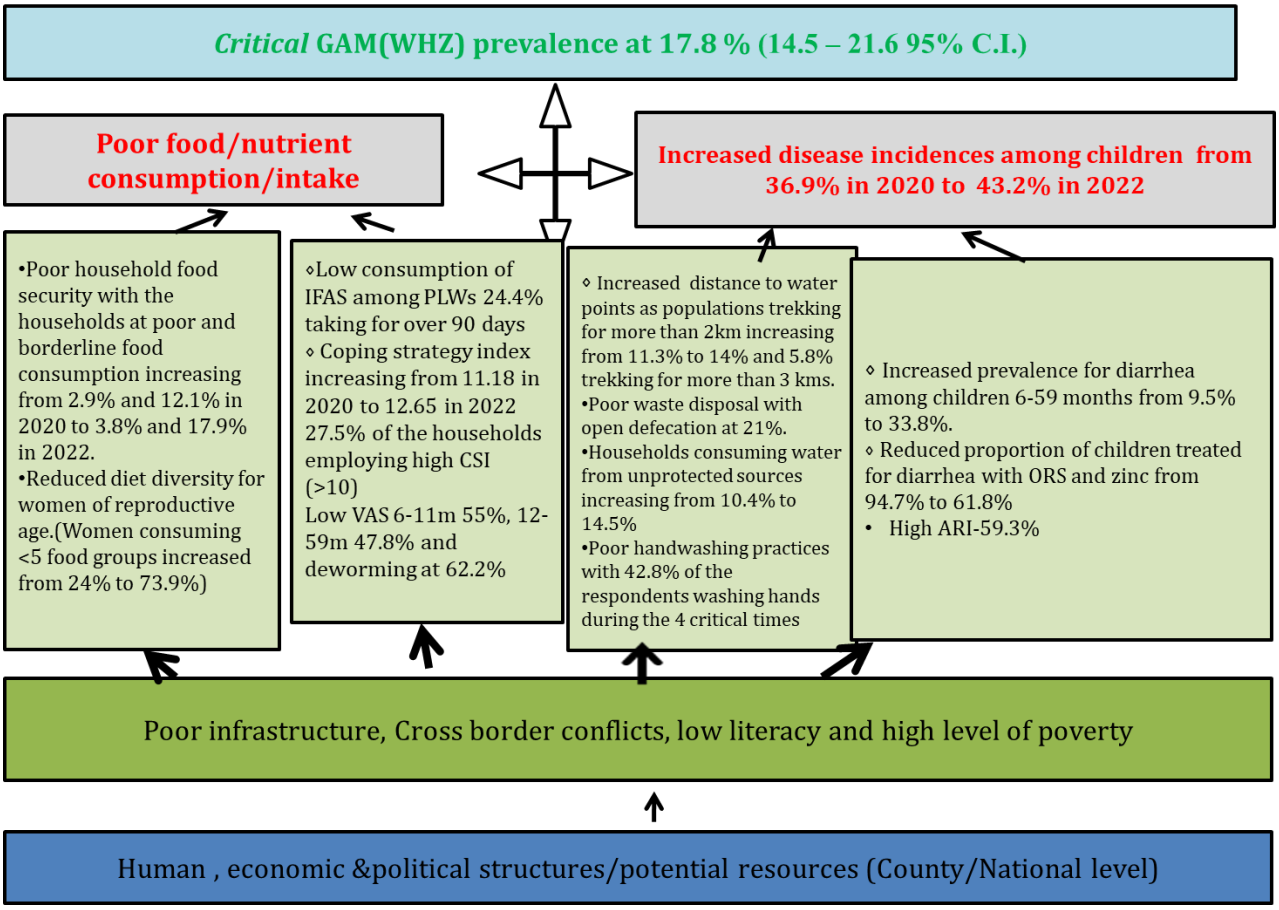
respiratory tract infections and watery diarrhea were the main morbidity at 59.3% and 33.8% respectively with notable upsurge diarrhea in 2022 compared to 9.5% in 2020. Among the diarrhea cases reported 61.8% were reported to have been treated with ORS and Zinc a decrease from 94.7% in 2020. There was also a notable improvement in Vitamin A Supplementation among children 6-59 months and deworming among children 12 to 59 months more than once from 37.3% and 23.8% in 2020 to 47.8% and 62.2% in 2022 respectively. The increased morbidity among under fives specifically prevalence of watery diarrhea illnesses, poor household dietary diversity and food consumption can be linked with increased wasting in Isiolo County. The increased number of diarrhea cases can be attributed to consumption of dirty water from the unprotected water sources during the drought period. It is also attributed to inadequate water treatment chemicals in the affected wards like Cherab, Sericho, Garbatula and Kinna wards. Flooding during the short rain in season in Iresaboru, Gafarsa, Muchuro, Kombola and Badana led to the communities drinking unsafe water leading to increased diarrhea cases.

Maternal nutrition status based on MUAC measurement among all women of reproductive age also showed an improvement with those having MUAC of <21cm at 4.6% respectively in 2022, an improvement from 5.4% in 2020. 24.4% of mothers of children under-two years consumed iron and folic acid supplements for more than ninety days in 2022, an increase from 19.3% in 2020.

There was a notable improvement in household dietary diversity with the proportion of households consuming more than 5 food groups increasing from 39.2% in 2020 to 55.1% in 2022. Iron and Vitamin A rich foods were the least consumed at 2.3 and 3.5 days respectively to owing to inaccessibility of these foods during the drought period. The county Food Consumption Score, which combines frequency of food intake and relative importance of each food, indicated a worsening food security situation with 78.3% of the Households at acceptable levels in 2022 compared to 85.1% in 2020.

In conclusion it can be noted that the key drivers of poor nutrition status in Isiolo County include; Chronic food insecurity, High prevalence of childhood illness, Inadequate dietary diversity, Poor access to safe water, Poor hygiene and sanitation practices, and Inadequate basic structures (incomes and assets for the households). Below are the conclusions based on UNICEF's conceptual framework for malnutrition.

CONCLUSION


Critical GAM(WHZ) prevalence at 17.8 % (14.5 – 21.6 95% C.I.)
Poor food/nutrient consumption/intake
Increased disease incidences among children from 36.9% in 2020 to 43.2% in 2022
•Poor household food security with the households at poor and borderline food consumption increasing from 2.9% and 12.1% in 2020 to 3.8% and 17.9% in 2022.
•Reduced diet diversity for women of reproductive age.(Women consuming <5 food groups increased from 24% to 73.9%)
◊Low consumption of IFAS among PLWs 24.4% taking for over 90 days
◊ Coping strategy index increasing from 11.18 in 2020 to 12.65 in 2022
27.5% of the households employing high CSI (>10)
Low VAS 6-11m 55%, 12-59m 47.8% and deworming at 62.2%
◊ Increased distance to water points as populations trekking for more than 2km increasing from 11.3% to 14% and 5.8% trekking for more than 3 kms.
•Poor waste disposal with open defecation at 21%.
•Households consuming water from unprotected sources increasing from 10.4% to 14.5%
•Poor handwashing practices with 42.8% of the respondents washing hands during the 4 critical times
◊ Increased prevalence for diarrhea among children 6-59 months from 9.5% to 33.8%.
◊ Reduced proportion of children treated for diarrhea with ORS and zinc from 94.7% to 61.8%
• High ARI-59.3%
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 17.8%	-Exhaustive mass screening and active case finding and ensure treatment on site eg team carrying commodities -Improve coverage of integrated medical outreaches to ensure population in hard to reach areas get nutrition services -Increase coverage of IMAM surge -Upscale on Implementation of Family MUAC approach to all community units to enhance early detection and referrals and ensure monitoring of caregivers making referrals -Activate response coordination forum -Blanket supplementary feeding -Capacity building of caregivers on good nutrition /balance diet -Increase the number of IMAM implementing facilities ;Kombola, Yaqbarsadi in Garbatulla sub-county and Gotu, Labarsheik in Isiolo sub-county -Train newly recruited health workers on IMAM and nutrition commodity management and reporting to avoid stock outs.	-Enhance food security at household level by empowering communities on agri-nutrition -Routine mass screening by CHVs to ensure malnourished child get to be admitted into program -Hiring of more nutrition officers -Capacity building of existing nutrition staff and Community health volunteers on BFCI/CBFCI/IMAM surge/Family MUAC/IMAM -Capacity building of caregivers/Mothers on good nutrition /healthy diets -Conduct regular nutrition technical forum at county and sub county levels -Develop and operationalize the common result framework through multi-sectoral platform. -Advocacy on increased budget allocation to nutrition especially for procurement of nutrition commodities (RUTF and RUSF). -Conduct nutrition financial tracking to establish allocation and utilization of nutrition funds in the County.	MOH, ACF, KRCS, WFP, UNICEF, WeWorld, NAWIRI, CESVI, WVI, FAO NDMA/Agriculture /livestock/ Water/education sectors

	-Conduct routine OJTs and supervisions on IMAM		
Low Vitamin A Supplementation (47.8%) and deworming coverage (62.2%).	-Conduct DQA to establish gaps on VAS and deworming data -Conduct review meetings and RDQA for IFAS, VAS, deworming. -Conduct review meetings to strengthen implementation of IMAM services -Follow up health facilities to ensure that vitamin A supplementation data is routinely reported. -Conduct health education at health facilities and community level on the importance of vitamin A supplementation and deworming.	-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 by the CHVs.	MOH/All the partners
Low IFAS utilization for >90 days at 24.4%%	-Sustained health education at the health facilities, outreach sites and community dialogues on consumption of iron folate during pregnancy.	-Foster male involvement as means of reaching women on IFAS consumption. -Develop social behavior messages targeting the community on IFAS -Reach women in mother to mother support groups and other women groups with key IFAS messaging -Roll out BFCI in more community units	MOH/All the partners
SECTOR:WATER, HYGIENE AND SANITATION			

A notable increase of children with watery diarrhoea from **9.5%** in 2020 to **33.8%** in 2022. **61.8%(N=42)** of watery diarrhea cases were reported to have been treated with Zinc, a decline from **94.7%** in the previous survey conducted in 2020	-Enhance Hygiene promotion at house level CHVs during routine visit -Procurement and distribution of water treatment chemicals to community during outreaches and routine household visits by CHVs and demonstration on how to use them -Restocking of Zinc supplement at the facility level. -Conduct WASH sensitization meetings with different stakeholders at all levels -Promote water treatment at household level	-Enhance accessibility of clean safe drinking water by sinking borehole -Solarisation and piping of water to communities to reduce the distance -Create awareness on water harvesting technique during rainy season -Ensure water sources are well protected to ensure safety of water for human consumption -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 -Repair of broken boreholes -Sensitize community on use of safe water sources -Sensitize community on water harvesting technique	MoH, UNICEF, ACF, KRCS, CRS, We World, Dept of water, NDMA
Slight increase in proportion of households trekking for more than 2 km from 11.3% to 14%. A notable 5.8% of community members are walking distances of above 3km.	-Emergency support to repair of broken boreholes through the County Rapid Response -Increase water access points to unserved areas -Rehabilitation of broken water systems -Improve accessibility of safe drinking water during this drought period through water trucking.	-Design assessments and Rehabilitation of water systems. -Water supply extensions to unserved areas -Development of new water sources and distribution, construction of water points and connection to households	County water department, UNICEF, ACF, KRCS, CRS, We World, Dept of water, NDMA

Proportion of people queuing for 30 to 60 minutes increased from 18% to 38.4%	-Construction of temporary water access points	-Development of new water sources and distribution, construction of water points and connection to households -Design assessments of existing water systems -Water demand analysis vs water availability -Development of new water sources and distribution, construction of water points e.g water kiosks and connection to households	County water department, UNICEF, ACF, KRCS, CRS, We World, CESVI, Dept of water, NDMA
84% of households reported to be storing water in closed containers attributed to various hygiene promotion interventions in the county	-Increase hygiene awareness campaigns. -Support households to practice safe water storage.		County water department, UNICEF, ACF, KRCS, CRS, We World, CESVI, Dept of water, NDMA
There is a notable increase in the number of HHs treating water from 73%.7 in 2020 to 84% in 2022. Of the 84% of households reported to be treating water before drinking 55.4% were using treatment chemicals.	-Procurement and distribution of water treatment chemicals -Increase awareness on household water treatment	-Undertaking regular water quality analysis and monitoring -Installation of water treatment systems -Develop water safety planning strategies -Implement Water safety planning approaches	County water department, UNICEF, ACF, KRCS, CRS, We World, CESVI, Dept of water, NDMA

Per capita water consumption in Isiolo was 11 l/person/day, which is below the minimum standards of 15l/person/day, and a reduction from 18l/person/day in 2020.	-Emergency support to repair of broken boreholes through the County Rapid Response -Increase water access points to unserved areas -Rehabilitation of broken water systems -Improve accessibility of safe drinking water during this drought period through water trucking.	-Development of new water sources and distribution, construction of water points and connection to households -Design assessments of existing water systems -Water demand analysis vs water availability assessments	County water department, UNICEF, ACF, KRCS, CRS, We World, CESVI, Dept of water, NDMA
21% of households practicing open defecation	-Increase hygiene and sanitation promotion activities at the community -Scale-up CLTS	-Mapping of villages to establish their OD status -Implementation of sanitation road map -Implement CLTS approach -Implement Sanitation marketing approaches -Promote and implement PPP models in sanitation -Support implementation of CHS -Support development of sanitation bill	County water department, UNICEF, ACF, KRCS, CRS, We World, CESVI, Dept of water, NDMA
96% of households are aware of handwashing practices.	-Continue with handwashing and hygiene messaging	-Increase hygiene promotion activities -Increase water availability and access at HH level -Promote CLTS	
There is a notable decrease in the number of HHs treating water from 27.2% in 2020 to 17.2% in 2022. Of the 17.2% of households reported to be treating water	-Supply and distribute HH water treatment chemicals -Hygiene promotion through HH water treatment	-Implement water safety planning -Water quality analysis, regular monitoring -Installation of water treatment systems	

before drinking 55.4% were using treatment chemicals.			
SECTOR: FOOD SECURITY			
55.1% of the households consuming more than 5 food groups.	-Upscale cash and voucher assistance to vulnerable drought affected households. -Upscale and Support agri-nutrition (nutrition sensitive agriculture and food system) capacity development and integration initiatives -Upscale and Promote value chain approach for sustainable food system -Upscale and support agri-nutrition business development -Enhance food production, preparation preservation and consumption demonstration and advocacy on food diversity and frequency -Enhance provision of quality & quantity farm inputs for optimum diversified food production -Scale up cBFCI in households with children 0-23 months.	-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 -Lobby for more funds from National County governments and development partners towards sustainable food system	County department of agriculture, health, National Government projects(DRSLP,KCSAP, NVSAP) and partners (WFP, NAWIRI ,ACF, DRIC, Action Aid, CESVI,FAO,ADS, KCIC, LMS)

Proportion of households within acceptable food consumption score decreased from 85.1% in 2020 to 78.3% in 2022.	-Promote adoption of climate resilient land and water management technologies to improve smallholder food production. -Promotion of 4K clubs in schools -Promote climate resilient vegetable production technologies for agropastoral households -Economic empowerment of women, youth and PLWD through income generating activities and group savings & also to enhance purchasing power of nutrient dense food -Enhance adoption/uptake of technology -Training on food safety(observing withdrawal periods of pesticides, antibiotics &dewormers e.t.c	-Collaboration with Public and Private sectors on managing climate change effects -Support the platforms for Climate Smart Agriculture(CSA) stakeholders to collaborate and participate in developing and implementing policies and strategies that promote CSA -Lobby for more funds from National, County governments and development partners towards sustainable food system & expansion of irrigation schemes) -Provision of crop insurance	C.G.I, National Government(DRSLP,KCSAP, NVSAP) and partners (WFP, NAWIRI, WE WORLD,DRIC, Action Aid, CESVI,FAO,ADS, KICC)

6.0 Annex

6.0.1 Anthropometric data plausibility report

Overall Isiolo
SMART survey_Anth

6.0.2 Standardization test report

Standardization
test report_Isiolo.xls

6.0.3 Sampled clusters and reserve clusters

Clusters Isiolo
Smart 2022.xls

6.0.4 Survey team composition and roles

TEAMS	ENUMERATORS	PHONE	TEAM LEADER
1	Lilian Karimi Abdi Ali	0708715116 0728621606	Junius Mutegi 0723857835
2	Leila Mohamed Aden Kiya	0729718345 0704536484	Hussein Ture 072076395
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4	Dansoye Bonaya Ibrahim Bante	0712982116 0729940722	Abdulahi Kuno 0728300329
5.	Winne Makena Peter Moika	0706762334 0726882342	Daniel Leruk 0720791525
6	Hawo Buba Mohamed Aden Dida	0729996737 0727021105	Erick Mujira 0707747312
7	Asili Jattan Dida Diba	0727174267 0799647401	Derrick Munene 0722604413
8.	Molu Galogalo Ian	0727021105	Florence Gitonga 0724024689
9.	Overall technical & administrative support – Kevin Mutegi & Lucy Kinyua (NITWG representatives), Sharon Kirera (UNICEF), Dr.Kiluva Steven (MOH –Isiolo), Sylvia Odera & Benjamin Nyaonga(Concern Worldwide), Gerald Mwangi, Dancliff Mbura(Action Against Hunger),		

6.0.5 SMART survey questionnaire & back-up forms

SMART questionnaire Tool

Standardization Test Form.docx

Anthropometric back-up questionna

Cluster control form (1).docx

Calendar of Events SMART_ survey_ Jan