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TANA RIVER COUNTY SMART SURVEY REPORT

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FEBRUARY 1, 2024  
MINISTRY OF HEALTH

## ACKNOWLEDGEMENT

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Tana River County SMART survey was made successful through the contribution of a number of partners. The County appreciates the immense support accorded by partners at different levels in making this year's SMART survey a success. These partners include; UNICEF, KRCS, WHH, ACF and World vision Kenya.

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LIST OF ABBREVIATIONS

ARI	Acute Respiratory Infection
FAO	Food And Agriculture Organization
BCG	Bacillus Chalmette Guerin
CIDP	County Integrated Development Plan
CLTS	Community Led Total Sanitation
CSG	County Steering Group
CHS	Community Health Strategy
CHMT	County Health Management Team
CSI	Coping Strategy Index
ENA	Emergency Nutrition Assessment
GAM	Global Acute Malnutrition
IPC	Integrated Phase Classification
KEPI	Kenya Expanded Program On Immunization
MNPs	Micro-nutrients Powders
MUAC	Mid Upper Arm Circumference
NDMA	National Drought Management Authority
ODK	Open Data Kit
OPV	Oral Polio Vaccine
PLW	Pregnant And Lactating Women
SAM	Severe Acute Malnutrition
SBCC	Social Behaviour Change And Communication
SMART	Standardized Monitoring Assessment On Relief And Transition
SPSS	Statistical Package For Social Sciences
UNICEF	United Nation Children Fund
WASH	Water Hygiene And Sanitation
WHO	World Health Organization.
CNC	County Nutrition Coordinator
NSO	Nutrition Support Officer

IPs	Implementing Partners
MDD	Minimum Dietary Diversity
MMF	Minimum Meals Frequency
EFF	Egg And/or Flesh Food
MAD	Minimum Acceptable Diet
ISSF	Introduction Of Solid & Semi-Solid Foods
SwB	Sweet Foods & Beverage
ZVF	Zero Vegetable Or Fruit Consumption 6–23 Months
CBF	Continued Breast Feeding 12–23 Months
UFC	Consumption Of Unhealthy Food 6–23 Months

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### Introduction

Tana River County, situated in the Kenyan Coastal region, is divided into five sub-counties: Bangale, Galyedertu, Galole, Tana Delta, and Tana North. The county encompasses three primary livelihood zones: pastoral, marginal mixed farming, and mixed farming. In February 2024, the County Department of Health, with support from UNICEF and other implementing partners (Kenya Red Cross, ACF, WHH and World Vision), conducted a Nutrition SMART survey across the entire county. The survey's main objective was to assess malnutrition prevalence among children aged 6 to 59 months, pregnant and breastfeeding mothers. Specifically, it aimed to determine the nutritional status of children, women of reproductive age (15-49 years), immunization coverage (measles, OPV1/3, and Vitamin A supplementation), deworming coverage for children aged 12 to 59 months, prevalence of common illnesses, WASH, maternal and child health care practices, water and sanitation hygiene practices, complementary feeding among 6 - 23 months, and the prevailing food security situation in the county.

### Methodology

The survey was cross sectional and descriptive by design. Standardized Monitoring and Assessment of Relief and Transition methodology was adopted in the study. The study applied quantitative approach. Two stage sampling was used in the survey. The first stage involved random selection of clusters from the sampling frame based on probability proportion to population size (PPS)<sup>1</sup>. Emergency Nutrition Assessment (ENA) for Standardized Monitoring for Assessment of Relief and Transition (SMART) January 2020 was used in calculating the sample size. Household was used as the sampling unit in the second stage sampling or basic sampling Unit.

The survey sample size of 822 households and 609 children under five years was obtained using ENA software. Based on logistical factors (time taken to arrive from the clusters, introductions, sampling, inter household movement, lunch and time back to the base), it was possible for each team to visit 17 households per cluster per day translating to a minimum of 49 clusters. Simple random sampling was used in household selection. Survey teams developed sampling frame in each of the village sampled during the second stage sampling where the list never existed or was missing with guidance from the village head (guide).

Standard SMART questionnaire in Open Data Kit (ODK) collect installed in android phones was used in data collection. Anthropometric data processing was done using ENA software version 2020 (January). All the other quantitative data were analyzed in Ms. Excel and the SPSS (Version 20) computer package. Survey findings were populated and reported both in power point and narrative for review and validation by National Nutrition information technical working group. The table 1 below is a summary of all assessed indicators, the table also compared the current and the previous survey data conducted on February 2023.

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<sup>1</sup> In this method villages with more population are likely to be selected as compared to those with low population

**Table 1: Summary of Findings**

Index	Indicators	February 2023	N 2024	n 2024	February 2024
6-59-month Malnutrition status	Global Acute Malnutrition (GAM) Weight for height Z-Score < -2 z and/or oedema	(127) 13.8 % (11.5 – 16.6 95% C.I.)	905	124	(124) 13.7 % (11.0 - 16.9 95% C.I.)
	Severe Acute Malnutrition Weight for height Z-Score < -3 z and/or oedema	(22) 2.2 % (1.2 - 3.8 95% C.I.)	905	17	(17) 1.9 % (1.1 - 3.0 95% C.I.)
	Stunting Height for age Z-Score < -2 z-score	(200) 22.1 % (18.7 - 26.0 95% C.I.)	883	163	(163) 18.5 % (14.4 - 23.4 95% C.I.)
	Underweight Weight for age Z-Score < -2 z-score	(203) 22.3 % (18.8 – 25.9 95% C.I.)	900	186	(186) 20.7 % (17.6 - 24.1 95% C.I.)
	Global Acute Malnutrition MUAC <125 mm or oedema	(47) 5.1 % (3.8 - 6.9 95% C.I.)	905	39	(39) 4.3 % (3.0 - 6.1 95% C.I.)
	Severe Acute Malnutrition MUAC <115 mm or oedema (<115mm)	(6) 0.7 % (0.2 - 1.8 95% C.I.)	905	7	(7) 0.8 % (0.4 - 1.5 95% C.I.)
Maternal Malnutrition	Pregnant and lactating mothers (MUAC<21cm)	2.9%	350	2	0.6%
	Women (WRA)- MUAC<21cm	3.1%	661	16	2.4%
FeFo supplementation	Pregnant mothers supplemented with FeFe	96.4%	269	260	96.7%
	Duration of FeFo consumption - < 90 days	61.6%	260	142	54.6%
	Duration of FeFo consumption - 90-180 days	34.0%	260	100	38.5%
	Duration of FeFo consumption - >180 days	4.4%	260	18	6.9%
Childhood Immunizations	BCG vaccination 6-59 months; scar	96.3%	912	903	99.0%
	Measles 1 (9m) vaccination by Card	61.7%	859	611	71.1%
	Measles 1 (9m) vaccination by Card and recall	90.7%	859	802	93.3%
	Measles 2 (18m) vaccination by Card	49.1%	707	443	62.7%
	Measles 2 (18m) vaccination Card and recall	77.7%	707	624	77.7%
	OPV1 By Card and recall	96.3%	912	905	99.2%
	OPV3 By Card and recall	95.3%	912	895	98.1%
	Vit. A 6-11 months Once By Card and recall	62.8%	113	86	76.1%

Index	Indicators	February 2023	N 2024	n 2024	February 2024
	Vit. A 12-59 months Once By Card and recall	97.6%	810	779	96.2%
	Vit. A 12-59 months At least twice By Card and recall	40.2%	810	554	68.4%
de-worming	De-worming 12-59 months Once By Card and recall	68.7%	810	523	64.6%
	De-worming 12-59 months At least twice	25.0%	810	254	31.4%
Childhood Morbidity	Ill-ed in the last 2 weeks (children 6-59 months)	40.1%	912	336	40.1%
	Fever with chill like malaria	27.5%	912	218	23.9%
	ARI/Cough	41.5%	912	192	21.1%
	Watery diarrhoea	22.5%	912	100	11.0%
	Bloody diarrhoea	0.8%	912	3	0.3%
	Others	7.7%	912	60	6.6%
	Therapeutic Zinc Supplementation	51.9%	100	40	40.0%
	Caregiver sought assistance-when child sick	81.0%	336	309	84.4%
	Caregiver sought assistance from appropriate places of health service delivery	91.4%	309	273	86.6%
WASH	HH drinking water from improved water sources	65.4%	830	444	53.5%
	Distance of Less than 500m to water source	76.3%	830	444	53.5%
	Distance of 500-2Km to water source	19.9%	830	323	39.7%
	Distance of more than 2Km to water source	3.8%	830	55	6.8%
	Queuing time of Less than 30 minutes	70.4%	270	154	57.0%
	Queuing time of 30-60 minutes	19.2%	270	65	24.1%
	Queuing time of More than 1 hour	10.4%	270	51	18.9%

Index	Indicators	February 2023	N 2024	n 2024	February 2024
	Cost of water - Price per 20 litres jerrycan - KES	11	399	230	67.8%
	Cost of water - Price per month - KES	315	399	109	32.2%
	HH consuming $\geq$ 15 Litres per person per day	51.4%	830	387	46.6%
	HH consuming < 15 Litres per person per day	47.5%	830	443	53.4%
	Proportion of Households treating drinking water	37.7%	830	281	33.9%
	Hand washing in all the 4 critical times (HH with U2-Yr)	15.6%	465	113	24.3%
	Hand washing using soap and water	69.72%	830	466	61.4%
	HH practice Open defecation	40.1%	830	279	40.3%
	Neighbour, Shared tradition/improved pit latrine	43.7%	830	462	55.7%
Food Security	Poor Household food consumption score - FCS	2.1%	830	20	2.1%
	Borderline Household food consumption score - FCS	13.3%	830	50	6.1%
	Acceptable Household food consumption score - FCS	84.6%	830	750	91.5%
	Women dietary diversity score < 5 food groups - MDD-W	85.0%	718	652	90.8%
	Women dietary diversity score $\geq$ 5 food groups - MDD-W	15.0%	718	66	9.2%
	Weighted Coping Strategy Index - CSI Score	19.71	693	203	17.0
Complementary feeding practices	Minimum Dietary Diversity (MDD)	ND	300	34	11.3%
	Minimum Meals Frequency (MMF) Children 6-23M	ND	300	140	46.7%
	Egg and/or Flesh Food (EFF)	ND	300	44	14.7%
	Minimum Acceptable diet (MAD)	ND	300	23	7.7%
	Introduction of Solid & Semi-solid Foods (ISSF)	ND	53	45	84.9%

Index	Indicators	February 2023	N 2024	n 2024	February 2024
	Sweet foods & Beverage (SwB)	ND	274	18	6.6%
	ZERO VEGETABLE OR FRUIT CONSUMPTION 6–23 MONTHS (ZVF)	ND	300	87	29.0%
	CONTINOUED BREAST FEEDING 12–23 MONTHS (CBF)	ND	187	142	75.9%
	CONSUMPTION OF UNHEALTHY FOOD 6–23 MONTHS (CBF)	ND	300	21	7.0%
Mortality	Crude death rate (CDR)	ND	ND	ND	ND
	Under-five death rate (U5DR)	ND	ND	ND	ND

1.1 Background Information

Tana River County is located in the Coastal region of Kenya and covers approximately 38,437 km<sup>2</sup> with an estimated population of 315, 943 people (2019 KNBS). It borders Kitui County to the West, Garissa County to the North East, Isiolo County to the North, Lamu County to the South East, Kilifi County and Indian Ocean to the South. The county is divided into 5 sub-counties: Bangale, Galyedertu, Galole, Tana Delta & Tana North sub counties. It has 3 main livelihood zones; Marginal mixed farming (MMF), Mixed farming (MF) and Pastoral and National park as shown in figure 1.

1: Tana River County livelihoods zones

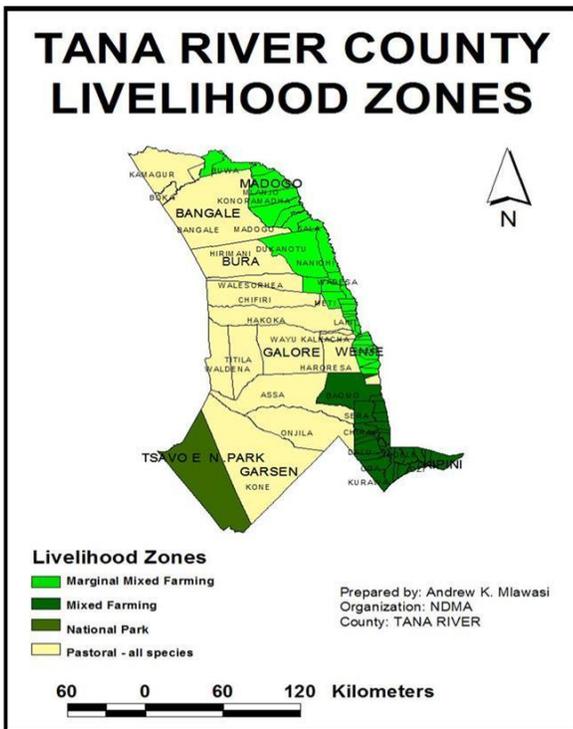


Figure 1: Tana River County livelihoods zones

Generally, the county experiences bimodal rainfall pattern which is mostly erratic with long rains falling between April and June and short rains between October and December.

The pastoral and marginal mixed farming livelihood zones rely on short rains while mixed farming zone rely on long rains. The County is generally hot and dry with temperatures ranging between 21°C and 38°C with the coldest month in July and hottest months in September and January. It experiences two dry spells every year occurring in December to March and July to October.

Most of the County consists of low-lying plains with the highest points being Minjila and Bilbil. The River Tana traverses the County from Tharaka Nithi County in the North to the Indian Ocean in the South passing through Tana Delta and covering a stretch of approximately 500km, situated in the Eastern side of the county, this provides livelihood opportunity to resident population through flood receded crop farming.

1.2 Rationale of the Survey

County drought status was Normal and Stable within all livelihood zones (NDMA EW bulletin Dec 2023). SMART survey conducted in

January 2023 depicted a GAM rate of 13.8% (11.5 - 16.6 95% C.I.) & the SAM rate was at 2.2% (1.2 - 3.8 95% C.I.). Stunting and Underweight was at 22.1% and 22.2% respectively.

The county experienced prolonged drought and shortly before fully recovering from the prolonged drought caused by five consecutive failed rainy seasons between 2021 and 2023, it was adversely affected by enhanced rains tied to Elnino phenomena affecting 28,628 households during OND short rains season, that destroyed their livelihoods and also impacted on the nutritional status of children under five years and pregnant and breastfeeding women. Cholera outbreak was confirmed in December 2023 within Tana Delta sub county. Since confirmation 29 cases have been line listed since index case received on 7<sup>th</sup> December 2023 (Tana River county cholera sitrep 15<sup>th</sup> January 2024).

KHIS data indicated an increasing trend of diarrheal diseases between October and December 2023 with December reporting the highest number

County LRA report 2023 showed that Tana River county was classified in a serious nutrition situation (IPC phase 3) according to IPC for acute malnutrition classification, and projected to remain in the same phase

According to the NDMA Bulletin December 2023, Livestock body conditions ranged from fair to good. However, reported livestock mortalities were as a result of floods. Milk production at household level was relatively normal however household milk consumption was noted to be below normal across all livelihood zones. This is attributed to fair to good forage and pasture conditions. The percentage of children at risk of malnutrition is still above average at 24%. Food prices are high attributed to the ongoing floods which resulted to low supply of most food supplies especially maize

Breastfeeding practices are suboptimal, only 49.6% of infants under 6 months of age are exclusively breastfed according to Tana River county KABP survey, 2018. Child diets are limited in quantity and quality, only 22.5% of children 6 -23 months eat foods from the minimum number of acceptable food groups.

The survey findings will inform on response actions and will be captured into the SRA of January 2024.

### 1.3 Survey Objectives

To determine the prevalence of malnutrition among the children aged 6-59 months old and women of reproductive age (15-49 years) in Tana River County.

### 1.4 Specific Objectives

- To assess current prevalence of acute and chronic malnutrition in children aged 6-59 months.
- To determine the nutritional status of women of reproductive age (15-49 years)
- To determine immunization coverage for measles, OPV1 & 3 and Vitamin A for children aged 6-59 months.
- To determine deworming coverage for children aged 12 - 59 months.
- To determine the prevalence of common illnesses (diarrhoea, measles and ARI).
- To establish the coverage of iron/folic acid supplementation and consumption during pregnancy among lactating women
- To quantitatively assess complementary feeding practices (MMF, MDD, MAD, ZVF, EFF, CBF, SwB, UFC) among children aged 6 -23 months
- To collect information on possible underlying causes of malnutrition such as household food security, water, sanitation, and hygiene practices
- To assess the prevailing situation of household food security in the County.
- To establish recommendations on actions to address identified gaps to support planning, advocacy, decision making and monitoring

### 1.5 Survey Timing

Tana River SMART survey was done in February 2024. According to the County seasonal calendar, this is usually a short dry spell. At this season, communities in the mixed farming livelihood zone have their farm without crop. Pastures depleting to be considered dry season in the pastoral communities.

Table 2: Seasonal Calendar of Tana River County

<ul style="list-style-type: none"> <li>▪ Short rains harvests</li> <li>▪ Short dry spell</li> <li>▪ Reduced milk yields <ul style="list-style-type: none"> <li>▪ Increased HH Food Stocks</li> </ul> </li> <li>▪ Land preparation</li> </ul>		<ul style="list-style-type: none"> <li>▪ Planting/Weeding</li> <li>▪ Long rains</li> <li>▪ High Calving Rate</li> <li>▪ Milk Yields Increase</li> </ul>				<ul style="list-style-type: none"> <li>▪ Long rains harvests</li> <li>▪ A long dry spell</li> <li>▪ Land preparation</li> <li>▪ Increased HH Food Stocks</li> <li>▪ Kidding (Sept)</li> </ul>					<ul style="list-style-type: none"> <li>▪ Short rains</li> <li>▪ Planting/weeding</li> </ul>											
Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sept		Oct		Nov		Dec

## 2 CHAPTER TWO: SURVEY METHODOLOGY

### 2.1 Survey Area

The target geographical area was Tana River County covering all the 5 Sub Counties: Bangale, Galole, Galyedertu and Tana North. The county conducted one survey.

### 2.2 Survey Design

The survey applied a two stage stratified 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.

### 2.3 Study Population

The target population for the survey was children aged 6 – 59 months for the anthropometric component and women of reproductive age between 15 – 49 years for the maternal nutrition component.

### 2.4 Sample Size

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 3: Sample Size Calculation**

Parameter	Value	Rationale/Source
Estimated Prevalence of GAM (%)	13.8%	(11.5 - 16.6 95% C.I). Used the estimated prevalence of the GAM rate from February 2023 Survey since the population was shortly recovering from prolonged drought and got adversely affected and displaced by floods losing their livelihoods and some still in IDP camps. Cholera outbreak recorded within population hosted in the IDP camps
± Desired precision	3.5%	Based on the SMART survey desired precision recommendation of +- 3.5 (if expected prevalence range from 10-15%)
Design Effect	1.5	Based on February 2022 SMART Survey
Children to be included	609	
Average HH Size	5	Based on KNBS 2019
% Children under-5	16.8%	Based on 2019 population census projections
%Non-response Households	2%	Estimated non response based on the current situation (displaced population in camps)
Households to be included	822	Minimum sample size-Households to be surveyed.

## 2.5 Cluster and household selection

### 2.5.1 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.

### 2.5.2 Stage 2 Sampling (Households Selection)

Prior to the survey, a household was defined as 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, with no substitution of households allowed.

For clusters with more than 250HHs, segmentation was used to select one portion of the cluster that was to represent the cluster. This was done using probability proportion to population size (PPS). A segment was randomly selected using simple random sampling. In the selected segment the households will then randomly selected using the simple random sampling strategy

Table 4: VILLAGES (CLUSTERS) AND HOUSEHOLD SELECTION

Parameter	Value (minutes)
Total time per day for field work	630
Travel time to cluster location	90
Duration for initial introduction and selection of household	15
Total duration of breaks	15
Travel time from one household to another	15
Average time in the household	28
<b>Number of HH planned/day/team</b>	<b>17.1</b>

## 2.6 Data Collection

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

Anthropometry (weight, height, edema, MUAC, age, sex) for children aged 6-59 months and MUAC for women of reproductive age.

Vaccination information (OPV1 and 3, measles, BCG, and Vitamin A supplementation).

Incidences of childhood illnesses in the last 2 weeks prior to the survey.

Food security information (Household Dietary Diversity Score, Women dietary Diversity Score, Food consumption Score, Food consumption Score-Nutrition and Coping strategy Index)

Water and sanitation Hygiene (Latrine access and coverage, water treatment and hand washing)

The survey adopted the data collection tools recommended in the nutrition survey guidelines with a few modifications to cater for all the objectives of the survey.

## 2.7 Survey Organisation

**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, in the CSG meeting, 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).

### 2.7.1 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. Eight teams of three persons were selected to include two measurers and a team leader.

### 2.7.2 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 17 households through random number generator application.

### 2.7.3 Piloting:

The data collection forms and questionnaires 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.

### 2.7.4 Team work in the field:

Eight teams each with three members who have experience in data collection were organized/ selected from the survey area with each team consisting of 1 team leader and two enumerators. Maximum supervision of the survey teams was ensured to facilitate quality data. Supervisors included the SCNO, UNICEF and representatives from NITWG who closely supervised the teams throughout the survey. The overall coordination was done by County Nutrition Coordinator. In moving from one randomly selected household to another, a village leader, or a community volunteer, depending on the village and availability guided the teams.

## 2.8 Questionnaire

The survey adopted the data collection tools recommended in the Nutrition Information Working Group.

## 2.9 Data collection.

Data collection took 6 days. Teams administered the standardized questionnaire to the mother or primary caregiver. Each survey team explained the purpose of the survey exercise, issues of confidentiality and thereafter obtained verbal consent before proceeding with the interview. The teams used ODK questionnaire in tablets to record the responses. In addition, the data was uploaded to ONA servers at the end of each day. Subsequently, the anthropometric data was downloaded daily, reviewed/analysed for plausibility and feedback provided to the teams, using daily customized scorecards

## 2.10 Data Analysis and Report Writing

### 2.10.1 Data Analysis:

the data downloading and analysis was done using ENA for SMART, Excel and SPSS Statistical software version Results are presented using the new WHO reference levels.

### 2.10.2 Preliminary Results and Final Report:

Nutrition support Officer from UNICEF and County Nutrition Coordinator presented the findings to CHMT, CSG stakeholders and the Nutrition Information Working Group (NIWG) within two weeks of completion of the survey fieldwork at County and National level.

### 2.10.3 Indicators, Guidelines and Formulas used

in determining Acute Malnutrition Weight for height (WFH) index. This was estimated from a combination of the weight for height (WFH) index values (and/or edema) and by sex based on WHO standards 2006. This index was expressed in WFH indices in Z-scores, according to WHO 2006 reference standards. Z-Score:

- Severe acute malnutrition is defined by WFH < -3 SD and/or existing bilateral edema,
- Moderate acute malnutrition is defined by WFH < -2 SD and >-3 SD and no edema
- Global acute malnutrition is defined by WFH < -2 SD and/or existing bilateral edema.
- Mid upper arm circumference (MUAC) MUAC analysis was also undertaken to determine the nutrition status of sampled children and women of reproductive age (15-49 years). The following MUAC criteria were applied. See table 4 below.

**Table 4: MUAC Reference guide**

<b>MUAC guidelines:</b>	<b>Interpretation</b>
<b>Children 6-59 Months</b>	
MUAC<115mm and /or Bilateral Edema	Severe Acute Malnutrition
MUAC >=115mm and <125mm (no bilateral edema)	Moderate acute Malnutrition
MUAC>=125mm and <135mm(No bilateral Edema)	Risk of Malnutrition
MUAC>135mm (No bilateral Edema)	Adequate Nutritional Status
<b>Women of reproductive age (15-49 Years)</b>	
MUAC >21-23cm	At risk of malnutrition
MUAC <21cm	Maternal Acute Malnutrition

### 2.10.4 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.

### 2.10.5 Ethical consideration

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

### 2.10.6 Quality Assurance

- To ensure data collected was valid and reliable for decision-making, a number of measures were put in place. They included;
- Thorough 4 days training conducted to survey participants, the training dealt on SMART methodology, survey objectives, interviewing techniques and data collection tools.

- During the training exercise, standardization test was done; in addition, piloting of tools was done to ensure all the information was collected with uniformity.
- Conducting a review of data collection tools during training and after the pilot test.
- Ensuring all anthropometric equipment were functional and standardized. On daily basis, each team was required to calibrate the tools.
- All the survey teams were assigned a supervisor during data collection.
- The anthropometric data collected was entered daily on ENA software and plausibility check was run. Any issues noted were communicated to the teams before they proceeded to the field the following day.
- Teams were supervised to ensure all errors were rectified on time. More attention was given to the teams with notable weaknesses.
- Adequate logistical planning beforehand and ensuring the assigned households per clusters were be comfortably survey.
- A WhatsApp group was formed to ensure close monitoring of the teams and easier for communication.
- Close supervision by the CNC, NSO and IPs during data collection period.

#### 2.10.7 Survey Limitation

In Tana Delta sub County, there was issue with insecurity due to terror attacks in Kipini East Ward hence inaccessible. The villages in Kipini East Ward were not included in the sampling frame.

### 3.1. Demographic Information

#### 3.1.1. General Characteristics of Study Population

This section presents the general characteristics of the sampled households. Overall data was collected from 830 households against the minimum sample size of 822 households. Therefore, the survey was able to meet the computed sample size. During logistic planning, and in order to meet the targeted sample size, a total of 49 clusters (villages) were sampled, in each of the clusters, 17 households were sampled. Based on this computation, the survey targeted to reach out to 833 households. In this case 3 households failed to participate in the survey. It can therefore be concluded that the non-response rate was 0.4% compared to 2023 survey where the non-response rate was 0.3%. As illustrated in the table below, the total population reached during the 2024 SMART survey was 4582 persons with an under 5 population of 1021 (22.3%). The total number of children reached was 933 with 487 male (52.2%) and 446 female (47.8%). The average household was 5.5 compared to 2023 SMART Survey where the household size was 5.0.

**Table 5: Results and Discussions**

AGE COHORT	Male AT HOME	Male ALL	Female AT HOME	Female ALL	Total AT HOME	Total ALL
less than 6month	45	45	43	43	88	88
6- 59 month	472	487	440	446	912	933
<b>Less than 5 years</b>	<b>517</b>	<b>532</b>	<b>483</b>	<b>489</b>	<b>1000</b>	<b>1021</b>
5 to less than 18 years	332	878	336	783	668	1661
18 years and above (Adult)	332	877	822	1023	1154	1900
Total	1181	2287	1641	2295	2822	4582
NUMBER OF HH SAMPLED				833		
NUMBER OF HH INTERVIEWED				830	99.6%	
AVERAGE HH SIZE				5.5		

#### 3.1.2. Residency and Marital Status

Almost all respondents of the survey were residents of the Tana River County. Specifically, 94.9% were permanent residents with 4.5% being residents with nomadic status. The proportion of population living at the internally displaced camps is relatively low with only 0.6%. The residency status remains the same compared to the same period in 2023 where 99.9% of the population were residents (either permanent or nomadic). In this year's survey, 99.4% retained the same status.

In terms of marital status, the proportion of married respondents remained high at 84% almost the same as 2023. Equally, the proportion of single, widowed, separated and divorced remained relatively low at 4%, 8%, 2% and 2% respectively. No much-observed changes when compared to 2023 survey as illustrated in the table below.

Table 6: Respondents marital status

Marital Status	n	2024	2023
Married	700	84%	87%
Single	34	4%	3%
Widowed	66	8%	7%
separated	14	2%	2%
Divorced	16	2%	1%

### 3.1.3. Literacy Status

Among the adult members, 65.1% of the population had at least attained the basic level of education compared to 59.1% in the previous survey. At the same time 20.9% had not received any form of education compared to 31.9% in 2023 as illustrated in the figure below

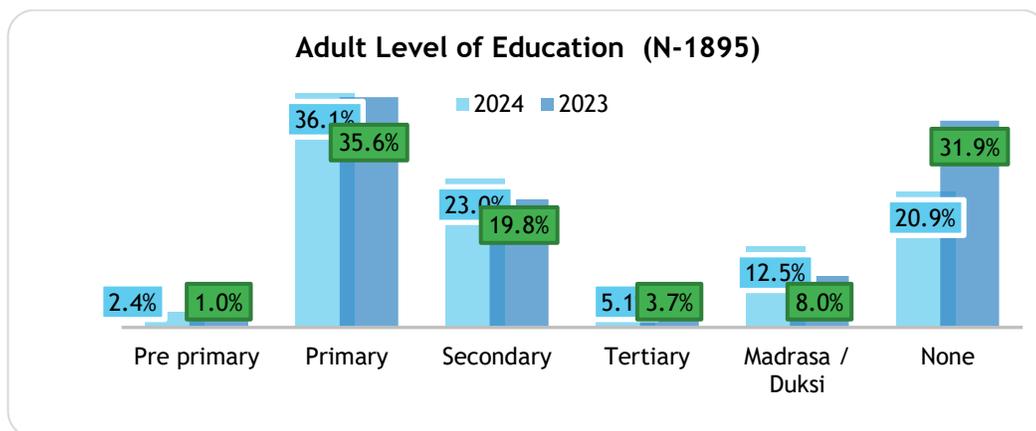


Figure 2: 2023/2024 adult education level comparative analysis

In terms of gender, 14.2% of the female members had no any form of education compared to 6.8% of male members. While 31.3% of the female members had either primary, secondary or tertiary education, 32.9% of male members had attained the same level of education. Nevertheless, there is significant difference in the level of education between male and female members with male members having a higher level of education compared to female members ( $p= 0.000$ ).

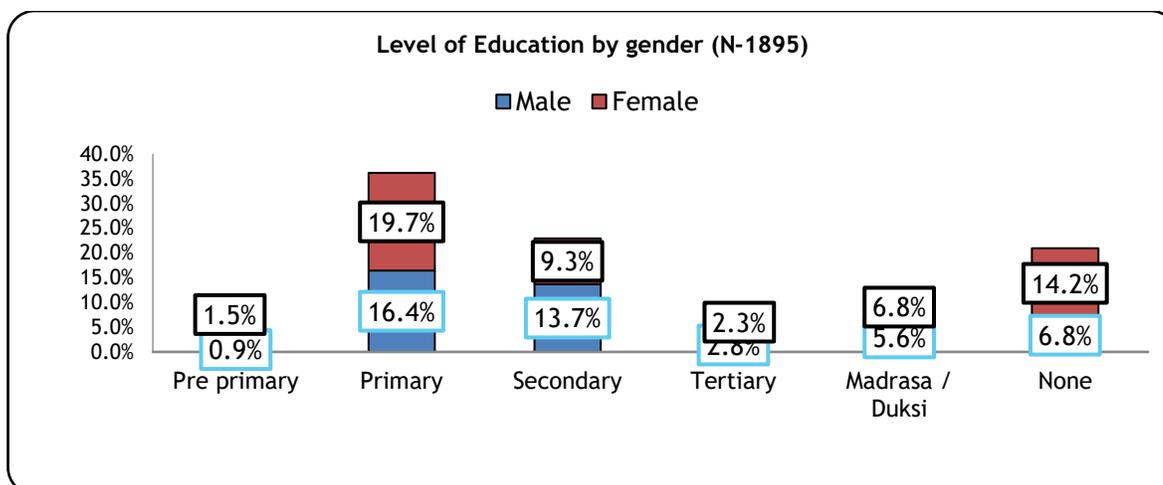


Figure 3: Comparative analysis of gender and education level among the adults

### 3.1.4. Main Occupation and Income Sources

The main occupation of the house head was waged labor (24.6%). Even if the proportion of waged labor has dropped compared to 2023, it was the pre-dominant main occupation among the households based on 2023 SMART survey. Crop farming and livestock herding were the second and third main occupations in 2024. They recorded a marginal increase compared to 2023 survey as illustrated in the table below.

Table 7: Main occupation of the household heads

HH MAIN OCCUPATION	n	2024	2023
Waged labour (Casual)	193	24.6%	28.6%
Livestock herding	172	22.0%	19.5%
Crop farming/Own farm labour	177	22.6%	18.7%
Petty trade	138	17.6%	12.7%
Other	0	0.0%	8.4%
Employed (salaried)	54	6.9%	5.7%
Firewood/charcoal	37	4.7%	5.0%
Merchant/trader	8	1.0%	1.0%
Fishing	4	0.5%	0.5%

In concurrence with main occupation of the household heads, casual labour was the main source of income for 28.1% of the household. This was the largest proportion of the main income sources in Tana River County. However, there was marginal decline among the proportion of households whose main source of income was casual labor compared to 2023 survey when it was 32.4%. The proportion of households relying on petty trading increased from 18.3% in 2023 to 25.4% in 2024. Sale of livestock marginally reduced from 13.6% to 12.0% while sale of crops increased from 12.1% to 13.6% in 2024. Increase in the proportion of households relying on petty trading which include activities such as sale of fire wood could signify worsening of situation when compared to 2023.

CURRENT SOURCE OF INCOME	n	2024	2023
Casual Labor	233	28.1%	32.4%
Petty trading e.g. sale of firewood	211	25.4%	18.3%
Sale of livestock	100	12.0%	13.6%
Sale of crops	113	13.6%	12.1%
Other	0	0.0%	9.5%
Permanent job	48	5.8%	5.1%
No income	37	4.5%	4.3%
Sale of livestock products	72	8.7%	4.0%
Remittance	11	1.3%	0.4%
Sale of personal assets	5	0.6%	0.3%

### 3.1.4. School Enrollment

The current child enrollment among the school going children is 80.4%. This was an improvement compared to the same period in 2023 where the school enrollment was 74.3%. Among those children who were not enrolled in school, the perception by the care-givers that their children were too young to be enrolled in school and lack of school fees or money to meet other costs was the main reason for non-enrollment at 17.7% and 17.2% respectively. The perception by the care-givers that children were too young to be enrolled was the main reason for non-enrollment based on 2023 SMART survey. Nevertheless, there was reduction in the proportion of care-givers with this perception from 43% to 17.7% in 2024. Notably the proportion that stated that they lack fees to meet the school attendance increased from 10.0% to 17.2% in 2024. Children attendance of religious schooling such as duksi or Madrasa was mentioned by 14.5%. This was a reduction from 24% in 2023 while lack of a nearby school was mentioned by 11.8% as illustrated in the table below.

Reason out of school	%_2023	n-2024	%_2024
Too young for school	43%	66	17.7%
lack of fees or money to meet other costs	10%	64	17.2%
Attending Duksi/Madrasa	24%	54	14.5%
No school Near by	11%	44	11.8%
Household doesn't see value of schooling	2%	41	11.0%
Family labour responsibilities	2%	36	9.7%
Others (specify)	3%	27	7.3%
Chronic Sickness	3%	12	3.2%
No food in the schools	0%	9	2.4%
Migrated/ moved from school area	0%	8	2.2%
Working outside home	0%	7	1.9%

Married	1%	3	0.8%
Pregnant / Taking care of her own child	1%	1	0.3%
Teacher absenteeism	0%	0	0.0%
Weather (rain, floods, storms)	0%	0	0.0%
Insecurity / violence	0%	0	0.0%

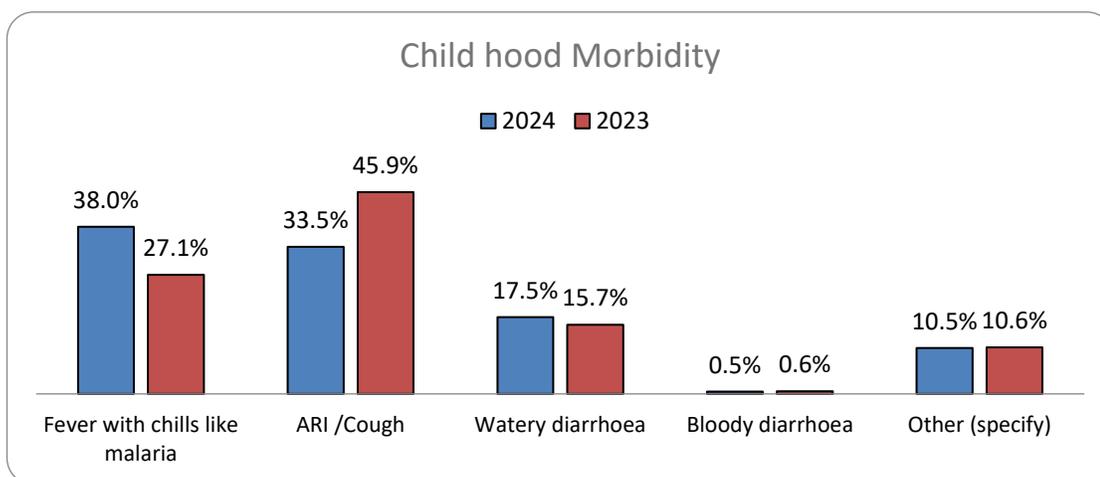
### 3.2. Child Morbidity and Health Seeking Behaviors

Childhood illness (diseases) and inadequate diet are considered among the immediate causes of acute malnutrition according to the UNICEF conceptual framework. There exists a correlation between the two in that disease may alter food intake while inadequate intake of some key nutrients may lead to infection and ultimately leading to malnutrition.

#### 3.2.1. Childhood Morbidity

Child morbidity assessment was done on a recall period of 2 weeks prior to the survey. The caregivers were probed on illness symptoms exhibited by the children. Enumerators noted the illness outlined by the respondent based on some disease definition given. Zinc supplementation was also assessed for children reported to have watery diarrhea.

Analysis revealed that morbidity among children was 40.1% similar to 2023 SMART survey. The leading disease among the children was fever with chills like malaria (38.0%). ARI and cough affected 33.5% with watery diarrhoea affecting 17.5% of the children. Fever with chills like malaria increased from 27.1% to 38.0%. This can be attributed to recent flooding in most parts of the County. There was notable reduction of ARI/cough from 45.9% in 2023 to 33.5% in 2024 as illustrated in the figure below.



**Figure 4: Childhood morbidity.**

Oral zinc administration provides substantial benefit in the reduction of stool output, frequency, and duration, combined with safety, efficacy, and affordability in acute diarrhea. Zinc supplementation is a simple and effective therapeutic intervention in the management of acute diarrhoea<sup>2</sup>. The Ministry of health has provided a guideline that prioritizes use of combined Zinc and

ORS for treatment of diarrhea. Further analysis was done on utilization of Zinc and ORS among children whose care-givers mentioned watery diarrhea as one the diseases that affected the children. As illustrated in the table below, 79% of children with watery diarrhea were supplemented with Zinc while 80% of them were supplemented with ORS. Seventy five percent (75%) were supplemented with both zinc and ORS. This was an increase compared to 2023 where 51.9% of watery diarrhea cases were supplemented with zinc, 45.5% with ORS and 44.2% with both zinc and ORS.

**Table 8: Zinc and ORS supplementation for watery diarrhea cases**

Number N=77	Zinc	ORS	BOTH
n	79	80	75
2024	79%	80%	75%
2023	51.9%	45.5%	44.2%

### 3.2.2. Health Seeking Behavior

Health seeking behavior refers to any action undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy to solve the problem. For this reason, the nature of care seeking is not homogenous depending on cognitive and non-cognitive factors that call for a contextual analysis of care seeking behavior. Context may be a factor of cognition or awareness, sociocultural as well as economic factors.

Among the 40.1% of the children whose caregivers reported as sick, 84.4% of them sought medical attention during the morbidity episodes. This was a marginal increment from 81.1% who sought the same during the 2023 SMART survey. Among those who sought medical services, 86.7% of them sought such services in appropriate sources such as public clinic (69.2%), Private clinic or Pharmacy (15.9%) as illustrated in the table below.

**Table 9: Health seeking places.**

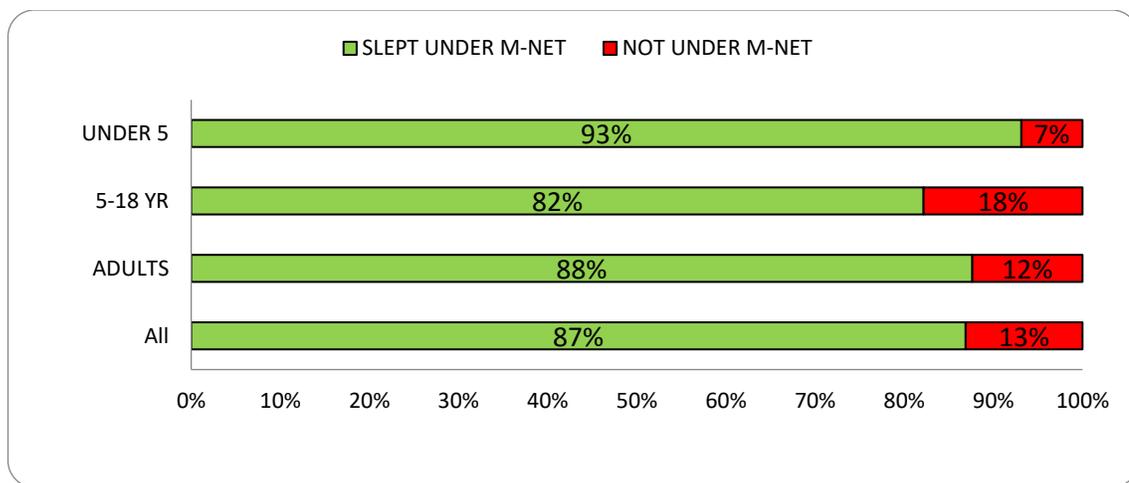
N-309	Traditional healer	Community health worker	Private clinic/ pharmacy	Shop/kiosk	Public clinic	Mobile clinic	Relative or friend	Local herbs	NGO/FBO
n	0	6	49	34	218	5	1	1	1
2024	0.0%	1.9%	15.6%	10.8%	69.2%	1.6%	0.3%	0.3%	0.3%
2023	1.7%	0.3%	14.3%	5.6%	74.4%	2.7%	0.3%	0.7%	0.0%

### 3.3. Utilization of Mosquito nets

In parts of the world where window screens are uncommon or unaffordable, insecticide-treated mosquito nets are increasingly used to protect against mosquito that carry Malaria, Dengue fever, Zika and other Viruses. The nets are cheap and last three to four years. Their cost effectiveness makes them well-suited for widespread distribution in developing countries where

mosquito-borne diseases are a significant threat. In regions with high rates of malaria, nets can reduce transmissions of the disease from mosquitoes to humans by as much as 90 percent.

Out of the household assessed during the 2024, SMART survey, 93.5% owned a mosquito net. This was a marginal increment compared to 2023, when the mosquito net ownership was 92.7%. The utilization of mosquito nets was equally high with 93% of children under 5 sleeping under a mosquito net. Overall 87% of household members slept under a mosquito net as illustrated in the figure below.



**Figure 5: Mosquito nets utilization**

### 3.4. Childhood Immunization, Vitamin A supplementation and Deworming

#### 3.4.1. Childhood Immunization

Kenya Ministry of Health implements a global immunization program targeting children less five years old with an aim of reducing morbidity and mortality due to vaccine preventable diseases. This is in line with the United Nations Sustainable development goal of ensuring healthy lives and promoting well-being for all at all ages by 2030 (SDG 3). This survey assessed the coverage of four (4) vaccines that comprised of BCG, OPV1, OPV3, and measles at 9 and 18 months.

The BCG coverage in Tana River County was almost universal at 99.0%. This was a marginal improvement compared to 2023 survey where the coverage was 96.3% as it was verified by the presence of a scar or immunization card.

The coverage of other antigens was assessed through documentation in health cards as well as care-givers recall. Overall 99.2% of all children had received OPV1<sup>2</sup>. This was a marginal increment when compared to 2023 survey when coverage was 96.3%. As far as OPV3 is concerned, 98.1% of children 6- 59 months had been immunized compared to 95.3% in 2023. In case of

<sup>2</sup> In Kenya infants receive 4 doses of trivalent OPV before one year of age 1st dose is given immediately at birth or within two weeks of birth. This is known as the "birth dose" or "Zero dose" The other 3 doses should be given at 6 (OPV1) 10(OPV2) and 14 weeks (OPV3) of age

measles coverage, 93.4% of children 9- 59 months had received the 1<sup>st</sup> dose of measles vaccination compared to 90.7%. Further 88.3% of children 18- 59 months had received second dose of measles vaccination as illustrated in the table below.

**Table 10: Comparative analysis of childhood immunization (2023/24)**

Antigen	Card	Recall	Not Immunised	Do not Know	Total Immunised
MEASLES 18M 2024	62.7%	25.6%	10.6%	1.1%	88.3%
MEASLES 18M 2023	49.1%	28.7%	20.3%	2.0%	77.7%
MEASLES 9M 2024	71.1%	22.2%	5.9%	0.7%	93.4%
MEASLES 9M 2023	61.7%	29.0%	7.2%	2.1%	90.7%
OPV 1 2024	77.1%	22.1%	0.3%	0.4%	99.2%
OPV 1 2023	68.0%	28.3%	2.4%	1.3%	96.3%
OPV 2 2024	76.4%	21.7%	1.4%	0.4%	98.1%
OPV 2 2023	67.3%	28.0%	3.2%	1.5%	95.3%

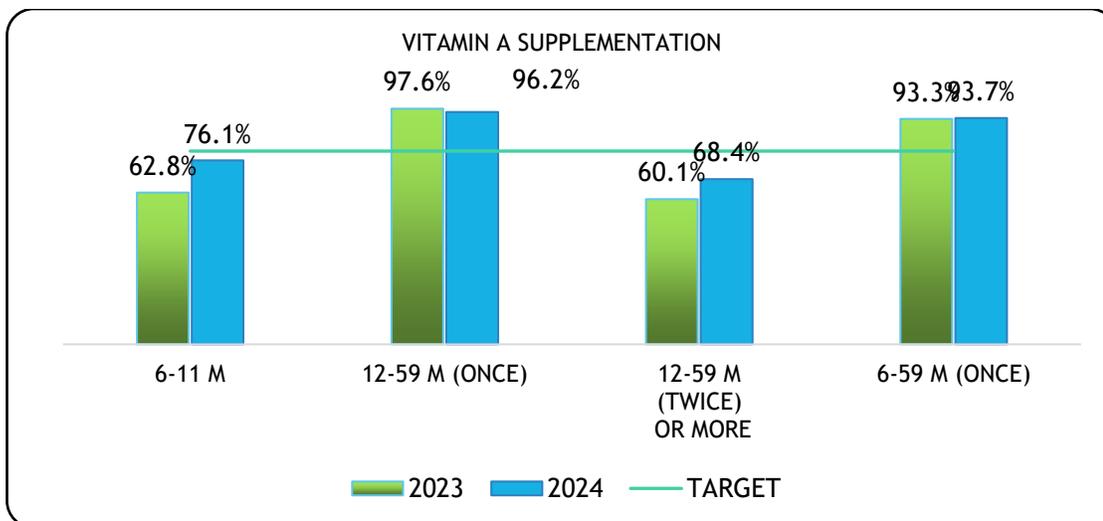
### 3.4.2. Vitamin A Supplementation

Vitamin A supplementation twice annually is a proven cost-effective high impact nutrition intervention for reducing childhood morbidity and mortality<sup>3</sup>. Improving Vitamin A status is associated with 24% reduction in all-cause of mortality, 27% reduction in deaths from diarrhoea, 15% decrease in diarrhoea incidence and a 50% decrease in incidence of measles<sup>4</sup>.VAS is therefore considered a key intervention in reducing the under-five mortality rate (U5MR) hence contributing in achieving Sustainable Development Goals (SDG 3) of ending preventable deaths of new born and under-five children by 2030.

Overall, 93.7% of children 6 to 59 months had been supplemented with vitamin A at least once in the past 12 months prior to the survey. There was no change compared to 2023 where the supplementation was 93.3%. Once supplementation for children 6- 11 months was 76.1% compared to 62.8% in the previous survey while once supplementation for children 12-59 months was 96.2%. Twice supplementation for children 12-59 months was 68.4% compared to 60.1% in 2023 survey as illustrated in the figure below.

<sup>3</sup> UNICEF (2007) Vitamin A Supplementation: A Decade of Progress. [www.unicef.org/publications/files/Vitamin\\_A\\_Supplementation.pdf](http://www.unicef.org/publications/files/Vitamin_A_Supplementation.pdf) (accessed June15, 2015).

<sup>4</sup> Mayo-Wilson, E., Imdad, A., Herzer, K., Yakoob, M., & Bhutta, Z. (2011). Vitamin A supplements for preventing mortality, illness, and blindness in children aged under 5: Systematic review and meta-analysis. *Bmj*, D5094-D5094.



**Figure 6: Vitamin A supplementation for children 6- 59 months**

The main source of vitamin A received was health facilities where 79% of children supplemented received vitamin A from the health facilities. Further, 20% of them received vitamin A from the outreaches. The same trend was witnessed in the previous survey where 69% of children had received vitamin A from the health facilities and 25% had received the same from the outreaches. In regard to the means of verification, 75% of the supplementation was verified through health cards while 25% was verified by recall as illustrated in the table below.

**Table 11: Source and means of verification for vitamin A supplementation**

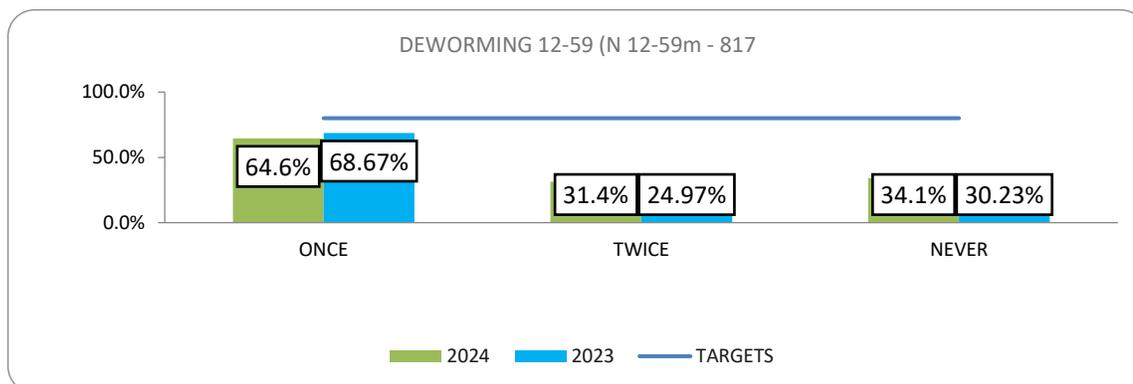
SOURCE OF VITAMIN A SUPPLEMENTATION					
PLACE OF RECEIVE	H. FACILITY	OUT-REACH	OTHER	BY CARD	BY RECAL
FREQUNCY	516	132	8	520	171
2024	79%	20%	1%	75%	25%
2023	69%	25%	6%	76%	24%

### 3.4.3. Deworming

Soil-transmitted worms, including roundworms, hookworms, and whip-worms, are common in tropical and subtropical areas, and particularly affect children in low-income areas where there is inadequate sanitation. Heavy worm infection is associated with malnutrition, poor growth, and anemia in children<sup>5</sup>. According to WHO (2017), preventive chemotherapy to control soil transmitted helminth should administered every 6 months for all children 12 to 59 months. It is according to this recommendation that the assessment of deworming was based. The overall target for deworming coverage is 80%. The once supplementation (meaning that the child received dewormers only once for the last 12 months) was 64.6% this was a marginal

<sup>5</sup> D. Robinson, C. Mayaan and K. Wesier (2015). Deworming drugs for soil-transmitted intestinal worms in children: effects on nutritional indicators, haemoglobin, and school performance

decline compared to 2023 where the supplementation was 68.7%. While 31.4% of children were dewormed twice as recommended, 34.1% had not received dewormers at all in the past one year as illustrated in the figure below.



**Figure 7: Proportion of children dewormed in Tana River County 2024 vs 2023**

### 3.5. Young Children Feeding Practices

#### 3.5.1. Introduction to complementary Feeding

Appropriate complementary feeding is important as far a child nutrition status is concerned. Complementary feeding means the introduction of foods to complement breastmilk or infant formula and should begin at 6 months and should continue until 24 months or beyond (WHO). Complementary foods and beverages and feeding patterns may also affect susceptibility to noncommunicable diseases later in life. Appropriate complementary feeding must be timely, adequate, safe, responsive and properly fed. Timely means, the complementary foods are introduced when energy and nutrient needs exceed that provided by breast milk. Adequate means that they should provide sufficient energy, protein and other essential macronutrients, and micronutrients to meet nutritional needs. Further, complementary foods should be hygienically stored, prepared and fed with clean hands and clean utensils and not bottles and teats. Responsive feeding means that feeding should be consistent with a child’s signals of hunger and satiety. While proper feeding means that meal frequency and feeding method, such as actively encouraging the child, even during illness, to consume sufficient food using fingers, spoon or self-feeding are suitable for their age.

Due to financial and time limitations, this survey only assessed the adequacy and the proper feeding components of complementary feeding. Three indicators were assessed i.e. the Minimum dietary diversity (A measure of adequacy) and Minimum Meal Frequency (a measure of proper feeding). Both indicators generated a combined indicator, the minimum Acceptable diet (MAD)

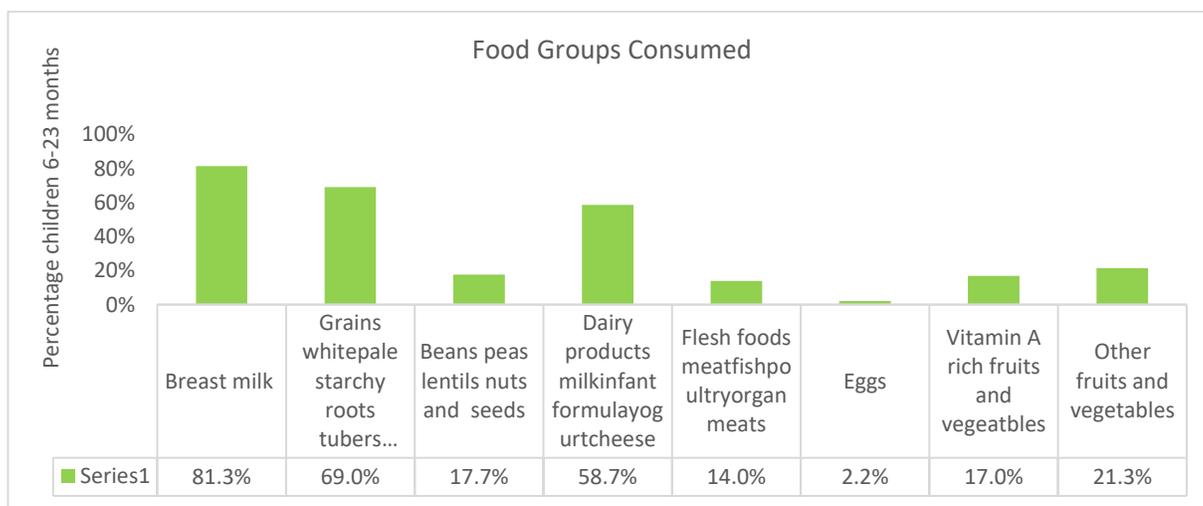
#### 3.5.2. The Dietary Diversity

WHO guiding principles for feeding the breastfed child and non-breastfed child recommend that children aged 6–23 months be fed a variety of foods to ensure that nutrient needs are met. A diet lacking in diversity can increase the risk of micronutrient deficiencies, which may have a damaging effect on children’s physical and cognitive development. Minimum dietary diversity (MDD), is an indicator used to measure if the complementary food meets the diversity to ensure nutrient needs are met. It is

defined as percentage of children 6- 23 months who consumed foods and beverages from five out of 8 defined food groups<sup>6</sup> during the previous day.

Analysis of food groups consumed during the previous day shows that breast milk, grains, roots, tubers and plantains and dairy products were largely consumed by children 6 to 23 months. As illustrated in the figure below, breast milk was consumed by 81.3% of children, Grains, roots, tubers and plantains was consumed by 69.0% of the children while dairy products (milk, infant formula, yogurt, cheese) was consumed by 58.7% of the children. The least consumed food was eggs at 2.2%.

**Overall, 11.3% of the children consumed at least 5 out of 8 food groups and therefore met the minimum dietary diversity.**



**Figure 8: Food groups consumed by children 6- 23 months.**

### 3.5.3. Meal Frequency

WHO guiding principles for feeding the breastfed child recommend that breastfed infants aged 6–8 months be provided complementary foods 2–3 times per day and breastfed children aged 9–23 months be provided complementary foods 3–4 times per day with additional nutritious snacks offered 1–2 times per day. Guiding principles on feeding the non-breastfed child increase that recommendation to 4–5 meals per day for non-breastfed children. Feeding meals/snacks less frequently than recommended can compromise total energy and micronutrient intake, which in turn may cause growth faltering, stunting and micronutrient deficiencies. The minimum meal frequency means percentage of children 6–23 months of age who consumed solid, semi-solid or soft foods (but also including milk feeds for non-breastfed children) at least the minimum number of times during the previous day.

The minimum meal frequency among the breastfed children was 78.7% while the minimum meal frequency among the non-breastfed children was 25.0%. Overall, the Minimum meal frequency was 47.0% as illustrated in the table below.

<sup>6</sup> The 8 food groups include 1. breast milk; 2. grains, roots, tubers and plantains; 3. pulses (beans, peas, lentils), nuts and seeds; 4. dairy products (milk, infant formula, yogurt, cheese); 5. flesh foods (meat, fish, poultry, organ meats); 6. eggs; 7. vitamin-A rich fruits and vegetables; and 8. other fruits and vegetables

**Table 12: Minimum meal Frequency**

	N	n	Percent
Minimum Meal Frequency (breastfed children	244	192	78.7
Minimum Meal Frequency (Non breastfed children	56	14	25.0
Minimum Meal Frequency- All children 6- 23 months	300	140	47.0

### 3.5.4. Minimum Acceptable Diets

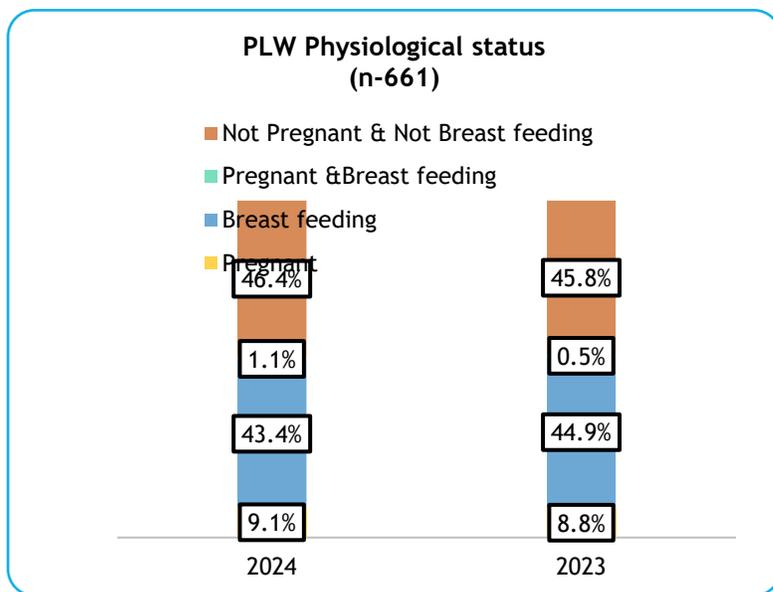
WHO guiding principles on feeding the breastfed child and the non- breastfed child recommend that children aged 6–23 months be fed meals at an appropriate frequency and in a sufficient variety to ensure, respectively, that energy and nutrient needs are met. Minimum Acceptable Diets is a composite indicator for minimum dietary diversity and minimum meal frequency.

**Overall, the minimum acceptable diet among children 6-23 months in Tana River County was 7.7%.**

### 3.6. Maternal Health and Nutrition

#### 3.6.1. Antenatal Care Services

The aim of good antenatal care is to ensure that pregnancy causes no harm to the mother and to keep the fetus healthy during the antenatal period. In addition, the opportunity must be taken to provide health education. These aims can usually be



achieved by following a definite plan as set by MoH or WHO. The main aim of the antenatal care is to prepare women for birth and motherhood as well as manage, check, identify and alleviate the three types of health problems during pregnancy that affect mothers and babies.

A total of 661 women of reproductive age were screened during the survey. Among the women screened, 46.4% were neither lactating nor breastfeeding while 43.4% were breastfeeding and 9.1% were pregnant as illustrated in the table below.

**Figure 9: Physiological status of WRA**

Among the WRA screened, 39.7% admitted that they carried pregnancy in the past 24 months prior to the survey compared to 48.2% in 2023. Among those WRA who indicated that they carried pregnancy in the past 24 months, 98.2% attended antenatal clinics during their pregnancy compared to 92.1% in 2023. Majority of the women (64.2%) who attended the clinics did so in

the second semester as it was the case of the immediate previous survey. Notably more than a quarter of them (26.5%) attended the clinic during their first trimester an increment from 18.2% in 2023 as illustrated in the table below.

**Figure 10: First ANC visit trimester.**

First ANC ATTENDANCE SEMESTER			
	1st Trimester	2nd Trimester	3rd Trimester
N	74	179	26
2024	26.5%	64.2%	9.3%
2023	18.2%	67.4%	14.4%

Among those caregivers who did not attend the ANC, distance to the health facility was the main reason why they failed to attend the clinic

### 3.6.2. Iron and Folic Acid Supplementation

Pregnant women require additional iron and folic acid to meet their own nutritional needs as well as those of the developing fetus. Deficiencies in iron and folic acid during pregnancy can potentially lead to negative impact on the health of the mother, her pregnancy, as well as fetal development. WHO recommends daily consumption of 60mg elemental iron and 0.4mg folic acid throughout the pregnancy<sup>7</sup>. These recommendations have since been adopted by the Kenyan government in its 2013 policy guidelines on iron folic acid supplementation during pregnancy.

Iron folic supplementation was assessed by asking mothers of children below 2 years if they consumed iron folate in their most recent pregnancy. The proportion of women supplemented with iron and folic acid was 96.7%. This was a marginal increment when compared to the 2023 survey where the supplementation 96.1% of women were supplemented with iron and folic acid. Majority (95.6%) of women received iron and folic acid from the public health facilities.

Regarding the iron and folic acid supplements consumption, only 6.9% consumed the supplements between 180 to 270 days compared to 4.4% in 2023 while 38.5% consumed iron and folic acid between 90 and 180 days compared to 34.0% in the immediate previous survey. As illustrated in the table below, 54.6% consumed iron and folic acid below 90 days. The mean number of days for iron and folic acid consumption was 78.2 days compared to 72.5 days in 2023.

**Table 13: Iron and folic acid consumption days**

	n	2024	2023
<90 days	142	54.6%	61.6%
90-180day	100	38.5%	34.0%

<sup>7</sup> WHO. Guideline: Daily iron and folic acid supplementation in pregnant women. Geneva, World Health Organization, 2012.

>180 days	18	6.9%	4.4%
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### 3.7. Water Hygiene and Sanitation

WASH typically refers to activities aimed at improving access to and use of safe drinking-water and sanitation as well as promoting good hygiene practices (e.g. handwashing with soap at critical times). Lack of access to WASH can affect a child’s nutritional status in many ways. Existing evidence supports at least three direct pathways: via diarrheal diseases, intestinal parasite infections and environmental enteropathy. WASH may also impact nutritional status indirectly by necessitating walking long distances in search of water and sanitation facilities and diverting a mother’s time away from child care<sup>8</sup>. This section focus on the following WASH intervention categories; Water quantity, water quality, Sanitation and Hygiene.

#### 3.7.1. Main Source of Drinking Water

The main source of drinking waters was borehole/protected spring/protected shallow wells at 38.1%. The proportion of whose drinking water was sourced from piped water system was 15.4% a decline from 27.9% in 2023. Overall, 53.5% sourced their drinking water from improved sources including piped water system, borehole/protected spring as well as protected shallow wells as illustrated in the table below.

**Table 14: Main sources of drinking water**

Main Water Source	n	2024	2023
River/spring	117	14.1%	14.1%
Piped water system	128	15.4%	27.9%
borehole / protected spring /protected shallow wells	316	38.1%	37.5%
Water trucking / Boozer	64	7.7%	3.0%
Unprotected shallow well	70	8.4%	5.5%
Water vendor	45	5.4%	1.0%
Earth pan/dam	63	7.6%	8.1%
Other	3	0.4%	2.3%
Earth pan/dam with infiltration well	21	2.5%	0.4%
Harvested water (Jabiya)	3	0.4%	0.0%
Cart with small tank	0	0.0%	0.0%

<sup>8</sup> Fenn B, Bulti AT, Nduna T, Duffield A, Watson F (2012). An evaluation of an operations research project to reduce childhood stunting in a food-insecure area in Ethiopia. *Public Health Nutr.* 15(9):1746–54.

### 3.7.2. Distance to the Water Sources & Queuing Time

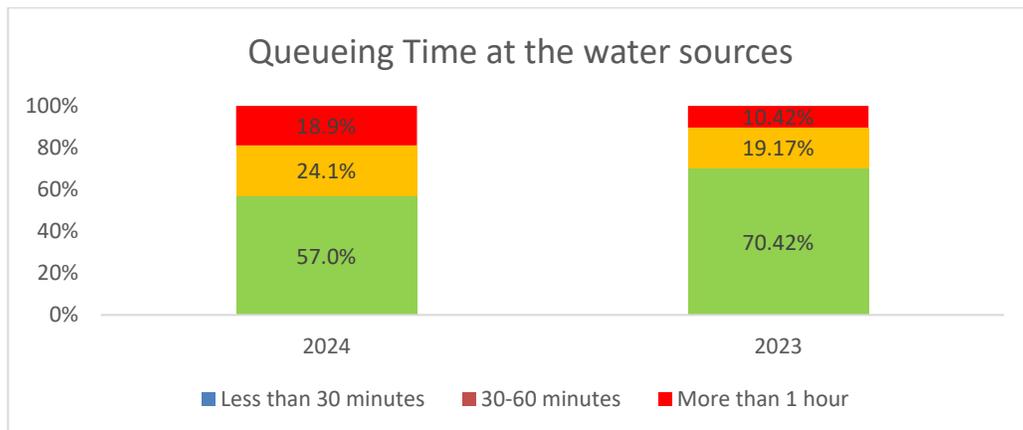
According to SPHERE handbook for minimum standards for WASH, the maximum distance from any household to the nearest water point should be 500 meters. It also gives the maximum queuing time at a water source which should be no more than 15 minutes.

Analysis of distance to the water sources shows that majority of the households (53.5%) accessed their drinking water from sources less than 500 meters from their households. This was a decline from 2023 where the proportion of households that accessed water from sources with similar distances was 76.3%. The proportion of households accessing water from sources more than 2 km increased from 3.8% to 6.8% in 2024 as illustrated in the table below.

**Table 15: Distances to the water sources**

Distance to waters source (equivalent time)	n	2024	2023
<500m (<15 min)	435	53.5%	76.3%
0.5 to 2km (15 to 1 hour)	323	39.7%	19.9%
>2 km (1 – 2 hrs)	55	6.8%	3.8%

Regarding the queuing time, 32.5% of the households' queued a slight increase from 31.3% reported in 2023. Among the households who queue, the proportion of households that queued for water within the recommended less than 30 minutes reduced from 70.4% in 2023 to 57.0% in the 2024 demonstrating crowding at the water sources. There was increase in the proportion of households that reported queuing time more than 1 hour as illustrated in the figure below.



**Figure 11: Queuing time at the water sources.**

### 3.7.3. Cost of Water

Approximately 40.8% of the household indicated that they pay for their water. This is not much difference from 2023 where 39.8% answered affirmatively to the same question. Regarding the payment mode, more than two thirds bought their water in 20 litre jerricans. The average price per 20 litre jerrican was KES 14. Less than a third paid their water monthly. The average

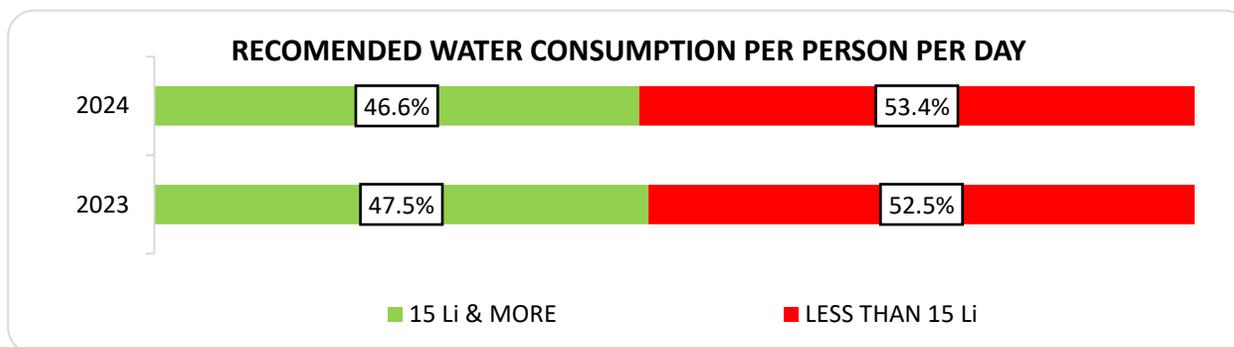
cost was KES 362. In both cases there was slight increase compared to 2023 survey where the average cost for 20 litre jerrican was KES 11, while the average monthly bill was KES 315

**Table 16: Cost of water**

Purchase method	N of HH	% HH	Min (Ksh)	Max (Ksh)	AVG (Ksh)
20 litre jerrican	230	67.8%	1	30	14
Water Boozer	0	0.0%	0	0	0
Monthly bill	109	32.2%	5	6500	362

### 3.7.4. Household daily per capita Consumption

According to SPHERE handbook for minimum standards for WASH, the average water uses for drinking, cooking and personal hygiene in any household should be at least 15 liters per person per day. Analysis shows that 46.6% of the households had its members meet the household per capita consumption. This is a slight deterioration compared to 2023 when the proportion that met this threshold was 47.5% as illustrated in the figure below. The mean water consumption per person per day was 15.2 liters compared to 2023 where the mean consumption was 16.4 liters.



**Figure 12: Household water consumption/per day/per person**

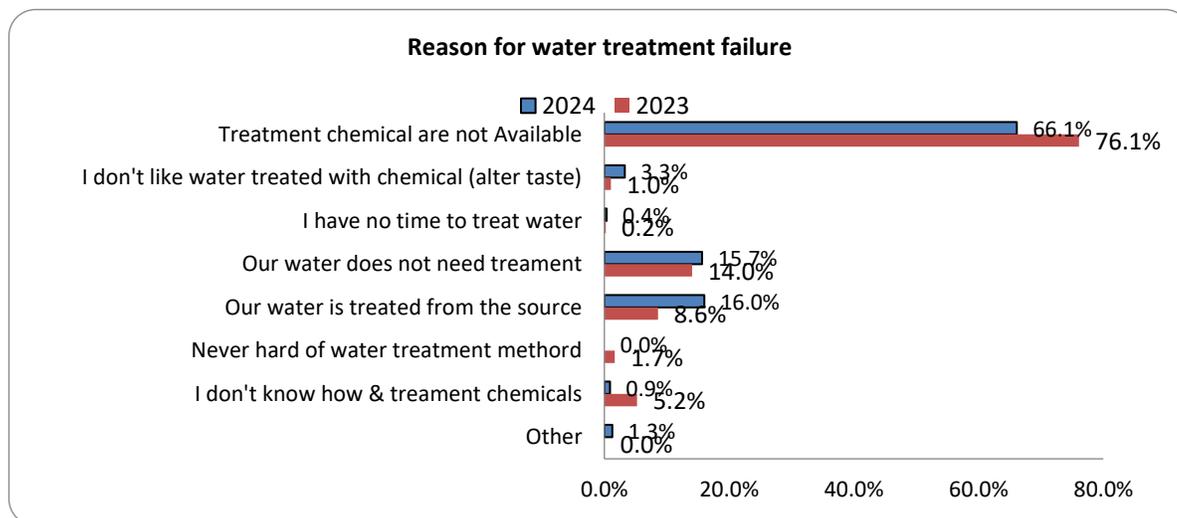
### 3.7.5. Drinking Water Treatment and Storage

Water quantity and quality is of vital importance for the ecosystem. The lack of water is further aggravated by insufficient treatment of water, particularly with rapid population growth. Despite some of the households obtaining water from unsafe sources, only 33.9% of households sampled were treating their water before drinking, an deterioration from 37.7 % in 2023. Among those who treat their drinking water some use one method others use multiple method, 93.2% of them use chemicals while 8.7% boil water as shown in the figure below. The proportion treating their drinking water using chemicals increased compared to the previous survey where the proportion using the same method was 82.4%.

**Table 17: Water treatment Methods**

	Boiling	Chemicals (Chlorine,Pur,Waterguard)	Traditional herbs	Pot filters	Other
	14	262	3	0	15
Jan-24	5.0%	93.2%	1.1%	0.0%	5.3%
Jan-23	8.7%	82.35%	6.6%	1.0%	2.8%

Further analysis of the reason why those who gave a dissenting responses on the question of water treatment shows that the unavailability of treatment chemicals was the leading reason at 66.1% compared to 76.1% in 2023. Other reasons given include, the community perception that the water does not need to be treated as well as the fact that the respondents believe that the treatment has been done at the source as illustrated in the figure below.



**Figure 13: Reasons for not treating the drinking water.**

Regarding the water storage, 87.3% of the respondents stored their drinking water in closed containers compared to 87.9% who practiced the same during the previous survey.

### 3.7.6. Hygiene

Hygiene refer to the practice of hand washing with soap after defecation, disposal of child faeces, prior to preparing and handling food and before eating. Hand washing with soap is the single most cost-effective intervention in preventing diarrhoea

diseases<sup>9</sup>. The four critical hand washing moments include; after visiting the toilet/latrine, before cooking, before eating and after taking children to the toilet/latrine.

Considering the awareness of the hand washing moments, 83.4% of the respondents indicated that they were aware of the handwashing moments. This is lower than the 2023 survey where 88.0% stated that they were aware of the handwashing critical moments. Despite high awareness, less than a quarter (24.3%) practise handwashing in the 4 critical moments. Nevertheless the proportion of respondents who practise handwashing in the four critical moments had increased from 15.6% as illustrated in the table below.

**Table 18: Hand washing in the 4 critical moments, with awareness only**

WITH AWARENESS with >24m child			
	N	%_2024	%_2023
After toilet	369	79.4%	84.0%
Before cooking	275	59.1%	51.2%
Before eating	416	89.5%	94.8%
After taking children to the toilet	181	38.9%	28.2%
At 4 critical times	113	24.3%	15.6%
Soap and water	308	66.2%	69.7%

Considering those without awareness, the proportion who practised handwashing in the 4 critical moments increased up to 26.9%. This was also an improvement compared to the immediate previous survey where only 14.2% practised handwashing in the 4 critical moments.

**Table 19: Handwashing in the 4 critical moments, with or without awareness**

All WITH OR WITHOUT AWARENESS			
	N	%_2024	%_2023
After toilet	639	77.0%	78.3%
Before cooking	481	58.0%	48.4%
Before eating	734	88.4%	94.1%
After taking children to the toilet	311	37.5%	25.5%
At 4 critical times	223	26.9%	14.2%
Soap and water	466	56.1%	61.4%

<sup>9</sup> Borghi, J., Guinness, L., Ouedraogo, J., & Curtis, V. (2002). Is hygiene promotion cost-effective? A case study in Burkina Faso. *Trop Med Int Health*, 7(11), 960-969. doi:10.1046/j.1365-3156.2002.00954.x

### 3.7.7. Sanitation

Sanitation refers to provision and use of facilities and services that safely dispose of human urine and faeces, 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. From the analysis of the sanitation facilities, it is apparent that 38.4% of the respondents relieve themselves in open fields. Nevertheless, this was an improvement from 2023 SMART survey where 40.1% relived themselves in open fields as illustrated in the table below.

	N	2024	2023
Pit latrine	412	49.6%	52.5%
Flush / pour flush	50	6.0%	5.4%
Composting toilet	32	3.9%	0.0%
Bucket	0	0.0%	0.0%
Hanging toilet / hanging latrine	8	1.0%	0.7%
No facility / bush / field	319	38.4%	40.1%
Other	9	1.1%	1.4%

### 3.8. Food Security

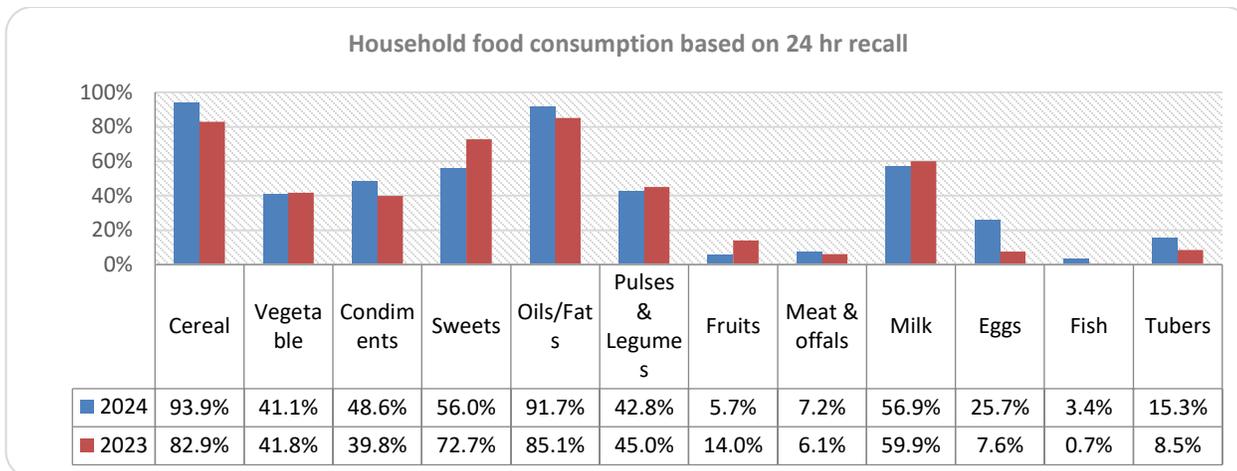
#### 3.8.1. Introduction

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.

#### 3.8.2. Household Dietary Diversity

Household dietary diversity refers to the number of unique foods consumed by household members over a given period. It is meant to reflect, in a snapshot form, the economic ability of a household to access a variety of foods.

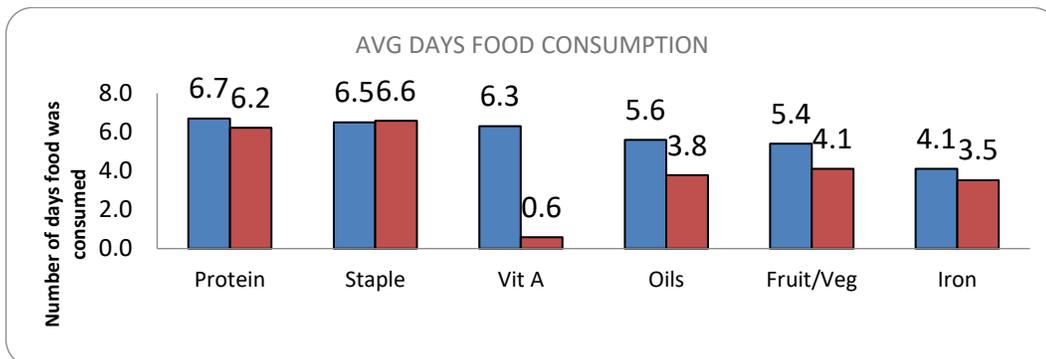
Household dietary diversity was assessed based on the 24-hour recall. As illustrated in the figure below, cereals was the most consumed food category as it was consumed by 93.9% of the households. A large proportion (91.7%) of households also consumed oils and fats. Therefore, majority of households consumed energy rich foods. Other foods consumed by the households include milk and milk products (56.9%) as well as condiments. Notably, there was low consumption of protein rich foods such as eggs, fish and fish as well as vitamin and minerals rich foods such as fruits and vegetables as illustrated in the figure below.



**Figure 14: Household dietary diversity based on 24 hr recall**

**Dietary diversity based on 7 days' recall**

The dietary diversity score on 7-day recall was assessed based on household food consumed in past 7 days from the day of survey. The consumption of proteins and staple remained relatively the same compared to the immediate previous survey. However, there was notable improvement in regard to the consumption of vitamin A rich foods, oils, fruits and vegetables and iron rich foods as illustrated in the figure below.



**Figure 15: Average number of days different food groups were consumed**

Household dietary diversity was computed using 12 foods groups namely; Cereal, Vegetable, Condiments, Sweets, Oils/Fats, Pulses & Legumes, Fruits, Meat & Offal, Milk, Eggs, Fish and Tubers. As illustrated in the table below, the proportion of household consuming diversified foods reduced marginally from 42.6% in 2023 to 41.4% in 2024. The proportion of households with low HDDS reduced from 10.8% in 2023 to 6.9% in 2024.

Indicator	N	2024	2023
< 3 Food Groups (low HDDS)	57	6.9%	10.8%
3-5 Food Groups (Medium HDDS)	428	51.8%	46.6%
> 5 Food Groups (High HDDS)	342	41.4%	42.6%

### 3.8.3. Food Consumption Score

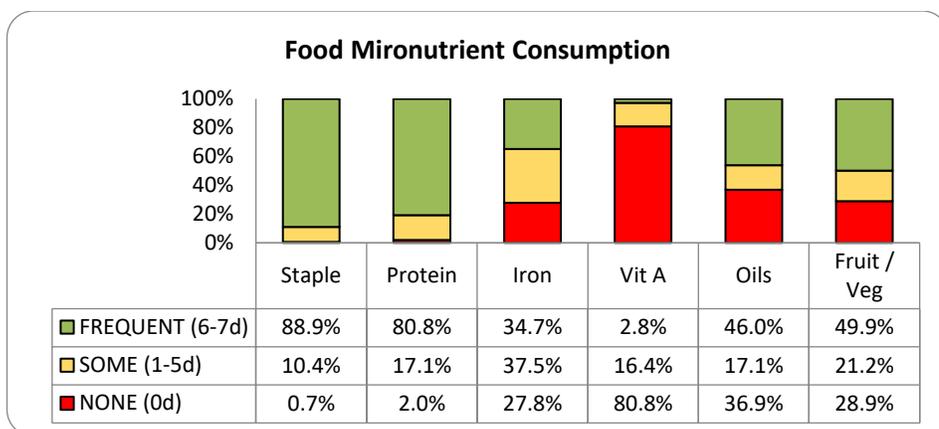
The Food Consumption Score (FCS) is a composite score based on dietary diversity, food frequency, and the relative nutritional importance of different food groups. It is used to compare food consumption across geography and time, target households in need of food assistance, monitor seasonal fluctuations in food consumption and provide key diet information to early warning analyses. The FCS is more of a quality than a quantity; food composition at different meals. The county had an improved in proportion of households with acceptable food consumption score from 84.6% in 2023 to 91.5 % in 2024.

**Table 20: Food Consumption Score**

Threshold	<35.5	21.5- 35	0- 21
Nomenclature	Good food consumption; Cereal, legumes, milk, condiment, flesh meat, vegetable, oil, sugar	Borderline food consumption; Cereal, legumes, milk, oil, sugar	Poor food consumption; Mainly cereal and sugar
Number of households	755	50	20
2024	91.5%	6.1%	2.4%
2023	84.6%	13.3%	2.1%

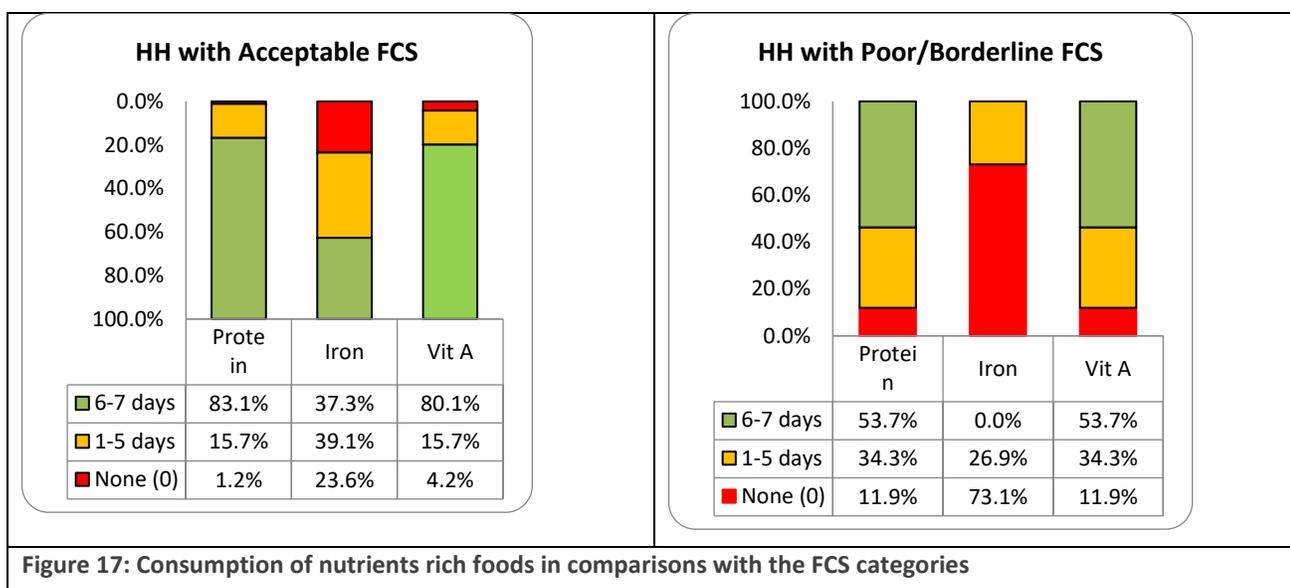
### Household consumption of micro-nutrient rich foods

Food is integral to everyday life, providing essential energy and nutrients for human function. An important aspect of food, among others, is the vitamins and minerals it provides. Yet in many low- and middle-income countries (LMICs) diets are known to be lacking in micronutrients, especially for population groups with increased needs, leading to deficiencies, particularly in iron, zinc, folate, vitamin A, calcium, and vitamin B12 that can have severe and lasting effects. Based on 7 days recall, staples and protein largely formed the households diets in most of the households. Atleast 88.9% and 80.8% of the households consumed staple foods (cereals & tubers) and Protein rich (pulses and legumes, meats or milk) respectively between 6 and 7 days. Nevertheless the consumption of vitamin A rich foods was minimal with 80.8% of the households not consuming vitamin A rich foods in any of the day. The figure below show the consumption of nutrients and energy rich foods in the last seven days prior to the survey.



**Figure 16: Consumption of energy and nutrients rich foods based on 7 days recall.**

Further analysis was done on the consumption of nutrients rich foods based on the food consumption score categorization. The consumption of protein, vitamin A and iron was better in households categorized as acceptable compared to the poor or borderline categories. Among the households categorized as acceptable, 83.1% and 80.1% consumed protein and vitamin A rich foods between 6 and 7 days . When it comes to households under poor and borderline categories, the consumption of the same was 53.7% in both cases that frequently consumed the same foods. In case of iron rich foods, under the acceptable category 37.3% of the households consumed iron rich foods while under the poor and borderline categories, none of the household consumed iron rich food as illustrated in the figure below.



### 3.8.4. Women Dietary Diversity (MDD-W)

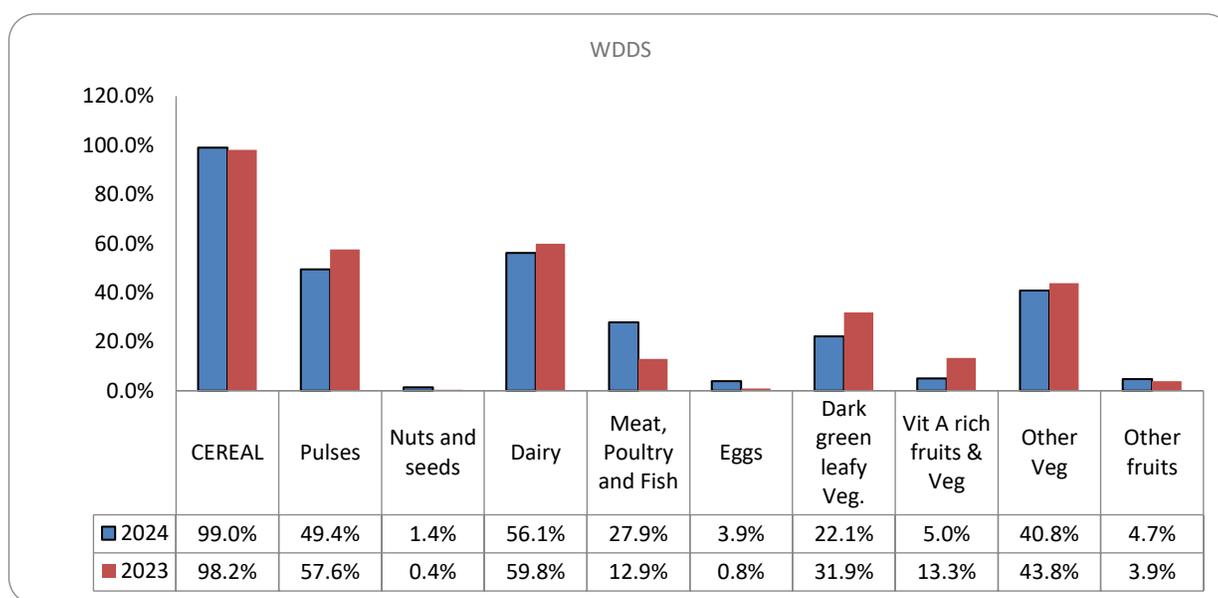
Different foods and food groups are good sources for various macro- and micro-nutrients, so a diverse diet best ensures nutrient adequacy. The principle of dietary diversity is embedded in evidence-based healthy diet patterns and is affirmed in all national food-based dietary guidelines. The World Health Organization (WHO) notes that a healthy diet contains fruits, vegetables,

legumes, nuts and whole grains. A diverse diet is most likely to meet both known and yet unknown needs for human health. In addition to our knowledge of protein, essential fatty acid, vitamin and mineral requirements, new knowledge about health effects of a wider range of bio-active compounds continues to grow.

### Women dietary diversity consumption on 24hrs recall

Different dietary diversity indicators have been developed to reflect household food security, infant and young child feeding practices and micronutrient adequacy for women of reproductive age, among others. The Minimum Dietary Diversity for Women of reproductive age indicator was developed for use in assessment when a simple proxy indicator is needed, and when it is preferable, for communication and advocacy purposes, to be able to express results as a proportion of a population meeting a criterion/threshold value.

The main food consumed by women was cereals (99.0%) followed by dairies at 56.1% compared to 2023 Survey, the consumption of different food groups remained relatively the same as illustrated in the figure below.



Minimum Dietary Diversity for Women (MDD-W) is a dichotomous indicator of whether or not women 15-49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality. Analysis shows that the proportion of women of consuming more that 5 food groups deteriorated from 15% in 2023 to 9.2% in 2024 survey as illustrated in the table below

**Table 21: MDD-W**

Number of food groups consumed	n (2024)	2024	2023
Less than 5 food groups	652	90.8%	85.0%

5 or more Food groups	66	9.2%	15.0%
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### 3.8.5. Reduced Coping Strategies Index (rCSI)

The Coping Strategies Index (CSI) is an indicator of household food security that is relatively simple and quick to use, straightforward to understand and correlates well with more complex measures of food security. A series of questions about how households manage to cope with a shortfall in food for consumption results in a simple numeric score. In its simplest form, monitoring changes in the CSI score indicates whether household food security status is declining or improving.

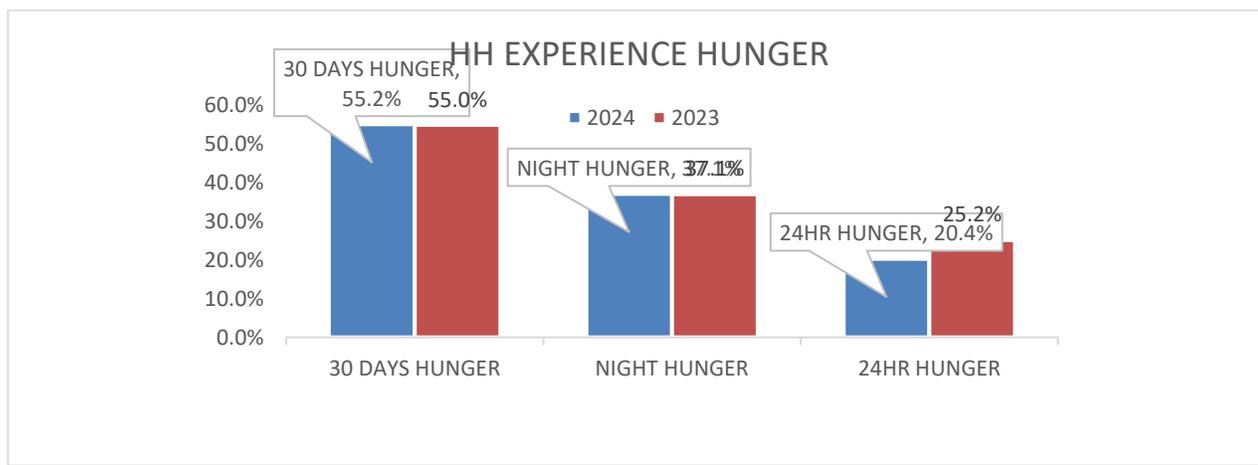
The CSI has a number of potential applications in food security programming. The most obvious is monitoring the short-term impact of food aid on household food security in an emergency. A second use is as a food security early warning indicator, incorporating CSI gives an indication of household access to food as well as availability. A third application is as a food security assessment tool, used in targeting food aid to the most vulnerable households, and to estimate food aid requirements. Lastly, the CSI can be used as an indicator of long-term changes in food security status. CSI tool can be used for any of these applications, and the actual design of the tool is the same regardless of the application and the way in which the CSI tool is calibrated. CSI is based on five coping strategies; the average times of each strategy is employed by HH in a week multiply by a score assigned to each strategy. Based on 7 days analysis, 52.7% of the households experienced food insecurity in the past 7 days. This was a marginal increase from 51.4% in 2023. The overall rCSI calculated by multiplying the average score by severity score for each of the coping strategy was 16.99. This was a reduction from 19.7 reported in the immediate previous survey as illustrated in the table below.

**Table 22: Reduced coping strategy (rCSI).**

Coping Strategy	A No. of Households	Proportion of households (%)	Proportion of households 2024 (%)	B Average Score (0-7)	C Severity constant (1-3)	D Weighted Score (B*C)
Rely on less preferred or less expensive foods	369	86.0	84.4	2.8	1	2.83
Borrow foods from relatives or friends	301	55.0	68.9	1.7	2	3.35
Limit Portion sizes	350	79.0	80.1	2.5	1	2.54
Restrict consumption by adults so that children can feed	226	57.0	51.7	1.4	3	4.24
Reduce the number of meals	412	91	94.3	4.0	1	4.03
Weighted Score (rCSI)						16.99

### 3.8.6. Household Hunger Scale (HHS)

The indicator measures the scale of households' food deprivation. It is based on a (validated) idea that the experience of household food deprivation causes predictable reactions that can be captured through a survey and summarized on a scale. It focuses on the food quantity dimension of food access and does not measure dietary quality. HHS is different from the other household food insecurity indicators as it assesses only the most severe experiences of food insecurity. Assessment of the household hunger score across the county indicates that 55.2% of the households experienced hunger in the last 30 days. This is similar to the same period in 2023, where 55% had the same experience. The situation remained the same as far as the household that slept hungry which was 37.1% in both cases. Notably there was marginal reduction in the proportion of households that went the whole day without eating from 25.2% in 2023 to 20.4% in 2024.

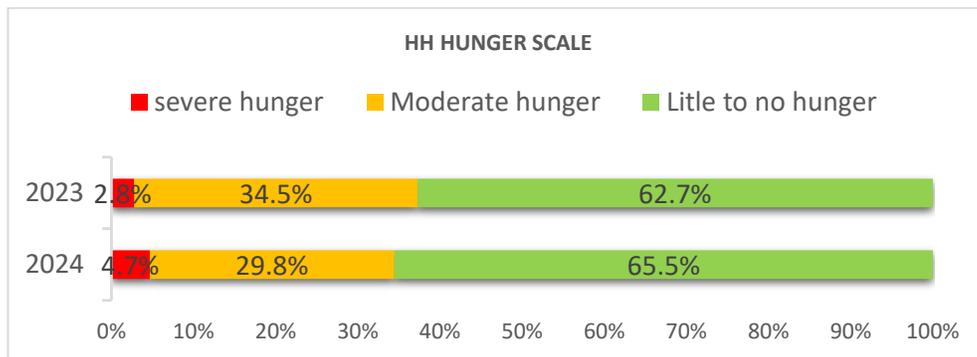


The frequency of occurrence of each hunger determines the severity of food insecurity at household and individual level. Among the household that have experience at least one form of a hunger, the proportion of households that experienced hunger frequently increased from 10.7% in 2023 to 13.3% in 2024. The proportion of households that experienced night hunger often increased from 6.0% in 2023 to 8.4% in 2024 while those that experienced 24-hour hunger increased from 8.3% in 2023 to 10.7% in 2024 as illustrated in the table below.

**Table 23: Household Hunger Frequency of occurrence**

	FREQUENCY	30Day HUNGER	NIGHT HUNGER	24HR HUNGER
2024	Rarely (1-2 times)	36.9%	46.1%	50.9%
	Sometimes (3 - 10 times)	49.8%	45.5%	38.5%
	Often (more than 10 times)	13.3%	8.4%	10.7%
2023	Rarely (1-2 times)	37.3%	43.3%	58.5%
	Sometimes (3 - 10 times)	52.0%	50.7%	33.2%
	Often (more than 10 times)	10.7%	6.0%	8.3%

Overall, 4.7% of the households experienced severe hunger compared to 2.8% in 2023. 29.8% experienced moderate hunger compared to 34.5% in 2024 while 65.5% experienced little or no hunger compared to 65.5% in 2023



**Table 24: Overall household Hunger Scale**

### 3.9. 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 2008 and 2012, the Copenhagen Consensus ranked food fortification as one of the most cost-effective development priorities. While mandatory food fortification has been used as a strategy to prevent micronutrient deficiencies in high income countries (HIC)—dating as far back as the 1920s in Europe and North America when the first salt was iodized—it is still less common in low and middle income country - LMICs where food systems are not delivering nutritionally adequate diets due to the production and consumption of just a few major starchy food crops (maize, rice, wheat) with low micronutrient content and/or bioavailability (phytate). In the past two decades, food fortification has become increasingly popular in LMICs for several reasons, including rapid urbanization and increasing household purchasing power, leading to a greater proportion of the population relying on processed foods.

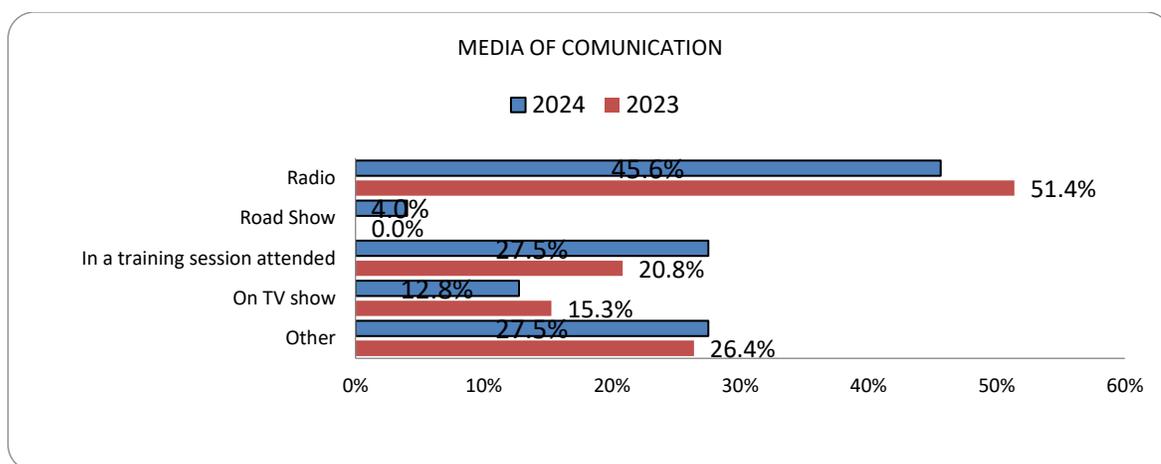
In Kenya some food commodity such as Sugar, Maize flour, salts and cooking oils must be fortified with specific micronutrient. The government in collaboration with partners have developed policy to ensure adherence by manufacturers and also create awareness to the public on the importance of food fortification.

The knowledge of food fortification increased almost twice from 9.4% in 2023 to 18.0% in 2024. Those who have never heard of food fortification increased from 67.1% to 71.8% while those who were not sure reduced from 23.5% in 2023 to 10.2% in 2024.

**Table 25: Knowledge on Food Fortification**

Ever heard of food fortification?	n	2024	2023
Yes	149	18.0%	9.4%
No	596	71.8%	67.1%
Don't know	85	10.2%	23.5%

Among those who stated that they were have heard about food fortification, majority (45.6%) heard it from the radio. Nevertheless, those who heard it from radio redion reduced from 51.4% in 2023. More than a quarter (27.5%) recived information on food fortification from the training session attended. The proportion of respondents however increased from 20.8% in 2023 as illustrated in the figure below. The proportion that received such information from the TV show was 12.8% a reduction fromn 15.3% in 2023.



**Figure 18: Media of communication on food fortification**

Respondents were shown the fortification logo. As illustrated in the table below, the awareness of the fortification logo remains relatively low with only 13.7% of the respondents indicating that they were aware of the logo. This was a marginal increase from 12.3% who responded affirmatively on the same question in 2023 SMART survey. While 75.8% gave a dissenting response, 10.5% said that they were not sure. The dissenting responses increased compared to the immediate previous survey.

Regarding the awareness of fortification of maize flour consumed, 13.9% of the respondents stated that they were aware that the maize flour consumed was fortified while 76.7% stated they were not aware. Compared to the immediate previous survey, the awareness increased marginally, those who stated they were not aware increased to an extent while those who were not sure reduced from 14.9% in 2023 to 9.7% in 2024 as illustrated in the table below.

**Table 26: Awareness of the fortification logo and fortification on maize flour consumed.**

Fortification sign awareness				Awareness on maize flour fortification			
	Aware	Not aware	Not sure		Aware	Not aware	Not sure
n	114	629	87	n	115	637	78
2024	13.7%	75.8%	10.5%	2024	13.9%	76.7%	9.4%
2023	12.3%	70.0%	17.8%	2023	12.8%	72.3%	14.9%

Majority of the respondents (89.7%) bought their flour from shops and supermarkets where they are likely to buy fortified brands. Nevertheless, the proportion of those who bought maize flour from the supermarkets reduced from 97.4% in 2023 while those who took flour from small scale mills (unbranded and unfortified) increased from 2.5% to 10.0%.

### 3.10. Anthropometry and Nutrition Status

#### 3.10.1. Age and Sex distribution of Sampled Children

A total of 905 children were assessed during the survey. They included 469 male and 436 female. The overall age and sex ratio of the sampled children was within excellent range. Age ratio of 6-29 months to 30-59 months: 0.94 (The value should be around 0.85): p-value = 0.141 (as expected) Overall sex ratio: p-value = 0.577 (boys and girls equally represented), Overall age distribution: p-value = 0.692 (as expected), Overall age distribution for boys: p-value = 0.061 (as expected), Overall age distribution for girls: p-value = 0.496 (as expected), sex/age distribution: p-value = 0.014 (significant difference). This is an indication that there was no sampling bias. Table 32 below shows distribution of sampled children by age and sex. The data are expressed as observed number/expected number (ratio of observe/expect)

**Table 27: Age and sex distribution table**

AGE (months)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy:girl
6-17	108	52.2	99	47.8	207	22.9	1.1
18-29	128	57.4	95	42.6	223	24.6	1.3
30-41	116	50.4	114	49.6	230	25.4	1.0
42-53	81	47.6	89	52.4	170	18.8	0.9
54-59	36	48.0	39	52.0	75	8.3	0.9
<b>Total</b>	<b>469</b>	<b>51.8</b>	<b>436</b>	<b>48.2</b>	<b>905</b>	<b>100.0</b>	<b>1.1</b>

In terms of age verification, majority (75.8%) of children's date of birth was verified through the health card or mother child booklet. This was an increment compared to the SMART survey 2023 where 69.1% of Childrens' age was verified by health card or mother's booklet. Only 5.3% of children's age was verified either by birth certificate or notification. This was almost the same percentage compared to 2023 survey as illustrated in the table below. Notably the proportion of undocumented births reduced from 25.4% to 18.9% and were therefore verified through recall with the aid of the events calendar.

**Table 28: Date of birth MoV**

DOB Verification	n	2024	2023
Birth certificate/notification	54	5.3%	5.4%
Health card/Mother child booklet	774	75.8%	69.1%
Recall (use event calendar)	193	18.9%	25.4%
<b>Total</b>	<b>1021</b>	<b>100%</b>	<b>100%</b>

### 3.10.2. Prevalence of Acute Malnutrition based on WFH Z-Score, MUAC and the Presence of Oedema

#### A. Introduction

Acute malnutrition is a form of under-nutrition caused by a decrease in food consumption and/or illness that results in sudden weight loss or bilateral pitting oedema (fluid retention). Acute malnutrition can be moderate or severe, and prolonged malnutrition can cause stunted growth, otherwise known as stunting. Stunting in early childhood has health consequences that can affect children throughout their entire lives. In emergencies or epidemics, more people tend to suffer from acute malnutrition because they lack nutritious food, unable to provide appropriate feeding care, have poor hygiene, or lack access to clean water & sanitation and health services. As a result of malnutrition, they may become ill and find it more difficult to fight disease. Screening and referral for all malnourished children to a health or nutrition services as quickly as possible, is crucial so that they can receive treatment to avoid long term effects.

As part of malnutrition assessment, SMART survey was conducted within 48 sampled clusters in Tana River county. Children within 6-59months age cohort from 766/768 households were assessed. Table 33 below gives a summary of the number of under 5 with data out of range.

**Table 29: Anthropometry Flagged Data**

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	912	-0.95±0.99	1.64	0	0
Weight-for-Age	907	-1.21±1.00	1.43	0	5
Height-for-Age	889	-1.02±1.11	2.90	0	23

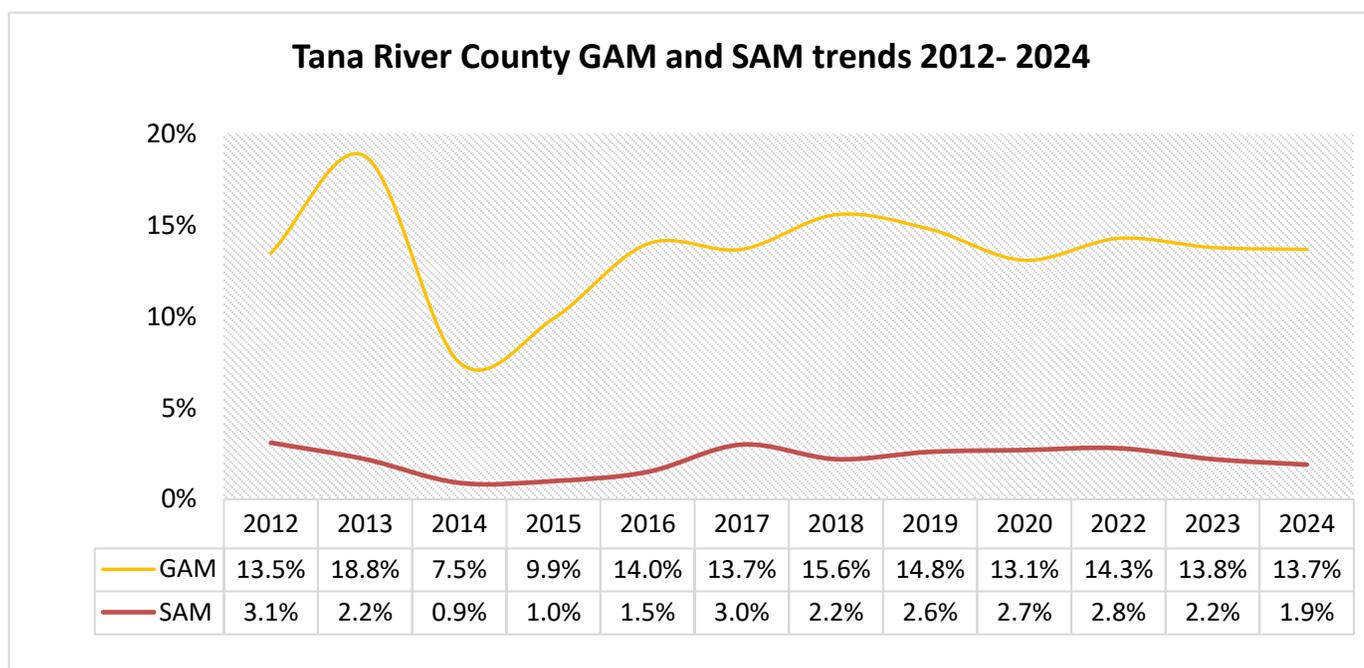
#### B. Prevalence of Acute Malnutrition Based on WHZ and the Presence of Oedema

The prevalence of global acute malnutrition based on the WHZ-score was 13.7% (11.0- 16.9, 95% C.I.). This was a slight decline compared to 2023 where the prevalence of global acute malnutrition was 13.8% (11.5- 16.6, 95% C.I.). In comparison with 2023 SMART survey the decline was not significant at 95% confidence level (p= 0.9589)

The prevalence of Severe acute malnutrition was 1.9% (1.2- 3.0, 95% C.I.). this was also a slight improvement compared to 2023 SMART survey where the prevalence of SAM was 2.2% (1.2- 3.8%). Notably, the improvement was not statistically significant (p= 0.7059) at 95% confidence levels. The Prevalence of malnutrition was higher in girls than in boys as illustrated in the table below. The difference is however not significant at 95% confidence levels (p= 0.231).

**Table 30: Prevalence of acute malnutrition based on WHZ-score and/or oedema**

	All 2024 n = 905	Boys 2024 n= 469	Girls 2024 n= 436	All - 2023 n = 918
Prevalence of global malnutrition (<-2 z-score and/or Oedema)	(124) 13.7 % (11.0 - 16.9 95% C.I.)	(57) 12.2 % (9.1 - 16.0 95% C.I.)	(67) 15.4 % (11.8 - 19.8 95% C.I.)	(127) 13.8 % (11.5 - 16.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no Oedema)	(107) 11.8 % (9.3 - 14.9 95% C.I.)	(49) 10.4 % (7.7 - 14.1 95% C.I.)	(58) 13.3 % (10.0 - 17.6 95% C.I.)	(107) 11.7 % (9.6 - 14.1 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or Oedema)	(17) 1.9 % (1.2 - 3.0 95% C.I.)	(8) 1.7 % (0.9 - 3.3 95% C.I.)	(9) 2.1 % (1.1 - 3.7 95% C.I.)	(20) 2.2 % (1.2 - 3.8 95% C.I.)



**Figure 19: Tana River County GAM and SAM trends**

**C: Malnutrition by Age, based on WHZ- Score and/or Oedema**

The Prevalence of acute malnutrition seems to be higher in young children 6- 29 months compared to the older children 30- 59 months. This can be attributed to poor feeding practices as illustrated in section 3.5 of this report where the minimum dietary diversity is 11.3% and Minimum acceptable diet was 7.3%. The prevalence of Malnutrition based on the presence of oedema was 0.0%

**Table 31: Prevalence of acute malnutrition by age, based on weight -for-height- z-score 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	207	1	0.5	34	16.4	172	83.1	0	0.0
18-29	223	4	1.8	38	17.0	181	81.2	0	0.0
30-41	230	2	0.9	18	7.8	210	91.3	0	0.0
42-53	170	1	0.6	15	8.8	154	90.6	0	0.0
54-59	75	0	0.0	9	12.0	66	88.0	0	0.0
Total	905	8	0.9	114	12.6	783	86.5	0	0.0

**D: Distribution of acute malnutrition and Oedema based on WHZ-scores**

There were no oedema cases identified during the survey. As illustrated in the table below, the marasmic cases with oedema absent was 0.9% a slight reduction compared to the 2023 SMART survey where marasmic cases with no oedema was 2.2%.

**Table 32: Distribution of acute malnutrition and oedema based on weight- for height z- scores**

	<-3 z-score	>=-3 z-score
<b>Oedema present</b>	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor. 0 (0.0 %)
<b>Oedema absent</b>	Marasmic No. 8 (0.9 %)	Not severely malnourished. 897 (99.1 %)

**D: Presence of Acute Malnutrition Based on MUAC and Presence of Oedema**

The analysis of acute malnutrition was also done using MUAC. According to Kenya National Guidelines on Management of malnutrition (2020) which has adopted WHO classification, A child with a MUAC <125mm and or Oedema is classified as acutely malnourished. A child is classified as severely malnourished if they have a MUAC < 115mm and/or oedema. Based on this classification, the global acute malnutrition for Tana River County was 4.3% (3.0- 6.1, 95% C.I.) while the prevalence of severe acute malnutrition was 0.8% (0.4- 1.6, 95% C.I.). There was slight decline in global acute malnutrition based on MUAC compared to the same period in 2023 where the prevalence was 5.1%. However the difference is statistically insignificant at 95% Confidence levels (p= 0.454). The table below is a summary of malnutrition prevalence based on MUAC

**Table 33: Prevalence of acute malnutrition based on MUAC and presence of oedema**

	All 2024 n = 905	Boys 2024 n= 469	Girls 2024 n= 436	All - 2023 n = 918
<b>Prevalence of global malnutrition (&lt; 125 mm and/or Oedema)</b>	(39) 4.3 % (3.0 - 6.1 95% C.I.)	(15) 3.2 % (1.7 - 6.1 95% C.I.)	(24) 5.5 % (3.8 - 7.8 95% C.I.)	(47) 5.1 % (3.8 - 6.9 95% C.I.)
<b>Prevalence of moderate malnutrition (&lt; 125 mm and &gt;= 115 mm, no Oedema)</b>	(32) 3.5 % (2.3 - 5.4 95% C.I.)	(10) 2.1 % (0.8 - 5.4 95% C.I.)	(22) 5.0 % (3.4 - 7.4 95% C.I.)	(41) 4.5 % (3.3 - 6.1 95% C.I.)
<b>Prevalence of severe malnutrition (&lt; 115 mm and/or Oedema)</b>	(7) 0.8 % (0.4 - 1.6 95% C.I.)	(5) 1.1 % (0.5 - 2.5 95% C.I.)	(2) 0.5 % (0.1 - 1.9 95% C.I.)	(6) 0.7 % (0.2 - 1.8 95% C.I.)

### 3.10.3. Prevalence of Underweight based on WFA Z-score

Weight-for-age reflects body mass relative to chronological age. It is influenced by both the height of the child (height-for-age) and his or her weight (weight-for-height), and its composite nature makes interpretation complex. For example, weight-for-age fails to distinguish between short children of adequate body weight and tall, thin children. However, in the absence of significant wasting in a community, similar information is provided by weight-for-age and height-for-age, in that both reflect the long-term health and nutritional experience of the individual or population. Short-term change, especially reduction in weight-for-age, reveals change in weight-for-height.<sup>10</sup>

The prevalence of underweight based on the weight for age z-score was 20.7% (17.6- 24.1%, 95% C.I.). This was a slight decline compared to 2023 where the prevalence of underweight was 22.2% (18.8- 25.9, 95% C.I.). ( $p= 0.539$ ) The prevalence of severe underweight marginally reduced from 4.0% in 2023 to 3.6% in 2024 as illustrated in the table below. Boys are more affected by underweight than girls. The difference is however not statistically significant at 95% Confidence levels ( $p= 0.186$ ).

**Table 34: Prevalence of underweight based on WFA**

	All 2024 n = 900	Boys 2024 n= 466	Girls 2024 n= 434	All - 2023 n = 916
<b>Prevalence of underweight (&lt;-2 z-score)</b>	(186) 20.7 % (17.6 - 24.1 95% C.I.)	(105) 22.5 % (18.4 - 27.2 95% C.I.)	(81) 18.7 % (15.3 - 22.6 95% C.I.)	(203) 22.2 % (18.8 - 25.9 95% C.I.)

<sup>10</sup> WHO Child Growth Standards. (2009). Developmental Medicine & Child Neurology, 51(12), 1002-1002. doi:10.1111/j.1469-8749.2009.03503.x

<b>Prevalence of moderate underweight (&lt;-2 z-score and &gt;=-3 z-score)</b>	(154) 17.1 % (14.5 - 20.1 95% C.I.)	(86) 18.5 % (15.0 - 22.5 95% C.I.)	(68) 15.7 % (12.3 - 19.7 95% C.I.)	(166) 18.1 % (15.1 - 21.6 95% C.I.)
<b>Prevalence of severe underweight (&lt;-3 z-score)</b>	(32) 3.6 % (2.5 - 5.1 95% C.I.)	(19) 4.1 % (2.7 - 6.2 95% C.I.)	(13) 3.0 % (1.6 - 5.5 95% C.I.)	(37) 4.0 % (2.7 - 5.9 95% C.I.)

The prevalence of underweight is high among children aged 18- 29 months (35.0%) and children aged 54 – 59 months (33.3%). The prevalence of severe underweight is higher in young children (6- 29 months) compared to older children (30-59 months)

**Table 35: Prevalence of underweight based on WFA and Age**

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score )		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	206	15	7.3	51	24.8	140	68.0	0	0.0
18-29	223	14	6.3	64	28.7	145	65.0	0	0.0
30-41	230	8	3.5	41	17.8	181	78.7	0	0.0
42-53	170	3	1.8	42	24.7	125	73.5	0	0.0
54-59	75	1	1.3	24	32.0	50	66.7	0	0.0
Total	904	41	4.5	222	24.6	641	70.9	0	0.0

#### 3.10.4. Prevalence of stunting based on height-for-age z-scores

Stunting is an indicator of chronic malnutrition. According to WHO, a child is said to be stunted if he/she is too short for his or her age and is the result of chronic or recurrent malnutrition. Stunting is a contributing risk factor to child mortality and is also a marker of inequalities in human development. Stunted children fail to reach their physical and cognitive potential. Child stunting is one of the World Health Assembly nutrition target indicators. The prevalence of stunting (height-for-age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age.

The prevalence of stunting in Tana River County was 18.5% (14.4- 23.4, 95% C.I.).. This was a slight decline compared to 2023 SMART survey where the prevalence was 22.1% (18.7- 26.0, 95% C.I.). The difference is however not statistically significant (p= 0.2120). The prevalence of severe stunting was 4.9% (3.4- 6.9, 95, C.I.) this was a slight deterioration compared to 2023 where the prevalence was 4.3% as illustrated in the table below.

Further analysis shows that boys were more stunted at 21.4% compared to girls (15.3%). Nevertheless statistical analysis shows that the difference is not significant at 95% confidence levels (p= 0.089)

**Table 36: Prevalence of Stunting based on HFA and sex of children**

	All 2024 n = 883	Boys 2024 n= 458	Girls 2024 n= 425	All - 2023 n = 904
<b>Prevalence of stunting (&lt;-2 z-score)</b>	(163) 18.5 % (14.4 - 23.4 95% C.I.)	(98) 21.4 % (16.3 - 27.6 95% C.I.)	(65) 15.3 % (11.4 - 20.2 95% C.I.)	(200) 22.1 % (18.7 - 26.0 95% CI)
<b>Prevalence of moderate stunting (&lt;-2 z-score and &gt;=-3 z-score)</b>	(120) 13.6 % (10.3 - 17.7 95% C.I.)	(70) 15.3 % (11.4 - 20.2 95% C.I.)	(50) 11.8 % (8.5 - 16.1 95% C.I.)	(161) 17.8 % (15.1 - 20.9 95% CI)
<b>Prevalence of severe stunting (&lt;-3 z-score)</b>	(43) 4.9 % (3.4 - 6.9 95% C.I.)	(28) 6.1 % (4.2 - 8.8 95% C.I.)	(15) 3.5 % (2.0 - 6.1 95% C.I.)	(39) 4.3 % (2.8 - 6.6 95% C.I.)

Further analysis was done on stunting per age category as shown in the table below. The analysis shows that children aged between 6- 17 & 30-41months were the most stunted. Severe stunting affected children 54 to 59 months This could be attributed to poor complementary feeding and owing to the fact that breastfeeding usually stops during this age.

**Table 37: Prevalence of stunting by age**

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score )		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
<b>6-17</b>	199	9	4.5	20	10.1	170	85.4
<b>18-29</b>	216	11	5.1	41	19.0	164	75.9
<b>30-41</b>	224	8	3.6	26	11.6	190	84.8
<b>42-53</b>	169	10	5.9	25	14.8	134	79.3
<b>54-59</b>	75	5	6.7	8	10.7	62	82.7
<b>Total</b>	883	43	4.9	120	13.6	720	81.5

### 3.11. IMAM Program Coverage

#### 3.11.1. Introduction

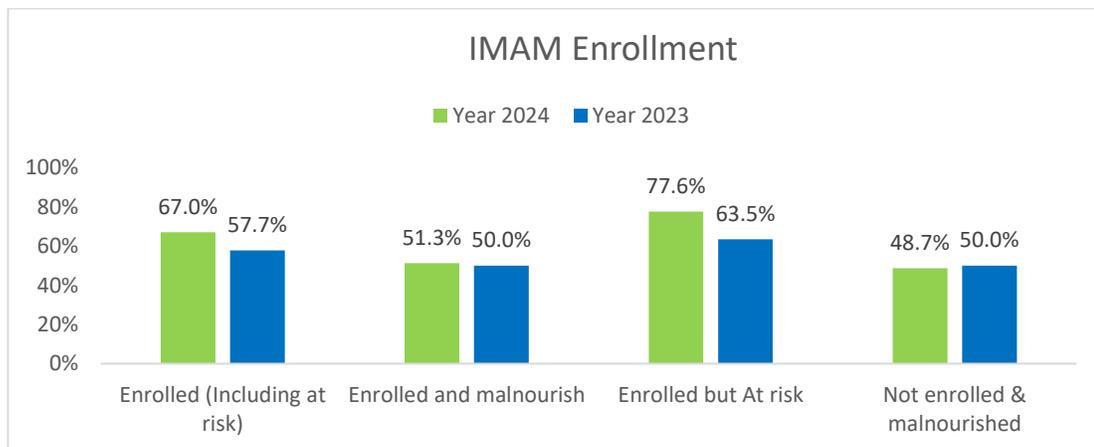
According to the Kenya National guideline on the management of acute malnutrition, the IMAM program in Kenya is divided in to 3 components. They include; the Supplementary feeding program for the management of moderate acute malnutrition, the outpatient therapeutic program for the management of severe acute malnutrition with no complications and finally the inpatient therapeutic program for the management of acute malnutrition with complications. The classification is based on WFH- Z-score, MUAC, oedema in addition the complications (presence of ailments).

#### 3.11.2. IMAM Enrollment based on MUAC

The prevalence of acute malnutrition based on MUAC was 4.3% while the children at risk (MUAC 125mm- 130mm) was 6.4% as illustrated in the table below.

	n	2024	2023
All < 130mm	97	10.6%	12.1%
GAM < 125mm	39	4.3%	5.2%
At risk (125 - 130 mm)	58	6.4%	6.9%
Normal above 130mm	815	89.4%	87.9%

Among the malnourished and at-risk children, 67% were enrolled in IMAM program compared to 57.7% enrolled in 2023. Among the malnourished group only, 51.3% compared to 2023 when the malnourished children who were enrolled was 50.0%. The combined non-enrollment (malnourished and at- risk) was 48.9% compared to 50.0% in 2023 as illustrated in the figure below.



**Figure 20: IMAM program enrollment.**

Among the enrolled children, 76.9% were enrolled in supplementary feeding program and received the RUSF and 16.9% in the outpatient therapeutic program. Only 1.6% were enrolled in SFP and received CSB++ as illustrated in the figure below.

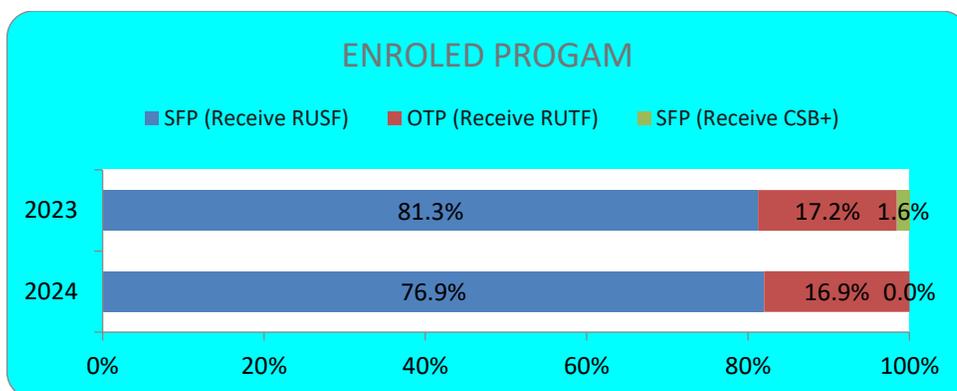


Figure 21: Program Enrolled

### 3.12. Maternal Health and Nutrition

Women of reproductive age have special nutrition needs. Such needs surge during the pregnancy and breastfeeding periods. If these special needs are not met, maternal under nutrition occur. Maternal under-nutrition affects the health of both mothers and children and, as a result, has broad impacts on economic and social development. 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. Maternal under-nutrition also diminishes a woman’s productivity, causing repercussions on herself, her family, her community, and the broader society. Both pregnant and lactating women have special health & nutritional needs; poor nutrition (macro & micro nutrient deficiencies) and poor health due to acute or chronic illness will have direct and indirect negative impact to the infant and child nutrition and health 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. For the purpose of pregnant and breastfeeding women, the physiological status was used to categorise them. The overall sample for Women of reproductive age was 661. Out of these 9.1% (60) were pregnant, 43.4% (287) were breastfeeding, 1.1% (7) were both lactating and breastfeeding while 46.4% (307) were neither pregnant or breastfeeding.

Regarding the overall WRA, 2.4% had a MUAC of less than 210mm and were classified as moderately malnourished while 13.0% had a MUAC measurement between 210mm and 229mm and were therefore classified as at risk of malnutrition. In both cases, there was improvement compared to 2023 SMART survey where moderately malnourished group was 3.1% and at risk category was 17.5%.

In case of pregnant and breastfeeding women, 0.6% were moderately malnourished. This was an improvement compared to 2023 SMART survey where the moderately malnourished PBW was 2.9%. There was also notable improvement among the at-risk PBW from 19.1% in 2023 to 4.0% in 2024 as illustrated in the table below.

**Table 38: Maternal Nutrition Status**

PLW	n	2024	2023
<210 (Moderately malnourished	2	0.6%	2.9%
<230mm (At-risk of malnutrition	14	4.0%	19.1%
WRA	n	%	%
<210 mm (Moderately Malnourished	16	2.4%	3.1%
<230 mm (At-risk of malnutrition)	86	13.0%	17.5%

4.1 Conclusion

- The GAM rate of the county is at 13.7% (serious), which is slightly lower than the previous survey though with no significant change (13.8%).
- 38.4% of the population practice open defecation a slight deterioration compared to the Previous Survey which was 40.1%
- 24.3% of the respondents washed their hands in the 4 critical times which is an improvement compared to the previous survey which was at 15.6%.
- Children 6 to 23 months in Tana River County were consuming inadequate diet with the proportion consuming Minimum Dietary Diversity and Minimum Adequate Diet at 7.7% and 11.3% respectively.
- 52.4% of the malnourished children have not been enrolled in any nutrition programs
- Moderate & severe hunger is at 28.9% & 4.7%

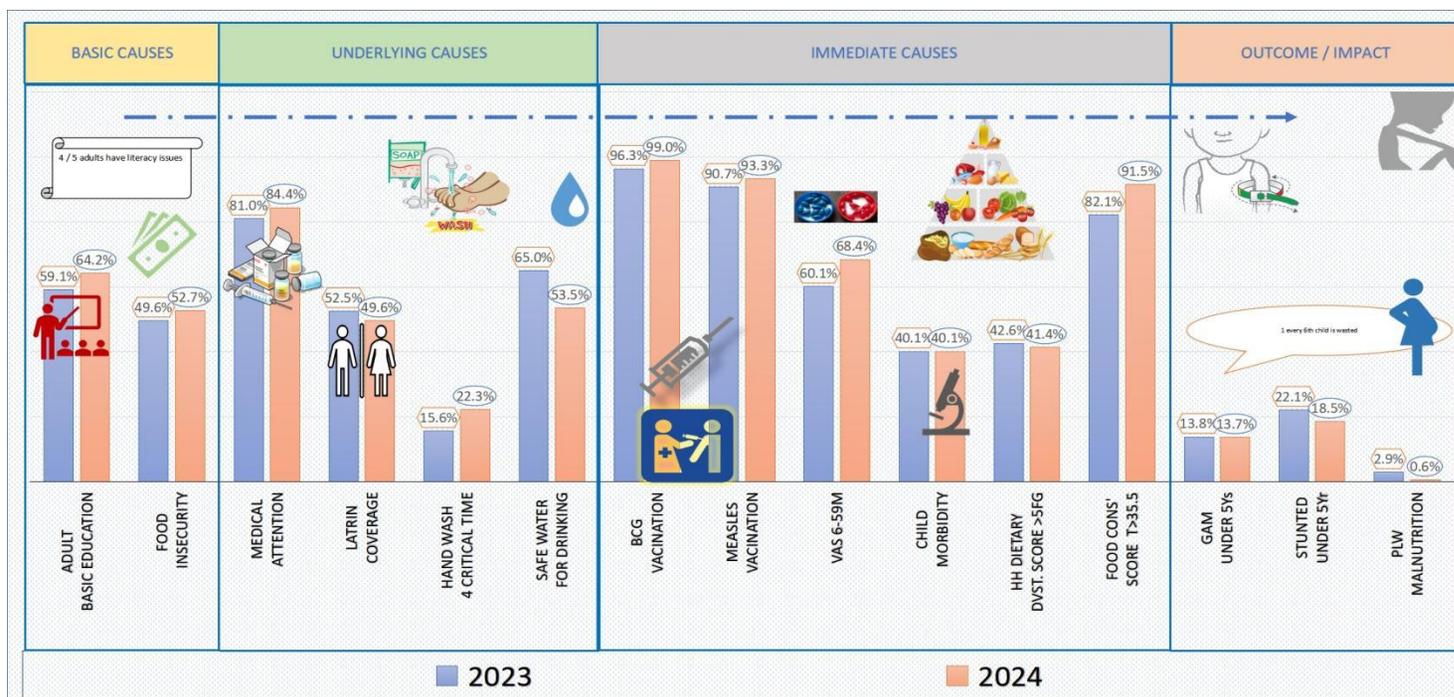


Figure 22: Infographic County Nutrition situation

## 4.2 Recommendation

**Table 39: Recommendation**

Findings	Recommendations	Actors (By Who)	Timelines
Prevalence of GAM 13.7% 52.4% of the malnourished children have not been enrolled in any nutrition programs	<ul style="list-style-type: none"> <li>Strengthen nutrition surveillance and active case finding.</li> <li>Increase number of facilities implementing IMAM</li> <li>Scale up family MUAC implementation approach with all CHUs</li> <li>Scale up of IMAM surge activities within all health facilities implementing IMAM.</li> <li>Strengthen community resilience through scale up of MIYCN activities (BFCI and BFHI).</li> <li>Conduct exhaustive mass malnutrition screening and integrated medical outreaches</li> <li>Provide nutrition commodities in all facilities offering IMAM services to avoid stock outs</li> <li>Strengthen Multi-sectoral platform for high level advocacy and coordination of nutrition activities both sensitive and specific.</li> <li>Advocate for recruitment of more nutritionist to help boost nutrition service delivery.</li> </ul>	MOH//KRCS/ ACF/UNICEF	June 2024
38.4% of the population practice OD	<ul style="list-style-type: none"> <li>Strengthen community hygiene promotion</li> <li>Sensitize schools on WASH through school health clubs</li> <li>Scale up CLTS activities within all the CHUs in the county</li> <li>Support PHOs to enforce construction and use of latrines at the community</li> <li>Certify OD villages in the county</li> <li>Strengthen WESCORD in the county</li> </ul>	MOH/CONCERNWOR LDWIDE/KRCS	September 2023
Moderate hunger – 29.8% Severe hunger – 4.7%	<ul style="list-style-type: none"> <li>Provision of Food aid (assistance)</li> <li>Provision of Cash and Voucher assistance</li> </ul>	KRCS/UNICEF/WVK/N DMA	May 2024

<p>Handwashing in 4 critical times with awareness and without awareness is 23.8% &amp; 26.9% respectively</p>	<ul style="list-style-type: none"> <li>• Scale up community sensitization on importance of handwashing in 4 critical times</li> <li>• Use local FM radio to sensitize the community on handwashing</li> <li>• Train CHPs on hygiene and sanitation</li> <li>• Sensitize schools on importance of hand washing in 4 critical times</li> <li>• Provision of hand washing facilities to schools and other institutions</li> </ul>	<p>MOH, WHH/CONCERNWORLDWIDE/KRCS/UNICEF</p>	<p>July 2024</p>
<p>Less than 43% of HHs are consuming more than 5 food groups are below  Majority of HHs were consuming below 5 food groups</p>	<ul style="list-style-type: none"> <li>• Scale up BFCI implementation within the CHUs</li> <li>• Sensitize the community on acceptable diets</li> <li>• Develop county recipe from locally available foods to promote diets</li> <li>• Use of radio to sensitize the community on appropriate MIYCN practices</li> </ul>	<p>MOH, CONCERNWORLDWIDE/KRCS/UNICEF</p>	<p>November 2024</p>
<p>6.9% of pregnant women consume IFAS for &gt;180 days</p>	<ul style="list-style-type: none"> <li>• Sensitize the communities of importance of consuming IFAS during pregnancy through media.</li> <li>• Train health care providers on IFAS guidelines</li> <li>• Sensitize CHVs on IFAS</li> <li>• Household monitoring of pregnant mothers consuming IFAS to ensure adherence</li> <li>• Ensure constant supply of IFAS tablets to avoid stock outs.</li> </ul>	<p>MOH, CONCERNWORLDWIDE/KRCS/UNICEF</p>	<p>June 2024</p>
<p>Children 6 to 23 months in Tana River County were consuming inadequate diet (MAD &amp; MFF – 11.3% each)</p>	<ul style="list-style-type: none"> <li>• Scale up BFCI Implementation in all health facilities and within 50% of CUs</li> <li>• Strengthen community resilience through scale up of MIYCN activities (BFCI and BFHI).</li> </ul>	<p>MoH/UNICEF/WVK</p>	<p>November 2024</p>

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## 5.1 Questionnaire



Integrated  
nutrition SMART q

## 5.2 Sampling frame



Tana river county  
sampling frame.xl:

## 5.3 Event Calendar



Event calendar  
Feb 2024.xlsx

## 5.4 Sampled Cluster

Sub- County	Ward	Sublocation	Village	Population	
Bangale	Madogo	Madogo	ADELE	2795	1
Bangale	Sala	Ziwani	ANOLE MILIMANI	345	2
Bangale	Madogo	Madogo	BARAKA	2702	3
Bangale	Madogo	Madogo	BOJI	3006	4
Bangale	Madogo	Madogo	BULA HUZUNI	2069	5
Bangale	Madogo	Madogo	BULA KODHA	532	6
Bangale	Madogo	Madogo	BULA SHEKH	540	7
Tana North	Chewele	Bawama	DARIME	172	8
Tana North	Chewele	Bawama	GALE	162	9
Bangale	Madogo	Madogo	HAGARSOT	4117	10
Bangale	Madogo	Mulanjo	KONEGABA	198	11
Bangale	Madogo	Konoramadha	LAGBADANA	912	12
Tana North	Hirimani	Meti	MANYATA	1241	13
Bangale	Bangale	Kamaguru	METIDIDA	192	14
Tana North	Chewele	Charidede	RAHMA	401	15
Bangale	Bangale	Boka	SUKELA	510	16

Tana North	Hirimani	Meti	VILLAE 10	328		17
Tana North	Chewele	Charidede	WAQBERI	198		18
Tana River	Kinakomba	Jamhuri	Bububu	1530		19
Galyedertu	Wayu	Hakoka	Bula Tara	220	RC	
Tana River	Chewani	Ghorei	Dafoma	1600	RC	
Galyedertu	Wayu	Chifiri	Gambo	513		20
Tana River	Mikinduni	Mazuni	Handampia B	495		21
Tana River	Chewani	Kasarani	Hola Secondary B	510		22
Tana River	Kinakomba	Kalkacha	Kalkacha Juu	153	RC	
Tana River	Kinakomba	Kilindini	Kilindini	1753		23
Tana River	Chewani	Laini	Laini A	1512		24
Tana River	Mikinduni	Lenda	Lenda	1451		25
Galyedertu	Wayu	Daba	Malkadende	553		26
Tana River	Chewani	Hola Mission	Mji Wa Waze B	631		27
Tana River	Chewani	Kibuyu	Mwangaza B	1399		28
Tana River	Chewani	Laini	Ovo	997		29
Tana River	Chewani	Matanya	Umoja	824		30
Tana Delta	Garsen North	Abaganda	Abaganda B	585		31
Tana Delta	Garsen North	Baomo	Baomo	947		32
Tana Delta	Garsen West	Garsen	Bula Aftin	248		33
Tana Delta	Kipini East	Kilelengwani	Chakamba	1020		34
Tana Delta	Garsen Central	Kipao	Dibe	1022		35
Tana Delta	Garsen Central	Galili	Galili A	660		36
Tana Delta	Garsen South	Wachu Oda	Gubani B&C	420		37
Tana Delta	Garsen North	Wema	Hewani	637		38
Tana Delta	Garsen West	Garsen	Kajisteni C	375		39
Tana Delta	Kipini East	Kilelengwani	Kings well	288		40
Tana Delta	Garsen North	Baomo	Kitere	1458		41
Tana Delta	Garsen North	Sera	Kurole B	911		42
Tana Delta	Garsen West	Kone	Masqabana	400	RC	
Tana Delta	Garsen South	Idsowe	Minijila B	600		43
Tana Delta	Garsen North	Mnazini	Mnazini	4180		44
Tana Delta	Kipini West	Kulawa	Mto Kilifi	391		45
Tana Delta	Kipini West	Odole	Odole	1228		46
Tana Delta	Kipini East	Matangeni	Ponge	205	RC	
Tana Delta	Kipini West	Kurawa	Shaurimoyo	469		47
Tana Delta	Garsen South	Dalu	Tawakal	143		48

Tana Delta	Kipini West	Kurawa	Vibao Viwili B	750	49
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## 5.5 Survey Teams

S/NO	NAME	DESGN	PHONE NO	SUB COUNTY
<b>1</b>	<b>YASMIN ISMAEL</b>	<b>SUPERVISOR</b>	<b>0705687689</b>	<b>TANA NORTH</b>
<b>2</b>	<b>ABDIRIZAQ ISMAIL</b>	<b>TEAM LEADER</b>	<b>0790521661</b>	<b>TANA NORTH</b>
3	VOLYVIAN AKOTH	ENUMERATOR	0757051544	TANA NORTH
4	IBRAHIM ABDI MUSA	ENUMERATOR	0710602443	TANA NORTH
<b>5</b>	<b>NURIYA ISSACK ADAN</b>	<b>TEAM LEADER</b>	<b>0725166391</b>	<b>TANA NORTH</b>
6	RAHMA MAHMUD	ENUMERATOR	0798558418	TANA NORTH
7	PATRICK KAMALE	ENUMERATOR	0799135759	TANA NORTH
<b>8</b>	<b>EMILY JARHA</b>	<b>TEAM LEADER</b>	<b>0713499679</b>	<b>TANA NORTH</b>
9	ABUBAKAR JARSA	ENUMERATOR	0797991799	TANA NORTH
10	FATUMA A. ABDULLAHI	ENUMERATOR	0704993217	TANA NORTH
<b>11</b>	<b>KAHINDI TUVA</b>	<b>SUPERVISOR</b>	<b>0724206830</b>	<b>TANA DELTA</b>
<b>12</b>	<b>ZEITUN BILAL</b>	<b>TEAM LEADER</b>	<b>0717045633</b>	<b>TANA DELTA</b>
13	HENRY MUTETI	ENUMERATOR	0711444991	TANA DELTA
14	AISHA AHMED	ENUMERATOR	0740744561	TANA DELTA
<b>15</b>	<b>ZAINAB IBRAHIM</b>	<b>TEAM LEADER</b>	<b>0703530589</b>	<b>TANA DELTA</b>
16	ANDERSON NZARO	ENUMERATOR	0702359459	TANA DELTA
17	RUKIA DIRAMO	ENUMERATOR	0794556560	TANA DELTA
<b>18</b>	<b>ZIPPORAH N. MUSYOKI</b>	<b>SUPERVISOR</b>	<b>0722778866</b>	<b>TANA RIVER</b>
<b>19</b>	<b>PAULINE KAMOTHO</b>	<b>TEAM LEADER</b>	<b>0720289783</b>	<b>TANA RIVER</b>
20	HARRISON JILLO	ENUMERATOR	0706656267	TANA RIVER
21	EMMACULATE HIRIBAE	ENUMERATOR	0795464655	TANA RIVER
<b>22</b>	<b>FATMA DIRAMO</b>	<b>TEAM LEADER</b>	<b>0701324252</b>	<b>TANA RIVER</b>
23	GHAMACHANA SUMBA	ENUMERATOR	0794573233	TANA RIVER
24	HASINA ABDALLA	ENUMERATOR	0724374670	TANA RIVER
<b>25</b>	<b>ADEN DUBOW</b>	<b>TEAM LEADER</b>	<b>0706264732</b>	<b>TANA RIVER</b>
26	HALIMA YUSUF	ENUMERATOR	0722491069	TANA RIVER
27	HALIMA MUMBO	ENUMERATOR	0701878875	TANA RIVER