Report of an Integrated Nutrition SMART Survey in Mandera County of Kenya (12th – 22nd July 2024).

(Report Date: 5th August 2024)

Acknowledgement

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Acronyms & Abbreviations

ACF	Action Against Hunger
ANC:	Antenatal Care
ASAL:	Arid and Semi-Arid Lands
BCG:	Bacillus Calmette – Guerin
BSFP:	Blanket Supplementary Feeding Program
C.I.	Confidence Interval
CHMT:	County Health Management Team
CLTS:	Community Led Total Sanitation
CSI:	Coping Strategy Index
ENA:	Emergency Nutrition Assessment
FAO	Food and Agriculture Organization
FCS	Food Consumption Score
GAM:	Global Acute Malnutrition
HAZ	Height for Age Z-Score
HDDS	Household Dietary Diversity Score
HiNi	High Impact Nutrition Intervention
IDPs	Internally Displaced Persons
IFAS	Iron Folic Acid Supplementation
IMAM	Integrated Management of Acute Malnutrition
IP	Implementing Partners
IPC	Integrated Phase classification
MAM:	Moderate Acute Malnutrition
MDD_W	Minimum Dietary Diversity Women
MNPs	Micronutrient Powder
MoA:	Ministry of Agriculture
MoH:	Ministry of Health
MUAC:	Mid-Upper Arm Circumference
NDMA	National Drought Management Authority
NITWG	Nutrition Information Technical Working Group
ODK	Open Data Kit
OPV	Oral Polio Vaccine
ORS	Oral Rehydration Salts
OTP	Outpatient Therapeutic Program

SAM:	Severe Acute Malnutrition
SBCC	Social and Behaviour Change Communication
SCHMT	Sub County Health Management Team
SCI	Save the Children International
SFP	Supplementary Feeding Program
SMART:	Standardized Measurement of Relief and Transition
SPSS:	Statistical Package for Social Sciences
SRA	Short Rains Assessment
UNICEF:	United Nations Children Fund
WASH	Water and Sanitation Hygiene
WAZ:	Weight for Age Z-Score
WDD_S	Women Dietary Diversity Score
WFP	World Food Programme
WHO:	World Health Organization
WHZ:	Weight for Height Z-Score

Executive summary

In July 2024, the Mandera County Department of Health, collaborating with nutrition partners (ACF, SCI, Concern Worldwide, UNICEF & WFP) and the Nutrition Information Working Group (NIWG), conducted a county-wide SMART survey across all seven sub-counties. The primary objective was to assess the prevalence of malnutrition among children aged 6-59 months and women of reproductive age (WRA) in Mandera County.

Specific Objectives:

- To determine the prevalence of acute malnutrition among children aged 6-59 months, as well as pregnant and lactating women.
- To assess the nutritional status of women of reproductive age (15-49 years) using maternal mid-upper arm circumference (MUAC).
- To evaluate immunization coverage for BCG, measles at 9 and 18 months, and Oral Polio Vaccines (OPV 1 and 3).
- To measure micronutrient supplementation coverage, including vitamin A supplementation for children aged 6-59 months and iron-folic acid supplementation during pregnancy.
- To determine de-worming coverage among children aged 12-59 months.
- To assess morbidity rates among children aged 6-59 months within two weeks prior to the survey.
- To collect information on potential underlying causes of malnutrition, such as household food security and Water, Sanitation, and Hygiene (WASH) practices.
- To determine Infant and Young Child Feeding (IYCF) indicators, including Minimum Meal Frequency (MMF), Minimum Acceptable Diet (MAD), and Minimum Dietary Diversity (MDD) among children aged 6-23 months.

Methodology:

The survey employed the Standardized Monitoring of Relief and Transitions (SMART) methodology, utilising a two-stage cluster sampling approach. The survey reached 691 children aged 6-59 months from 628 households in 45 clusters for anthropometric measurements. The survey collected data on food security, livelihoods, water, sanitation, hygiene, and access to healthcare from these households.

The survey covered Mandera County, excluding 20 villages due to insecurity, limited population, or being deserted. Conducted from July 12th to 22nd, 2024, the survey involved children aged 6-59 months for anthropometric measurements, with mothers/caregivers as primary respondents for household and mortality questionnaires. The survey also assesses the nutritional status of women of reproductive ages 15-49 years.

Key Findings:

- The prevalence of Global Acute Malnutrition (GAM) by WHZ was 20.6% (17.5 - 24.2 95% CI), classified as very high according to WHO/UNICEF 2018 thresholds, and Severe Acute Malnutrition (SAM) by WHZ was 3.2% (2.0 - 5.2 95% CI).
- This GAM rate is not statistically significantly different from the July 2023 report, where the GAM WHZ prevalence was 21.2% (17.7 - 25.1 95% CI) with a p-value >0.05.
- Malnutrition in the county was exacerbated by illness, with 30.2% (n=209) of children aged 6-59 months ill within the last 14 days before the survey. The majority suffered from ARI/Cough (21.4%, n=148), fever with chills like malaria (15.6%, n=108), watery diarrhoea (4.6%, n=32), bloody diarrhoea (0.3%, n=2), and other illnesses (e.g., pneumonia, dengue fever) (0.9%, n=6).
- Food intake was also poor, as indicated by IYCF indicators: minimum meal frequency (53.9%), minimum dietary diversity (16.7%), and minimum acceptable diet (15.6%) among children aged 6-23 months.

The results of key indicators are summarized in Table 1.

Table 1: Summary of Mandera County SMART Survey Findings in July 2024

	Characteristic	N	n	% (95% CI)
Wasting based on WHZ	Overall GAM (WFH <-2 Z score or presence of oedema) - WHO 2006	684	141	20.6% (17.5 - 24.2%)
	Overall SAM (WFH <-3 Z score or presence of oedema) - WHO 2006	684	22	3.2% (2.0 - 5.2%)
Wasting based on MUAC	Overall GAM (MUAC < 125 mm and/or oedema)	690	37	5.4% (3.7 - 7.7%)
	Overall SAM(MUAC < 115 mm and/or oedema)	690	4	0.6% (0.2 - 1.5%)
Combined GAM & SAM based on WHZ and MUAC	Combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	690	161	23.3% (20.1 - 26.9%)
	Combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema)	690	25	3.6% (2.3 - 5.6%)
Underweight	Overall underweight (WFA <-2 Z score) – WHO 2006	690	136	19.7% (16.5 - 23.4%)
	Overall Severe underweight (WFA <-3 Z score)- WHO 2006	690	20	2.9% (1.9 - 4.3%)
Stunting	Overall stunting (HFA <-2 Z score) – WHO 2006	665	103	15.5% (12.6 - 18.9%)
	Overall severe stunting (<-3 z-score)	665	18	2.7% (1.6 - 4.6%)
PLW MUAC	Pregnant & Lactating Women (PLW) MUAC <21cm	270	11	4.07%
WRA MUAC	Women of Reproductive Age 15-49 years (WRA) MUAC <21cm	532	26	4.89%
MDD-W	Women consuming five or more food groups	454	104	22.9%
ANC Attendance	ANC attendance	250	225	90.0%
IFAS	IFAS intake for >90 days	216	23	10.6%
Morbidity & Health seeking behaviour	Child morbidity (illness in the past two weeks before the survey)	691	209	30.2%
	Seek assistance (Yes)	209	136	65.1%

Vaccination	BCG	691	658	95.2%
	OPV1	691	675	97.7%
	OPV3	691	657	95.1%
	Measles 9 months	677	622	91.9%
	Measles 18 months	579	401	69.3%
VAS	Vitamin A (6-11 months)	35	27	77.1%
	Vitamin A (12-59 months) _Once	656	566	86.3%
	Vitamin A (12-59 months) _Twice	656	209	31.9%
Deworming	Deworming (12-59 months) _Once	568	169	29.8%
	Deworming (12-59 months) _Twice	568	57	10.0%
Infant & Young Child Feeding	Ever Breastfed (EvBF)	182	169	92.9%
	Early Initiation of Breastfeeding (EIBF)	169	151	89.4%
	Exclusively Breastfed For The First Two Days After Birth (EBF2D)	169	118	69.8%
	Continued Breastfeeding 12–23 Months (CBF)	136	99	72.8%
	Minimum Dietary Diversity 6–23 Months (MDD)	180	30	16.7%
	Minimum Meal Frequency 6–23 Months (MMF)	180	97	53.9%
	Minimum Acceptable Diet 6–23 Months (MAD)	180	28	15.6%
	Egg and or Flesh Food Consumption 6–23 Months (EFF)	180	44	24.4%
	Unhealthy Food Consumption 6–23 Months (UFC)	180	41	22.8%
	Zero Vegetable or Fruit Consumption 6–23 Months (ZVF)	180	146	81.1%
Water Sanitation & Hygiene (WASH)	Access to safe & clean drinking water	628	403	64.2%
	Water consumption ≥15Liters PPPD	628	298	47.5%
	Handwashing at 4 critical times	628	168	26.8%
	Access to toilet/latrine facility	628	447	71.2%
Food Consumption Score (FCS)	Poor FCS	628	5	0.8%
	Borderline FCS		44	7.0%
	Acceptable FCS		579	92.2%
Household Dietary Diversity (HDDS)	Low Dietary Diversity < 3 Food Groups	628	93	14.8%
	Medium Dietary Diversity (3-5 Food Groups)		241	38.4%
	High Dietary Diversity (>5 Food Groups)		294	46.8%
Household Hunger Scale (HHS)	No or little hunger in the household	628	301	47.93%
	Moderate hunger in the household		325	51.75%
	Severe hunger in the household		2	0.32%
Reduced Coping Strategies Index (rCSI)	Phase 1 (Minimal): rCSI score 0-3	628	301	47.9%
	Phase 2 (Stressed): rCSI score 4-18		152	24.2%
	Phase 3 (Crisis): rCSI score ≥19		175	27.9%

Conclusion: The nutrition situation in Mandera County remains critical according to Integrated Phase Classification (IPC), with a significant acute malnutrition rate. Addressing risk factors such

as low coverage of health services, poor childcare practices, low dietary diversity, and inadequate sanitation and hygiene is essential for a comprehensive recovery strategy in the county.

1 Introduction

1.1 Geographic Description of the Survey Area

Mandera County is in the North eastern part of Kenya, it borders Ethiopia to the North, Somalia Republic to the East, and Wajir County to the South and Southwest. It has 7 sub-counties (*Mandera East, Mandera West, Mandera North, Mandera South, Banissa, Lafey and Kutulo*), with an estimated population of 983,222 persons of which 15.2% (approximately 149,582) are children under the age of five (KNBS 2024 population projections).

The terrain is characterized by low lying rocky hills located on the plains that rise gradually from 400 meters above sea level in the south at Elwak to 970 metres above sea level on the border of Ethiopia. The rest of topography is low lying, characterized by dense vegetation with thorny shrubs of savannah type found along foots of isolated hills. The flat plains make drainage very poor, causing floods during heavy rain downpours. Rainfall is scanty and unpredictable averaging at 255mm per year. It has hot temperatures ranging at a mean annual average of 24^0 C in July to a high of 42^0 C in February/March. The county is prone to unpredictable climate changes, leading to either severe droughts or heavy rains.

Mandera County has three main livelihood zones i.e. a pastoral economy zone in the east and agro-pastoral economy zone in the west and an irrigated cropping zone in the north along the Daua River. Approximately 28.4% of the population resides in the pastoral zone, 39.2% in the agro-pastoral zone, and 32.4% in the irrigated cropping zone, which includes a mix of agro-pastoralism.

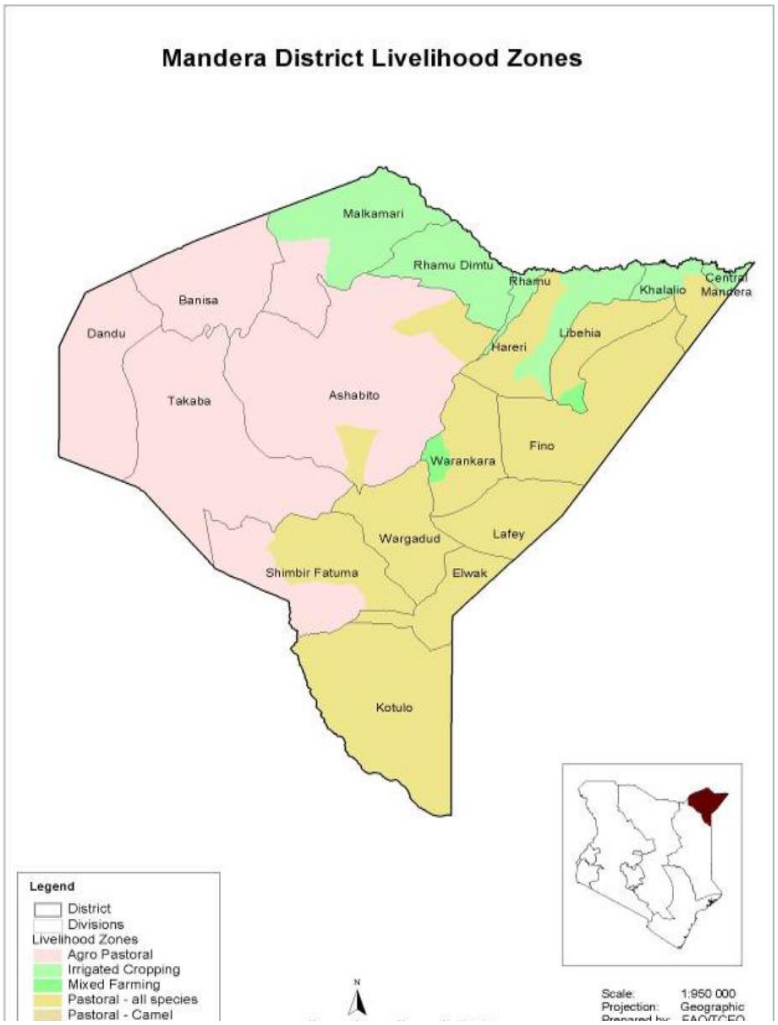


Figure 1: Map of Mandera County indicating the livelihood zones

1.2 Health and Nutrition situation:

The nutrition status of the community is associated with many factors that range from poor socio-economic and civil security, food insecurity, poor childcare practices and poor health seeking behaviours, frequent disease outbreaks, water, sanitation and hygienic infrastructure which lead to a cycle of malnutrition that only reduces slightly during the post rain season. The county's health, social and economic infrastructure is improving; there is increasing operationalisation of health facilities representing 13.5% increase compared to July 2018 and recruitment of health workers from 638 to 834 respectively.

Despite these progress, disease specific challenges exist as a result of limited health system infrastructure, lack of access to services at the community level, limited specialized health care services and high staff turnover which inhibits county efforts to sustain improved quality of health care. Currently the county also receives cases from neighbouring countries – Somalia and Ethiopia, increasing the number of severe malnutrition cases requiring inpatient treatment through the County referral hospital, Banisa, Kutulo and Elwak Sub County hospitals and outpatient services sought from health facilities and dispensaries along border points.

1.3 Survey Justification

The last SMART Nutrition survey in the county conducted in July 2023 showed a GAM WHZ level of 21.2%(17.7-25.1 95 C.I.) and the SAM rate of 2.9%(1.8 - 4.6 95% C.I.) depicting a critical situation. Ever since, several changes in the county have taken place that are likely to have impacted the health and nutrition situation.

An estimated total of 77,029 children aged 6-59 months have acute malnutrition, of which 64,619 and 12,410 have moderate and severe acute malnutrition respectively. 15,660 pregnant and lactating women were estimated to be acutely malnourished and require treatment for acute malnutrition based on the SRA 2023 report, conducted in February 2024.

The long rains in the months March, April and May (MAM) 2024 experienced above average amount of rainfall, leading to above normal vegetation greenness that depicted good pasture and browse condition for livestock production (NDMA bulletin, June 2024). This positively impacted livestock body and increased milk production. However, in the early months of the rain in April & May, flash floods were witnessed across the county which had a huge impact on various sectors including food security, health facilities and other critical infrastructures such as road networks, schools, market, and trading centres (NDMA bulletin, April 2024).

Due to current funding gaps, integrated health and nutrition outreaches for hard-to-reach areas have been scaled down to fewer than 100 sites, from over 300 sites previously supported by partners.

i. Thus the SMART survey is necessary to assess:
ii. The effects of short rains and long rains on nutrition and health status of children under five years.
iii. The impact of various interventions on nutrition and health status of children under five years and pregnant and lactating mothers.

iv. To gauge the performance of routine HINI package and other child survival interventions in the seven sub counties.
v. The overall health, nutrition and food security situation which informs surveillance at county level as well as the long rains assessment and response planning.

1.4 Survey Objectives

The overall objective of the survey was to determine the prevalence of acute malnutrition in children aged between 6-59 months in Mandera County.

1.4.1 Specific Objectives:

The specific survey objectives were;

i. To determine the prevalence of acute malnutrition among children 6-59 months, pregnant and lactating women.
ii. To determine the nutrition status of women of reproductive age of 15-49 years based on maternal mid-upper circumference (MUAC).
iii. To determine the immunisation coverage for BCG, measles at 9 and 18 Months, Oral Polio Vaccines (OPV 1 and 3),
iv. To determine micronutrient supplementation coverage: vitamin A supplementation among children aged 6-59 months and Iron folic supplementation coverage during pregnancy.
v. To determine de-worming coverage among children aged 12 to 59 months
vi. To determine morbidity rates among children aged 6-59 months two weeks prior to the survey
vii. To collect information on possible underlying causes of malnutrition such as household food security, Water, Sanitation, and hygiene practices.
viii. To determine the IYCF indicators (MMF, MAD and MDD) among children 6-23 months old.

1.5 Survey timing

The survey was conducted towards the start of dry season and toward the end of short rains.

Table 2:Mandera County Seasons calendar indicating the timing of the survey

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

1.6 Survey Area

A single survey was conducted to cover the entire county, encompassing all livelihood zones (pastoral, agro-pastoral, and irrigated cropping zones). Previous surveys had shown a homogeneity pattern across these zones, which informed the decision to conduct one comprehensive survey to generate countywide indicators. However, due to security concerns, the survey excluded the following 20 areas:

- Banisa Sub-county: 6 villages in Guba and Banisa wards
- Katulo Sub-county: 4 villages in Katulo ward
- Mandera North Sub-county: 4 villages in Ashabito and Guticha wards
- Mandera South Sub-county: 5 villages in Elwak North, Shimir Fatuma, and Wargadud wards
- Mandera West Sub-county: 1 village in Takaba South ward.

2 Methodology

2.1 Study Design & Population

A descriptive cross-sectional nutrition SMART survey was conducted for children aged 6-59 months and pregnant and lactating women (PLWs) for the anthropometric measurements. Mothers or primary caretakers (above the age of majority) were the chief targets for the household questionnaires. The study covered both the residents and internally displaced persons (IDPs) within the nine sub counties.

2.1.1 Exclusion criteria

- Caregivers who declined to grant consent despite informed consent efforts.

2.1.2 Inclusion criteria

- All children aged 6– 59 months and their caregivers and PLWs around the household at the time of study in the sampled households.

- All sampled households, including those without eligible children 6-59 months. In sampled households without eligible children, the survey team still visited them for other household-level and non-child variable indicators such as mortality.

2.2 Sample size

The Sample size was determined using ENA for SMART software (11th January 2020). In SMART methodology, the calculation of the Anthropometry Sample size used the following parameters in the ENA for SMART software:

- estimated prevalence rates of malnutrition (GAM),
- desired precision,
- design effect,
- average household size,
- Percentage of <5's in the population
- Percentage of non-response rate.

Table 3: Sample size calculation for anthropometric

Parameters	Value	Rationale
Estimated prevalence of GAM	21.2%	Based on July 2023 SMART survey there was a critical GAM of 21.2 % (17.7 - 25.1 95% C.I.). Due to the good short and long rains performance and nutrition emergency interventions, the nutrition situation is projected to improved. However, flash floods witnessed across the county had a huge impact on food security, health services access and other critical infrastructures, scale down of integrated health and nutrition outreach services can have impact program coverage hence the use of point GAM prevalence (21.2%).
±Desired precision	5%	SMART methodology guideline recommends that, if expected prevalence of GAM is higher, for example 20% or more, a precision of +/-5% would likely be sufficient
Design effect	1.66	This was sufficient to cater for any heterogeneity based on the expected prevalence. Obtained from SMART survey results of July 2023.
Children to be included	**464**	
Average household size	5.5	Based on the KNBS 2019 KPHC-analytical-report-on-population- 2024 projections
Percent of under five children	15.2%	Based on the KNBS 2019 KPHC-analytical-report-on-population- 2024 projections
Percent of non-respondent	1.0%	This is the anticipated non-response rate based on SMART guideline. July 2023 SMART survey which had a non-response close to 1.0%.
Household to be included	**623**	

2.3 Number of households per cluster

The survey applied a household definition of a group of people who eat from the same pot regularly and live on the same compound or in a physical location. The members may have lived in different structures. Each cluster had 14 households to be visited. The calculation of 14 households was based on field logistics, such as the estimated time the teams spend in the field, excluding travel, initial introduction and selection of HHs, and applicable breaks (see Table 4)

Table 4: Calculation of Households to Survey Per Cluster

Parameter	Value (minutes)
Total time per day for field work (start at 7:00 am and end at 5:00 pm)	540
Travel time to cluster location (one-way)	45
Duration for initial introduction and selection of household	30
Total duration of breaks	30
Travel time from one household to another	5
Average time in the household	27
Number of HH planned/day/team	**= 540 – (45*2+30+30+5) = 14**

In the survey, a village—the smallest geographical unit in a locality—was a cluster. The total number of households (sample size of 623 HHs), calculated using ENA software, was divided by the estimated number of households per cluster (14 HHs) to determine the number of clusters for the survey.

Consequently, the total number of clusters sampled from the list of all accessible villages and their populations in the *Mandera County* was 623÷14 = 45 clusters.

2.4 Sampling procedure: selecting clusters

Stage one involved the selection of the 45 calculated clusters using probability proportional to size (PPS) from an updated sampling frame collected with the support of the relevant stakeholders. A village, also called the primary sampling unit (PSU), was the smallest geographical unit in the county and formed a cluster. All PSUs with their respective populations were keyed into the ENA software (Jan 11th 2020), and the 45 clusters were selected accordingly. Cluster sampling excluded only one village with a refugee camp due to differences in livelihoods. No PSU was excluded due to inaccessibility (due to insecurity or no road) and having no population.

2.5 Sampling procedure: selecting households and children

A household was defined as people who slept under the same roof and ate from the same cooking pots. Members of a household were not necessarily related to one another. If there were several structures within the same compound but each ate from the same cooking pots (more common

in rural homesteads), they were regarded as separate households. Conversely, if there was a single structure with families eating from different cooking pots (more common in urban rentals), they were also regarded as separate households.

The survey team prepared a list of all HHs in the village in collaboration with the village leaders on arrival to an area and after introducing themselves and the survey's objectives to the village leaders. From such a list that would exclude abandoned ones, enumerators would select the expected number of Households (14) using simple random sampling, after which they would start visiting the HHs one after the other.

Survey teams segmented clusters with more than 100 households and randomly selected a segment for the survey. Whenever a sampled HH or an eligible child 6-59 months were absent at the first attempt, the survey team revisited the HH. If the outcome remained the same on the second visit, the survey teams entered the necessary details in the cluster control form and did not substitute such a Household.

2.6 Questionnaire, training and supervision

2.6.1 Questionnaire

Quantitative data collection methods were employed to gather survey data. The standard survey questionnaire, developed and approved by the NITWG and tailored to the local context, was configured in tablets using Open Data Kit (ODK) for data collection.

The anthropometric tools used in the survey included:

- Height/length boards: For measuring the height/length of children under 5 years.
- Digital weighing scales: For measuring the weight of children aged 6-59 months.
- MUAC tapes: For measuring the mid-upper arm circumference (MUAC) of children and pregnant/lactating women.

Before the actual survey commenced, all tools and instruments were pre-tested and calibrated to ensure accuracy.

2.6.2 Survey team composition and selection

The survey team consisted of eight teams, each comprising three members: a team leader and two enumerators/measurers. The team leaders were from the sub-county Department of Health, while the enumerators/measurers were selected from qualified individuals in Mandera County who had experience in SMART surveys and had performed well in previous engagements.

Additionally, the team included a technical lead from the Nutrition Information Technical Working Group (NITWG), the survey manager (County Nutrition Coordinator), and coordinators from the County Department of Health Services who supervised the survey team. Partner staff from organisations such as Action Against Hunger (ACF), Save the Children (SCI), the National

Drought Management Authority (NDMA), and the Rural Agency for Community Development and Assistance (RACIDA) also participated.

2.6.3 Survey Team Training

A comprehensive training for the survey teams was conducted over four days (12th – 15th July 2024) by the SMART Survey Manager and NITWG Technical Assistance (TA). The classroom training covered general survey objectives, an overview of survey design, household selection procedures, anthropometric measurements, signs and symptoms of malnutrition, data collection and interview skills, and the completion of questionnaires using ODK Collect. The training schedule is included as an appendix in this report.

The training also included a standardisation test, where the measurers took anthropometric measurements for 10 children twice, and field tests, where each survey team completed two questionnaires. All pre-tested data sets from the Kobo Server were downloaded and reviewed in the presence of the enumerators.

The pre-test exercise was discussed, and necessary changes to the questionnaire were made accordingly.

2.7 Data analysis

The teams uploaded data daily to the ODK Aggregate server or Ona. Anthropometry data was downloaded to Excel and then to ENA every day of data collection for plausibility checks, with feedback given to the teams every morning.

All anthropometric data was downloaded to Excel for analysis using ENA for SMART (Jan 11th, 2020 version). Other data sets were analysed using SPSS 29.0 and Microsoft Excel.

2.8 Results Dissemination

On completing the data collection and analysis stage, the preliminary report and data sets were submitted to the Nutrition Information Technical Working Group (NITWG) for review and validation. Final report dissemination to the County Department of Health Services, and partners occurred afterwards.

2.9 Ethical consideration

- **Entry Behaviour into Households**: The interviewers formally introduced themselves, and the organization they represented, and stated the purpose of their visit. They also asked for consent for participation.
- **Voluntary Participation**: All respondents were interviewed upon their informed consent and were not forced to participate. Interviewers stopped interviewing at any time during the interview if the respondent desired.
- **Informed Use of Data**: Participants were clearly informed about how the collected data would be used.

- **Confidentiality**: Interviewers ensured that participants' information remained confidential and was used only for the survey. Their names were not included in the reports.

2.10 Limitations of the survey

- IYCF indicators should be interpreted as proxy indicators since the SMART survey sample size was mainly derived and focused on anthropometric indicators.
- The percentage of children with an accurate date of birth from a documented source like a birth certificate or child health card was only 42.8%, meaning age estimations were through recall for 57.2% of children surveyed. The absence of a recorded date of birth may have impacted the quality of the age determination and other age-dependent indicators of Health and IYCF.

3 Results

3.1 Description of Sample

3.1.1 Households & number of children 6-59months

The data collection reached 691 children 6-59 months from 628 households in the 45 clusters (villages/sub-villages) surveyed, as seen in Table 5 below. 99.8% of the HHs were residents, while <1% were refugees. Most respondents (84%) were female and the mean age of the respondents was 37 years.

Table 5: The survey sample

Category	Target	Achievement
Household	630 (i.e. 14*45=630)	628 (99.7%)
Children ages 6-59 months	464	691 (>100%)
Cluster	45	45 (100%)

3.2 Anthropometric results (based on WHO standards 2006):

To generate nutrition indices such as wasting, underweight and stunting, an analysis of anthropometric measurements from the surveyed children 6-59 months was done using ENA for SMART Software. The indices were then compared to the World Health Organisation Standards 2006. SMART flags: WHZ -3 to 3, HAZ -3 to 3 and WAZ -3 to 3 were used in the final analysis to exclude z-scores with extreme values from the observed mean.

3.2.1Distribution by age and sex

Anthropometric measurements were taken on a total of 690 children (338 boys and 352 girls) aged 6-59 months to assess acute malnutrition. The ratio of boys and girls was around 1.0 as expected. The distribution of the assessed children by age shows that the younger (6-29 months) were significantly more compared to the older (30-59 months) at 0.73 (p=0.039). The age distribution according to Table 6 was within the expected limits which show that there was no selection bias during data collection process.

Table 6: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	65	56.5	50	43.5	115	16.7	1.3
18-29	74	42.3	101	57.7	175	25.4	0.7
30-41	82	47.4	91	52.6	173	25.1	0.9
42-53	72	50.0	72	50.0	144	20.9	1.0
54-59	45	54.2	38	45.8	83	12.0	1.2
Total	**338**	**49.0**	**352**	**51.0**	**690**	**100.0**	**1.0**

3.2.2 Prevalence of acute Malnutrition based on Weight-for-Height Z scores (WHZ)

The prevalence of Global Acute Malnutrition (GAM) based on WHZ for the county was **20.6% (17.4 - 24.2 95% CI)**, and the Severe Acute Malnutrition (SAM) rate was **3.2% (2.0 - 5.2 95% CI)**. No cases of oedema were observed in this assessment. According to WHO classification, these findings indicate a very high GAM rate. This GAM rate is not statistically significantly different from the July 2023 report, where the GAM WHZ prevalence was 21.2% (17.7 - 25.1 95% CI) with a p-value >0.05 (see Table 7 below).

Table 7: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 684	Boys n = 335	Girls n = 349
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(141) 20.6 % (17.4 - 24.2 95% C.I.)	(79) 23.6 % (18.8 - 29.1 95% C.I.)	(62) 17.8 % (13.5 - 23.0 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(119) 17.4 % (14.3 - 20.9 95% C.I.)	(70) 20.9 % (16.3 - 26.4 95% C.I.)	(49) 14.0 % (10.3 - 18.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(22) 3.2 % (2.0 - 5.2 95% C.I.)	(9) 2.7 % (1.3 - 5.4 95% C.I.)	(13) 3.7 % (2.0 - 6.8 95% C.I.)

The prevalence of oedema is 0.0 %

The prevalence of Global Acute Malnutrition (GAM) was lower in the 6-29 months' age group at 15.3% (11.2-20.5 95% CI) compared to the 30-59 months' age group at 24.5% (20.1-29.4 95% CI), as shown in Table 7. The difference in wasting rates by WHZ between these two age groups was statistically significant (p = 0.006).

Table 8: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	115	3	2.6	16	13.9	96	83.5	0	0.0
18-29	174	4	2.3	22	12.6	148	85.1	0	0.0
30-41	172	4	2.3	23	13.4	145	84.3	0	0.0
42-53	140	9	6.4	33	23.6	98	70.0	0	0.0
54-59	83	2	2.4	25	30.1	56	67.5	0	0.0
Total	**684**	**22**	**3.2**	**119**	**17.4**	**543**	**79.4**	**0**	**0.0**

Figure 2 indicates clusters with high cases of acute malnourished children. There were 18 clusters considered as *hotspots* of acute malnutrition (>=25% proportion of malnourished children).

Sub County	Ward	Main Town Name	Village/Bulla Name	Population	N (screene	(n)cases	<-2 WHZ-WHO %	WHZ ± SD	Cluster #
Banisa	Banisa	Lulis	Bulla Idps Lulis	2640	19	7	36.84%	-1.43 ± 0.92	2
Banisa	Guba	Guba	Jibal	2000	21	8	38.10%	-1.51 ± 1.10	4
Banisa	Kiliweheri	Funanteso	Bulla Mosque Funanteso	1408	22	6	27.27%	-0.98 ± 1.13	7
Kotulo	Kotulo	Garsesala	Goro Garse Sala	3090	18	5	27.78%	-1.02 ± 1.04	8
Mandera South	Elwak South	Tuli	Tuli	1345	14	4	28.57%	-1.23 ± 1.26	10
Mandera East	Arabia	Odha	Odha Zone 2	1980	12	3	25.00%	-1.18 ± 1.23	24
Mandera West	Takaba Ward	Takaba	Bamba Ongese	500	18	5	27.78%	-1.30 ± 1.08	27
Mandera West	Dandu Ward	Dandu	Hargesawara	660	23	8	34.78%	-1.51 ± 0.73	28
Lafey	Sala	Sala	Ali Garob	1471	16	6	37.50%	-1.40 ± 0.79	32
Mandera North	Rhamu Ward	Bulla Dana	Bulla Dana(Rhamu Town)	5905	13	4	30.77%	-1.81 ± 0.60	33
Mandera North	Rhamu Ward	Bulla Hargesa	Bulla Hargesa B(Rhamu Town)	5708	15	4	26.67%	-1.25 ± 1.00	34
Mandera North	Rhamu Ward	Bulla Abakaro	Bulla Abakaro(Rhamu)	3851	12	5	41.67%	-1.17 ± 1.22	35
Mandera North	Rhamu Ward	Girissa	Girissa(Rhamu Town)	4436	12	3	25.00%	-1.31 ± 0.95	37
Mandera North	Rhamu Ward	Bulla	Bulla Dodey(Rhamu)	3500	15	4	26.67%	-0.90 ± 1.06	38
Mandera North	Rhamu Dimtu	Rhamu	Rhamu Dimtu Town	6300	13	5	38.46%	-1.59 ± 0.84	39
Mandera North	Rhamu Dimtu	Yabicho	Kalmalab	2321	12	5	41.67%	-1.43 ± 1.24	41
Mandera North	Marothiley Ward	Kubi	Kubi(Marothiley)	3664	10	5	50.00%	-1.98 ± 1.29	43
Mandera North	Guticha Ward	Darab	Darab Athithi(Guticha)	3851	8	2	25.00%	-1.74 ± 0.79	44

Figure 2: Weight for height Z scores averages across clusters

3.2.3 Prevalence of acute malnutrition based on MUAC cut-off (and/or oedema)

Based on MUAC measurements, the prevalence of Global Acute Malnutrition (GAM) was 5.4% (3.7-7.7 95% CI) and Severe Acute Malnutrition (SAM) was 0.6% (0.2-1.5 95% CI). These rates were significantly lower than those obtained using Weight-for-Height Z-scores (WHZ), as MUAC is more sensitive to detecting malnutrition in younger children (under two years of age) and may not identify older children who are malnourished by WHZ criteria. Additionally, the prevalence of malnutrition measured by MUAC was higher among girls than boys, with a statistically significant difference (p = 0.007) (Table 9).

Table 9: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 690	Boys n = 338	Girls n = 352
Prevalence of global malnutrition (< 125 mm and/or oedema)	(37) 5.4 % (3.7 - 7.7 95% C.I.)	(10) 3.0 % (1.7 - 5.2 95% C.I.)	(27) 7.7 % (5.2 - 11.3 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(33) 4.8 % (3.3 - 7.0 95% C.I.)	(9) 2.7 % (1.5 - 4.8 95% C.I.)	(24) 6.8 % (4.6 - 10.1 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(4) 0.6 % (0.2 - 1.5 95% C.I.)	(1) 0.3 % (0.0 - 2.2 95% C.I.)	(3) 0.9 % (0.3 - 2.5 95% C.I.)

The analysis of acute malnutrition based on MUAC included all 690 children aged 6-59 months surveyed (Table 10). Acute malnutrition was more prevalent among younger children (6-29 months) at 9.6% (6.2-14.5 95% CI) compared to older children (30-59 months) at 2.5% (1.5-4.3 95% CI). The difference in wasting rates by MUAC between these two age groups was statistically significant (p = 0.001).

Table 10: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

		Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	115	2	1.7	16	13.9	97	84.3	0	0.0
18-29	175	0	0.0	9	5.1	166	94.9	0	0.0
30-41	173	2	1.2	4	2.3	167	96.5	0	0.0
42-53	144	0	0.0	2	1.4	142	98.6	0	0.0
54-59	83	0	0.0	2	2.4	81	97.6	0	0.0
Total	690	4	0.6	33	4.8	653	94.6	0	0.0

3.2.4 Prevalence of combined GAM and SAM based on WHZ and MUAC cut off's (and/or oedema) and by sex

The combined prevalence of GAM and SAM based on WHZ and MUAC criteria was **23.3% (20.1 - 26.9 95% CI)** and **3.6% (2.3 - 5.6 95% CI)**, respectively, as shown in Table 11. The prevalence rates were slightly higher in boys than in girls, but the differences were not statistically significant (p = 0.60 for GAM and p = 0.23 for SAM).

Table 11: Prevalence of combined GAM and SAM based on WHZ and MUAC cut off's (and/or oedema) and by sex*

	All n = 690	Boys n = 338	Girls n = 352
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	(161) 23.3 % (20.1 - 26.9 95% C.I.)	(82) 24.3 % (19.6 - 29.6 95% C.I.)	(79) 22.4 % (17.6 - 28.2 95% C.I.)
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema	(25) 3.6 % (2.3 - 5.6 95% C.I.)	(9) 2.7 % (1.3 - 5.4 95% C.I.)	(16) 4.5 % (2.7 - 7.6 95% C.I.)

*With SMART or WHO flags a missing MUAC/WHZ or not plausible WHZ value is considered as normal when the other value is available

Table 12: Detailed numbers for combined GAM and SAM

	GAM		SAM	
	no.	**%**	**no.**	**%**
MUAC	20	2.9	3	0.4
WHZ	124	18.0	21	3.0
Both	17	2.5	1	0.1
Edema	0	0.0	0	0.0
Total	161	23.3	25	3.6

Total population: 690

3.2.5 Prevalence of underweight based on weight-for-age z-scores

The analysis of Weight for Age, a composite index that measures both stunting and wasting, included 649 children (3 cases were flagged). The overall prevalence of underweight in *Mandera County* was **19.7 % (16.5 - 23.4 95% C.I.)**, with severe underweight rates being **2.9 % (1.9 - 4.3 95% C.I.)** as shown in Table 13. Based on the WHO classification, the prevalence was **"very high",** as it was ≥ 15%.

Table 13: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 690	Boys n = 338	Girls n = 352
Prevalence of underweight (<-2 z-score)	(136) 19.7 % (16.5 - 23.4 95% C.I.)	(74) 21.9 % (17.1 - 27.5 95% C.I.)	(62) 17.6 % (13.9 - 22.1 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(116) 16.8 % (13.7 - 20.5 95% C.I.)	(60) 17.8 % (13.4 - 23.1 95% C.I.)	(56) 15.9 % (12.4 - 20.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(20) 2.9 % (1.9 - 4.3 95% C.I.)	(14) 4.1 % (2.5 - 6.8 95% C.I.)	(6) 1.7 % (0.8 - 3.6 95% C.I.)

3.2.6 Prevalence of stunting based on height-for-age z-scores

Stunting reflects a failure to achieve genetic potential for height, typically resulting from the persistent, cumulative effects of inadequate nutrition and other deficits over an extended period, often spanning several generations. It can also be influenced by recurrent and chronic illnesses and is not sensitive to recent or short-term changes in dietary intake.

The Mandera County survey found a stunting prevalence of **15.5% (12.6 - 18.9 95% CI)**, with severe stunting at **2.7% (1.6 - 4.6 95% CI)**, as shown in Table 14. According to WHO classification, this prevalence is categorised as “medium” (10 - <20%). The results also indicated a higher prevalence of stunting among boys compared to girls, although this difference was not statistically significant (p > 0.05).

Table 14: Prevalence of stunting based on height-for-age z-scores and by sex

	All **n = 665**	Boys **n = 321**	Girls **n = 344**
Prevalence of stunting (<-2 z-score)	(103) 15.5 % (12.6 - 18.9 95% C.I.)	(58) 18.1 % (13.1 - 24.4 95% C.I.)	(45) 13.1 % (10.3 - 16.4 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(85) 12.8 % (10.0 - 16.1 95% C.I.)	(48) 15.0 % (10.6 - 20.7 95% C.I.)	(37) 10.8 % (8.2 - 14.0 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(18) 2.7 % (1.6 - 4.6 95% C.I.)	(10) 3.1 % (1.5 - 6.2 95% C.I.)	(8) 2.3 % (1.1 - 4.8 95% C.I.)

3.2.7 Mean z-scores, Design Effects and excluded subjects

The standard deviation for the distribution of Weight-for-Height (1.03), Weight-for-Age (0.98) and Height-for-Age (1.10) in the Z-score fell within the acceptable range (0.8–1.2). The design effects for WHZ, WAZ and HAZ were 1.17, 1.28 and 1.23, respectively, which shows the sampled population had homogeneity in terms of wasting and underweight but less homogeneous in terms of stunting (see Table 15).

Table 15: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	684	-1.12±1.03	1.17	0	6
Weight-for-Age	690	-1.17±0.98	1.28	0	0
Height-for-Age	665	-0.82±1.10	1.23	0	25

* contains for WHZ and WAZ the children with oedema.

3.3 Children's morbidity

According to UNICEF's conceptual framework on the causes of malnutrition, disease is an immediate cause of the condition. It also affects food intake, which is another immediate cause. Therefore, assessing morbidity and its impact on malnutrition is crucial.

The survey found that 30.3% (n=209) of children had been ill in the two weeks preceding the July 2024 survey, compared to 25.6% in the July 2023 survey. The majority of these illnesses were Acute Respiratory Infections (ARI) (21.4%), fever with chills similar to malaria (15.6%) and Watery diarrhoea (4.6%). Table 16 summarises the reported illnesses.

Among children with watery diarrhoea, 68.8% (n=22) received therapeutic zinc, and 59.4% (n=19) got supplementation with zinc and or Oral Rehydration Salts (ORS). However, zinc supplementation coverage was below the national target of 80%.

This data highlights the importance of addressing disease prevention and treatment seeking to combat malnutrition.

Table 16: Prevalence of reported illness in children in the two weeks prior to interview

Prevalence of reported illness among children 6-59 months (N=691)		
No	482	69.75%
Yes	209	30.25%
Type of illness (N=691)		
Fever with chills like malaria	108	15.63%
ARI/Cough	148	21.42%
Watery diarrhoea	32	4.63%
Bloody diarrhoea	2	0.29%
Other (pneumonia, dengue fever)	6	0.87%

65.1% (n=136) sick children were taken for health assistance during the episode of illness compared to 64.9% (n=137) July 2023. Worth to note is that majority (85.3%) sought health assistance from public health facilities as shown in Table 17.

Table 17: Health seeking behaviours

Healthcare seeking behaviours, N=209	**n**	**%**
No	73	34.93%
Yes	136	65.07%
Sources of health assistance, N=136	**n**	**%**
Community health worker	5	3.7%
Private clinic/ pharmacy	23	16.9%
Shop/kiosk	10	7.4%
Public clinic	116	85.3%
Mobile clinic	4	2.9%

76.8%(n=482) of the households owned at least one mosquito net and an average of 2.4 nets per household. This coverage was slightly higher compared to the July 2023 survey, where 61.9% (n=415) of the households owned at least one mosquito net and an average of 1.56 nets per household.

Regarding utilisation, only 58.9% of all members had slept under a mosquito net the previous night to the survey, as shown in Figure 3.

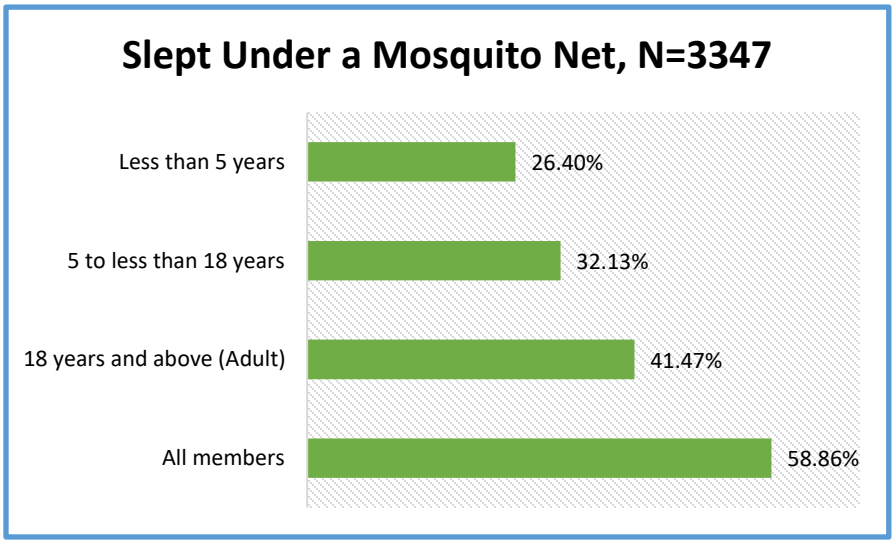


Figure 3: Usage of Mosquito nets

3.4 Vaccination Results

The Kenya guideline on immunization defines a fully immunised child as one who has received all the prescribed antigens and at least one Vitamin A dose under the national immunization schedule before the first birthday. This is meant to reduce child mortality and morbidity due to vaccine preventable diseases. This survey assessed the coverage of 4 vaccines namely, BCG, OPV1, OPV3, and measles at 9 and 18 months.

Immunization coverage was above 80% in all antigens apart from measles at 18 months (69.2%). The low coverage of second doses of measles at 18 months may be attributed to low awareness among caregivers. BCG coverage was at 95.2**%** (n=658) and was assessed by presence of a scar on the left arm or clinic card verification.

Table 18: Vaccination Coverage: OPV1 and OPV3 for 6-59 months and measles for 9-59 months

	OPV1		OPV3		MEASLES AT 9 MONTHS		MEASLES AT 18 MONTHS	
	n	%	n	%	n	%	n	%
Do not know			4	0.58%	7	1.03%	10	1.73%
No	16	2.32%	30	4.34%	48	7.09%	168	29.02%
Yes, Card	182	26.34%	176	25.47%	172	25.41%	117	20.21%
Yes, Recall	493	71.35%	481	69.61%	450	66.47%	284	49.05%
Total	691	100.00%	691	100.00%	677	100.00%	579	100.00%

3.5 Deworming coverage & Vitamin A Supplementation

3.5.1 Deworming

Deworming is crucial for parasite control (such as helminths and schistosomiasis (bilharzia)) and preventing anaemia. The World Health Organization (WHO) recommends that children exposed to poor sanitation and limited access to clean water in developing countries receive deworming every six months.

The survey assessed deworming among children aged 12-59 months. It found that 39.8% (n=226) of these children had been dewormed at least once in the past year, with 10% (n=57) dewormed twice or more within the same period. In comparison, the July 2023 survey reported that 60.1% of children had received deworming at least once, and 26.2% had got it twice or more.

These figures represent a significant drop in deworming coverage from the previous year and remain below the national target of 80%. The low coverage could be attributed to low service delivery by health workers, who rarely administer dewormers to children, and inadequate recording of deworming activities.

Addressing these challenges is essential to improve deworming coverage and meet the national target, ensuring better health outcomes for children.

3.5.2 Vitamin A Supplementation

In Kenya, the government has set a target of 80% coverage for vitamin A supplementation (VAS) among children aged 6-59 months. The national guidelines recommend that children should receive vitamin A supplementation at least every six months.

The survey revealed that vitamin A supplementation coverage was 77.1% for children aged 6-11 months and 86.3% for children aged 12-59 months, resulting in an overall coverage of 85.8% for children aged 6-59 months. Additionally, 31.9% (n=209) of children aged 12-59 months received two or more doses of vitamin A in the last 12 months before the survey (see Figure 4).

While there has been a significant increase in vitamin A supplementation compared to previous years, the coverage for children aged 6-11 months (77.1%) is slightly below the national target of 80%. However, % overall coverage of 85.8% for children aged 6-59 months exceeds the national target, indicating substantial progress in VAS efforts.

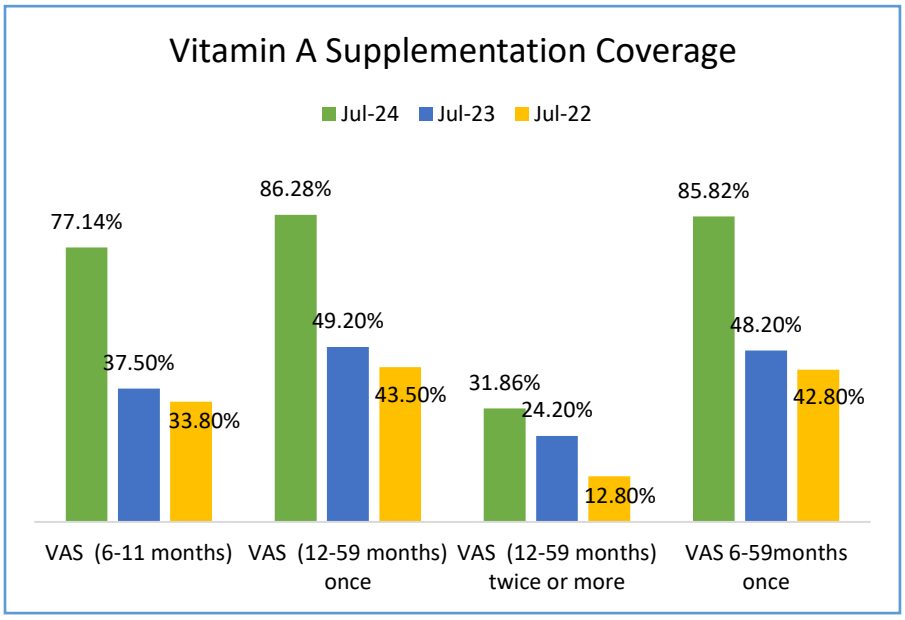


Figure 4: Vitamin A Supplementation Coverage

3.6 Infant & Young Child Feeding (IYCF)

3.6.1 Breastfeeding indicators

WHO[1] and UNICEF advise starting breastfeeding within one hour of birth, exclusively breastfeeding for the first six months, introducing age-appropriate solid, semi-solid, and soft foods after six months, continuing breastfeeding for up to two years, and ensuring improved feeding during and after illness. Based on this, the survey analysed the breastfeeding data and compared them to global standards to assess their performance.

The July 2024 survey indicates a significant improvement in continued breastfeeding rates (at 72.8%) compared to the July 2023 survey at 62.4%. However, these figures and those of Ever Breastfed (92.9%), Early Initiation of Breastfeeding (89.35%) and Exclusively Breastfeeding for The First Two Days After Birth (69.8%) were sub-optimal.

[1] http://apps.who.int/iris/bitstream/handle/10665/42590/9241562218.pdf?sequence=1

Table 19: Breastfeeding Indicators

Indicator	July 2024			July 2023
	N	n	%	%
Ever Breastfed (EvBF), 0-23 months	182	169	92.86%	
Early Initiation of Breastfeeding (EIBF), 0-23 months	169	151	89.35%	
Exclusively Breastfed For The First Two Days After Birth (EBF2D), 0-23 months	169	118	69.82%	
Continued Breastfeeding 12–23 Months (CBF)	136	99	72.79%	62.4%

3.6.2 Complementary feeding indicators

WHO recommends timely initiation of foods of a diverse variety to children starting at six months of age. The child should receive diverse foods in increasing amounts and frequency as the child grows while breastfeeding continues (Dewey, 2005). Typically, complementary feeding targets between 6 and 24 months, but breastfeeding may persist beyond two years. Table 22 provides a summary of indicators for complementary feeding.

From the July 2024 survey, when compared to the July 2023 survey, while there have been improvements in meal frequency, there are declines in dietary diversity and the consumption of nutrient-rich foods like eggs and flesh, see Table 19.

Table 20. Additionally, the increase in zero vegetable or fruit consumption is alarming and suggests a need for targeted interventions to improve dietary quality.

Table 20: Complementary Feeding Indicators

Indicator	July 2024			July 2023
	N	n	%	%
Introduction of Solid, Semi-Solid Or Soft Foods 6–8 Months (ISSSF)	14	13	92.90%	
Minimum Dietary Diversity 6–23 Months (MDD)	180	30	16.67%	24.9%
Minimum Meal Frequency 6–23 Months (MMF)	180	97	53.89%	39.83%
Minimum Milk Feeding Frequency For Non-Breastfed Children 6–23 Months (MMFF)	54	48	88.89%	
Minimum Acceptable Diet 6–23 Months (MAD)	180	28	15.56%	15.35%
Egg and or Flesh Food Consumption 6–23 Months (EFF)	180	44	24.44%	32.37%
Unhealthy Food Consumption 6–23 Months (UFC)	180	41	22.78%	
Zero Vegetable or Fruit Consumption 6–23 Months (ZVF)	180	146	81.11%	71.37%

Only 16.7% of children 6–23 months of age received foods from 5 or more food groups out of eight main food groups to meet the minimum dietary diversity standard. Further, the survey findings indicate that children 6-23 months had fed mainly on dairy products (milk, infant formula,

yoghurt, cheese) (87.2%) and breast milk (70.0%) and were rarely fed other fruits and vegetables (10.0%), vitamin A-rich fruits and vegetables (12.2%) and flesh foods (meat, fish, poultry, organ meats) (15.6%), see Figure 5.

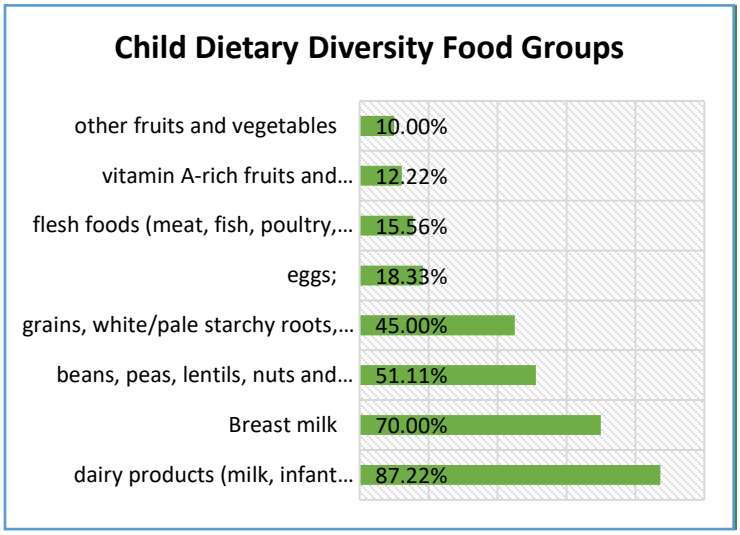


Figure 5: Child Dietary Diversity Food Groups

3.6.3 Child Food Poverty

Child food poverty refers to the condition where children do not have reliable access to sufficient quantities of affordable, nutritious food. This can have severe implications for their physical and cognitive development, health, and overall well-being.

From the survey, 44.4% of children 6-23 months were experiencing the highest level of food insecurity, indicating that they lacked access to sufficient and nutritious food. Still, 38.9% of the children had face moderate food insecurity the previous day before the survey, meaning they had inconsistent access to adequate food, which can affect their health and development.

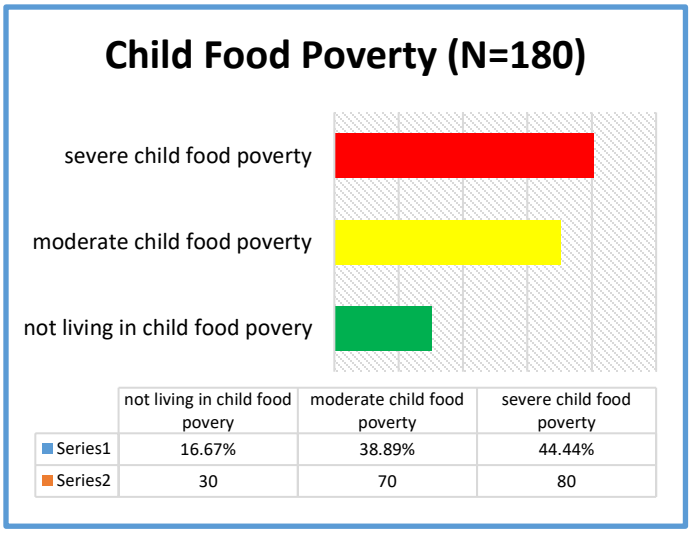


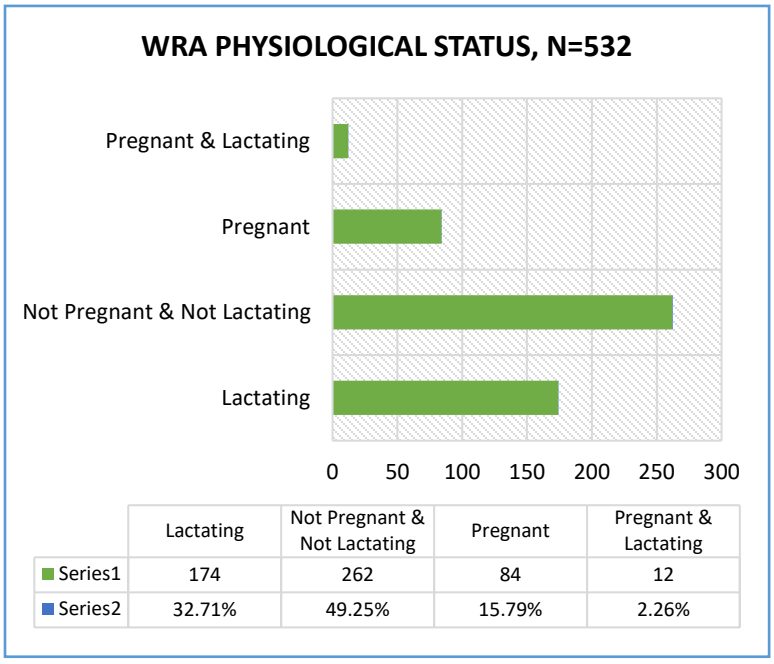
Figure 6: Child Food Poverty

3.7 Maternal nutrition status and Iron folate supplementation

The consequences of poor nutritional status and inadequate nutritional intake during pregnancy extend beyond the immediate health of women, negatively impacting birth outcomes and early child development. Gestational malnutrition often results in low birth weights, which can lead to poor growth and development in children. Therefore, addressing high rates of malnutrition among pregnant women is crucial. Household food insecurity is a significant determinant of poor nutritional status in adults. A high prevalence of malnourished pregnant and lactating women (PLWs) increases the risk of fetal growth retardation, leading to low birth weights. This malnutrition burden extends to children under five (U5) and caregivers in food-insecure households, a common scenario during nutritional emergencies.

3.7.1 Acute Malnutrition

The assessment of maternal nutrition status involved measuring the Mid-Upper Arm Circumference (MUAC) of all women of reproductive age (15-49 years) in the sampled households (N=532).



	Lactating	Not Pregnant & Not Lactating	Pregnant	Pregnant & Lactating
Series1	174	262	84	12
Series2	32.71%	49.25%	15.79%	2.26%

Figure 7: Physiological Status

The MUAC analysis revealed an acute malnutrition prevalence of 4.1% among pregnant and lactating women (PLWs) and 4.89% among women of reproductive age (WRA), as detailed in Table 21..

Table 21: Maternal Nutrition Status

	Jul-24		Jul-23	Jul-22
Category	**n**	**%**	**%**	**%**
WRA MUAC <21cm (N=532)	26	4.89%	19.4%	7.10%
WRA MUAC >21cm - <23cm (N=532)	70	13.16%	42.3%	21.60%
PLW MUAC <21cm (N=270)	11	4.07%	12.3%	8.30%
PLW MUAC >21cm - <23cm (N=270)	38	14.07%	23.9%	20.80%

3.7.2 Iron and Folic Acid Supplementation (IFAS)

During pregnancy, women have an increased need for additional iron to ensure they have sufficient iron stores to prevent iron deficiency. Iron supplementation is recommended in resource-limited settings to prevent and correct iron deficiency and anaemia among pregnant women.

The World Health Organization (WHO) recommends the daily consumption of 60 mg of elemental iron and 0.4 mg of folic acid throughout pregnancy. The Kenyan government adopted these recommendations in its 2013 policy guidelines on iron and folic acid supplementation (IFAS) during pregnancy.

The July 2024 survey found that 86.4% (n=216) of mothers with children under 24 months received iron and folic acid during their most recent pregnancy, compared to 80.9% (n=208) in July 2023. However, only 10.6% (n=23) of these mothers consumed iron and folic acid supplements for the recommended duration of more than 90 days, with the mean number of days for iron and folic acid consumption being 71.5 days. In July 2023, IFAS consumption for ≥90 days was at 14.6%, with a mean of 67 days, as shown in Figure 8.

Additionally, 93.3% of women who had consumed IFAS had also attended antenatal care (ANC), compared to only 24% who consumed IFAS but did not attend ANC (Table 22). It indicates that ANC attendance is a strong predictor of IFAS coverage.

Table 22: ANC Attendance

Category		**n**	**%**
ANC Attendance (N=250)	No	25	10.00%
	Yes	225	90.00%
1ST ANC (MONTH) (N=225)	Don't Know	1	0.44%
	Month 1 To Month 3 (1st Trimester)	76	33.78%
	Month 4 To Month 6 (2nd Trimester)	129	57.33%
	Month 7 To Month 9 (3rd Trimester)	19	8.44%
ANC Attendance & IFAS intake (n=225)		210	93.3%
No ANC Attendance & IFAS intake (N=25)		6	24%

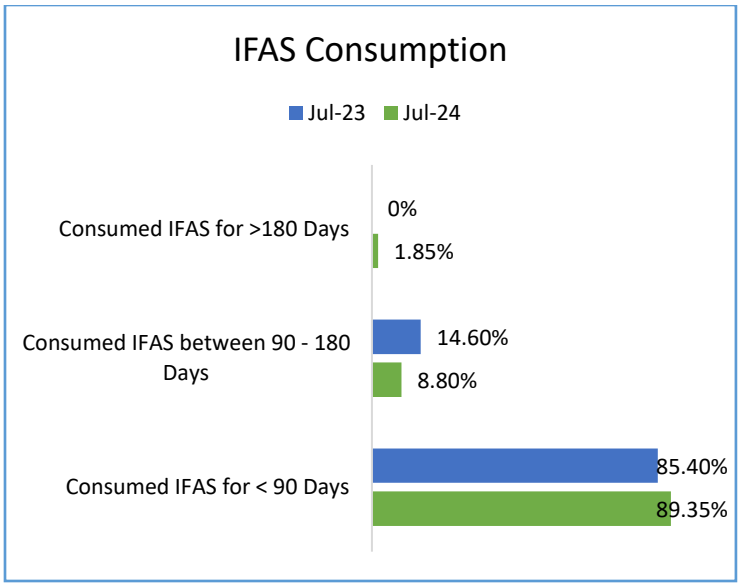


Figure 8: IFAS Consumption

3.7.3 Minimum Dietary Diversity -Women Score (MDD-W)

Minimum Dietary Diversity for Women (MDD-W) is a dichotomous indicator used in assessing whether women aged 15-49 have consumed at least five out of ten defined food groups in the previous day or night. The proportion of women in this age group who meet this minimum can serve as a proxy indicator for higher micronutrient adequacy and a crucial dimension of diet quality. This indicator is vital for national and subnational assessments.

Although MDD-W is a population-level indicator based on a single-day recall period, it cannot describe diet quality for individual women due to normal day-to-day variability in individual intakes. In the recent assessment in July 2024, only 22.9% (n=104) of women consumed five or more food groups, indicating a slight improvement from the 19.7% reported in the July 2023 survey.

As shown in Figure 9, there was a high consumption of grains, pulses, dairy and meat in the survey, suggesting a reliance on staple foods and proteins. However, there was a low intake of vitamin A-rich fruits and vegetables, other fruits, nuts and seeds, which indicates potential gaps in micronutrient intake, which could affect overall health and nutrition.

Therefore, efforts to improve dietary diversity should focus on increasing the consumption of underrepresented food groups, like fruits, nuts, seeds, and vitamin A-rich vegetables, to ensure a more balanced and nutrient-rich diet.

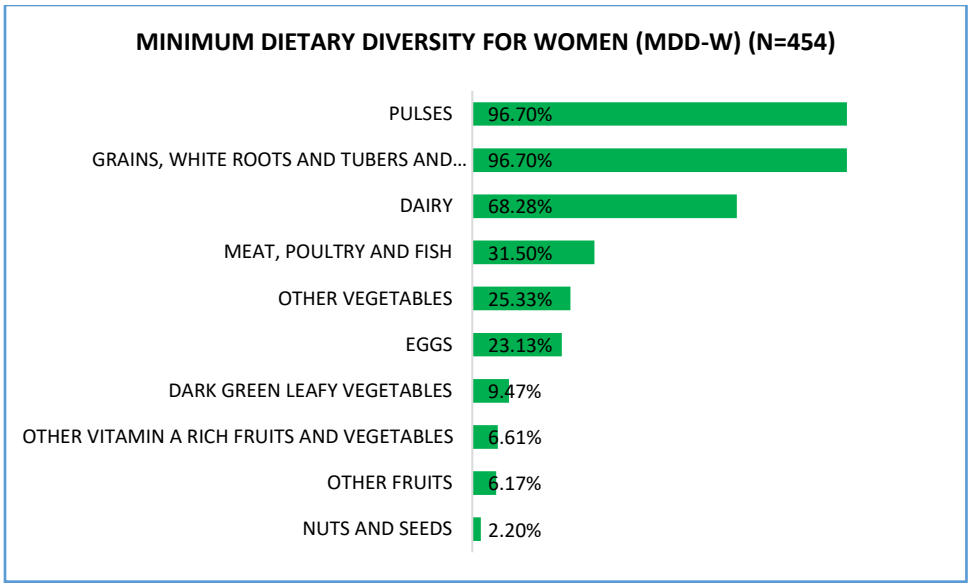


Figure 9: Minimum Dietary Diversity for Women (MDD-W)

3.8 Water, Sanitation & Hygiene (WASH)

Water and sanitation are deeply interrelated. Sanitation is essential for the conservation and sustainable use of water resources, while access to water is crucial for sanitation and hygiene practices. Furthermore, to realise other human rights, such as the right to the highest attainable standard of health, the right to food, the right to education, and the right to adequate housing, substantially depends on implementing the right to water and sanitation.

Increasingly, current evidence links poor Water, Sanitation, and Hygiene (WASH) indicators to undernutrition and high stunting levels. Diarrhoea, the leading cause of death among young children, is closely associated with inadequate WASH (Prüss-Ustün et al., 2014)[2]. Diarrhoea often leads to undernutrition, which in turn reduces a child's resistance to subsequent infections, creating a vicious cycle.

3.8.1 Water Access and Quality

The survey revealed that 64.2% (n=403) of households obtained their drinking water from unsafe sources, including surface water, berkads (underground tanks), water vendors (buzzers, carts with small tanks), and unprotected wells (see Figure 10). These findings are similar to those from July 2023, where 65.3% of households reported obtaining their water from unsafe sources.

This data underscores the urgent need for improved water and sanitation infrastructure to ensure safe drinking water and better community health outcomes.

[2] https://onlinelibrary.wiley.com/doi/abs/10.1111/tmi.12329

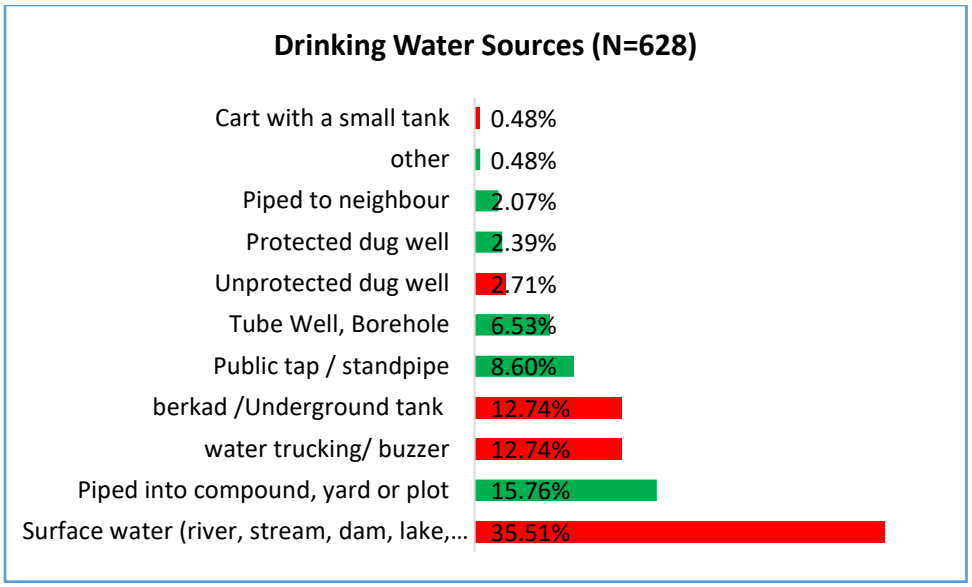


Figure 10: HH's Sources of Drinking Water

Even though most households obtained water from unsafe sources, only 43.9% (n=276) of respondents treated their drinking water, an improvement from 20.3% in July 2023. Among those who treated their water, chemicals at 69.9% and boiling at 43.8% were the most common methods, as shown in

Table 23. Additionally, most respondents (86.3%) stored their water in closed containers.

Table 23: Water Treatment

Water Treatment (N=628)	n	Percent
No	352	56.05%
Yes	276	43.95%
Type Of Water Treatment (N=276)	**n**	**Percent**
Boiling	121	43.84%
Chemicals (Chlorine, Pur, Water Guard)	193	69.93%
Traditional Herbs	42	15.22%
Pot Filters	2	0.72%

According to the SPHERE Handbook on minimum standards for WASH, the maximum distance from any household to the nearest water point should be 500 meters. Additionally, the maximum queuing time at a water source should be no more than 15 minutes, and it should take no more than three minutes to fill a 20-litre container.

The survey measured the time to collect water, including queuing and travel time. It found that 58.1% of the population took less than 15 minutes to travel to a water source, while 66.3% spent less than 30 minutes queuing and fetching water, as shown in Table 24.

With an estimated household size of 5.3 persons, the assessed households had a mean water utilization of 17.2 litres per person per day, within the recommended average water requirement of 15 litres per person per day for drinking, cooking, and personal hygiene. However, only 47.4% (n=298) of households met the SPHERE standard of 15 litres per person daily.

Table 24: Trekking distance and Queueing

		n	%
Trekking Distance (N=628)	Less than 500m (Less than 15 minutes)	365	58.12%
	More than 2 km (1 – >2 hrs)	82	13.06%
	More than 500m to less than 2km (15 min to 1 hour)	181	28.82%
Queue For Water (N=628)	No	456	72.61%
	Yes	172	27.39%
Queue Duration (N=172)	30-60 minutes	20	11.63%
	Less than 30 minutes	114	66.28%
	More than 1 hour	38	22.09%

3.8.2 Access to Sanitation Facilities

A significant proportion of the surveyed households have access to sanitary facilities, with the majority (67.4%) using pit latrines for defecation. However, 28.8% of household members were practising open defecation, an increase from 22.8% in the July 2023 survey. Open defecation was more prevalent among the nomadic population than the settled population.

Open defecation poses a significant risk for waterborne diseases, mostly when many households rely on untreated surface runoff for their water supply. Among those with access to pit latrines (n=440), 94.5% (n=416) owned the sanitary facilities, while 5.5% (n=24) shared them.

This data highlights the need for improved sanitation facilities and education on the health risks associated with open defecation, particularly in nomadic communities.

Table 25: Household Relieving Point

Household Relieving Point, N=628	July 2024		July 2023	July 2022
	n	%	%	%
Flush / Pour Flush			0.0%	0.2%
Pit Latrine	440	70.06%	75.8%	70.0%
Composting Toilet			0.1%	0.3%
Bucket			1.2%	0.8%
Hanging Toilet / Hanging Latrine	7	1.11%	0.0%	0%
No Facility / Bush / Field	181	28.82%	22.8%	29.5%

3.8.3 Handwashing Practices

Hand washing with soap is the most cost-effective intervention for preventing diarrheal diseases. The four critical moments for hand washing are after visiting the toilet/latrine, before cooking, before eating, and after taking children to the toilet/latrine.

In the July 2024 survey, 84.7% (n=532) of respondents were aware of proper handwashing practices, an increase from 79.4% (n=532) in July 2023. About a quarter (26.9%, n=143) of these respondents in July 2024 were aware of using soap and water for handwashing, slightly down from 28.0% in 2023. Handwashing at the four critical times was reported by 26.7% (n=168) of respondents, compared to 39.1% in the July 2023 SMART survey.

Observations in the July 2024 survey revealed that only 40% (n=251) of households had handwashing facilities in their homesteads, of which 48.6% (n=122) had soap available, see Figure 11. This data highlights the need for continued efforts to promote handwashing with soap, especially at critical times, to improve public health outcomes.

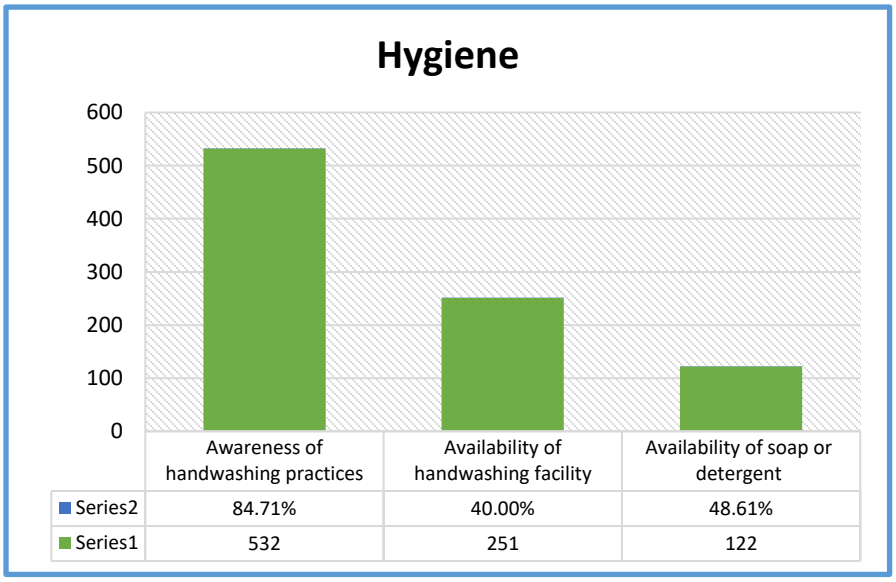


Figure 11: Hygiene

3.9 Food Security & Livelihoods

3.9.1 Households' Source of Income and Food

Household income is crucial in ensuring food security at the household level. The sources and amount of income directly impact the availability and accessibility of food items. Typically, the primary occupation of the household determines the main source of income for most of the year, although this can vary with the seasons and other socio-economic factors. The study indicates that the primary occupation of the household head, which generally reflects the chief source of

household income, was livestock herding at 48.7%, followed by casual labour at 28.5% (see Table 26).

Table 26: Main occupation of the household

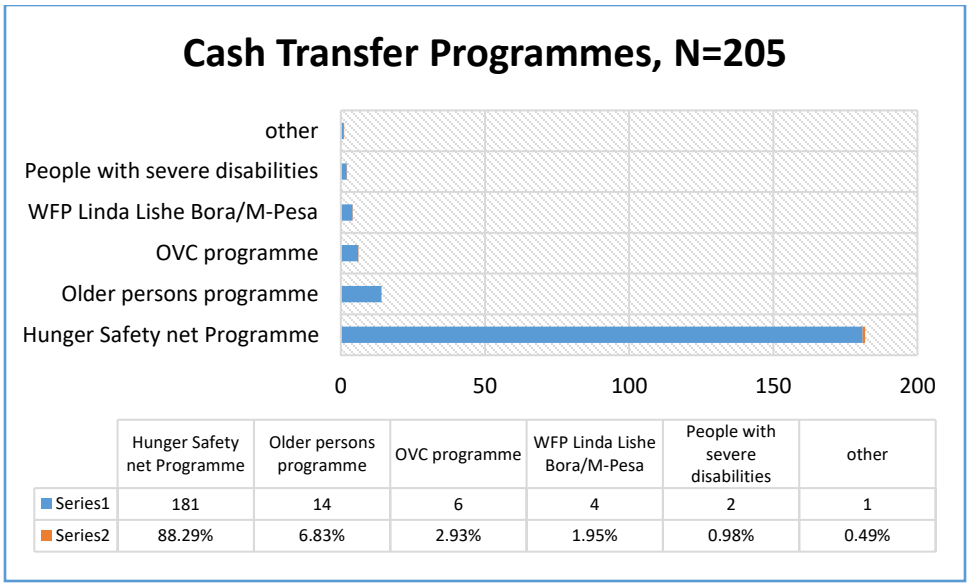
Occupation	July 2024		July 2023	July 2022
	n	%	%	%
Livestock herding	**306**	**48.7%**	**51.79%**	**41.60%**
Crop farming/Own farm labour	10	1.6%	2.39%	2.10%
Employed (salaried)	13	2.1%	3.73%	3.90%
Waged labour (Casual)	179	28.5%	25.07%	33.80%
Petty trade	76	12.1%	13.58%	12.30%
Merchant/trader	5	0.8%	0.90%	0.50%
Firewood/charcoal	14	2.2%	1.49%	4.10%
Others (Specify)	24	3.8%	1.04%	1.70%
Total	**628**	**100.0%**		

The primary source of income was sale of livestock 37.1% followed by casual labour (31.5%), as shown in Table 27.

Table 27: HH current main income source

Income source	July 2024		July 2023	July 2022
	n	%	%	%
No income	38	6.1%	10.00%	11.60%
Sale of livestock	**233**	**37.1%**	**31.64%**	**24.90%**
Sale of livestock products	26	4.1%	2.24%	3.60%
Sale of crops	11	1.8%	1.94%	1.70%
Petty trading e.g. sale of firewood	71	11.3%	11.79%	11.80%
Casual labor	198	31.5%	33.88%	37.70%
Permanent job	11	1.8%	3.58%	3.90%
Sale of personal assets	5	0.8%	0.15%	0.70%
Remittance	15	2.4%	4.33%	3.60%
Regular cash transfer program (HSNP)	6	1.0%	0.15%	0.00%
Emergency Cash transfer			0.15%	0.00%
Others			0.15%	0.00%
Total	**628**	**100.0%**	**100.0%**	**100.0%**

Further, nearly a third of households (32.6%, n=205) reported receiving cash transfers within the last three months before the July 2024 survey. Out this population, the most common cash transfer programme was the HSNP at 88.3% (n=181) (Figure 12).



	Hunger Safety net Programme	Older persons programme	OVC programme	WFP Linda Lishe Bora/M-Pesa	People with severe disabilities	other
Series1	181	14	6	4	2	1
Series2	88.29%	6.83%	2.93%	1.95%	0.98%	0.49%

Figure 12: Cash Transfer Programmes in Mandera County

3.9.2 Households' Food Consumption and Dietary Diversity

The Food Consumption Score (FCS), also known as the "weighted diet diversity score," is calculated based on the frequency of consumption of various food groups by a household over the seven days preceding the survey. The FCS is instrumental in identifying the most food-insecure households. The prevalence of households with poor and borderline food consumption provides crucial insights into current dietary patterns and aids in determining the most suitable type and scale of food security interventions and the appropriate target groups for assistance.

Data on food consumption was collected using a seven-day recall method. All surveyed households were to report which foods they had consumed in the last seven days before the survey, grouped into 16 specific food groups. Calculating the FCS was done by multiplying the consumption frequency of each food item over the past seven days by a weight assigned to each food group, with weights determined by nutrient density.

The FSCs were then categorised using three food consumption groups using standard benchmarks. The results showed that most households (92.2%) had an acceptable score, 7.0% fell into the borderline category, and 0.8% had a poor food consumption score, indicating that less than 1% in July 2024 of the households surveyed were food-insecure compared to 5.8% in July 2023, as illustrated in Table 28.

Table 28: Household food consumption score

Main Threshold	Nomenclature	July 2024 (N=628)		July 2023 (N=670)	July 2022 (N=586)	July 2021 (N=474)
		n	%	%	%	%
0-21	Poor Food Consumption Score	5	0.8%	5.82%	10.2%	1.90%
21.5-35	Borderline Food Consumption Score	44	7.0%	22.84%	22.0%	5.91%
>35.5	Acceptable Food Consumption Score	579	92.2%	71%	67.7%	92.19%

3.9.3 Household Dietary Diversity Score

The Household Dietary Diversity Score (HDDS) is a qualitative measure that reflects households' access to diverse foods. It is calculated based on the number of food groups consumed by a household over the past 24 hours.

According to the July 2024 survey, nearly half of the households exhibited high dietary diversity, while less than 15% had low diversity. In comparison, the July 2023 survey showed that 38% of households had high dietary diversity, whereas 25.2% had low diversity. This increase in dietary variety between the two survey periods showcases positive changes in food accessibility and households' consumption patterns.

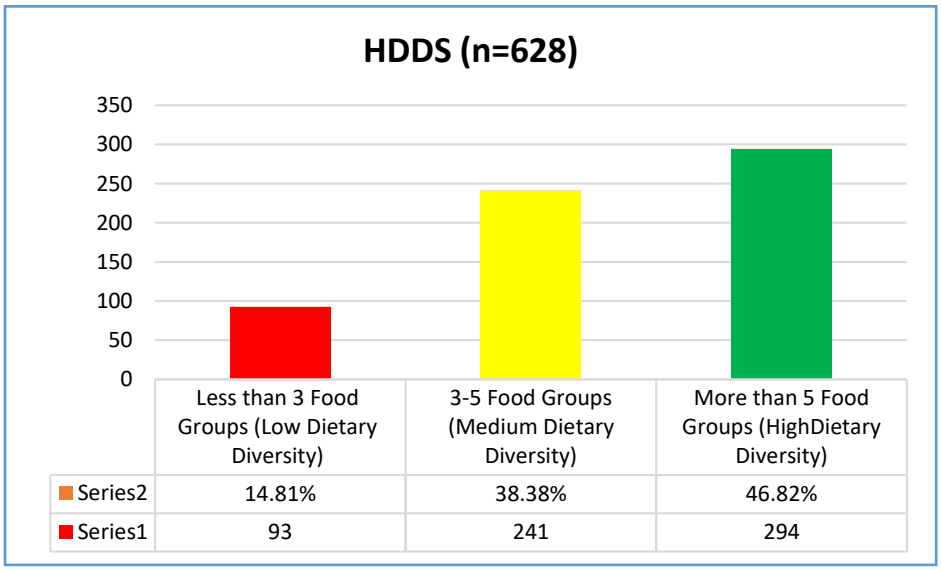


Figure 13: Household Dietary Diversity Score

From the July 2024 survey, the Household diets were mainly composed of cereals (83.6%), oils/fats (76.6%) and pulses and legumes (73.7%). However, there was a notably lower consumption of eggs (0.32%), tubers (4.5%), fruits (9.9%) and fish (15.8%), primarily due to the unavailability of these items in rural community markets, as they are typically only found in larger towns within the county.

The low consumption of eggs in the county could also have been due to a strong local belief that consuming eggs can cause the foetus to grow too large during pregnancy and lead to obesity in children. This cultural belief significantly impacts dietary choices.

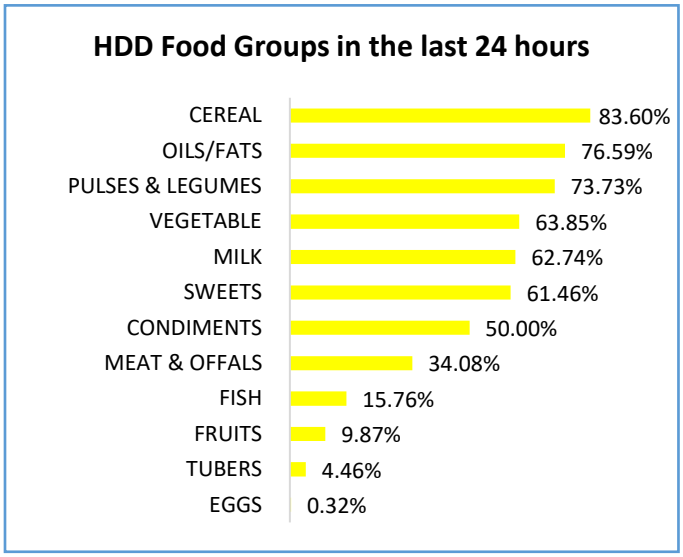


Figure 14: HDDS Food Groups in the last 24 hours

3.9.4 Micronutrient rich food consumption

The poor quality of habitual diets and the lack of dietary diversity in much of the developing world contribute significantly to micronutrient deficiencies. Micronutrient malnutrition is a global issue that imposes enormous costs on societies, including ill health, lives lost, reduced economic productivity, and poor quality of life. Addressing this global challenge requires a multifaceted approach encompassing short- and intermediate-term strategies and long-term sustainable solutions.

In addition to conventional approaches such as micronutrient supplementation and fortification, promoting sustainable, food-based strategies is essential. These strategies include dietary diversification and agriculture-based approaches to ensure adequate intake of micronutrients across populations.

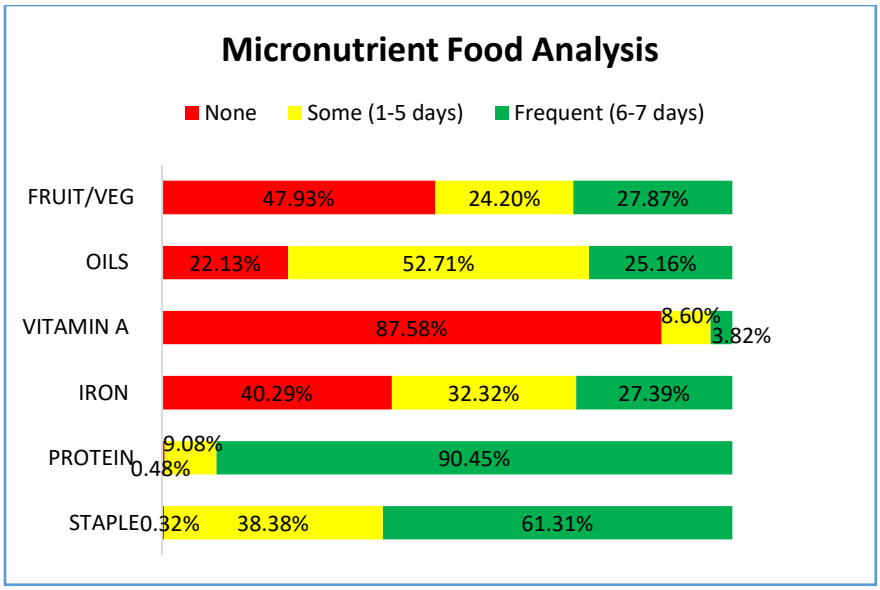


Figure 15: Micronutrient Food Analysis

Survey results based on a seven-day recall of food consumption highlight the patterns of micronutrient intake. Staples (such as cereals and cereal products) and proteins (mostly from purles & legumes) were the most frequently consumed food groups, averaging 5.8 and 6.7 days per week, respectively. In contrast, fruits, vegetables, and vitamin A-rich foods were the least consumed, averaging only 1.1 and 0.5 days per week, respectively, as shown in Figure 16.

This low consumption of micronutrient-rich foods, more so fruits and vegetables, underscores the need for targeted interventions to improve dietary diversity and enhance the nutritional quality of diets in Mandera County.

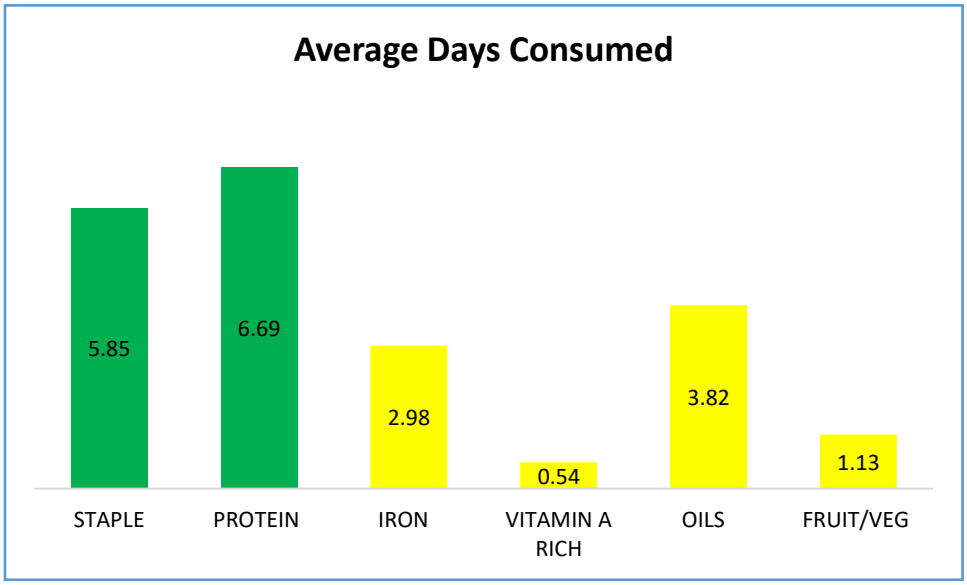


Figure 16: Average Days of Micronutrient Consumption

3.9.5 Household Hunger Scale

The Household Hunger Scale (HHS) is a key indicator used to measure household hunger. The HHS helps identify the severity of hunger within households and is crucial for targeting food security interventions. The HHS consists of three “occurrence” questions and three “frequency-of-occurrence” questions.

In the survey, the HHs responded to three specific questions about food deprivation experienced at the household level over the past four weeks (30 days). Then, the responses helped to classify the households into three categories:

- **Little to No Hunger**: Households that experience minimal or no food deprivation.
- **Moderate Hunger**: Households that experience moderate levels of food deprivation.
- **Severe Hunger**: Households that experience severe food deprivation.

In the study, most households fell into the categories of Moderate hunger (51.7%) and Little to no hunger (47.9%), as shown in Table 29.

Table 29: Household Hunger Scale

Categories (N=628)	July 2024		July 2023	July 2022
	n	%	%	%
Little to no hunger in household (HHS Score of 0-1)	301	47.93%	65.2%	56.1%
Moderate hunger in the household (HHS Score of 2-3)	325	51.75%	34.5%	43.2%
Severe hunger in the household (HHS Score of 4-6)	2	0.32%	0.3%	0.7%

3.9.6 Household’s Livelihood Shocks and Coping Strategies

The Reduced Coping Strategy Index (rCSI), a proxy indicator of household food insecurity, measures the frequency and severity of five pre-selected coping strategies commonly used in households when faced with food shortages. These strategies are:

- Relying on less preferred and less expensive foods.
- Borrowing food or relying on help from friends or relatives.
- Reducing the number of meals eaten in a day.
- Reducing portion sizes at mealtimes.
- Restricting consumption by adults so that small children can eat.

When calculating the rCSI, the frequency of each coping strategy used in the past seven days is multiplied by a severity weight assigned to each strategy. The higher the rCSI score, the more severe the food insecurity experienced by the household.

The assessment of coping strategies revealed that 66.56% (n=418) of households employed at least one coping strategy in the past seven days, with an overall weighted score of 8.8. These figures were similar to those reported in the July 2023 survey, where 61.9% (n=415) of households reported using coping strategies, but a slightly higher weighted score of 11.2.

The primary coping strategies adopted by households included *relying on less preferred and less expensive foods*. The least preferred strategy was *restricting consumption by adults to ensure that children had enough to eat*. These strategies reflect the households' efforts to manage food shortages and maintain food security during difficult times.

Table 30: Reduced Coping Strategies

Coping Mechanism	Severity	July 2024		July 2023	July 2022
		Average score	Weighted Score	Weighted Score	Weighted Score
Rely on less preferred and less expensive foods?	1	1.77	1.77	2.66	1.23
Borrow food, or rely on help from a friend or relative?	2	1.02	2.04	3.06	2.33
Limit portion size at mealtimes?	1	1.29	1.29	1.4	1.27
Restrict consumption by adults in order for small children to eat?	3	0.81	2.43	2.7	2.71
Reduce number of meals eaten in a day?	1	1.31	1.31	1.4	1.27
Total (Average)			**8.84**	**11.22**	**8.81**

Moreover, from the July 2024 survey, almost a quarter of the households were in Phase 3, highlighting severe food insecurity and a heavy reliance on coping strategies. On the other hand, nearly half of the households were in Phase 1, suggesting that they were relatively food secure with minimal need for coping strategies. See Figure 17.

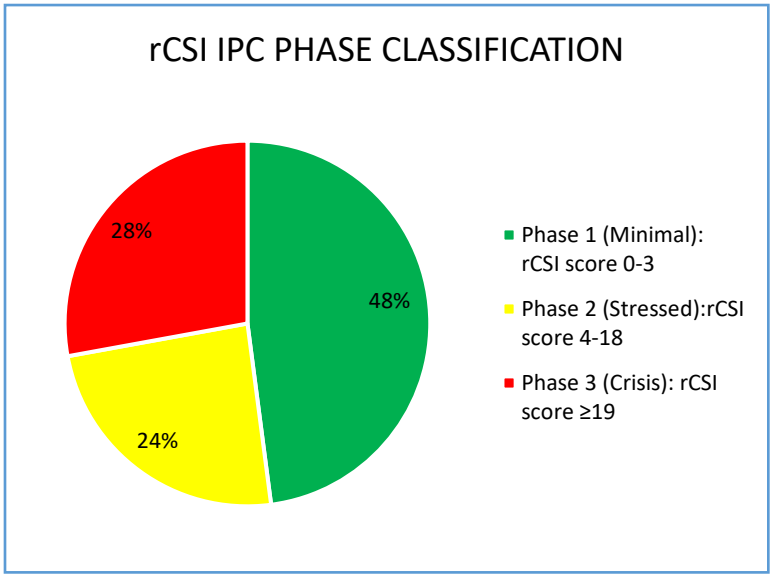


Figure 17: rCSI phase classification

4 Discussions & Conclusion

Acute malnutrition: Based on survey findings, the nutrition situation in Mandera County remains a significant public health concern due to “very high” acute malnutrition rates. The combined rate of Global Acute Malnutrition (GAM) based on both weight-for-height (WHZ) and mid-upper arm circumference (MUAC) cut-offs was 23.3 % (20.1 - 26.9 95% C.I.), and the GAM rate based solely on WHZ was 20.6 % (17.4 - 24.2 95% C.I.). Both rates were “very high” (i.e., ≥15%) and above the WHO’s emergency threshold of >15.0%. These rates indicate a continued need for nutrition interventions targeting children under five. Additionally, acute malnutrition prevalence by MUAC cut-off was 5.4% (3.7- 7.7 95% CI) but was slightly higher among younger children (6-29 months) than among older children (30-59 months), emphasising the importance of interventions in the younger age group through improved maternal, infant, and young child nutrition (MIYCN) practices and maternal education towards behavioural change.

Comparing the SMART survey findings of July 2024 to that of July 2023, where the GAM (WHZ) rate was 21.2% (17.7 - 25.1 95 CI), the acute malnutrition rates of children 6-59 months in Mandera County have remained the same.

Underweight and stunting: in the survey, 19.7 % (16.5 - 23.4 95% C.I.) of children 6-59 months were underweight, while 15.5 % (12.6 - 18.9 95% C.I.) had stunting. The prevalence of underweight exceeded WHO and UNICEF thresholds of 2018 of ≥ 15%, raising further public health concerns. However, stunting was medium and within the 10 – <20% threshold. Compared to the 2023 SMART survey, underweight (<-2 z-score) was “very high” at 20.7 % (16.3 - 25.9 95% C.I.), while stunting (<-2 z-score) was “medium” at 14.6 % (11.3 - 18.8 95% C.I.).

Morbidity Status: The morbidity rate among children aged 6-59 months in the two weeks before the assessment was 30.3%, with acute respiratory infections (ARI) (21.4%), fever with chills (15.6%), and watery diarrhoea (4.6%) being the most common illnesses. Only 65.1% of the sick cases sought treatment, with the majority (59%) seeking help from public health facilities. In July 2023, the morbidity rate was 25.6%, and health-seeking behaviour was 64.9%.

Vaccination, Vitamin A, and Deworming Coverage: Immunisation aims to reduce child mortality and morbidity from vaccine-preventable diseases. This survey assessed the coverage of four antigens: BCG, OPV1, OPV3, and measles at 9 and 18 months. Apart from measles at 18 months, the other vaccination coverages remained above the national target of 80%. In the 2023 survey, vaccination coverage was above 80% for all antigens except for measles at 18 months. The low coverage of measles may explain the frequent measles outbreaks in Mandera County due to a lack of herd immunity. The low coverage of the second dose of measles at 18 months may be due to low awareness among caregivers. Vitamin A Supplementation (VAS) coverage of two or more doses in the last 12 months before the 2024 survey was 31.9% (n=209), below recommended standards. Similarly, twice or more deworming coverage stood at 10% (n=57), below the target. In the 2023 survey, twice or more VAS and deworming coverage stood at 24.2% and 26.2%, respectively.

MIYCN Practices: Despite using proxy indicators due to a small sample size, MIYCN practices in the survey were suboptimal. Exclusive breastfeeding for the first two days after birth was at 69.8%, and continued breastfeeding from 12-23 months was at 72.8%, both of which are low. Complementary feeding lacked variety and consistency, negatively impacting child nutrition. Only 53.9% of children aged 6-23 months received the minimum number of meals, and just 16.7% met the minimum dietary diversity. Furthermore, only 15.6% of children aged 6-23 months met the requirements for a minimally acceptable diet. These findings were similar to the 2023 SMART survey results, where continued breastfeeding was 62.4%, dietary diversity was 24.9%, minimum meal frequency was 39.8%, and the minimum acceptable diet was 15.3%, all indicating suboptimal practices. Additionally, there was an increase in zero vegetable or fruit consumption from 71.4% in 2023 to 81.1% in 2024 and a decline in the consumption of eggs and flesh foods from 32.4% in 2023 to 24.4% in 2024.

Maternal Nutrition: The nutritional status of pregnant and lactating women (PLW) and women of reproductive age (WRA) based on MUAC measurements indicated that 4.1% and 4.89%, respectively, were acutely malnourished (GAM MUAC <210mm). These rates represent a decline from the previous year, where acute malnutrition was 12.3% for PLW and 19.4% for WRA. In the 2024 survey, only 10.6% (n=23) of mothers consumed iron and folic acid supplements for the recommended duration of more than 90 days during their most recent pregnancy, down from 14.6% in the 2023 survey. Additionally, 22.9% (n=104) of women consumed five or more food groups in the 2024 survey, an increase from 19.7% reported in July 2023.

Food security: The survey revealed that 92.2% of households had an acceptable Food Consumption Score (FCS), 7.0% were borderline, and 0.8% had a poor FCS. The FCS in July 2024 marked a significant improvement from July 2023, when 5.8% of households were food-insecure. In July 2024, nearly half of the households exhibited high dietary diversity, while less than 15% had low diversity, showing progress from July 2023, where 38% had high diversity and 25.2% had low diversity. Most households fell into moderate hunger (51.7%) and little to no hunger (47.9%) categories. The assessment indicated that 66.56% of households employed at least one coping strategy in the past seven days, with an overall 8.8 weighted score. The findings were similar to the July 2023 survey, where 61.9% of households reported using coping strategies but with a slightly higher weighted score of 11.2. The July 2024 survey also highlighted that nearly a quarter of households were in Phase 3, indicating severe food insecurity and heavy reliance on coping strategies, while almost half of the households were in Phase 1, suggesting they were relatively food secure with minimal need for coping strategies.

WASH: Access to potable water remains a concern, with 64.2% of the population accessing drinking water from unsafe sources, while only 43.9% treated the water. Awareness of handwashing practices had increased to 84.7%, up from 79.4% in the July 2023 survey. However, only 26.9% of respondents reported using soap and water for handwashing, a slight decrease from 28.0% in the July 2023 survey. Handwashing at all critical times had also declined to 26.7% from 39.1% in July 2023. The proportion of households without access to sanitation facilities (toilets/latrines) had risen to 28.8%, compared to 22.8% in the previous survey. Poor water access, poor hygienic and sanitation practices may have contributed to the incidence of waterborne diseases such as watery diarrhoea.

5 Recommendations and priorities

Table 31: Recommendations and Priorities

Finding	Recommendation	Actors	Timeline	Priority
GAM based on WHZ being very high prevalence at 20.6% (95% CI: 17.5 - 24.2). The prevalence of underweight based on WAZ was very high at 19.7% (95% CI: 16.5 - 23.4).	Mass screening for acute malnutrition using MUAC and WHZ criteria to reach all children aged 6-59 months across Mandera County.	County Department of Health services and partners	August 2024 – July 2025	
	Building the capacity of frontline healthcare workers.			
	Providing surge support in hotspots and activating closed outreaches.			
	Conducting IMAM program coverage assessments to identify barriers and boosters.			
	Strengthening Community Units (CUs) for early identification and referral of malnutrition cases.			
	Building the capacity of private health facility staff on IMAM.			
	Strengthen Growth Monitoring and Promotion (GMP) in Early Childhood Development Education (ECDE) centres.			
Deworming coverage among children aged 12-59 months is poor, with only 10% of the population having received deworming twice or more in the last 12 months. Low coverage of Vitamin A supplementation (VAS) for children aged 6-59 months, with only 31.9% of the population having received VAS twice or more in the last 12 months.	Upscaling micronutrient supplementation during Malezi Bora, including IFAS, VAS, and deworming.	County Department of Health services and partners	August 2024 – July 2025	
	Support routine VAS and deworming in ECDE centres and Duksi.			

Only 10.6% of mothers consumed IFAS for the recommended duration of more than 90 days during last pregnancy				
64.2% of households obtained their drinking water from unsafe sources, while only 43.9% treated water for drinking. There were significant levels of open defecation by 28.82% of the population. Hand washing practices at critical times were poor at 26.75%.	Providing water treatment chemicals at the household level and in institutions.	County Department of Health services and partners	Continuous	
	Building the capacity of Public Health Officers (PHOs), Community Health Assistants (CHAs), and Community Health Volunteers (CHVs) on Community-Led Total Sanitation (CLTS) modules.			
	Intensifying follow-up verification and certification of villages for CLTS.			
	Conducting community sensitisation on handwashing through CUs and school health clubs.			
	Strengthening coordination structures among water supply actors.			
Suboptimal breastfeeding and complementary feeding practices among children <23 months. Only 22.9% of WRA consumed the minimum recommended five food groups or more.	Conduct MIYCN/KABP surveys to ascertain valid and reliable dietary intake indicators.	County Department of Health services and partners	June – December 2024	
	Supporting Social and Behaviour Change Communication (SBCC) on dietary diversity.		August 2024 – July 2025	
	Promoting nutrition-sensitive programming (agri-nutrition).			
A significant number of households were classified as having moderate hunger (47.3%) and severe hunger (0.3%) by the Household Hunger scale.	Enhancing the linkage of households with acutely malnourished pregnant and lactating women to existing social safety net programs, such as cash transfers and relief food distributions.	County Department of Health services and partners	August 2024 – July 2025	

6 Appendices

6.1 Appendix 1: Plausibility Report

Plausibility check for: Mandera County SMART Survey_July 2024_CMoH & Partners.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.9 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.594)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**4** (p=0.039)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (6)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (1.03)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.15)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**1** (-0.34)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.079)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**5** %

The overall score of this survey is 5 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 53 %

6.2 Appendix 2: Assignment of Clusters

Sub County	Ward	Village /Bulla Name	Population	Cluster #
Banisa	Banisa	Zone 4a Banisa	2062	1
Banisa	Banisa	Mata'arba	2930	Rc
Banisa	Banisa	Bulla Idps Lulis	2640	2
Banisa	Derkale	Rigdera	1110	3
Banisa	Guba	Jibal	2000	4
Banisa	Malka Mari	Bulla Juu Malkamari	2105	Rc
Banisa	Kiliweheri	Bulla Goro Kiliwehiri	2415	5
Banisa	Kiliweheri	Dakabor	2870	6
Banisa	Kiliweheri	Bulla Mosque Funanteso	1408	7
Kotulo	Kotulo	Goro Garse Sala	3090	8
Kotulo	Kotulo	Bula Adu Kutulo	562	9
Mandera South	Elwak South	Elwak Town C	1300	Rc
Mandera South	Elwak South	Tuli	1345	10
Mandera South	Elwak North	Elgolicha Elwak	556	11
Mandera South	Elwak North	Bulla Afya B	1143	12
Mandera South	Shimbir	Shimbir Town H	1300	13
Mandera South	Shimbir	Burmayo Townd	1200	14
Mandera South	Wargadud	Kubi Hills Wargadud	900	15
Mandera East	Libehiya	B/Haji Mohamed	2130	16
Mandera East	Khalalio	Bulla Haji	2980	17
Mandera East	Neboi	B/Bosnia Central Mdr Town	2810	18
Mandera East	Township	B/Falah Bulla Mpya	2720	19
Mandera East	Neboi	Garba Ado Animal Mkt Neboi	2480	20
Mandera East	Township	B/Primary Kamor	2890	21
Mandera East	Libehiya	B/Adilla Quradeer	1360	22
Mandera East	Khalalio	Gedudiye 3	1851	23
Mandera East	Arabia	Kamor Bahawa	1980	Rc
Mandera East	Arabia	Odha Zone 2	1980	24
Mandera West	Gither Ward	Gither	6200	25
Mandera West	Gither Ward	Gagaba B	900	26
Mandera West	Takaba Ward	Bamba Ongese	500	27
Mandera West	Dandu Ward	Hargesawara	660	28
Mandera West	Lagsure Ward	Bulla Mpya B	1300	Rc
Lafey	Lafey	B/Alungu	2613	29
Lafey	Lafey	Amar	941	30
Lafey	Warankara	B/Haaji	1314	31
Lafey	Sala	Ali Garob	1471	32
Mandera North	Rhamu Ward	Bulla Dana (Rhamu Town)	5905	33

Mandera North	Rhamu Ward	Bulla Hargesa B (Rhamu Town)	5708	34
Mandera North	Rhamu Ward	Bulla Abakaro (Rhamu)	3851	35
Mandera North	Rhamu Ward	Bulla Nguvu B (Rhamu Town)	3500	36
Mandera North	Rhamu Ward	Girissa (Rhamu Town)	4436	37
Mandera North	Rhamu Ward	Bulla Dodey (Rhamu)	3500	38
Mandera North	Rhamu Dimtu	Rhamu Dimtu Town	6300	39
Mandera North	Rhamu Dimtu	Kalicha Town North	3959	40
Mandera North	Rhamu Dimtu	Kalmalab	2321	41
Mandera North	Ashabito Ward	Bulla Madina	1289	42
Mandera North	Marothiley Ward	Kubi (Marothiley)	3664	43
Mandera North	Guticha Ward	Darab Athithi (Guticha)	3851	44
Mandera North	Guticha Ward	Sarman (Olla)	4985	45

6.3 Appendix 3: Evaluation of Enumerators

Evaluation of Enumerators

Weight:

	Precision: Sum of Square [W1-W2]	Accuracy: Sum of Square [Enum.(W1+W2)-(Superv.(W1+W2)]	No. +/- Precision	No. +/- Accuracy
Supervisor	0.51		3/0	
Enumerator 1	0.28 OK	0.55 OK	3/1	2/5
Enumerator 2	1.37 POOR	0.46 OK	4/2	2/4
Enumerator 3	0.00 OK	0.59 OK	0/0	4/1
Enumerator 4	13.75 POOR	9.18 POOR	3/1	5/2
Enumerator 5	0.01 OK	0.48 OK	1/0	6/0
Enumerator 6	0.02 OK	0.35 OK	2/0	2/3
Enumerator 7	0.00 OK	0.51 OK	0/0	4/2
Enumerator 8	0.08 OK	0.67 OK	3/2	5/3

Height:

	Precision: Sum of Square [H1-H2]	Accuracy: Sum of Square [Enum.(H1+H2)-Superv.(H1+H2)]	No. +/- Precision	No. +/- Accuracy
Supervisor	7.98		2/6	

Enumerator 1	1.36 OK	15.62 OK	0/2	3/7
Enumerator 2	230.25 POOR	156.63 POOR	3/6	4/6
Enumerator 3	0.13 OK	14.51 OK	2/3	1/9
Enumerator 4	1.44 OK	17.58 OK	3/3	3/7
Enumerator 5	98.15 POOR	71.95 POOR	6/3	5/5
Enumerator 6	0.17 OK	24.47 POOR	4/5	5/4
Enumerator 7	0.04 OK	25.98 POOR	2/2	4/6
Enumerator 8	0.32 OK	37.82 POOR	3/5	7/3

MUAC:

	Precision: Sum of Square [MUAC1-MUAC2]	Accuracy: Sum of Square [Enum.(MUAC1+MUAC2)-Superv.(MUAC1+MUAC2]	No. +/- Precision	No. +/- Accuracy
Supervisor	193.67		5/4	
Enumerator 1	37.00 OK	496.55 OK	6/1	7/3
Enumerator 2	14763.20 POOR	10343.70 POOR	5/5	4/6
Enumerator 3	5.00 OK	584.55 POOR	1/4	9/1
Enumerator 4	51.00 OK	378.75 OK	4/3	4/5
Enumerator 5	24.00 OK	494.15 OK	3/5	5/5
Enumerator 6	9.00 OK	360.35 OK	6/3	6/4
Enumerator 7	2.00 OK	192.75 OK	2/0	1/8
Enumerator 8	153.00 OK	269.75 OK	6/4	3/7

For evaluating the enumerators, the precision and the accuracy of their measurements is calculated.
For precision the sum of the square of the differences for the double measurements is calculated. This value should be less than two times the precision value of the supervisor.
For the accuracy the sum of the square of the differences between the enumerator values (weight1+weight2) and the supervisor values (weight1+weight2) is calculated. This value should be less than three times the precision value of the supervisor.
To check for systematic errors of the enumerators the number of positive and negative deviations can be used.

6.4 Appendix 5: Training Plan

Table 32: Mandera County SMART SURVEY Training Plan - 12th - 15th July 2024

Time/ Day	Day 1: Friday	By Who	Day 2: Saturday	By Who	Day 3:Sunday	By Who	Day 4: Monday	By Who
8.00-10.00 AM	**Opening Introductions** - **Participants Expectations Setting of Ground Rules**		Recap- Enumerator		**Recap**- Enumerator Standardisation *(Module 4)*		**Standardisation** - Analysis	
	Objectives of the Training *(Module 1A)* Survey teams *(Module 1B)*		**HH Information & Anthropometry Questionnaire**– Kobo Toolbox		**Teaming-Up Groups** Preparing sites for standardisation			
	Introduction to Malnutrition (*Module 3A***)**							
10.00-10.15 AM	**Tea Break**		**Tea Break**		**Tea Break**		**Tea Break**	
10.15 – 1.00 PM	**Anthropometry**- • Weight *(3B)* • Height *(3C)* • MUAC *(3D)* • Oedema *(3E)*		**Questionnaire**– Kobo Toolbox		**Standardisation Exercise**		**Pilot Survey**	
1.00-2.00 PM	**Lunch Break**		**Lunch Break**		**Lunch Break**		**Lunch Break**	
2.00-3.45 PM	**Age Determination** – Local Calendar *(2B)*		**Special cases** *(5E)* **Field procedures** *(5A)* **Research Ethics**		**Address Standardisation**		**Address issues from pilot survey** **Any Further Clarifications** **Planning Fieldwork** **Timetable** **Logistic & Administration Arrangements**- **Meeting with Team Leaders/ Supervisors** – **AOB**	
	• Household Definition and Random Sampling *(5C & 5D)*		**Data Quality check/Plausibility report** *(4)*					
	• Segmentation *(5B)*		**Role Play (Questionnaire in local Language)**- **Form Teams**					
3.45-4.00 PM	**Break**		**Break**		**Break**		**Break**	
4.00-5.00 PM	• Referral Procedures – Prepare (3F) • Household Definition and Random Sampling *(5C & 5D)*		Finalize Local Calendar - Supervisors		Make Survey Timetable for All Days			