WAJIR INTEGRATED HEALTH AND NUTRITION SURVEY REPORT

February 2023

Wajir County Department of Public Health & Sanitation and Medical Services

ACKNOWLEDGEMENT

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Acronyms

ANC	Antenatal Care
CSI	Coping Strategy Index
GAM	Global Acute malnutrition
HAZ	Height for Age Z-score
HH	Household
MOH	Ministry of Health
MUAC	Mid-upper arm circumference
NDMA	National Drought Management Authority
PPS	Proportion to population size
SAM	Severe Acute Malnutrition
WAZ	Weight for Age Z-score
WHZ	Weight for Height Z-score
WHO	World Health Organization
WRA	Women of reproductive age

EXECUTIVE SUMMARY

Background information

Wajir County is located in the North-eastern region of Kenya, covering an area of 56,685.9 Km^2. It borders Somalia to the East, Ethiopia to the North, Mandera County to the Northeast, Isiolo County to the Southwest, Marsabit County to the West and Garissa County to the South. Administratively, it has six constituencies - Wajir East, Tarbaj, Wajir West, Eldas, Wajir North and Wajir South. It is further divided into 30 wards. Wajir County is a semi-arid area falling in the ecological zone V-VI. Zone V receives rainfall between 300-600mm annually. County divided into four livelihood zones: Agro-Pastoral, Pastoral all species, Pastoral cattle, Pastoral camel and formal employment. Estimated population 781,263 (2019 Kenya population and housing census), with projected population of 870,636[1] in 2023

Objectives

The main objective of the SMART survey was to determine the prevalence malnutrition amongst children aged 6-59 months and women of reproductive age 15 – 49 years in Wajir County.

Sub-objectives:

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

Methodology

Standardized Monitoring Assessment for Relief and Transition Methodology (SMART) was used to conduct the survey. The methodology is a cross sectional design using two stage cluster sampling process. The first stage involved sampling of 39 clusters from a list of all villages in Wajir country using probability proportional to size (PPS). This was done using ENA for SMART software. The second stage involved random selection of 15 households surveyed from the updated list of households within the cluster or Bulla (Village). Household was used as the basic sampling unit. Household was defined as compromising all those who live within the same compound, cook and eat from the same pot.

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[1] 2019 Kenya Population and Housing Census – Analytical Report on Population Projections Vol XVI

National MOH integrated household questionnaire in ODK collect was used in android phones to collect data. The data was synchronized with ODK aggregate hoisted in server (ONA) where it was downloaded daily for plausibility checks and at the end of the survey for final data analysis.

Summary of the findings

The global acute malnutrition (GAM) prevalence by WHZ was at 14.95 % whereas severe acute malnutrition (SAM) prevalence was at 2.5%. This is classified as high according to WHO wasting classification of 2017. GAM by MUAC was at 4.4% of those severe by MUAC were 0.7%. 38.8% of children were reported to be ill within 2 weeks prior to survey and majority of complained of having acute respiratory infection/cough (76.7%), fever (32.7%) and Watery diarrhea at 24.10%. Sanitation remain still sub-optimal across the county with only 16.5% of the households treating their water before drinking, 44.2% using soap and water for handwashing and majority (49.65%) of the households have relieving points and practice open defecation.

Table 1, summarizes the survey findings while table 2, summarizes the recommendations.

Table 1: Summary of key findings

INDICATORS	FREQUENCY	PERCENTAGE
Household Characteristics		
Total number of households surveyed	585	
Total number of household's members	3808	
Average HH size		6.9
Children 6 – 59 months	681	18.5%
Socio-Demographic Characteristics		
Main marital status-Married	90.8%	
Adult ever received formal education		23.0%
Highest level of Education Attained- Secondary		15.0%
Anthropometric Results (6-59 Months) WHO 2006		
GAM (WHZ <-2 Z score or presence of oedema)	**14.9 %** (11.8 - 18.8 95% C.I.)	
SAM (WHZ <-3 Z score or presence of oedema)	**2.5 %** (1.5 - 4.2 95% C.I.)	
GAM (MUAC < 125 mm and/or oedema)	**4.4 %** (2.7 - 7.2 95% C.I.)	
SAM (MUAC < 115 mm and/or oedema)	**0.7 %** (0.3 - 1.7 95% C.I.)	
Stunting (HAZ <-2 Z score)	**12.3 %** (9.3 - 16.0 95% C.I.)	
Severe stunting (HAZ <-3 Z score)	**2.9 %** (1.8 - 4.6 95% C.I.)	
Underweight (WAZ<-2 Z score or presence of oedema)	**16.9 %** (13.6 - 20.9 95% C.I.)	
Severe underweight (WAZ <-3 Z score / presence of oedema)	**2.1 %** (1.1 - 3.8 95% C.I.)	
Child Health		
Prevalence of reported illness 14 days recall	249	36.8%
Main type of illness reported: ARI/ Cough		76.7%
Practice-treatment seeking for ill children	167	67.1%
Child Immunization and Vaccination		
Crude BCG vaccination by scar and card		96.7%

OPV 1 by card and recall		98.0%
OPV 3 by card and recall		96.8%
Measles at 9 by card and recall (9-59 months)		93.7%
Measles at 18 by card and recall (18-59 months)		69.1%
Vitamin A 6-11months once		78.3%
Vitamin A 12-59 months once		84.7%
Vitamin A 12-59 months twice or more		37.3%
Crude Deworming in last 12 months (12-59 months) once		70.9 %
Crude Deworming in last 12 months (12-59 months) twice or more		20.3%
Maternal Health		
PLW (pregnant, lactating or both)		44.8%
All women Acute Malnutrition by MUAC (<210mm)	78	15.1%
PLW women Acute Malnutrition by MUAC (<210mm)	44	15.6%
ANC attendance in last pregnancy		94.2%
ANC attendance in 1st trimester of pregnancy		1.5%
Pregnant	233	84.4%
Food Security and Livelihood		
Households main source of income- sale of livestock		
Food consumption (acceptable)		
Household dietary diversity (medium to high)		
Household Hunger Scale (little to no hunger)		
Water Sanitation and Hygiene		
Main drinking water source- borehole		28.9%
Less trekking distance 500m (< 15 minutes)	344	82.7%
Practice appropriate drinking water treatment	82	16.5%
No facility/bush/field	290	51.5%
Handwashing in 4 critical times	243	47.5%
Handwashing with soap or ash		44.2%

Recommendations

The following recommendations were developed through a participatory approach during the dissemination and validation of results at County level

Table 2: Summary of Recommendations

Scale-up and sustain provision of integrated outreach services across the County (Tarbaj sub-county with the lowest coverage at 4%)

Conduct exhaustive mass screening in all villages across the County
Scale-up sensitization of mothers on use of family MUAC
Strengthen quality treatment for children with acute malnutrition at static health facilities and outreach sites through on-job and training
Continue to advocate for linkage of households with malnourished children and social protection support programs.
Liaise with the WASH program to promote handwashing and hygiene practices in villages
Scale up and sustain IMAM surge approach in all facilities offering IMAM services

1 INTRODUCTION

1.1 Background on survey area

Wajir County is located in the North-eastern region of Kenya, covering an area of 56,685.9 square kilometres. It borders Somalia to the East, Ethiopia to the North, Mandera County to the Northeast, Isiolo County to the Southwest, Marsabit County to the West and Garissa County to the South. Administratively, it has six constituencies - Wajir East, Tarbaj, Wajir West, Eldas, Wajir North and Wajir South. It is further divided into 30 wards. Wajir County is a semi-arid area falling in the ecological zone V-VI. Zone V receives rainfall between 300-600mm annually. County divided into four livelihood zones: Agro-Pastoral, Pastoral all species, Pastoral cattle, Pastoral camel and formal employment. Estimated population 781, 263 (2019 Kenya population and housing census) projected to 870,636[2] in 2023
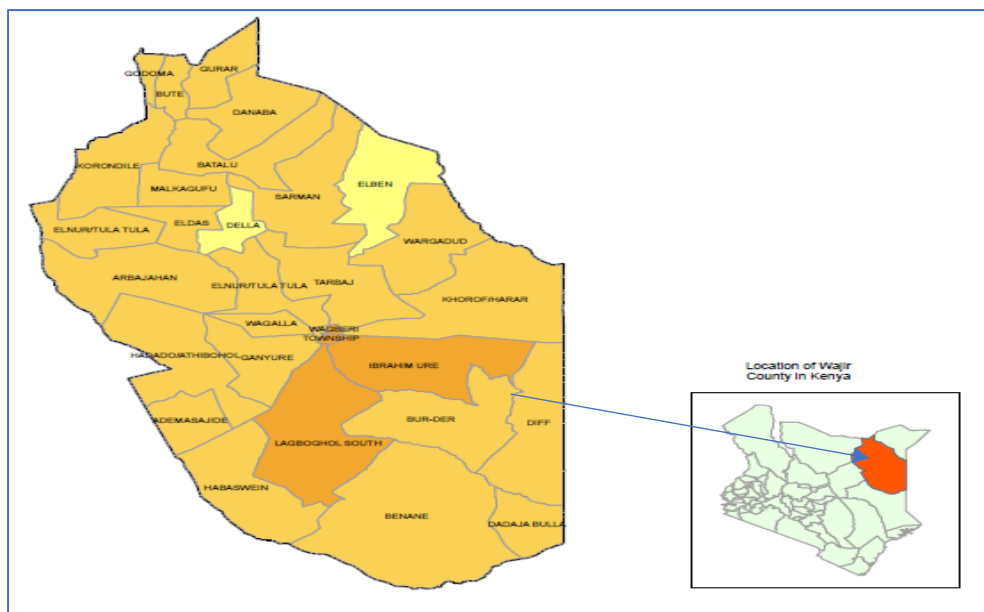
Figure 1: Wajir County and its location within Kenya

1.2 Food security and nutrition situation

The food security situation in the county remained critical, phase 3 according to long rains assessment carried out in July/ August 2022. According to the Kenya food security outlook October 2022, it observed that if it was not for current or programmed humanitarian assistance the phase would be worse. The current drought phase for the County is alarm [3] on a worsening trend. The vegetation condition index in December 2022 was extreme vegetation deficit.

1.3 Survey Justification

Drought Early Warning phase was Alarm on a worsening trend, in all the livelihood zones except informal settlement which is on alert (NDMA Bulletin, January 2022). Current vegetation condition index is extreme vegetation deficit. Pasture and browse condition was poor, following cummulative depressed rains in the last four seasons. Average household return distance to water sources slightly decreased from 10 kilometres in the month of

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[3] National Drought Management Authority, early warning bulletin January 2023

November to 7.3 kilometres, however it is still above the long-term average and dry years' average. Milk consumption increased in December 2021 to 0.8 litres per household per day compared to the previous but declined in January. However, this is still lower than the long-term average and dry years' average. Acute food insecurity classification was classified as crisis (IPC Phase 3). The number of people in need of humanitarian assistance increased by 40% to 273,000 (December, SRA Mid-season Report 2021 Report) indicating a deteriorating situation.

According to integrated phase classification for acute malnutrition classified the County as Critical (IPC AMN phase 4) with a GAM of 17.9 % (14.4 - 22.1 95% C.I.). Proportion of households with poor and borderline food consumption score (FCS) was above 70% (NDMA, EW bulletin Dec 2021). Proportion of children with severe and moderate of malnutrition as per sentinel data was 2.8% and 25.8% respectively. Outbreak of Kala Azar is still active, with a total of 375 cases line listed as of February 2022. Reported in all the sub-counties with the most affected being Wajir West and Eldas. High cases of malaria reported in Buna, Wajir North, with 301 cases reported.

1.4   Survey Objectives
The main objective of the SMART survey was to determine the prevalence malnutrition amongst children aged 6-59 months and women of reproductive age 15 – 49 years in Wajir County. With the following sub-objectives:
1. To determine the prevalence of acute and chronic malnutrition in children aged 6-59 months
2. To determine the immunization coverage for Measles (at 9, 18), Oral Polio Vaccines (OPV 1 and 3), deworming and vitamin A supplementation in children aged 6-59 months
3. To establish coverage of iron / folic acid supplementation during pregnancy among pregnant and lactating women
4. To determine the nutritional status of women of reproductive age (15-49 years)
5. To collect contextual information on possible causes of malnutrition such as household food security, water, sanitation, and hygiene (WASH) practices and morbidity

1.5   Survey timing
The survey was conducted at the end of the short rains (October- December). The results of the survey fed into the Short Rain Assessment (SRA).

Short Dry Spell (Jilaal)			Long Rainy Reason (Gu')			Long Dry Spell (Hagai)				Short Rainy Season (Deyr)	
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Migration, Conflicts, Watering of Livestock, Pressure on boreholes			Pasture Surveys, mating season, Planting			Livestock diseases, Labour Demand			Calving, Kidding Period	Migration, Conflict	

Figure 2: Wajir County Seasonal calendar

2   METHODOLOGY

2.1   Survey Design

The survey was a cross-sectional two stage cluster design based on SMART Methodology. Clusters were selected in the first stage using probability proportionate to size (PPS), and households in the second stage by simple random sampling; population listing approach. Household member data on anthropometry, retrogressive morbidity, vaccination and maternal health was collected. Other data sets collected concurrently included data on Water Sanitation and Hygiene (WASH) and Food security and livelihood (FSL). The entire exercise was done in consideration of ethical guidelines as well as government guidelines for prevention of COVID19 transmission. The quantitative methodology was shared with national and county level nutrition information working groups for validation before commencement of data collection.

2.2   Sampling and sample size determination

The sample size was based on ENA for SMART 2020 (January 11th, 2020, version). It entailed determination of number of children and households to be included in the survey based on different parameters as shown in Table 1.

Table 3: Sample size determination

Data entered in ENA for SMART	Anthropometric survey	Rationale
Estimated prevalence	18.8 %	Based on contextual data (KHIS,NDMA EWS, Mass screening data) routine admission in to targeted programs points as a deterioration situation. Thus using upper limit value of July 2022 SMART survey results **15.9 %** (13.5 – 18.8 95% C.I.)
+Desired precision	4	Rule of thumb for prevalence of 15-20%
Design effect	1.1	Value from the July 2022 SMART survey results, was 1.0
Number of children	**439**	**As calculated by ENA**
Average household size	5.7	2019 KPHC – Analytical Report on Population Projections Vol XVI
Proportion of under-five	15.2%	2019 KPHC – Analytical Report on Population Projections Vol XVI
Non-response rate	2.0%	Previous survey non-response during data collection < 1%, response rate was 99.4%
No. of Households	**574**	**As calculated by ENA**
No. of HH per day	**15**	

2.3   Description of sampling methods

The first stage required an updated list of all villages in Wajir County with their respective population sizes. Villages within Wargadud ward in Tarbaj sub-county and Khorof Harar Ward in Wajir Eastsub-county were excluded due to insecurity. The final list of villages were uploaded into ENA for SMART software and the required number of clusters (39) were selected based on probability proportional to population size (PPS).

The second stage involved selection of 15 households from each of the sampled clusters during data collection day. The selection was done using simple random sampling method through household listing approach and use of android application (random number generator). All eligible children (6-59 months) in the selected households were assessed for anthropometry, morbidity and vaccination. In sampled households with no eligible children, only household related data (WASH and Food security) was collected.

2.4   Survey organization

2.4.1   Recruitment and composition of survey teams

The survey was executed under the overall leadership of the County Nutrition Coordinator. She was supported by two staff, one from the national information working group and UNICEF-NSO. The survey had six teams of three members each (1 team leader and 2 survey measurers). Priority was given to those who had prior experience in SMART survey as recommended in the resumption of SMART survey after COVID-19 guide. At the village level (cluster), the team was joined by a village guide who was knowledgeable of the village.

2.4.2   Survey team training and supervision

A four-day training workshop was held from 25th to 28th January 2022 at County Guest House, Wajir town. The training focused on: - the purpose and objectives of the survey; familiarization with the questionnaire by reviewing the purpose for each question; recording of data using ODK software; how to take accurate anthropometric measurements; cluster and household selection. Demonstrations on how to take accurate anthropometric measurements were conducted. Enumerators training also emphasized on field procedures, measurements, interviewing techniques as well as anthropometric standardization as recommended by SMART methodology. The protocol and tools were reviewed and discussed for a better understanding by the survey team. Possible problematic situations that might arise during the training were described and solutions for them given.

A standardization test was conducted on the third day to assess enumerators' accuracy and precision in taking anthropometric measurements. Pre-testing of the survey questionnaire was conducted on the last day of the training in one of the clusters not sampled (kalkacha, Wajir East Sub-county). This was to gauge the enumerator's level of understanding, ability to follow sampling procedures and ease in use of tablets; take and record measurements correctly as well as interact effectively with respondents. After the pre-testing, a debriefing session with the survey team was held where difficulties that arose were addressed.

2.5   Data Collection

Data collection took six days from 29th January to 3rd February 2022. During data collection, all the field procedures were followed to select eligible households, identify children for anthropometric measurement as well as the respondents for the interviews. Survey teams first reported to the area chief or village elder for the respective selected clusters/villages

updated the list of households and were then assigned a village guide. Using random numbers generator, households to be visited were randomly selected. Village guide then took teams around the village to the selected households. Each day after data collection, all the teams were able to submit the data electronically. A central data manager was on stand-by to be able receive, review, export data, filter and give feedback teams through the field supervisor or WhatsApp group created for the survey.

2.6 Case Definitions

In all selected households, all children 6-59 months were included in the anthropometric survey. The age of the children was determined using a local historical and seasonal calendar of events or a birth notification slip or certificate if available. If there were no children aged 6-59 months in the household, the household was still interviewed for Water Sanitation and Hygiene (WASH), Food Security and Livelihoods (FSL), Health access and protection data. Data on morbidity WASH and FSL were collected by recall.

The following case definitions were used in the assessment:
- Household: Group of persons who live together under the same roof and eat from the same pot for at least a period of 3 months preceding the assessment. In polygamous homes, those living and eating in different houses are considered as separate households. Wives living in different houses but eating from the same pot are considered as one household.
- Head of household: One who controls and makes key decisions on household resources (livestock, assets, income, and food), health and social matters for and on behalf of the household members
- Respondent: The person responsible for food preparation on the recall day. For the child, this refers to the mother or caregiver.
- Diarrhea: having three or more loose or watery stools per day
- Measles vaccination: a jap in the upper arm given to children after 9 months and 18 months of age at health clinics or by mobile health teams.
- Meal: food served and eaten at one time (excluding snacks) and includes one of the three commonly known: - breakfast, lunch and supper/dinner
- Oedema: Swollen limbs leaving depression 3 seconds after pressing on both feet (bilateral)

2.7 Indicators, guidelines and formulas used in acute malnutrition

2.7.1 <u>Weight for Height (WHZ) index</u>

This was estimated from a combination of the weight for height (WHZ) index values (and/or oedema) and by sex based on WHO standards 2006. This index was expressed in WHZ indices in Z-scores, according to WHO 2006 reference standards.
Z-Score:
- Severe acute malnutrition is defined by WHZ < -3 SD and/or bilateral Oedema
- Moderate acute malnutrition is defined by WHZ < -2 SD and >-3 SD and no Oedema.
- Global acute malnutrition is defined by WHZ < -2 SD and/or bilateral Oedema.

2.7.2 <u>Mid Upper Arm Circumference (MUAC)</u>

MUAC measurements was also undertaken to determine the nutrition status of eligible children and mothers/caretaker (15-49 years of age) from sampled households. The following MUAC criteria were applied.

Table 4: MUAC Guideline

MUAC Guideline Children 6 - 59 Months	**Interpretation**
MUAC< 115mm and/ or bilateral oedema	Severe acute malnutrition
MUAC 115mm and <125mm (no bilateral oedema)	Moderate acute malnutrition
MUAC 125MM and 135mm (no bilateral oedema)	At Risk of Malnutrition
MUAC >135 MM	Adequate nutrition
Maternal MUAC Cut off	**Interpretation**
MUAC< 21cm	Malnourished
MUAC 21 - 23 cm	At risk of malnutrition
MUAC > 23cm	Normal

- **Global Acute Malnutrition (GAM):** weight-for-height Z scores less than -2 and/or presence of oedema (WHZ<-2 and/oedema)
- **Severe Acute Malnutrition (SAM):** weight-for-height Z scores less than -3 and/or presence of oedema (WHZ<-3 and/oedema)
- **Global Acute Malnutrition based on MUAC (GAMMUAC)**: Mid Upper Arm Circumference less than 125 mm and/or presence of oedema (MUAC<125 mm and/oedema); and severe acute malnutrition as MUAC<115 mm and/oedema
- **Wasting**: weight-for-height Z scores less than -2 (WHZ<-2); and severe wasting as WHZ<-3.
- **Underweight**: weight-for-age Z scores less than -2 (WAZ<-2); and severe underweight as WAZ<-3.
- **Stunting**: height-for-age Z scores less than -2 (HAZ<-2); and severe stunting as HAZ<-3.

2.8   Data Management

2.8.1   Data Quality Control
To ensure data quality, the following measures were put in place;
- A four-day comprehensive training including standardization and pilot test
- Field supervision of the survey teams during data collection
- Use of ODK for data collection and hosting in ONA
- Daily calibration and standardization of the survey equipment
- Use of cluster control forms for survey outcome for every sampled household
- Daily plausibility checks and sharing feedback with the teams every morning before proceeding to the field
- Adequate logistic planning during training and fieldwork

2.8.2   Data collection tool
The national SMART methodology data collection tools were harmonized and designed in ODK for use. The tools captured all the indicators as per the survey specific objectives.

2.8.3   Data analysis and processing
Anthropometric data entry and processing was done using the ENA for SMART software 11th January 2020 where the World Health Organization Growth Standards (WHO-GS) data cleaning and flagging procedures were used to identify outliers that enabled data cleaning as well as exclusion of discordant measurements from anthropometric analysis. The SMART/ENA software generated weight-for-height, height-for-age and weight-for-age Z scores to classify them into various nutritional status categories using WHO standards and cut-off points. Additional data for children aged 6-59 months, women aged 15-49 years, WASH, and food security indicators were cleaned and analysed using STATA and Excel. The result of this survey was compared to WHO/UNICEF standard cut-off points

Table 5: Definition of boundaries for exclusion

1. If sex is missing the observation was excluded from analysis.
2. If Weight is missing, no WHZ and WAZ were calculated, and the programme derived only HAZ.
3. If Height is missing, no WHZ and HAZ were calculated, and the programme derived only WAZ.
5. For any child records with missing age (age in months) only WHZ was calculated.
6. If a child has oedema only his/her HAZ was calculated.

2.9   Survey Limitations

The main challenges were:

a) Determining the exact age of some children was a major challenge particularly with the use of calendar of events. The main difficulties relate to accuracy on recall (recall bias) and at some villages, respondents could not relate well with some of the events. The challenge in determination of accurate age may impact of some survey findings.

b) There was poor recording of vitamin A, Iron folate and de-worming in the health cards and recall issues. Some of the mothers indicated that their children had received Vitamin A and de-worming while it was not recorded in the health cards.

c) During sampling villages (31) were excluded from the sampling frame due to insecurity.

2.10   Ethical considerations

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

3   SURVEY RESULTS

1.1   SURVEY RESULTS

1.1.1   Household Demographic Characteristics

A total of 3808 household members were assessed in 585 households across the County in 39 clusters. A summary of the demographics is as illustrated in table 6 below;

Table 6: Household demographic characteristics

		n	%
HH data	Planned	585	
	Actual	585	100%
HH Members	Total	3808	
	Average HH size	6.9	
Gender of HH members	Male	1907	50.1%
	Female	1901	49.9%
Age 6-59 months	Planned	439	
	Actual	681	125.7%
	Male	365	53.6%
	Female	316	46.4%
Age group	Less than 5 years	734	19.3%
	5 years to less than 18 years	1693	44.5%
	18 years and above (Adult)	1381	36.3%

1.1.2   Main Sources of Income

The main sources of income were sale of livestock (33.6%), casual labour (18.7%), petty trading (15.9%) and sale of livestock products (12.5%) as illustrated in figure 3.
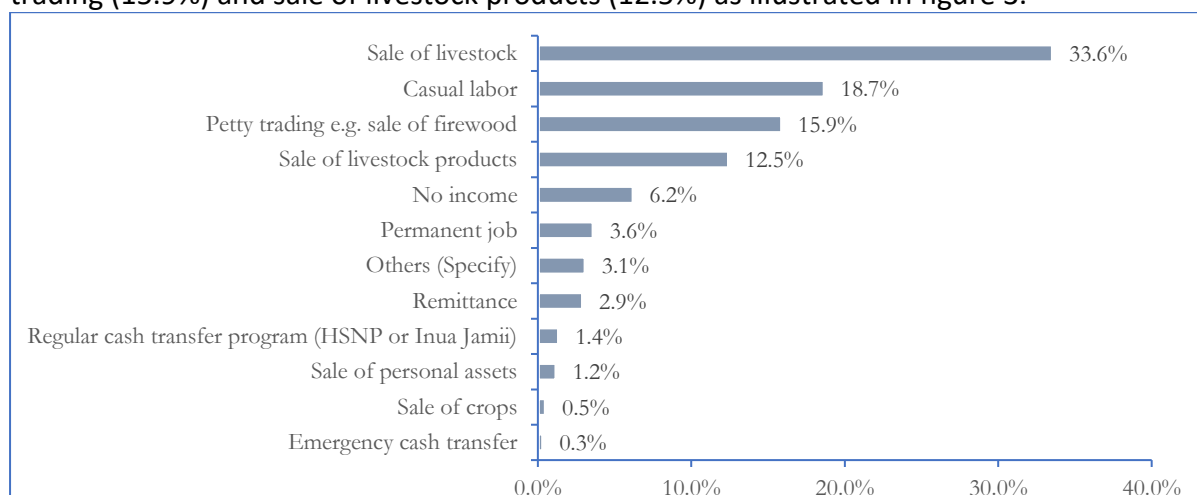

Figure 3: Main source of household income

1.1.3 Level of Education and School Enrolment

School aged going children (2,002), 65.9% were enrolled in school, the caregivers mentioned that the school going age children who don't go to school are either too young or they are attending *dugsi* (Islamic school), as indicated in the table 9.

Among the 1,381 household members, 52.3 % were no formal education. Slightly above 20% of the household members have attained secondary education and above.

Table 7: Reasons for not attending school as per respondents

Main reasons for not attending school.	Proportion
Too young to be in school	70.4%
Chronic sickness	8.1%
Household doesn't see the value of school	6.9%
Others (including attending dugsi	14.6%

1.2 Child Health & Immunization

A total of 1323 children aged 6-59 months, 595 from pastoral and 728 from Agro-pastoral were assessed from immunization coverage verified by the card and recall from caregivers.

1.2.1 Immunization Coverage

Overall, BCG coverage of 96.7% was as confirmed by the presence of BCG scar.

OPV 1 and OPV 3 coverage was 98.0% and 96.8% respectively indicating good access and utilization of immunization services, this has also been contributed by the sustained integrated outreach services. Measles Rubella at 9 months and 18 months was 93.7% and 69.1 % respectively, the high coverage of measles observed was attributed to measles campaign carried out in December 2022. Figure 4 illustrates measles rubella and OPV shows coverage by both recall and card, indicating that most caregivers had no mother child booklet for their children and relied on recall for immunization status.
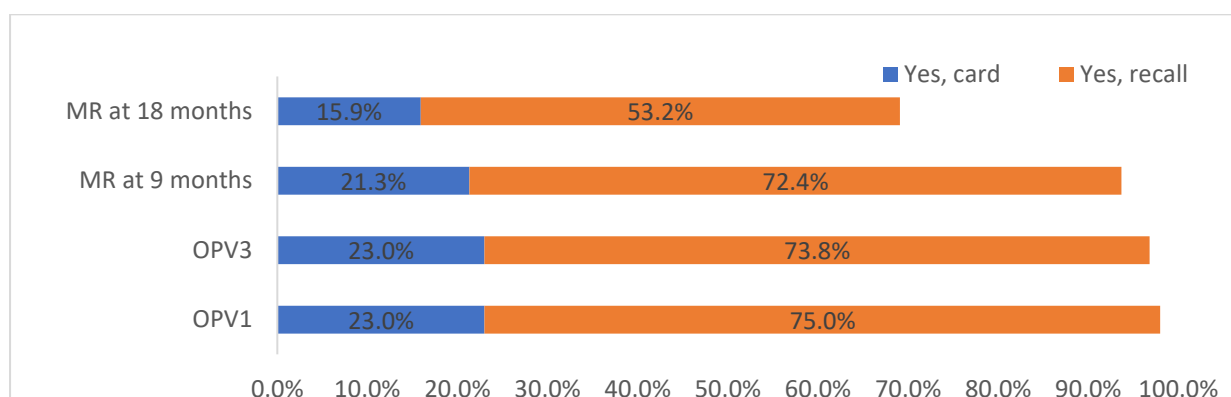

Figure 4: Immunization coverage for measles rubella and OPV

1.2.2 3.5.2 Zinc & Vitamin A Supplementation and Deworming Coverage

1.2.3 Vitamin A and Deworming Coverage

The national targets for Vitamin A coverage for children aged 6 – 59 months is 85%. What was observed is still below the national target. Vitamin supplementation for children aged 6-11 months was 78% with 84.7% of the children supplemented in the last 12 months from the time of data collection. Children supplemented twice according to MOH policy is still low at 37.3% as illustrated in figure 5. The coverage is comparable to last year sustained coverage attributed to mass campaign during exhaustive mass screening of children aged 6 – 59 months. Deworming coverage for children aged 12 – 59 months was 70.9%.
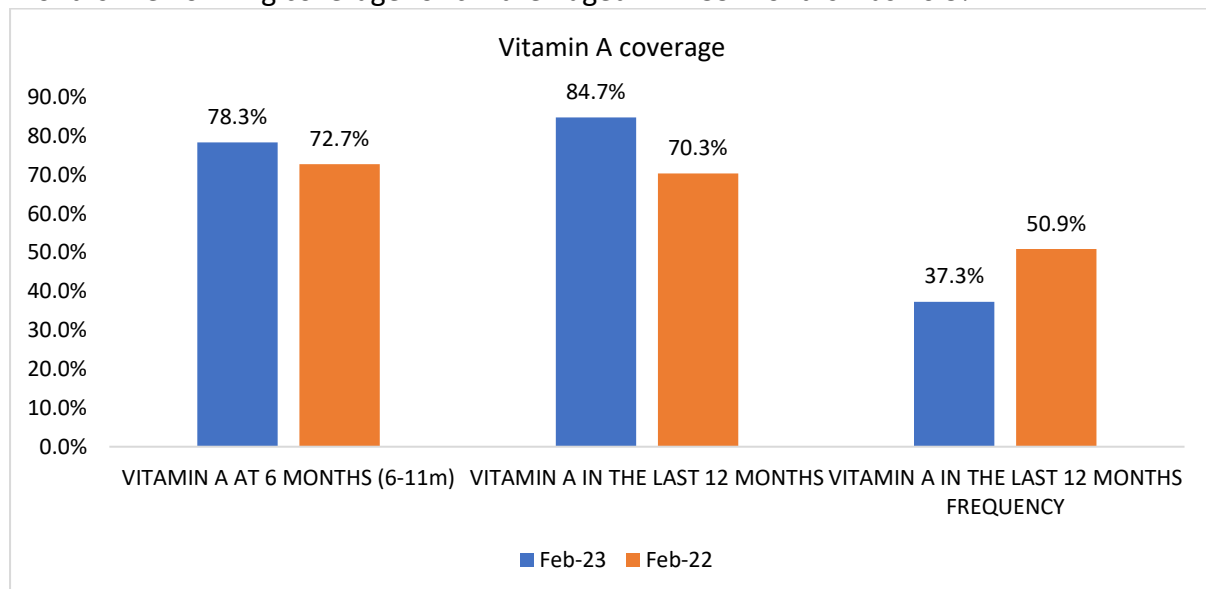
Figure 5: Vitamin A coverage

1.3 Child Morbidity

A total of 676 children under five were assessed for illness in the past two weeks, with 36.8% reported to have been ill in the last two weeks, as shown in the figure 6. It was observed that the leading cause of morbidity was acute respiratory infection (ARI)/ cough at 76.7%. Fever with chills like malaria nd watery diarrhoea was 34.5% and 24.1% respectively. It was observed that 71.7% of the children with diarrhea were supllemented with zinc. diseases in; Diarrhoea and ARI has diret negative impact on the nutrition status of the population
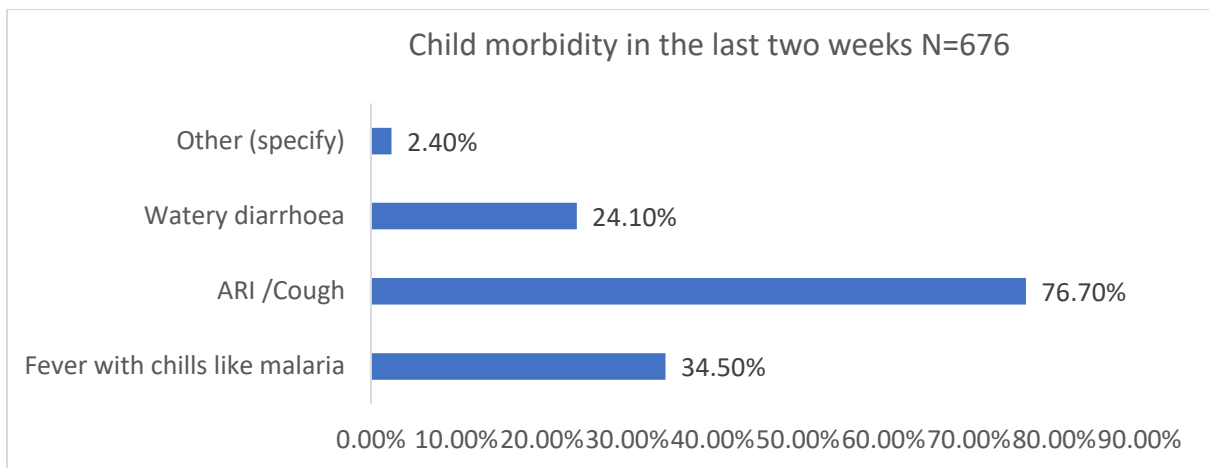
Figure 6: Child morbidity in the last two weeks

The health seeking behaviour was 67.1%, with majority (73.1%) of the caregivers sought medical services at public health facilities. Other places are as indicated in figure 7. Majority (83.3%) of the households
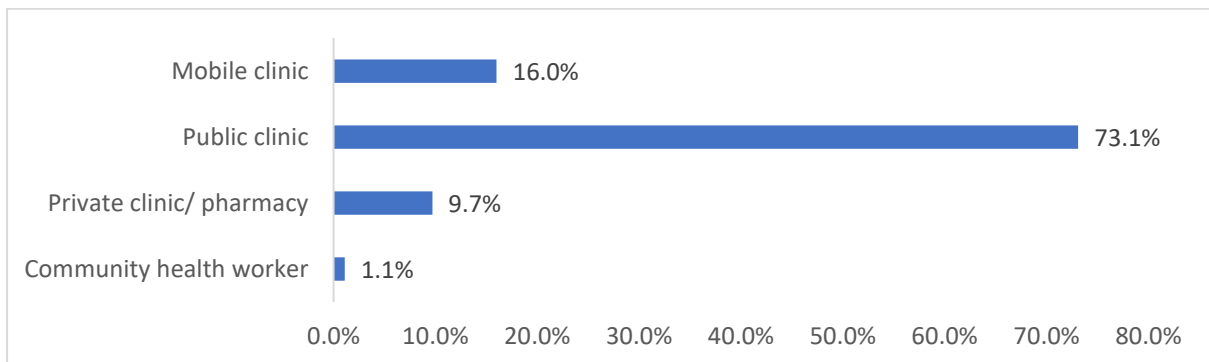
Figure 7: Places where caregivers with ill children sought medical assistance

1.4 Water Sanitation & Hygiene Practices

1.4.1 Main Water Sources

A total of 578 households were assessed for source of drinking water. Following cumulative seasons of depressed rains, the main source of drinking water was borehole (28.9%) other sources recorded piped water, water trucking, earth pan and unprotected shallow well as indicated in figure 8. Mean water consumption was 15.9% with majority of the households (55%) consuming more than 15 litres per day. This was however lower compared to other years. The trekking distance for majority (82.7%) was less than 500 meters or 15 minutes.
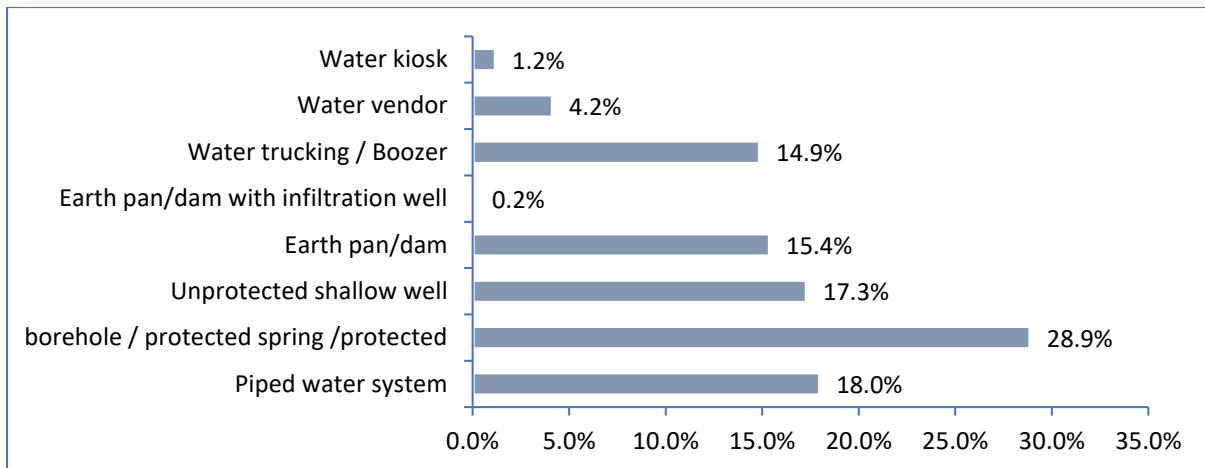
Figure 8: Main source of drinking water for Wajir County

1.4.2 Water Treatment

Despite most of the water sources being from unsafe sources such as earth pans and unprotected only 16.5%. The treatment methods are as illustrated in figure 9.

	Boiling	Chemicals (Chlorine,Pur,Waterguard)	traditional herbs	Pot filters
■ Series1	63.4%	67.1%	26.8%	8.5%
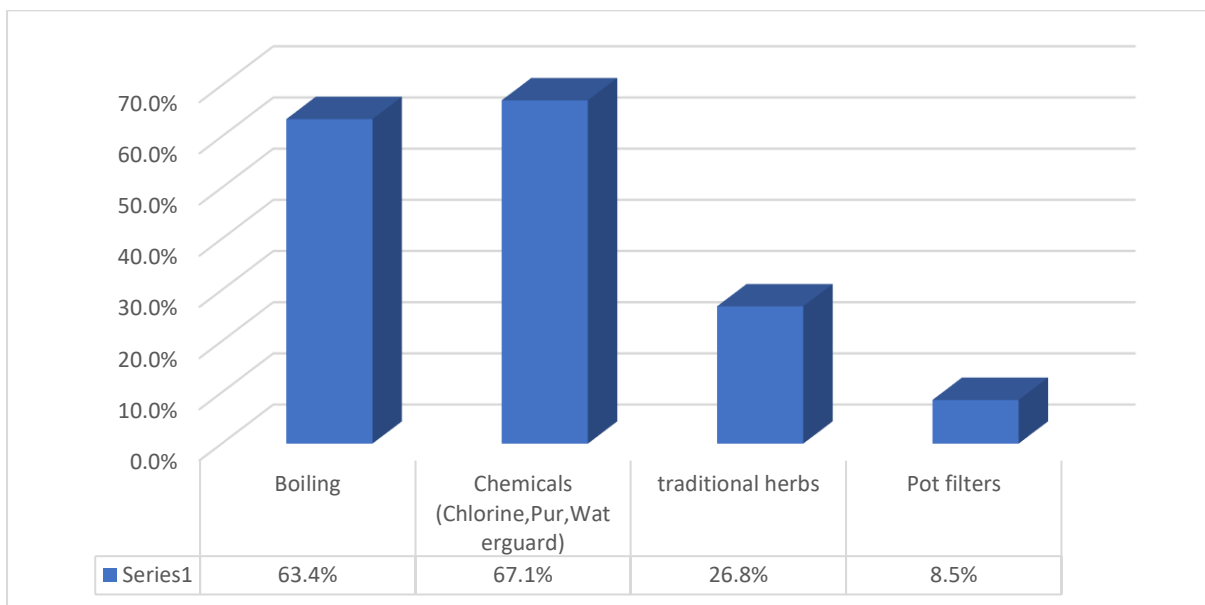
Figure 9: Drinking water treatment methods

1.4.3 Hand Washing

Across the County, most (88.6%) of respondents were aware of handwashing practices. Handwashing at critical times was high. Hand washing after visiting the toilet and before eating at 97.1% and 97.5% respectively as shown in table 8 but handwashing at all four critical times is low at 47.5%. only 44.9% of the respondents washed their hands with soap and water as shown in figure 3-22 below.

Table 8: Handwashing practices at critical times

Critical times	n	%
After toilet	497	97.1%
Before cooking	327	63.9%
Before eating	499	97.5%
After taking children to the toilet	352	68.8%
All 4 critical times	243	47.5%

1.4.4 Latrine Ownership and Utilization

Majority (49.7%) of the respondents had no relieving facility and used the bush or field, as illustrated in figure 10. This predisposes the population to disease outbreaks and the contamination of water sources with faecal coliforms which might in turn be contributing to the higher malnutrition rates in Wajir
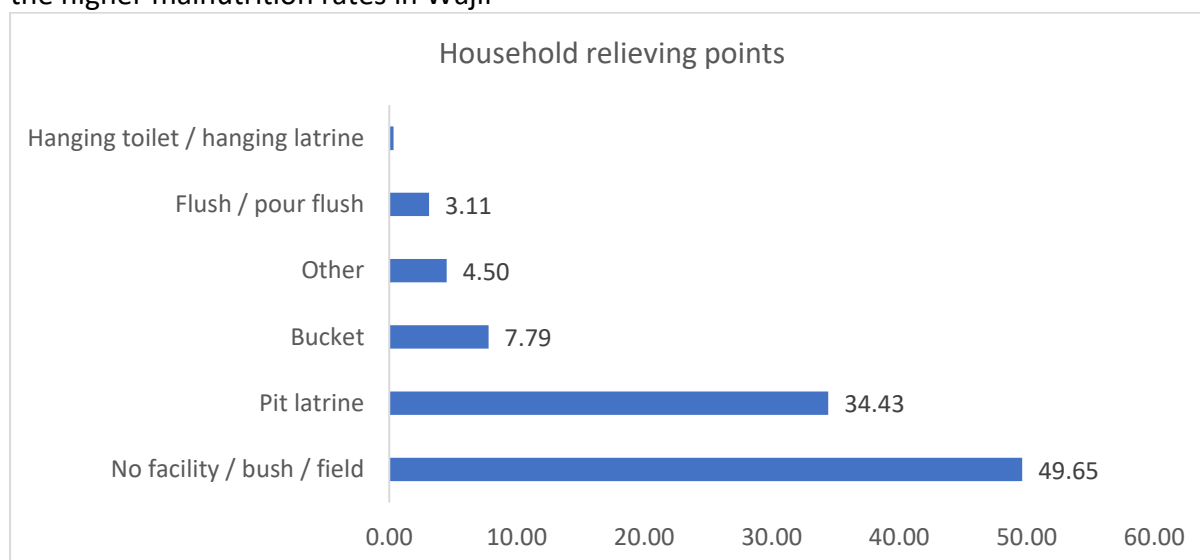
Figure 10: Proportion of household relieving points

1.5 Household Dietary Diversity and Food Consumption Score

1.5.1 Household dietary diversity

Majority of the households consumed cereals, oil fats, sweets and legumes based on 24 hours recall, as illustrated in figure 11. The consumption of eggs, fruits remain low, whereas majority of the household's main livelihood is livestock keeping remain low at 0.7%. Majority (78.5%) of the households consumed 3 – 5 food groups, with only 10.7% consuming recommended more than 5 groups.
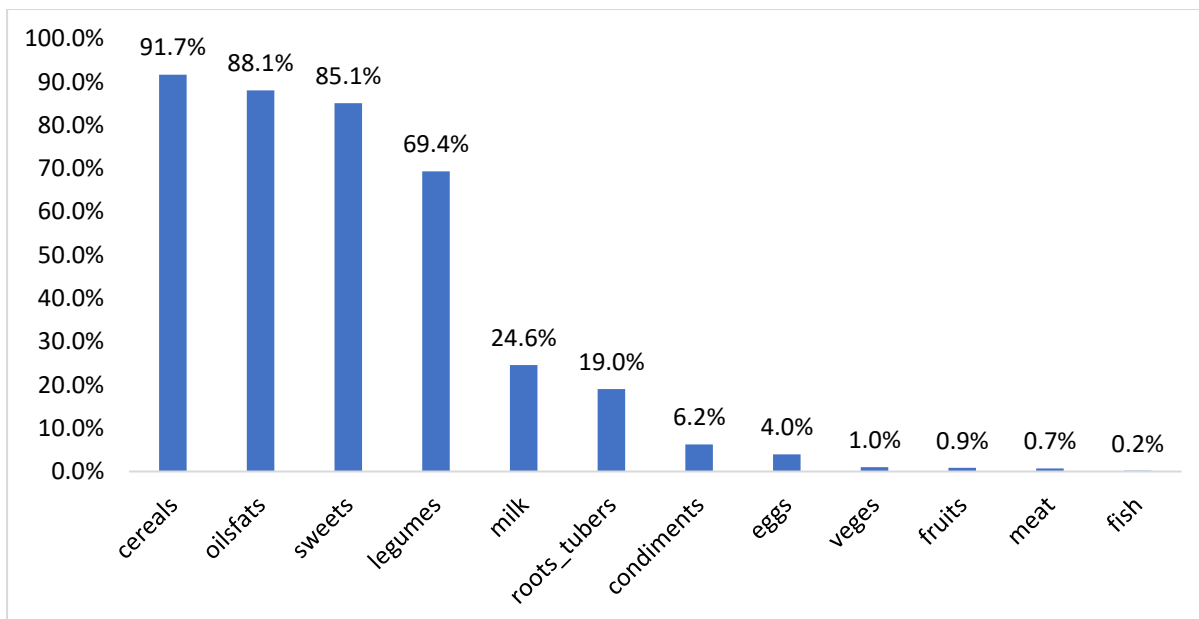
Figure 11: Household Dietary Diversity based on 24 hours recall

1.5.2 Micronutrient Consumption, Food Consumption Score and Coping Strategy Index

Micronutrient consumption was poor (no consumption, 0 days) for iron rich foods, Vitamin A rich foods and all fruits and vegetables. Consumption of protein rich foods, oils and fats and staples was frequent (6 – 7 days) as illustrated in figure 12. As illustrated by the household dietary diversity and micronutrient consumption, dietary diversity is poor.
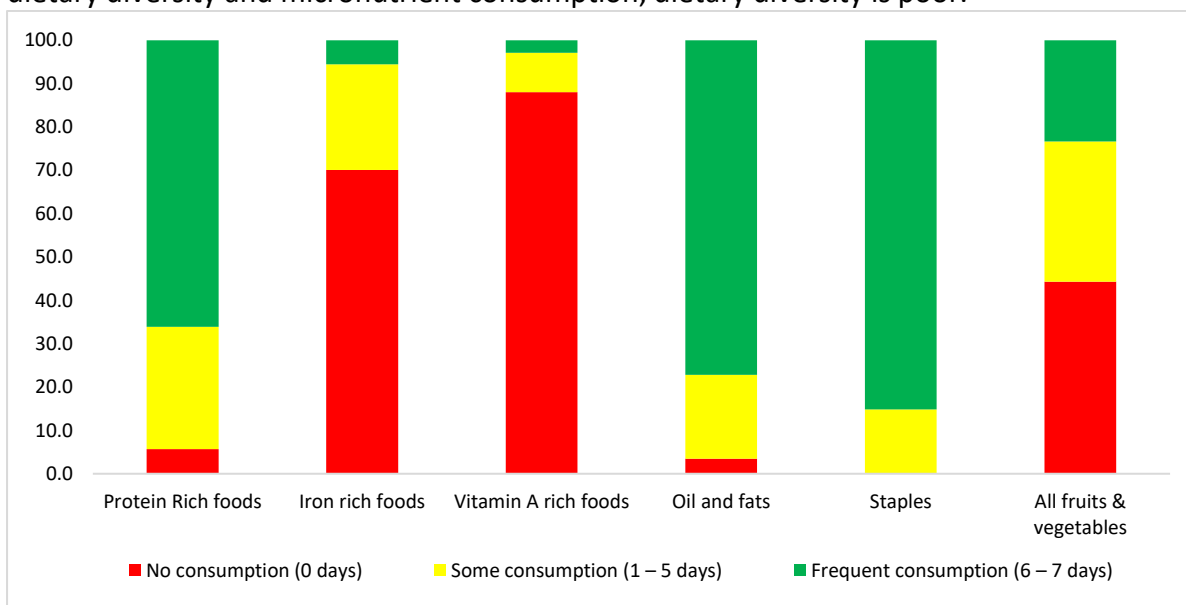
Figure 12: Micronutrient consumption from household dietary diversity

Food consumption score for majority of the households was good, as indicated in table 9.

Table 9: Food consumption score

Main Threshold	Nomenclature	Proportion of Households	
		2022	February 2023
0-21	Poor food consumption…manly cereal and sugar	2.4%	6.2%
21.5-35	Borderline food consumption Cereal, legumes, milk, oil, sugar	8.9%	19.2%
>35.5	Good food consumption Cereal, legumes, milk, condiment, flesh meat, vegetable, oil, sugar	88.7%	74.6%

Majority of the households (67.3%) reported having experienced food insecurity in the last 7 days prior to data collection, of these 66.4% were stressed with 10.7% in crisis. Table 10 indicates the different coping mechanisms and its weighted score.

Table 10: Coping mechanism

Coping Mechanism	%	Severity	Scores	
			Average score	Weighted Score
Rely on less preferred and less expensive foods?	379	1	2.62	**2.62**
Borrow food, or rely on help from a friend or relative?	323	2	1.64	**3.28**
Limit portion size at mealtimes?	350	1	2.11	**2.11**
Restrict consumption by adults in order for small children to eat?	234	3	1.09	**3.27**
Reduce number of meals eaten in a day?	353	1	2.31	**2.31**
Total (Average)				**13.59**

1.6 Maternal Nutrition Status

A total of 541 women of reproductive age were assessed and approximately 41% and 11% were lactating and pregnant respectively, with 1% pregnant and lactating. All women of reproductive age were assessed for nutritional status using MUAC. Pregnant and lactating women with a MUAC less than 21.0 CM were 8.2% whereas those who were not pregnant or lactating were 7.9%.

Majority (95.3%) of the pregnant women attended antenatal care in their last pregnancy of the 301 women assessed. 62.0% of those who attended ANC started in the second trimester (between 4TH and 6th month of their pregnancy), close to 10 % attended in the last trimester as indicated in figure 13. Only 25% of the pregnant women attended ANC the recommended four times.
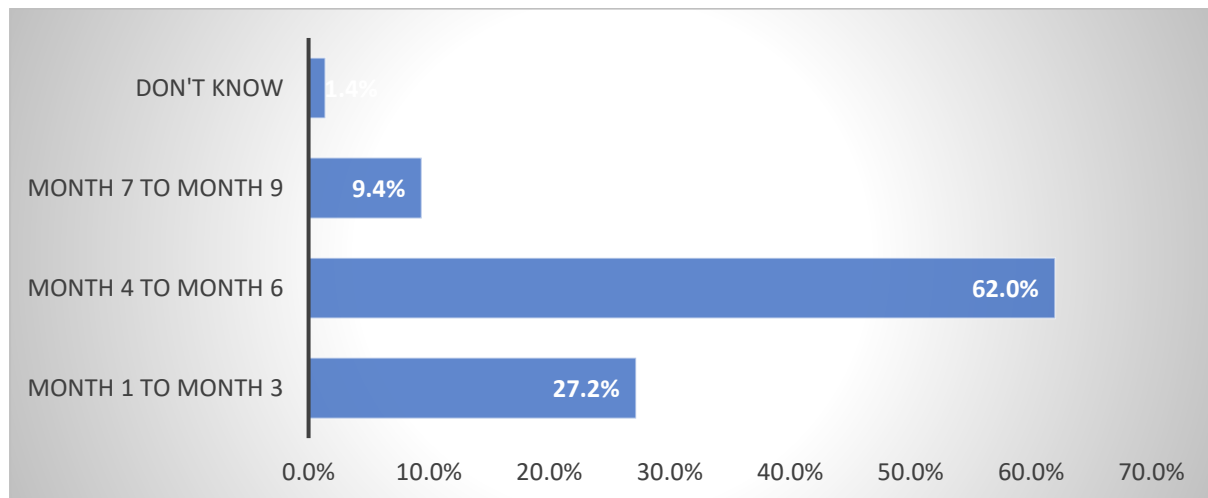
Figure 13: Proportion of first ANC attendance in the last pregnancy

The recommended iron folic acid for pregnant women is 270 days. In Wajir the consumption of IFAS is still very low. 95.6% of the pregnant women who attended ANC were issued monthly dose of iron folic acid, this indicates that the health care workers are prescribing and dispensing to pregnant mothers. The main challenge is the consumption with majority of the women consuming for less than 90 days. The mean consumption of days was 57 days. Majority (92.3%) of the women consumed less than 5 food groups. Majority of the women consume cereals, pulses, diary and other fruits as indicated in figure14.
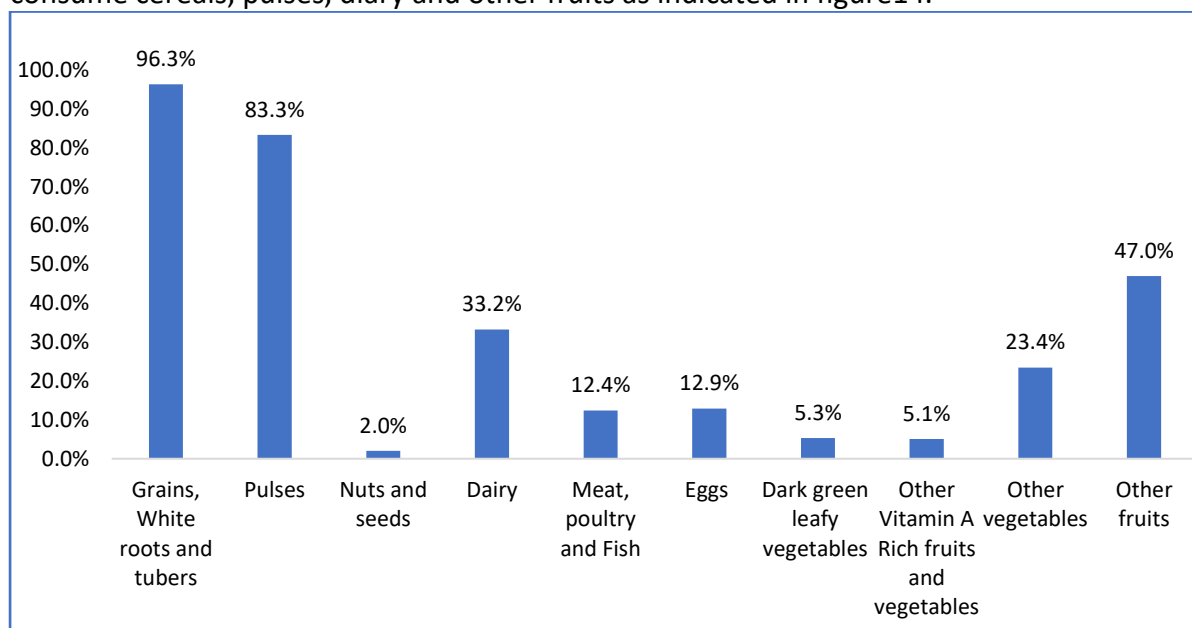
Figure 14: Women dietary diversity based on 24 hours recall

1.7 Nutritional Status of Children Under Five Years

Global acute malnutrition (GAM) is defined as <-2SD Z scores weight-for-height and/or oedema. This is a combination of Moderate Acute Malnutrition and Severe Acute Malnutrition. Moderate Acute Malnutrition is defined as Z Scores of <-2SD - >-3SD while Severe Acute Malnutrition is defined as <-3SD Z scores weight-for-height and/or oedema. Quality of the survey (Overall score (WHZ)) was excellent at 7%.

1.7.1 Prevalence of acute malnutrition (weight-for-height z-score –WHO Standards 2006)

A total of 676 children 6- 59 months were assessed, of this 53.7% were boys. The survey revealed that the Global Acute Malnutrition (GAM) rate was **14.9 %** (11.8 - 18.8 95% C.I.) with prevalence of severe acute malnutrition of **2.5 %** (1.5 - 4.2 95% C.I.) as shown in table 12. The GAM was lower that what was observed in February 2022. The GAM was high as the WHO wasting classification. It was observed that the prevalnce of malnutrition was higher for boys compared girls.

Table 11: Prevalence of acute malnutrition based on height/length for weight (WHZ) for children aged 6-59 months

	All n = 669	Boys n = 359	Girls n = 310
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(100) **14.9 %** (11.8 - 18.8 95% C.I.)	(59) **16.4 %** (12.2 - 21.7 95% C.I.)	(41) **13.2 %** (10.1 - 17.2 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(83) **12.4 %** (9.7 - 15.7 95% C.I.)	(49) **13.6 %** (10.1 - 18.2 95% C.I.)	(34) **11.0 %** (8.2 - 14.5 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(17) **2.5 %** (1.5 - 4.2 95% C.I.)	(10) **2.8 %** (1.4 - 5.4 95% C.I.)	(7) **2.3 %** (1.1 - 4.6 95% C.I.)

1.7.2 Prevalence of acute malnutrition based on MUAC

MUAC is the best indicator for mortality and is used in the community (for screening) to identify individual children in need of referral and as an admission criterion for feeding programme. A total of 676 children were measured. Generally, in Wajir County MUAC usually tends to indicate lower GAM levels compared to WFH z-scores as shown in table 12 and 13.   Prevalence of acute malnutrition by MUAC was 4.4% as shown in table 12.

Table 12: Prevalence of acute malnutrition based on MUAC

	All n = 676	Boys n = 363	Girls n = 313
Prevalence of global malnutrition (< 125 mm and/or oedema)	(30) **4.4 %** (2.7 - 7.2 95% C.I.)	(16) **4.4 %** (2.1 - 8.8 95% C.I.)	(14) **4.5 %** (2.7 - 7.4 95% C.I.)

Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(25) **3.7 %** (2.3 - 6.0 95% C.I.)	(14) **3.9 %** (1.9 - 7.6 95% C.I.)	(11) **3.5 %** (2.0 - 6.2 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(5) **0.7 %** (0.3 - 1.7 95% C.I.)	(2) **0.6 %** (0.1 - 2.2 95% C.I.)	(3) **1.0 %** (0.3 - 2.9 95% C.I.)

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

Underweight is measured by weight for age and reflects combination of acute and chronic malnutrition. Total of 763 children were sampled. Prevalence of underweight was 16.9% with severe underweight at 2.1%. There was variation within gender with 18.2% of the boys being under weight compared to 15.4% as shown in table 13.

Table 13: Prevalence of underweight based on weight-for-age z-score for children aged 6-59 months

	All n = 673	Boys n = 362	Girls n = 311
Prevalence of underweight (<-2 z-score)	(114) 16.9 % (13.6 - 20.9 95% C.I.)	(66) 18.2 % (13.7 - 23.9 95% C.I.)	(48) 15.4 % (11.5 - 20.4 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(100) 14.9 % (12.0 - 18.2 95% C.I.)	(56) 15.5 % (11.6 - 20.3 95% C.I.)	(44) 14.1 % (10.6 - 18.6 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(14) 2.1 % (1.1 - 3.8 95% C.I.)	(10) 2.8 % (1.4 - 5.3 95% C.I.)	(4) 1.3 % (0.5 - 3.3 95% C.I.)

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

Stunting is measured by the index of height for age and reflects failure to receive adequate nutrition over a long period of time termed as (chronic malnutrition) and is also affected by recurrent and chronic illness. Stunting was 12.3% and 2.9% were severe. According to WHO classification is medium. High proportion of girls were stunted compared to boys as indicated in table 14.

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

	All n = 661	Boys n = 351	Girls n = 310
Prevalence of stunting (<-2 z-score)	(81) 12.3 % (9.3 - 16.0 95% C.I.)	(36) 10.3 % (7.2 - 14.5 95% C.I.)	(45) 14.5 % (10.3 - 20.1 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(62) 9.4 % (6.9 - 12.6 95% C.I.)	(26) 7.4 % (5.0 - 10.7 95% C.I.)	(36) 11.6 % (8.1 - 16.4 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(19) 2.9 % (1.8 - 4.6 95% C.I.)	(10) 2.8 % (1.5 - 5.3 95% C.I.)	(9) 2.9 % (1.2 - 6.8 95% C.I.)

4   CHAPTER 4

4.1   CONCLUSIONS AND RECOMMENDATIONS

The survey revealed that the Global Acute Malnutrition (GAM) was is **14.9 %** (11.8 - 18.8 95% C.I.), indicating an improvement in nutrition status of children comapred to the previous season. According to NDMA early bulletin the prodcution indicators are poor following cummulative effects of failed season. The consumption of milk has remained at all time below long term average, however this has not impacted negatively the nutritional status of children as evidenced with slight decline in GAM. This observed improvement can be attributed to intensified scale-up of drought response interventions by sate and non-state actors. The department of health with support from its partners have slighly over 200 outreach sites supoorted across the County. Cash tranfer has also been initaited with some partners targettng households with children in OPT and SFP programs.

Over the years as ullustrated in figure 15, GAM has remained above WHO emergency treshold of 15% since 2019.

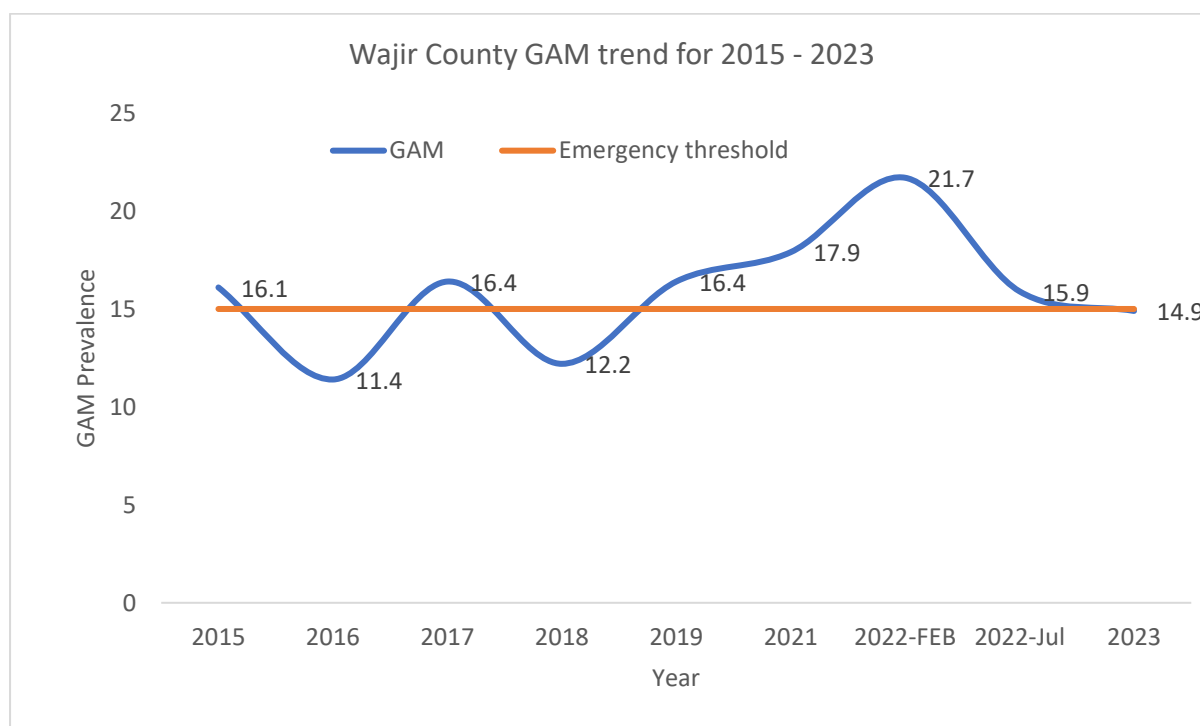Figure 15: Wajir County Global Acute Malnutrition tend for 2015 - 2023

The drivers of acute malnutrition include suboptimal sanitation practices. As observed from the survey, handwashing with soap and water remains low at 44.2% despite the awareness of handwashing practices remining high at 88.6%. Treatment of drinking was observed to be low at 16.5%, despite unprotected sources of water. Open defecation is high at 49.7%

Recommendations

RECOMMENDATION	ACTOR (BY WHO?)	IMPLEMENTATION TIME LINE
Scale-up and sustain provision of integrated outreach services across the County (Tarbaj sub-county with the lowest coverage at 4%)	CDH and Nutrition partners	Immediately
Conduct exhaustive mass screening in all villages across the County	CDH and Nutrition partners	Immediately
Scale-up sensitization of mothers on use of family MUAC	CDH and Nutrition partners	Immediately
Strengthen quality treatment for children with acute malnutrition at static health facilities and outreach sites through on-job and training	CDH and Nutrition partners	Immediately and continuously
Continue to advocate for linkage of households with malnourished children and social protection support programs.	CDH and Nutrition partners	Immediately and continuously
Liaise with the WASH program to promote handwashing and hygiene practices in villages	CDH, Nutrition partners and WASH partners	Immediately and continously
Scale up and sustain IMAM surge approach in all facilities offering IMAM services	CDH and Nutrition partners	Immediately

Appendix 1

Plausibility Report

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** (1.0 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**2** (p=0.054)
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=0.022)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (3)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
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** (0.94)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.00)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.02)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**1** (p=0.047)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**7** %

The overall score of this survey is 7 %, this is excellent.

Appendix 2

Assignment of Clusters

Geographical unit	Population size	Assigned cluster
Central B	3679	1
B.Qorax	3300	2
Lagdima	3725	3
Aqalaar	1461	4
wagberi	2218	5
Fumati	1808	6
Danow	788	7
JIRIGA	1298	8
CENTRAL	1121	9
KULAN	927	10
b.dismensary	1082	11
central	1066	12
migag	1677	13
Bulla Forest	1775	14
B.Police	710	15
Bulla Central A	1065	16
Issaqiya	976	17
Wel-garas	710	18
Bulla Primary	444	RC
Bulla Central	710	19
Bulla Town	799	RC
B. Baraza Park	1852	20
B. Shikuku	2478	21
B. Towhid	2862	22
B. Bangal	1552	23
B.kom 1	1374	24
Halane 1	1882	25
Bulla Primary	678	RC
Mosque	768	26
mosque	640	27
Wagberi	989	28
bula AP	690	29
Cherdab	1000	30
Sala	2916	31
Milsaded	3300	32
Dugo	1158	33
Adadijole	1200	RC
Garakilo	2800	34
B.East	1394	35

B. ALI GALO   1457   36
B. GESTOW   1140   37
B. Poster A 2217   38
B. Wagberi 507
B.Primary   526
B. Barwaqo 570   39

Appendix 3

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	0.11		5/0	
Enumerator 1	0.05 OK	0.16 OK	3/2	2/4
Enumerator 2	0.02 OK	0.19 OK	2/0	2/4
Enumerator 3	0.03 OK	0.06 OK	2/1	1/6
Enumerator 4	0.01 OK	0.24 OK	1/0	2/4
Enumerator 5	0.06 OK	0.21 OK	3/0	2/5
Enumerator 6	0.05 OK	0.10 OK	5/0	4/3
Enumerator 7	0.00 OK	0.11 OK	0/0	3/2

Height:

	Precision: Sum of Square [H1-H2]	Accuracy: Sum of Square [Enum.(H1+H2)-Superv.(H1+H2)]	No. +/- Precision	No. +/- Accuracy
Supervisor	0.74		5/4	
Enumerator 1	1.57 POOR	9.43 POOR	2/6	7/3
Enumerator 2	0.44 OK	4.24 POOR	2/4	7/3
Enumerator 3	1.30 OK	10.16 POOR	3/4	6/4
Enumerator 4	0.06 OK	12.28 POOR	4/2	6/3
Enumerator 5	0.11 OK	5.99 POOR	3/5	6/4
Enumerator 6	0.12 OK	6.56 POOR	3/6	6/4
Enumerator 7	0.06 OK	435.48 POOR	4/2	4/5

MUAC:

	Precision: Sum of Square [MUAC1-MUAC2]	Accuracy: Sum of Square [Enum.(MUAC1+MUAC2)-Superv.(MUAC1+MUAC2]	No. +/- Precision	No. +/- Accuracy
Supervisor	25.00		2/5	
Enumerator 1	601.00 POOR	518.00 POOR	3/7	3/7
Enumerator 2	6.00 OK	235.00 POOR	3/3	4/5
Enumerator 3	5.00 OK	1004.00 POOR	3/2	8/1
Enumerator 4	6.00 OK	843.00 POOR	2/4	10/0
Enumerator 5	10.00 OK	417.00 POOR	2/5	8/2
Enumerator 6	9.00 OK	488.00 POOR	4/5	3/7
Enumerator 7	5.00 OK	208.00 POOR	3/2	6/4

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.