



**INTEGRATED
SMART SURVEY -
REPORT
JULY 2023**

**IMPLEMENTED
BY
MINISTRY OF
HEALTH,
COUNTY
GOVERNMENT OF
GARISSA &
PARTNERS**



TABLE OF CONTENTS

TABLE OF CONTENTS	1
ACKNOWLEDGEMENT	4
INTRODUCTION.....	4
Background Information	4
Health and Nutrition Situation	5
Status of the previous Recommendations	5
Survey Justification	7
SAM and MAM Admission trends (KHIS)	8
Survey Objectives	8
Survey Timing	9
Survey Methodology.....	9
Survey Design	9
Survey Area.....	9
Sample Size Calculation: Household and Mortality	9
Clusters and Household selection	11
Survey Team Selection, Composition and Training	12
Data Collection	12
Referrals.....	13
Data Uploading and Analysis	13
Data Quality Control Measures	13
Anthropometric data	14
Vaccination, immunization and micronutrient supplementation information	15
Other Health and food related Information	15
Indicators, Guidelines and Formulas Used in Acute Malnutrition	16
SURVEY RESULTS	17
General Characteristics of the Study Populations and Households.....	17
Anthropometric Results (bases on WHO Standards 2006)	20
Distribution by Age and Sex.....	20
Nutritional status of children 6-59 months	20
Overview of Trends in under nutrition over time in Garissa County.....	24
Proxy (Indirect) Coverage of IMAM program	24
Mortality.....	25
Morbidity.....	25
Prevalence and Incidence	25
Health Seeking Behaviour.....	27
Zinc Supplementation.....	27
Child Immunization, supplementation and deworming.....	28
<i>Immunization</i>	28
<i>Vitamin A Supplementation</i>	28
<i>Deworming</i>	29
Maternal Health and Nutrition	30
<i>Physiological status of Women of Reproductive Age</i>	30
<i>Maternal nutrition status based on Mid Upper Arm Circumference (MUAC)</i>	30
<i>Antenatal Care Practices</i>	31
<i>Iron Folate Supplementation during Pregnancy</i>	31



Water, Sanitation and Hygiene (WASH).....	32
Water Sources	32
Return Distance to and Queuing Time in the main water source	33
Water Storage and Treatment.....	33
Water Consumption and Purchase.....	34
Sanitation Practices	34
Hygiene Practices.....	35
Food Security and Livelihoods.....	36
<i>Food Security Information</i>	36
<i>Household Dietary Diversity</i>	36
Micronutrient Consumption from Household Dietary Diversity	37
Food Consumption Score (FCS).....	37
Food Consumption Score Frequency.....	38
Minimum Dietary Diversity – Women	39
Infant and Young Child Feeding Practices.....	40
Reducing Coping Strategy Index.....	41
Household Hunger Scale	41
DISCUSSION AND CONCLUSION	43
RECOMMENDATIONS.....	45
APPENDICES	45

List of Tables

Table 1: Status of the previous Recommendations	5
Table 2: Garissa Season Calendar	9
Table 3: Sample Size Calculation for Anthropometric Survey	9
Table 4: Sample Size Calculation for death rate survey	10
Table 5: MUAC Thresholds	16
Table 6: Integrated SMART Survey Coverage.....	17
Table 7: A Summary of Household Demographics.....	17
Table 8: Main Occupation (Main Income Source) in Garissa.....	18
Table 9: Current Income Source in Garissa.....	18
Table 10: Reasons for not being Enrolled in School (Children 3 to 18 years).....	19
Table 11: Distribution by Age and Sex of Sample	20
Table 12: Prevalence of Acute Malnutrition based on Weight-for-Height Z-scores (and/or oedema) and by Sex.....	21
Table 13: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex.....	22
Table 14: Combined GAM and SAM prevalence	22
Table 15: underweight based on weight-for-age z-scores.....	23
Table 16: Prevalence of stunting based on height-for-age z-scores.....	23
Table 17: Prevalence of Stunting by age	24
Table 18: Trends in stunting.....	24
Table 19: Mortality Demographics.....	25
Table 20: Individual Death Rates	25
Table 21: A summary of Iron Folic Acid Supplementation and utilization	32
Table 22: Current Main Water Sources in Garissa	32
Table 23: Return Distance to and Queuing Time in the main water source	33
Table 24: Handwashing Awareness.....	35
Table 25: Handwashing practice	35
Table 26: Food Consumption Score categories and proportion of HHs	38
Table 27: A Summary of Complementary feeding indicators	40
Table 28: Organization Garissa Integrated SMART Survey Activities	45
Table 29: Garissa SMART Survey Plausibility Report	45
Table 30: Sampled Clusters.....	46



List of Figures

Figure 1: A map showing the location of Garissa in Kenya and the livelihoods	5
Figure 2: Food Consumption Score in May 2023 versus LTA 2018 to 2022	7
Figure 3: SAM Admission trends - 2021 to 2023	8
Figure 4: MAM Admission trends - 2021 to 2023.....	8
Figure 5: A screenshot of the ENA planning page for Household sample size calculation	10
Figure 6: A screenshot of the ENA planning page for Death rate survey sample size calculation	11
Figure 7: Age verification method	17
Figure 8: Marital Status of households in Garissa	18
Figure 9: Level of Adult Education	19
Figure 10: School enrolment in Garissa	19
Figure 11: A comparison of mosquito net utilization by households	20
Figure 12: Mosquito utilization per age category	20
Figure 13: Gaussian Curve.....	21
Figure 14: Trends for Acute malnutrition in Garissa County	24
Figure 15: Enrollment into IMAM program	25
Figure 16: Child morbidity in the past two weeks.....	26
Figure 17: Prevalence of morbidity in Garissa.....	26
Figure 18: Comparison of Morbidity incidence in 2022 and 2023	27
Figure 19: Health seeking behavior in Garissa County.....	27
Figure 20: Child Immunization Coverage in Garissa County	28
Figure 21: Vitamin A Supplementation coverage and utilization	29
Figure 22: Information source on VAS.....	29
Figure 23: Deworming Status and Trends in Garissa	30
Figure 24: Physiological status of Women of Reproductive Age	30
Figure 25: Antenatal Care practices in Garissa County.....	31
Figure 26: Proportion of households obtaining water from safe and unsafe sources ..	33
Figure 27: Water Storage and Treatment	34
Figure 28: Water consumption and purchase.....	34
Figure 29: Relieving Points in Garissa County.....	35
Figure 30: Household Dietary Diversity Score.....	36
Figure 31: 7 day recall HH consumption per food groups	37
Figure 32: Micronutrient Consumption from HH dietary Diversity	37
Figure 33: Proportion of HHs in each FCS Category	38
Figure 34: 7 day recall Household Food Consumption.....	38
Figure 35: Food consumption Frequency per FCS category	39
Figure 36: Foods Consumed by Women in the last 24 hours	39
Figure 37: Minimum Dietary Diversity Score - Women	40
Figure 38: Food groups consumed by Children 6 to 23 months.....	41
Figure 39: Proportion of households Reducing Coping Strategy Index.....	41
Figure 40: Household Hunger Scale and Frequency	42
Figure 41: Frequency of Hunger Experience and the Proportion of Households.....	42
Figure 42: A causal analysis for malnutrition in Garissa County	44



ACKNOWLEDGEMENT

Garissa County Department of Health would like to take this opportunity to appreciate the support and pivotal role of the various stakeholders for the successful implementation of this year's Integrated SMART Survey in the entire county. Specifically, the department recognizes the financial support provided by UNICEF, WFP, TDH and Save the Children. Special appreciation to Garissa CHMT for ensuring coordination of the survey with support from UNICEF, WFP and Save the Children. A very big thank you to the entire Garissa communities and their respective leadership for providing consent as respondents during the data collection as well as the CHVs and village guides for mobilizing various respondents and guiding the teams to villages during household, anthropometry and mortality data collection. We applaud the coordination team led by the CNC for their zeal and sacrifices when implementing the survey including resilience while ensuring quality during the long working hours throughout the implementation period. We acknowledge the technical inputs by National (NITWG) and County/sub-County nutrition technical forum (CNTF/SCNTF). Lastly, we recognize enumerators and team leaders for their zeal and sacrifices throughout the implementation duration.

INTRODUCTION

Background Information

Garissa County is an administrative County in the former North Eastern Region of Kenya. Its capital and largest town is Garissa an area of about 45,720.2 km². Garissa County is one of the three counties in the North Eastern Region of Kenya. It covers an area of 44,174.1Km² and lies between latitude 10 58'N and 20 1' S and longitude 380 34'E and 410 32'E. The county borders the Republic of Somalia to the east, Lamu County to the south, Tana River County to the west, Isiolo County to the North West and Wajir County to the north. The County is low lying, with altitudes ranging between 70m and 400m above sea level. The area is hot and dry much of the year, receiving scarce rainfall in the range of 150mm-300mm annually. Frequent droughts and unreliable rains do not favour agriculture activities and the growth of pasture for livestock rearing. Tana River runs along the western boundary of the county and is the only permanent natural source of water for Garissa town and the surrounding areas. Seasonal Rivers (laggas) provide water during the wet season for both human and livestock, although they greatly interfere with road transportation. The county also hosts the Boni forest, a section of which is the Boni National Reserve, a protected wildlife conservation area. The County has four (4) main livelihood zones: pastoral, agro pastoral, casual/ waged labour and formal employment. Garissa has six constituencies namely: Garissa Township, Ijara, Dadaab, Lagdera, Fafi and Balambala. Garissa County is mostly inhabited by ethnic Somalis.

The County has a population of 850,077, A male population of 408,037 and a female population of 442,040 (census 2009). Garissa County has a child rich population, where 0-14 year olds constitute 48% of the total population. This is due to high fertility rates among women as shown by the percentage household size of 4-6 members at 35%. The lower proportion of 0-4 year olds is due to high infant and under five mortality rates.

Political and administrative set up

Garissa County has seven sub-counties, which include Fafi, Garissa, Ijara, Hulugho, Lagdera Balambala and Dadaab. However, this does not correspond to the six constituencies in the County; Hulugho is still under Ijara constituency.

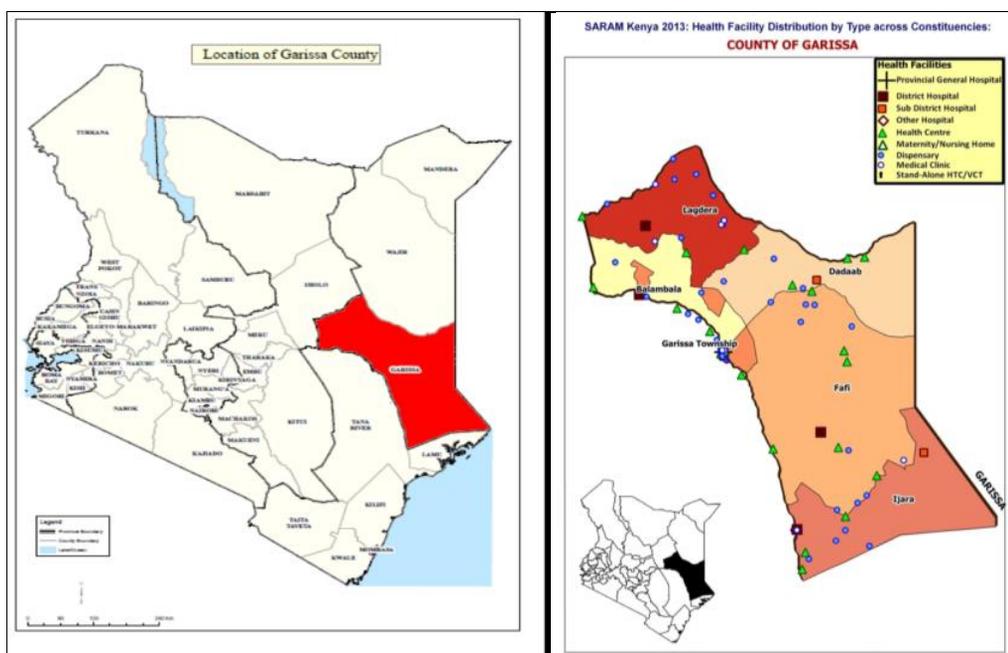


Figure 1: A map showing the location of Garissa in Kenya and the livelihoods

Health and Nutrition Situation

Nutrition situation is Critical (Phase 4) according to the 2022 Short Rains Assessment Integrated Phase Classification for acute malnutrition analysis (IPC AMN), Global Acute Malnutrition (GAM) by WHZ range of 15 – 29.9 percent with a GAM and SAM of 20.3% and 4.3% respectively. The proportion of children at a risk of malnutrition is above the long-term average (NDMA Early Warning Bulletin, April 2023). Currently, the drought situation is normal with stable trend in the county and across all livelihood zones (NDMA EWB, June 2023). Diseases of respiratory system are the main cause of outpatient morbidity, both in under-fives and over 5 years with 34% and 21% respectively, followed by diarrhoea, diseases of the skin and pneumonia at 10%, 7%, 6% respectively (Source: Garissa KHIS 2022). Pneumonia and diarrhoea are the morbidities, which contribute to the highest mortality cases with 7.7% and 5% respectively (Garissa MoH 2022). The overall County poverty estimate is 65.5% (KIHBS 2015/16) and Insurance coverage of 6.6% (Kenya Household expenditure and utilization survey 2018).

The Department of Health has been responding to the critical nutrition situation while sustaining the implementation of routine high-impact nutrition interventions. This is in line with the GCNAP (2019-2023). To understand the current nutrition situation, a nutrition SMART survey was conducted on 27 June-17 July 2023, which will inform the nutrition response.

Status of the previous Recommendations

Table 1: Status of the previous Recommendations

Finding	Recommendation	Status
The nutrition situation for Garissa County is classified as Critical based on the IPC with a GAM of 20.3 % and a SAM of 4.3%.	Conduct mass screening for malnutrition (using both MUAC and WHZ criteria) to reach all children 6-59 months in Garissa	All sub counties have conducted mass screening with 80% coverage
	Train 80 newly recruited health workers on IMAM	A total of 100 staffs trained on IMAM
	Train newly recruited staff on nutrition commodity management and reporting to avoid stock outs	A total of 94 staffs trained and sensitized on LMIS
	Scale up and strengthen IMAM surge from 40% to 80% of IMAM implementing health facilities	IMAM surge scaled up done in some sub counties



	Conduct DQA to improve quality of IMAM data and reporting	Biannual DQA has been conducted
	Conduct OJT and mentorship for health care workers	Done continuously during supervision and other meetings
	increase BFCI Implementation in all health facilities and 50% of CUs	33 Community units implementing BFCI
12.7% of pregnant and lactating women are malnourished compared to 9.9% in July 2021.	Strengthen linkage of households with malnourished children to social protection programmes.	This is done through other sectors and is a criteria for selection
	Increase emergency response integrated health and nutrition outreach services in communities far (high priority) from functional health facilities and in malnutrition hotspot areas	320 Outreaches is conducted in all our sub counties with good coverage
	Preposition adequate therapeutic and supplementary nutrition (SAM and MAM) supplies to cater for potential increase of admissions due to mass screening for malnutrition.	This is has been done and no stock out reported
	Scale up rollout and use of family MUAC screening of malnutrition by mothers and caregivers	33 community units using family MUAC
38.0% (239) of the households practice Open Defecation (In the bush) an improvement from 39.2% in 2021	Accelerate scale up Community Led Total Sanitation (CLTS) especially in Balambala, Lagdera, Dadaab, Fafi, Ijara and Hulugho sub counties.	A total of 618 villages has been triggered
Only 17.8% of 629 households treat their drinking water.	Sensitization of the community members on the importance of treating drinking water, safe sanitation practices, and practicing hand washing during critical times.	This done through community units and health education
29.3 % of respondents practice hand washing during all the critical times compared to 12.3% in July in 2021.	Procure and distribute water treatment chemicals for distribution to households	Distribution has been done across health facilities
Only 20.0% of mothers with children less than 24 months consumed Iron Folic Acid for at least 90 days during their last pregnancy.	Intensify sensitization of pregnant women and other key influencers, using multiple platforms, on the importance and schedule for Iron Folic Acid supplementation.	Done through health education and CHVs
44.9% (135) households Confirm to have been visited by CHV of which 57.8% (78) households were visited within the last month.	Continue advocacy efforts and engagement to push for the passing of Community health services bill, its enactment and implementation in the new dispensation.	In the process and not completed
	Strengthen functionality of CUs through streamlining of service delivery, human resource management and increased funding by County department of health.	CHAs recruited and distributed.
Only 3% of respondents are aware of fortification including logo and	Integrate awareness creation on food fortification in all Social Behavior Change Communication (SBCC) efforts across all health and nutrition programs	Not done



<p>branding of foods while 40% 251 households were not sure while 57% 356 Households insisted to have never heard about it</p>	<p>Conduct radio talk shows for the public, trainings for health workers, sensitization of CHVs on the same</p>	<p>Periodically conducted radio talk shows</p>
<p>55.3% percent of children 6-59 months received a dose of Vitamin A in the last 12 months.</p>	<p>Continue VAS acceleration exercise during Malezi Bora months in May/June and October/November every year. Strengthen VAS delivery as part of routine immunization services at health facility and CUs</p>	<p>This has been done during outreaches and Malezi bora days integrated in immunization and CUs</p>

Survey Justification

According to NDMA EWB, drought situation is classified as normal across the livelihood zones (NDMA, EWB, May 2023). Garissa County is classified under **Emergency Food Insecurity (IPC phase 4) - IPC Acute Food Insecurity Phase Classification and Critical (Phase 4)- IPC Acute Malnutrition Phase Classification**. According to SMART Survey conducted in June 2022, the County Nutrition situation was classified as **critical (IPC-Phase 4)** and was projected to deteriorate due to the worsening food security situation. There has been increase in admission for both SAM and MAM cases across the County. The mean coping strategy index (CSI) was 12.13 for the month as compared to a long-term average of 9.9 indicating households are employing stressed coping mechanisms. The proportion of children below five years of age at risk of malnutrition based on MUAC was 13.2 percent compared with the long-term average of 12 percent (NDMA May 2023).

The mean food consumption score for the month of May 2023 was 29.12, which was below the normal ranges. Indicating higher number of households have food related deficits, are eating less of the food groups, and have food gaps (NDMA May 2023). 17.8 percent of the population had poor food consumption score meaning that they had poor dietary diversity as a result of high food commodity prices and low purchasing power of pastoralists

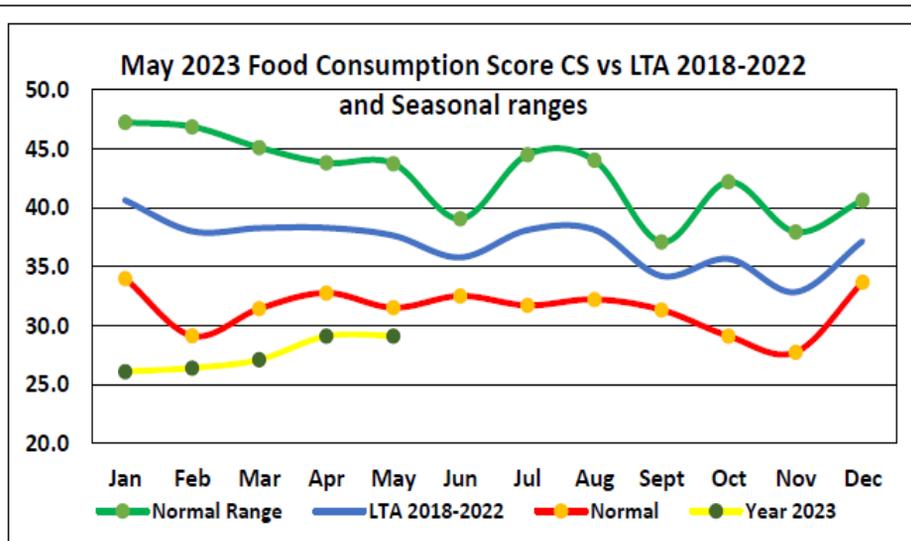


Figure 2: Food Consumption Score in May 2023 versus LTA 2018 to 2022

The 3-month VCI was 15.86 indicating severe vegetation deficit and was 65 percent below the long-term average for the month (NDMA May 2023). The sub counties of Fafi, Balambala and Dadaab are in the extreme vegetation deficit. The mean food consumption score for the month was 29.21, which was below the long-term average of 37.6 (NDMA May 2023). Only 10 percent of households in the county were treating water by use of chemicals and boiling (NDMA May 2023). Breastfeeding practices are suboptimal. Slightly more than half (59%) of newborns are put to the breast in the first hour of life and less than half (43%) of infants under 6 months of age are exclusively breastfed (MIYCN



KAP survey, 2016). Child diets are limited in quantity and quality. Fewer than 1 in 3 children (22%) eat foods from the minimum number of food groups (MIYCN KAP survey, 2016). The proportion of children at risk of malnutrition was higher than the LTA in February and March 2022 and lower than LTA by 17% in April 2022. However, it has remained lower than the rates reported during the dry years (NDMA bulletin-April 2022). Active cholera cases continue to be reported in refugees' camps and Dadaab Sub Counties. So far, 2840 cases line listed since index case recorded on 23rd October 2022 with 17 deaths recorded. Measles outbreak was also reported in 04 Sub Counties. Diseases of respiratory system are the main cause of outpatient morbidity both in under 5 and over 5 years with 34% and 21% respectively, followed by Diarrhoea, Diseases of the skin and pneumonia at 10%, 7%, 6% respectively (Garissa MOH 2022). Pneumonia and Diarrhea contributes the highest mortality cases with 7.7% and 5% respectively (Garissa MoH 2022). The results of the survey will provide updates of health, nutrition and food security situation in the County to inform intervention. The results will also provide data for LRA July 2023.

SAM and MAM Admission trends (KHIS)

New admissions for OTP and SFP in 2022 were consistently high compared to 2021. Trajectories for 2023 suggest much higher trends comparing the first three month of January to March of 2023.

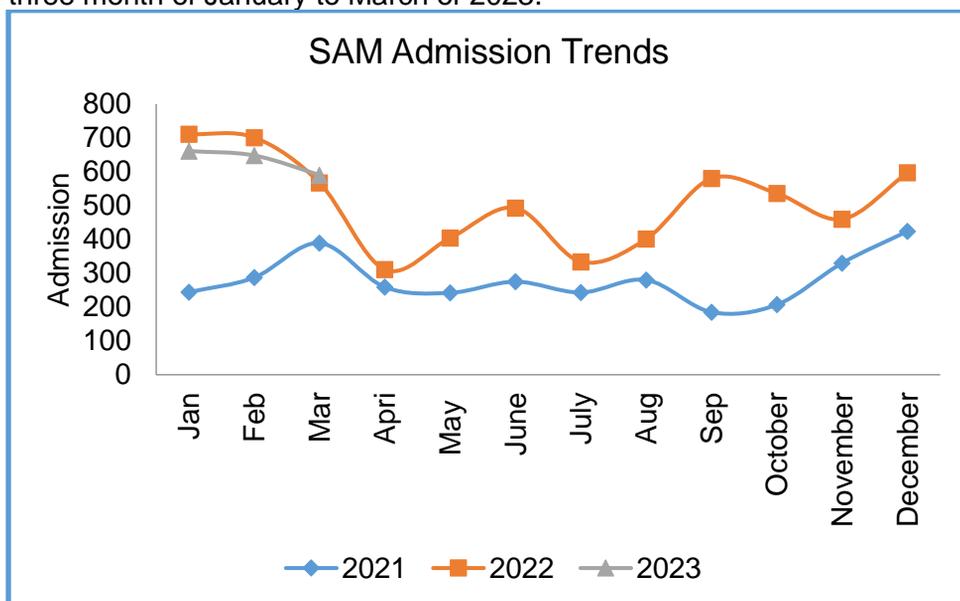


Figure 3: SAM Admission trends - 2021 to 2023

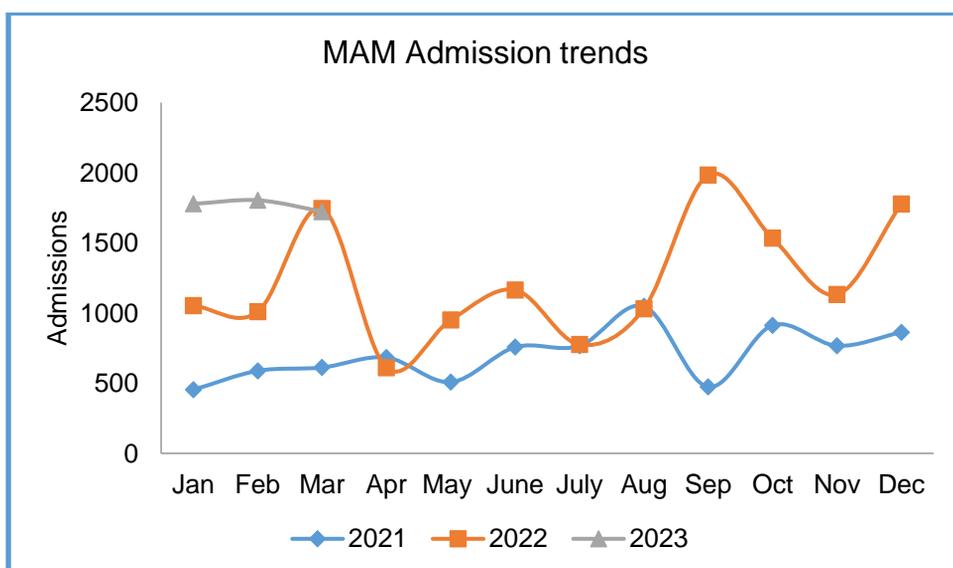


Figure 4: MAM Admission trends - 2021 to 2023

Survey Objectives

The overall objective of this survey was to determine the prevalence of malnutrition among the children aged 6 to 59 months old and women of reproductive age in Garissa County. The specific objectives were to;



1. Determine the prevalence of acute malnutrition among children 6-59 months, pregnant and lactating women.
2. Determine the nutrition status of women of reproductive age of 15-49 years based on maternal mid-upper circumference.
3. Determine the immunization coverage for BCG, measles at 9 and 18 Months, Oral Polio Vaccines (OPV 1 and 3)
4. Determine micronutrient supplementation coverage: vitamin A supplementation among children aged 6-59 months, Micronutrient powder supplementation among children 6-23 months
5. Establish Iron folic supplementation coverage during pregnancy among PLWs
6. Determine de-worming coverage among children aged 12 to 59 months;.
6. Determine the prevalence of common illnesses;
7. Collect information on possible underlying causes of malnutrition such as household food security, Water, Sanitation, and hygiene practices.
8. Assess the minimum meal frequency, minimum acceptable diet and minimum dietary diversity for children and aged 6-23 Months
9. Estimate the crude mortality rate and under 5 mortality rate

Survey Timing

The survey was conducted after the end of the long rains (July 2023) led by the County Department of Health in collaboration with other line ministries and partners. The results of the survey were to feed into the Long Rains Assessment, to inform on the food security and nutrition situation in Garissa County.

Table 2: Garissa Season Calendar

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

Survey Methodology

Survey Design

The survey used cross sectional and descriptive survey design. Standardized Monitoring and Assessment on Relief and Transition (SMART) methodology was adopted in planning and analysis of anthropometric and mortality data. Data on socio demographic information, immunization, Vitamin A, morbidity, food security, water, sanitation and hygiene practices were collected concurrently with the anthropometric and mortality data, making it an integrated survey.

Survey Area

One survey was conducted covering all the livelihood zones in the county (pastoral, agro-pastoral and formal employment/business/petty trade).

Sample Size Calculation: Household and Mortality

The following assumptions (based on context) were used to calculate the sample size in number of children, which were then converted into number of households to be surveyed. All calculations were made using ENA Software for SMART ENA for SMART software (version January 11, 2020).

Table 3: Sample Size Calculation for Anthropometric Survey

Parameters	Value	Rationale
Estimated prevalence of GAM	20.3%	Base on GAM from SMART Survey - July 2022



±Desired precision	4.5%	SMART methodology guideline recommends, If expected prevalence of GAM is higher, for example 15-20%, the precision of +/- 4-5% would likely be sufficient.
Design effect	1.66	This is based on the design effect from the July 2022 SMART Survey data based on WHZ < -2
Children to be included	555	
Average household size	5.9%	KNBS Census report 2019.
Percent of under five children	15.8%	KHIS - Garissa County health information System data - 2023
Percent of non-respondent	0.74%	Anticipated non-response rate based on the July 2022 SMART survey (Non-response rate of 0.74%).
Household to be included	666	

Name of Survey

Sampling
 Random Cluster

Correction small population size

Sample size calculation for a cross sectional anthropometric survey*

<input type="text" value="20.3"/> Estimated prevalence %	<input type="text" value="5.9"/> Average household size
<input type="text" value="4.5"/> ± desired precision %	<input type="text" value="15.8"/> % children under 5
<input type="text" value="1.66"/> Design effect	<input type="text" value="0.74"/> % of non-response households
<input type="text" value="555"/> Children to be included	<input type="text" value="666"/> Households to be included

Figure 5: A screenshot of the ENA planning page for Household sample size calculation

Table 4: Sample Size Calculation for death rate survey

Parameters	Value	Rationale
Estimated death rate per 10,000/day	0.33	Last survey results for the survey carried out on July 2022 with crude mortality of 0.33 (0.18-0.63 at 95% CI) using point estimate
±Desired precision per 10,000 per day	0.3%	As per SMART guideline
Design effect	1	As last survey July 2022
Recall period in days	97	Start of recall period will be 23 rd March 2023, the start of Ramadan to 27 th June as mid of data collection.
Average household size	5.9%	KNBS Census report 2019.
Non-respondent rate	0.74%	Previous survey non response rate <1%, increasing it 3% as mortality questions are sensitive
Population to be included	1581	As calculated by ENA
Household to be included	270	As calculated by ENA



Sample size calculation for a death rate survey*			
<input type="text" value="0.33"/>	Estimated death rate per 10,000/day		
<input type="text" value="0.3"/>	± desired precision per 10,000/day		
<input type="text" value="1"/>	Design effect	<input type="text" value="5.9"/>	Average household size
<input type="text" value="97"/>	Recall period in days	<input type="text" value="1"/>	% of non-response households
<input type="text" value="1581"/>	Population to be included	<input type="text" value="271"/>	Households to be included

Figure 6: A screenshot of the ENA planning page for Death rate survey sample size calculation

Number of Clusters

- The number of households included for both household survey and anthropometric measurements was 666 while households to be included for mortality were 270. A minimum of 666 households were sampled for the integrated SMART survey.
- Considering the time spent on traveling, introductions, Sampling, administering questionnaires, and breaks, a maximum 15 households will be sampled per cluster.
- Therefore, the survey will have **45 clusters** with **15 households** for anthropometry, this will translate to 675HH

Clusters and Household selection

A two-stage cluster sampling was employed in this survey where;

- **Stage 1;** Involved determination of clusters from the population data (Census 2019) generated from ENA for SMART software (11th January 2020) and
- **Stage 2;** Involved household selection (simple random sampling)

In the first stage, village names, their respective population sizes, and the required number of clusters were entered into ENA for SMART software version 2020; probability proportional to size (PPS) applied in stage one. A maximum of **45 clusters** were randomly sampled in stage one. In this stage, our primary sampling unit will be villages.

In the second stage, an updated list of households would be obtained at the village from community leaders in stage two; then **15 households** randomly selected using simple random sampling for administration of the household, anthropometry and mortality questionnaires. In the event that the household members or children were absent, the survey team would arrange to re-visit the household. The anthropometric measurements of all the eligible children in the sampled households were taken.

A household was defined as people who sleep under the **same roof** and eat from **same cooking pots**. Members of a household may not necessarily be related to one another. Where there were several structures within the same compound but each eating from the same cooking pots (More common in rural homestead), then these would be regarded as separate households. Where there is a single structure with families eating from different cooking pots (more common in urban rentals), then these would be regarded as separate households.



Survey Team Selection, Composition and Training

Survey Team Selection

The County Department of Health managed the implementation of Garissa Integrated SMART Survey. The survey coordinators and team leaders were county health officials who have had previous experience in SMART surveys. The enumerators with experience in conducting SMART surveys were recruited to reduce training time.

Survey team composition and supervision;

The survey comprised of;

- 1 Survey manager
- 4 Survey coordinators
- 1 Technical lead person from NITWG
- 7 teams (comprising of 2 enumerators and 1 team leader)

Therefore, the survey had 7 team leaders and 14 enumerators. The survey also engaged 45 village guides sourced from all the randomly selected villages, to assist in the generation of the household list for random selection of the households, introduction of the survey teams in the community, assist in routing and showing the boundary of the respective villages selected.

Survey Team training

A comprehensive training of the survey teams was carried out for 4 days from 18th to 22nd July 2023. This training provided both classroom and practical learning sessions where the content covered sampling methods; anthropometric measurements; interviewing techniques; completion of questionnaires by use of tablets, and General IPC considerations during data collection. All survey teams participated in a standardization test and pre-test survey as part of the training before the actual start of data collection, adjustments made to the questionnaires after the pretest accordingly. A pre-test in one village that was not part of the selected survey clusters was necessary for the teams to familiarize with the process of village/site introduction, household sampling, taking anthropometric measurements, capturing household, anthropometric and mortality data. The County Nutrition Coordinator and the survey manager alongside the other supervisors coordinated the training and the whole survey process.

Data Collection

The SMART training questionnaire approved by the national nutrition information Technical Working Group (NITWG) was adopted and configured in tablets (using Open Data Kit) for use to collect data during the survey. The tools used in the survey included;

1. **Height/length board** for taking height/length measurements for selected children under 5 years.
2. **Digital Weighing scales** for measuring the weight of the children 6-59 months
3. **MUAC tape** for measuring the mid-upper arm circumference (MUAC) of children and pregnant/lactating women

Before the commencement of the actual survey, all the survey tools and instruments were pre-tested and daily calibrations done to ensure accurate and quality measurements. Anthropometric and household questionnaires were administered to all the sampled households. Every survey team had at least one mobile phone, charger, and power bank.



Referrals

During the survey, all severe and moderately malnourished children as per MUAC, <125mm and Weight-for-Height cut offs <-3SD were referred to the nearby health facility/outreach for management. Pregnant and lactating women with MUAC <21cm were referred as well.

Data Uploading and Analysis

All anthropometric data was uploaded to the server every evening, then downloaded to excel for analysis using ENA for SMART (January 11, 2020). Other data sets (WASH, Food Security and consumption) were analyzed by use of Microsoft Excel. Anthropometry data was downloaded to excel then to ENA every day of data collection with feedback given to the teams after each day.

Ethical considerations

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

General Infection Prevention & Control (IPC) considerations

- The Ministry of Health (MoH) Infection Prevention and Control (IPC) guidelines were strictly adhered to.
- All survey team members were **provided with and wore facemasks during interviews.**
- Household members who are directly in contact with the survey team (survey respondents and measured children/adults above 2 years of age) were also **requested to wear a face mask during the entire household interview process.**
- **Introduction, consent, interviews, and measurement were done outside in an open, shaded area** with enough space for proper physical distancing wherever feasible while still respecting a person's privacy.
- All team members were required to sanitize their hands immediately before entering a household using soap and water or alcohol-based hand sanitizer. Therefore, the teams were provided with hand sanitizers.
- Anthropometric equipment (scales, height boards, and MUAC tapes) would be disinfected after a single-use to prevent cross-infection.

Data Quality Control Measures

To ensure data collected was valid and reliable for decision-making, the following measures were put in place:

- Training of survey team focusing on SMART methodology, survey objectives, interviewing techniques and data collection tools.
- Standardization test conducted to assess team's accuracy and precision in taking anthropometric measurements. Feedback from the test was shared with participants and supervisors.
- Pilot survey test conducted to ensure all the information was collected with uniformity.
- Ensured all anthropometric equipment's were functional and standardized. On daily basis during data collection, each team was required to calibrate the tools.
- Daily support and supervision of teams during data collection. Each survey team was assigned a supervisor during data collection.



- Daily data quality checks were done by running plausibility check using ENA software. Feedback was communicated to the teams before they proceeded to the field the following day. More attention was given to the teams with notable weaknesses and support given where necessary.
- Adequate logistical planning

Survey Limitations

There were inherent difficulties in determining the exact age of some children (even with use of the local calendar of events). This may have led to inaccuracies when analyzing chronic malnutrition. Although verification of age was done by use of health cards, in some cases no exact date of birth was recorded on the card other than the date a child was first seen at the health facility.

Case Definitions and Inclusion Criteria

A household was defined as members of family eating from the same cooking pot. All the children within the household who were aged 6-59 months were included in the survey.

Anthropometric data

Anthropometric data was collected from all eligible children aged 6-59 months. The child's information collected included:

Age: The child's immunization card, birth certificate or birth notification were the primary sources for this information. In the absence of these documents, a local calendar of events developed from discussions with community members, enumerators and key informants was used. Age calculation chart was used for ease of identifying age in months (see Annex).

Child's Sex: This was recorded as either 'm' for male or 'f' for female.

Weight: A seca¹ digital weighing scale was used to measure the children's weight. The electronic scales were calibrated on daily basis using a standard weight to confirm measurements and any faulty scales were replaced. In order to enhance accuracy and quality, children were weighed with no clothing inside the house based on the weather, the scale was placed on a hard-flat surface with minimal or no movement of the child and accurate recording of measurements taken to the nearest 0.1kg.

Height: Recumbent length was taken for children less than two years of age while those children above two years of age were measured standing up. A height board was used to measure length/height. The emphasis was placed on the ideal placement of cursor as per instructions on height measurements (SMART/IMAM² guidelines) ensuring minimal or no movement of the child and maintaining height readings at eye level to the nearest 0.1cm.

MUAC: Mid Upper Arm Circumference was measured on the left arm, at the middle point between the tip of the elbow and the tip shoulder bone while the arm is at right-angle, then followed MUAC measurements of the arm while it is relaxed and hanging by the body's side. MUAC was measured to the nearest 1 mm. In the event of a disability on the left arm or a left-handed child, the right arm was used. Emphasis during the exercise was on the correct identification of mid-point and correct tension upon placement of MUAC tape on arm.

¹Electronic SECA scale manufactured by Secagmbh & co.kg. Hammer Steindamm 9-25.22089 Hamburg, Germany.

² Integrated Management of Acute Malnutrition



Maternal MUAC tapes were used to measure MUAC in women of reproductive age.

Bilateral Oedema: This was assessed by the application of moderate thumb pressure for at least 3 seconds on both feet. If a depression formed on both feet upon pressure application, then presence of pitting upon release of thumb pressure indicated bilateral oedema was confirmed.

Growth Standards: WHO growth standards were used to report principle anthropometry results.

Vaccination, immunization and micronutrient supplementation information

Measles vaccination: The child's vaccination card was used as a source of verification. In circumstances where this was not available, the caregiver was probed to determine whether the child had been immunized against measles or not (done subcutaneously on the right upper arm). All children with confirmed immunization (by date) on the vaccination card, the status were recorded as "1" (Card) otherwise as "3" (Not immunized). Oral confirmation from the caregiver without proof of card was recorded as "2" (Recall). Children between 9 to 18 months or greater were used to determine coverage of this in the final analysis.

Oral Polio Vaccine (OPV) 1 (1st dose at 6 weeks) **and OPV3** (3rd dose at 14 weeks) was calculated for all children aged 6-59 months.

Vitamin A coverage: This was determined by the number of times the eligible child had received vitamin A in the past year. The response received (number of times) was probed to determine whether provided at the health-facility/outreach sites or elsewhere and the number of times recorded in the card.

Micronutrient powders: The eligible children for this information were children aged 6-23 months. The respondent was asked whether the child was enrolled in the program; recorded in the questionnaire as "0" for No and "1" for Yes. Those who said no were probed for reasons as to why not enroll. Those enrolled were further probed on adherence.

Other Health and food related Information

De-worming: Determined by whether the child had received drugs for intestinal worms in the past one year. This was recorded as "0" for No, "1" for Yes by card, "2" for Yes by recall and "3" for Do not know.

Morbidity: This was gathered over a two-week recall period by interviewing/probing the mothers/caretakers of the target child and eventually determined based on the respondent's recall. A clinician did however not verify this information.

Household Water Consumption and Utilization: The indicators used were main source of drinking and household water, time taken to water source and back, cost of water per 20-litre jerry-can and treatment given to drinking water.

Sanitation: Data on household access and ownership to a toilet/latrine, occasions when the respondents washed their hands were also obtained.

Mosquito nets ownership and utilization: Data on the household ownership of mosquito nets and their utilization was collected.

Minimum Dietary Diversity Score Women (MDD-W): using a 24-hour food consumption recall questionnaire on all women of reproductive Age (15-49



years). Foods consumed in the last 24 hours were enumerated and analyzed. Women consuming more at least five of the ten food groups were categorized to meet the MDD-W.

Household Food Consumption Score (FCS): Data on the frequency of consumption of different food groups by a household during 7 days prior to the survey was collected and analyzed using SPSS.

Reducing Coping Strategy Index (CSI): Data on the frequency of the five reduced CSI individual coping behaviors was collected. The five standard coping strategies and their severity weightings used in the calculation of Coping Strategy Index are:

1. Eating less-preferred foods (1.0)
2. Borrowing food/money from friends and relatives (2.0)
3. Limiting portions at meal time (1.0)
4. Limiting adult intake (3.0)
5. Reducing the number of meals per day (1.0)

RCSI index per household was calculated by summing the product of each coping strategy weight and the frequency of its use in a week (number of days).

Household Hunger Scale (HHS): this was collected by asking three questions on potentially experienced food deprivation at household level over the past 4 weeks/30 days, to calculate an indicator to measure household hunger. Responses to each frequency-of-occurrence question from the three categories (rarely, sometimes and often) were recoded into two categories (rarely or sometimes and often). A value was given to each response category: no = 0, rarely or sometimes = 1, and often = 2. The values for all questions were then summed up to calculate the HHS score for each household. For IPC purposes, households were divided into five categories based on their scores: 0 (no), 1 (slight), 2-3 (moderate), 4 (severe) and 5-6 (severe) that corresponded to IPC Phases 1-5 respectively.

Indicators, Guidelines and Formulas Used in Acute Malnutrition

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

Z-Score:

- Severe acute malnutrition is defined by $WFH < -3 SD$ and/or existing bilateral oedema
- Moderate acute malnutrition is defined by $WFH < -2 SD$ and $\geq -3 SD$ and no oedema.
- Global acute malnutrition is defined by $WFH < -2 SD$ and/or existing bilateral oedema.

Mid Upper Arm Circumference (MUAC):

MUAC analysis undertaken to determine the nutrition status of children and women of reproductive age (15-49 years) in the sampled households. MUAC cut offs criteria were applied as shown in table 5.

Table 5: MUAC Thresholds

MUAC Guideline	Interpretation
Children 6-59 months	
MUAC <115mm and/or bilateral Oedema	Severe acute malnutrition



MUAC \geq 115mm and $<$ 125mm (<i>no bilateral oedema</i>)	Moderate acute malnutrition
MUAC \geq 125mm and $<$ 135mm (<i>no bilateral Oedema</i>)	Risk of malnutrition
MUAC $>$ 135mm (no bilateral Oedema)	Adequate nutritional status
Women of Reproductive Age (15-49 years)	
MUAC 23cm- \geq 21cm	At Risk of malnutrition
MUAC $<$ 21cm	Moderate Acute Malnutrition

SURVEY RESULTS

Table 6: Integrated SMART Survey Coverage

PLANNED				ACHIEVED			
No. of HHs	No. of Children (Sample Size)	No. of Clusters	Mortality Sample	No. of HHs	No. of Children (Sample Size)	No. of Clusters	Mortality Sample
666	555	45	270	673	845	45	673

General Characteristics of the Study Populations and Households

The average household size as derived from 3,813 household members (only 2,559 were at home) from the 673 randomly selected households was approximately 6 (5.7) persons per household. The household size remained almost the same as the previous year (2022) at 5 members per household. In regards to the age cohort surveyed; 0-59 months were 906 (459 Male, 447 Female) at home where children aged 6-59 months were 845 (430 Male, 415 Female), the 5 to 18 years were 673 (356 Male, 317 Female) at home, while those above 18 years of age at home were 980 (381 Male, 599 Female).

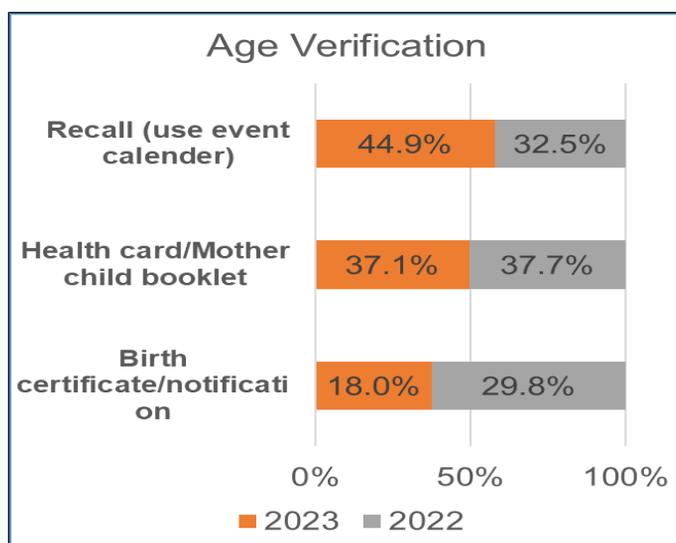


Figure 7: Age verification method

Table 7: A Summary of Household Demographics

AGE COHORT	Male AT HOME	Male ALL	Female AT HOME	Female ALL	Total AT HOME	Total ALL
less than 6month	29	29	32	32	61	61
6- 59 month	430	444	415	425	845	869
Less than 5 years	459	473	447	457	906	930
5 to less than 18 years	356	699	317	651	673	1350
18 years and above (Adult)	381	742	599	791	980	1533
Total	1196	1914	1363	1899	2559	3813
NUMBER OF HH INTERVIEWED					673	
AVERAGE HH SIZE (AT HOME)					3.8	
AVERAGE HH SIZE (ALL MEMBER)					5.7	



The majority of the subjects surveyed were married at 92%, 5% widowed and 2% divorced. Notably 98% of the households were Residents and 2% were resident nomadic pastoralists. No IDPs and refugees were reported in the Survey since only the host community of Dadaab Sub County was assessed.

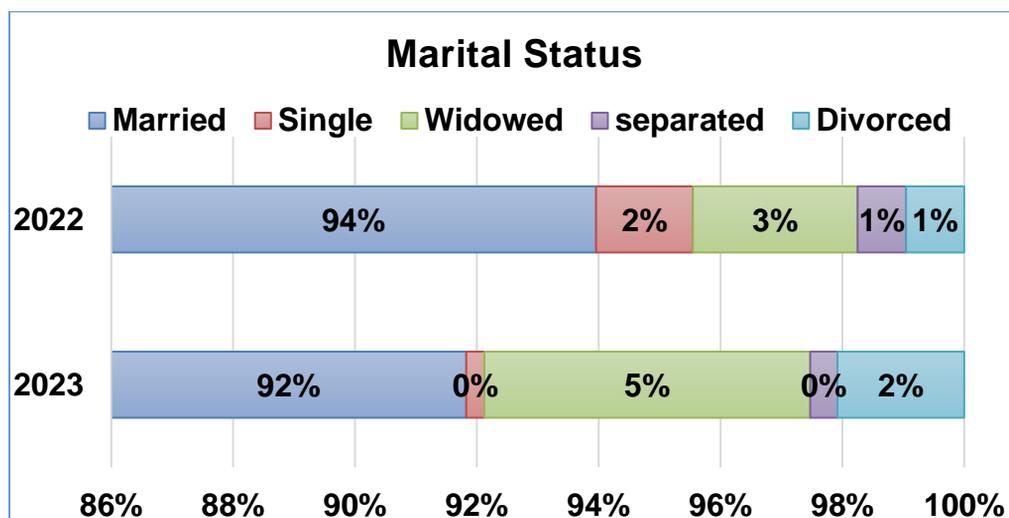


Figure 8: Marital Status of households in Garissa

The main occupation of the household heads livestock herding (50.2%), waged labour (casual) (21.5%), employed/salaried (10.8%) and the rest (petty trade, firewood and charcoal burning, farming and others) accounting for 21.5% (Table 8). Sale of livestock (36.7%) and casual labour (22.4%) remained the leading current income source in Garissa County.

Table 8: Main Occupation (Main Income Source) in Garissa

Main income	n	2023	2022
Livestock herding	338	50.2%	50.5%
Waged labour (Casual)	145	21.5%	16.7%
Employed (salaried)	73	10.8%	9.1%
Petty trade	50	7.4%	14.2%
Others (Specify)	34	5.1%	3.2%
Firewood/charcoal	14	2.1%	2.2%
Merchant/trader	11	1.6%	2.9%
Crop farming/Own farm labour	8	1.2%	1.3%
Fishing	0	0.0%	0.0%

Table 9: Current Income Source in Garissa

Current source	n	2023	2022
Sale of livestock	247	36.7%	34.2%
Casual labor	151	22.4%	18.6%
No income	84	12.5%	7.5%
Permanent job	72	10.7%	8.6%
Petty trading e.g. sale of firewood	65	9.7%	14.6%
Sale of livestock products	30	4.5%	12.6%
Remittance	14	2.1%	1.0%
Sale of crops	9	1.3%	2.1%
Sale of personal assets	1	0.1%	1.0%

The proportion of adults in the county who had no formal education was 42.9% in Garissa, almost similar to the previous year's (43.9%); 8% of them reported to have attained compulsory primary education, 10.8% secondary education and about 4.8% tertiary education. The assessment showed that majority (63%) of the children aged between 3-18 years were enrolled in school with lack of school nearby 19%, joining Madrasa (6.9%) among others (just at home, child



too young and lack of fees) being some of the main reasons cited for the rest of the children (37%) not attending school. Those not enrolled in school were herding livestock (93.3%), a slight reduction from the previous year (97.2%).

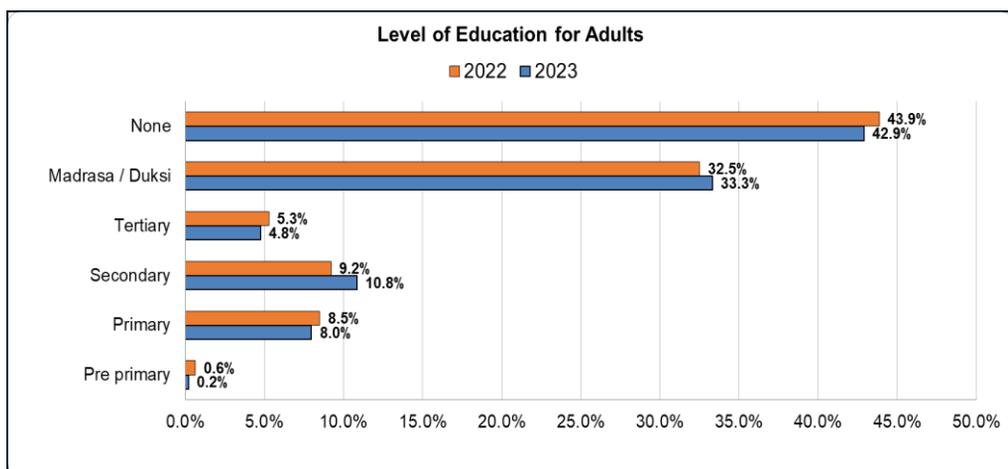


Figure 9: Level of Adult Education

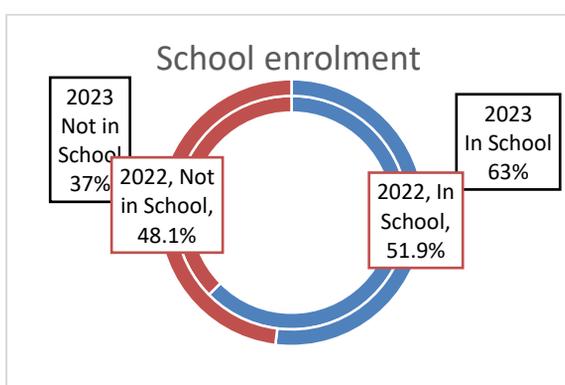


Figure 10: School enrolment in Garissa

Table 10: Reasons for not being Enrolled in School (Children 3 to 18 years)

Reason out of school	2022 (%)	n	2023 (%)
Chronic Sickness	1%	5	1%
Weather (rain, floods, storms)	3%	0	0.0%
Family labour responsibilities	12%	8	1.2%
Working outside home	0%	0	0.0%
Teacher absenteeism	1%	3	0.5%
lack of fees or money to meet other costs	4%	8	1.2%
Household doesn't see value of schooling	0%	0	0.0%
No food in the schools	0%	0	0.0%
Migrated/ moved from school area	0%	9	1.4%
Insecurity / violence	0%	0	0.0%
No school Near by	4%	124	19.0%
Married	0%	3	0.5%
Pregnant / Takingcare of her own child	0%	1	0.2%
Others (specify)	74%	492	75.3%
Duksi/Madrassa	14.8%	45	6.9%
Child just at home	0.0%	0	0.0%
Too young for school	10.7%	4	0.6%

The assessment findings indicated that mosquito ownership was at 81%. The proportion of the population sleeping under mosquito net the previous day was 91%, with 76.3% being children under five years.

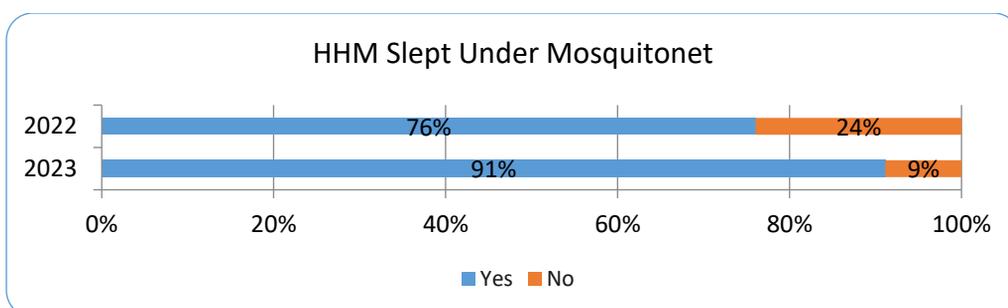


Figure 11: A comparison of mosquito net utilization by households

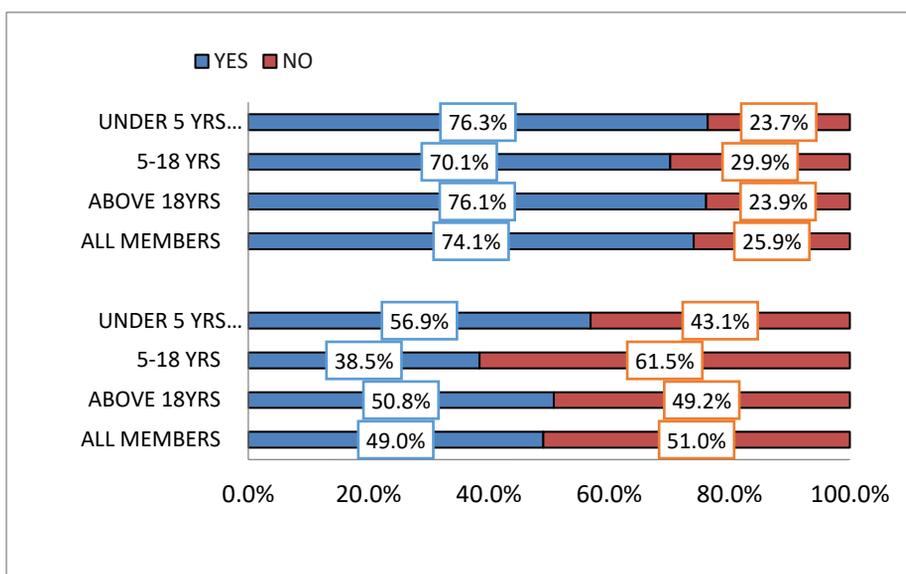


Figure 12: Mosquito utilization per age category

Anthropometric Results (bases on WHO Standards 2006)

Distribution by Age and Sex

The anthropometric measurements covered 845 children aged between 6 to 59 months indicating a 33% of total population. Both boys and girls were equally represented with p-value of (0.629). The Age ratio among children aged 6-29 months and 30-59 months was 0.87 with overall p-value of ($p=0.730$) indicating equal representation of both age cohorts. Statistical evaluation of sex and age ration using chi-squared statistics had a p-value of (0.000) indicating significant difference. **Table 11** shows distribution by age and sex of the sampled children. The overall data quality score of the anthropometric survey results was 6% (interpreted as excellent score). From the survey, at least 20 clusters in Garissa County had at least two (2) malnourished cases ($WHZ < -2SD$).

Table 11: Distribution by Age and Sex of Sample

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy:girl
6-17	73	44.0	93	56.0	166	19.8	0.8
18-29	120	53.6	104	46.4	224	26.7	1.2
30-41	103	51.5	97	48.5	200	23.9	1.1
42-53	93	50.5	91	49.5	184	22.0	1.0
54-59	37	57.8	27	42.2	64	7.6	1.4
Total	426	50.8	412	49.2	838	100.0	1.0

Nutritional status of children 6-59 months

Prevalence of acute malnutrition based on weight-for height Z-scores

The survey results showed a Global and severe acute malnutrition prevalence based on weight for height z-scores of 16.4% (13.4 – 20.0 95% C.I) and 2.7% (1.7 – 4.3 95% C.I.) respectively, with 0% prevalence of oedema. The GAM is classified as very high based on the revised WHO classification of acute malnutrition and critical based on IPC classification for acute malnutrition. Though not statistically significant, the boys were more malnourished compared



to girls, with GAM and SAM prevalence at 17.0 % (13.5 - 21.1 95% C.I.) and 2.8 % (1.7 - 4.6 95% C.I.) for boys, and 15.9 % (12.1 - 20.7 95% C.I.) and 2.7 % (1.5 - 4.8 95% C.I.) prevalence for girls respectively. The point prevalence for the current GAM (16.4% (13.4 - 20.0 95% C.I.) is observed to have improved compared to the previous one unveiled in July 2022 at 20.3% (17.0-24.0 95% CI), although no statistically significant change (p value is 0.1071).

Table 12: Prevalence of Acute Malnutrition based on Weight-for-Height Z-scores (and/or oedema) and by Sex

SMART July 2023	All n = 839	Boys n = 424	Girls n = 415
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(138) 16.4 % (13.4 - 20.0 95% C.I.)	(72) 17.0 % (13.5 - 21.1 95% C.I.)	(66) 15.9 % (12.1 - 20.7 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(115) 13.7 % (11.2 - 16.7 95% C.I.)	(60) 14.2 % (11.0 - 18.1 95% C.I.)	(55) 13.3 % (10.1 - 17.2 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(23) 2.7 % (1.7 - 4.3 95% C.I.)	(12) 2.8 % (1.7 - 4.6 95% C.I.)	(11) 2.7 % (1.5 - 4.8 95% C.I.)

The Gaussian curve as illustrated in **figure 13** shows the survey curve (colored in red) deviating to the left of the WHO reference curve (green color) meaning that majority of children assessed were categorized within poor nutritional status.

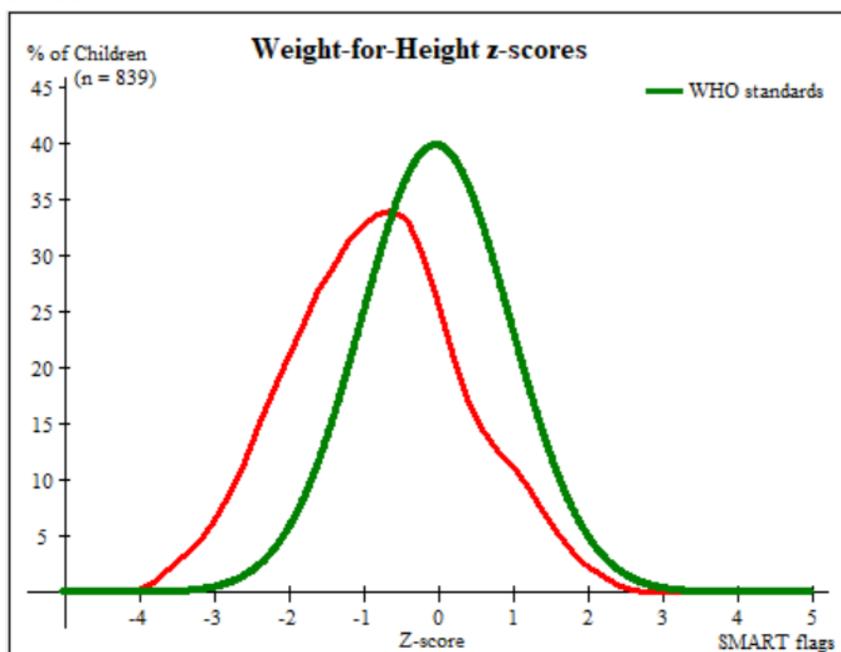


Figure 13: Gaussian Curve

Prevalence of Acute Malnutrition by Mid upper arm circumference (MUAC)

MUAC is a simple and low-cost method that can easily be applied with minimum training. It is less susceptible to measurement error than WHZ. However, MUAC admission criteria to community-based therapeutic programmes may result in missed opportunities to treat severe condition³. The GAM and SAM prevalence by MUAC were 2.4 % (1.6 - 3.6 95% C.I.) and 0.4 % (0.1 - 1.1 95% C.I.) respectively, a reduction with a significant difference (p=0.009), compared to GAM and SAM prevalence of 4.9 % (3.5 - 7.0 95% C.I.) and 0.8 % (0.4 - 1.6 95% C.I.) respectively in July 2022. With a statistically significant difference, girls were more malnourished than boys were as illustrated **in table 13** (p value of 0.020).

³ Comparison of Mid-Upper Arm Circumference and Weight-for-Height to Diagnose Severe Acute Malnutrition: A Study in Southern Ethiopia, 11th March 2017



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

	All n = 844	Boys n = 429	Girls n = 415
Prevalence of global malnutrition (< 125 mm and/or oedema)	(20) 2.4 % (1.6 - 3.6 95% C.I.)	(5) 1.2 % (0.5 - 2.7 95% C.I.)	(15) 3.6 % (2.2 - 6.0 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(17) 2.0 % (1.4 - 2.9 95% C.I.)	(4) 0.9 % (0.4 - 2.4 95% C.I.)	(13) 3.1 % (1.9 - 5.0 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(3) 0.4 % (0.1 - 1.1 95% C.I.)	(1) 0.2 % (0.0 - 1.7 95% C.I.)	(2) 0.5 % (0.1 - 2.0 95% C.I.)

Prevalence of Combined GAM & SAM (Wasting) by WHZ, MUAC and/or Oedema

This analysis combined GAM and SAM, wasting, by weight-for-height, MUAC and/oedema. GAM and SAM prevalence was 17.3 % (14.3 - 20.7 95% C.I.) and (24) 2.8 % (1.8 - 4.4 95% C.I.), indicating *very high* levels of acute malnutrition according to the revised WHO classification of acute malnutrition and *critical* based on IPC classification for acute malnutrition.

Table 14: Combined GAM and SAM prevalence

	All n = 844	Boys n = 429	Girls n = 415
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	(146) 17.3 % (14.3 - 20.7 95% C.I.)	(72) 16.8 % (13.3 - 20.9 95% C.I.)	(74) 17.8 % (13.9 - 22.7 95% C.I.)
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema)	(24) 2.8 % (1.8 - 4.4 95% C.I.)	(12) 2.8 % (1.7 - 4.6 95% C.I.)	(12) 2.9 % (1.6 - 5.0 95% C.I.)

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

Underweight is a composite of acute and chronic malnutrition that occurs when a child fails to attain the appropriate weight relative to age. The survey established underweight rates of 9.7% (7.2 – 12.8 95% C.I.) as shown in **table 15**. There was a significant difference (P value = 0.035) in current prevalence of underweight compared to 13.6 % (11.4 – 16.0 95% C.I.) unveiled in July 2022 SMART survey. There was no significant difference in underweight between boys and girls. Analysis by age indicated that age groups of 18 to 29 months were more severely underweight than the rest of the age groups, while those aged between 6 to 17 months were more moderately underweight than the other age groups.



Table 15: underweight based on weight-for-age z-scores

	All n = 838	Boys n = 425	Girls n = 413
Prevalence of underweight (<-2 z-score)	(81) 9.7 % (7.2 - 12.8 95% C.I.)	(42) 9.9 % (7.0 - 13.7 95% C.I.)	(39) 9.4 % (6.6 - 13.4 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(68) 8.1 % (6.2 - 10.5 95% C.I.)	(37) 8.7 % (6.2 - 12.2 95% C.I.)	(31) 7.5 % (5.1 - 10.8 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(13) 1.6 % (0.7 - 3.2 95% C.I.)	(5) 1.2 % (0.4 - 3.3 95% C.I.)	(8) 1.9 % (0.8 - 4.5 95% C.I.)

Trends in Underweight

	2021	2022	2023
Prevalence of underweight (<-2 z-score)	8.7 %	13.6 %	9.7 %
Prevalence of severe underweight (<-3 z-score)	1.6 %	2.2 %	1.6 %

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

Stunting refers to a state of being too short for one's age. Stunting is associated with diminished mental abilities and limited physical work capacity, resulting in continued economic hardships for families and Garissa County at large. The causes of stunting are multiple and cuts across different sectors. Studies reveal that there is need to embrace multi-sectoral approaches, which recognize the role of other sectors such as agriculture, water, sanitation, social protection and education in addressing malnutrition in order to address stunting. Further, there's need to support efforts such as Scaling Up Nutrition which has a multi-sectoral approach to addressing stunting.

The SMART Survey 2023 revealed a significant increase in stunting prevalence from 2.2 % (1.5 - 3.4 95% C.I.) in 2022 to 11.0 % (8.9 - 13.5 95% C.I.) as illustrated in [table 16](#), (p=0.000). The stunting prevalence as reflected to revised WHO classification on chronic malnutrition indicates the current prevalence is high (>10). Analysis by gender revealed that boys were more stunted than girls were, although with no significant difference. Analysis by age indicated that age groups of 6 to 17, 18 to 29 and 30 to 41 months were more underweight than the rest of the age groups, which could be attributed to poor complementary feeding practices.

Table 16: Prevalence of stunting based on height-for-age z-scores

	All n = 828	Boys n = 420	Girls n = 408
Prevalence of stunting (<-2 z-score)	(91) 11.0 % (8.9 - 13.5 95% C.I.)	(55) 13.1 % (10.3 - 16.5 95% C.I.)	(36) 8.8 % (6.4 - 12.1 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(81) 9.8 % (7.7 - 12.3 95% C.I.)	(52) 12.4 % (9.7 - 15.7 95% C.I.)	(29) 7.1 % (4.9 - 10.3 95% C.I.)



Prevalence of severe stunting (<-3 z-score)	(10) 1.2 % (0.7 - 2.1 95% C.I.)	(3) 0.7 % (0.2 - 2.3 95% C.I.)	(7) 1.7 % (0.9 - 3.4 95% C.I.)
---	--	--------------------------------------	--------------------------------------

Table 17: Prevalence of Stunting by age

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	161	3	1.9	20	12.4	138	85.7
18-29	219	4	1.8	24	11.0	191	87.2
30-41	195	1	0.5	22	11.3	172	88.2
42-53	183	2	1.1	14	7.7	167	91.3
54-59	64	0	0.0	1	1.6	63	98.4
Total	822	10	1.2	81	9.9	731	88.9

Table 18: Trends in stunting

	2021	2022	2023
Prevalence of stunting (<-2 z-score)	6.0 %	2.2 %	11.0 %
Prevalence of severe stunting (<-3 z-score)	0.2 %	0.8 %	1.2 %

Overview of Trends in under nutrition over time in Garissa County

Acute malnutrition in Garissa County has remained critical (above 15%) according to IPC acute malnutrition classification since 2019 with the highest level being in July 2022 (GAM level of 20.3%). This year's GAM prevalence has improved but within the same phase (phase 4). The improvement is attributed to scaled up response in the county including cash transfer programs and more so good rainfall performance observed during the long rains period leading to improved food security, pastures, animal body condition, milk availability and food stocks across households, low disease burden, and scaled up multi-sectoral response including early detection and treatment of acute malnutrition.

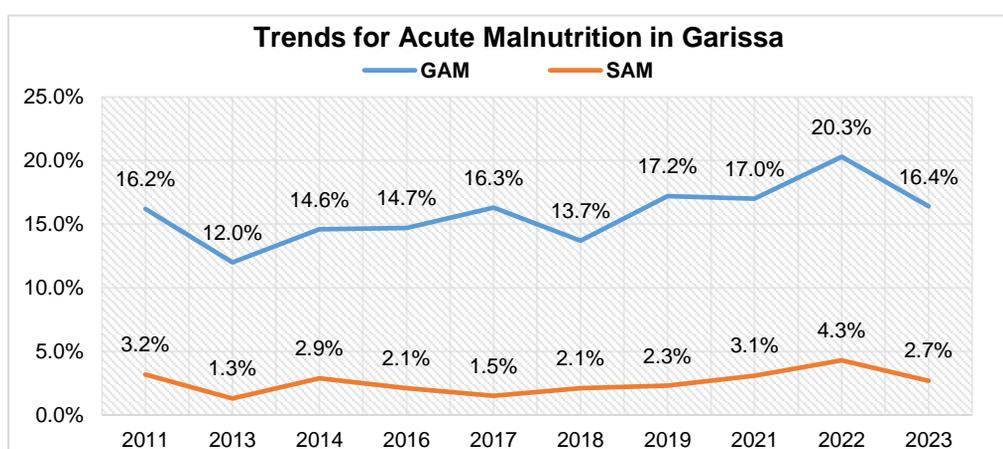


Figure 14: Trends for Acute malnutrition in Garissa County

Proxy (Indirect) Coverage of IMAM program

All the malnourished children 6-59 months (MUAC<125MM or WFH Z score<-2 SD) were assessed whether they were enrolled into any nutrition program during the survey. Only 18.8% of the malnourished children identified during the survey were enrolled in IMAM program; 15.4% in OTP and 84.6% in SFP. Only 17.4% of identified SAM cases were enrolled in OTP program while only 19.3% of identified MAM cases were enrolled in SFP. Low proxy coverage for OTP and SFP programs is below the 50% SPHERE standards coverage for rural setting.

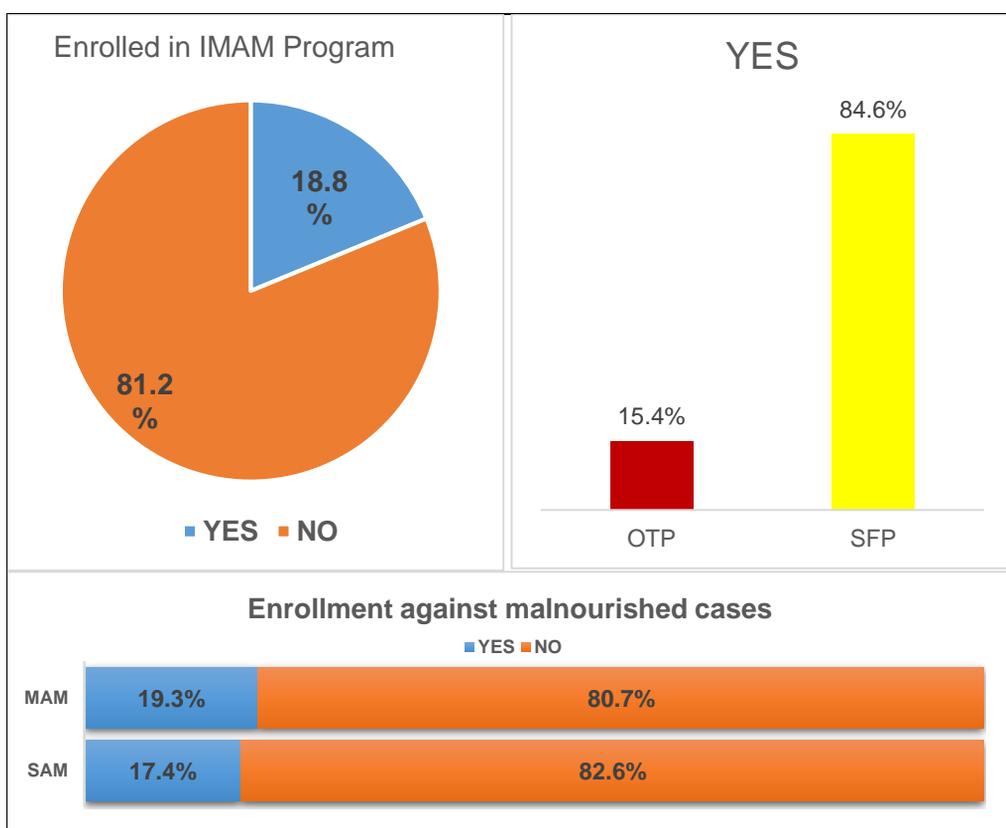


Figure 15: Enrollment into IMAM program

Mortality

Mortality data collected in all the 673 households that were covered for the household survey, in the 45 clusters. The average household size is 5.7. The Crude Mortality Rate unveiled in July 2023 is 0.30 (0.15 – 0.59 at 95% C.I.). The main cause of death as given by the respondents, MOH and the community leaders was unknown (63.6%) and illnesses (36.4%).

Table 19: Mortality Demographics

Total number of HHs	673
Total number of HHs with children under five	501
Average household size	5.7
Mid Interval Population Size	3825.5
Number of Clusters	45
Percentage of children under five	22.9
Birth Rate	1.0
In-migration Rate (Joined)	3.34
Out-migration Rate (Left)	0.57

Table 20: Individual Death Rates

	Crude Death Rate (95% CI)	Design Effect
Overall (CDR)	0.30 (0.15-0.59)	1.28
By Sex		
'Male	0.22 (0.06-0.72)	1.46
'Female	0.38 (0.17-0.88)	1.1
'Years		
Child Mortality rate (0-4 yrs)	0.49 (0.15-1.63)	1.43

Morbidity

Prevalence and Incidence

Malnutrition can make a person more susceptible to infection, and infection contributes to malnutrition, which causes a vicious cycle of malnutrition and infections. A sick person's nutrition is further aggravated by diarrhea, mal-



absorption, loss of appetite, diversion of nutrients for the immune response, and urinary nitrogen loss, all of which lead to nutrient losses and further damage to defense mechanisms. These, in turn, cause reduced dietary intake. Morbidity was assessed among children aged 6-59 months by cross-checking the mother and child health booklet if the child was sick in the last 2 weeks. Where the booklet was missing, inquiry was made to the caregivers to recall whether the child was ill or not in last 14 days. Those who confirmed illness in the past two weeks were further probed on the type illness that affected their children and whether or not they sought any assistance when their child/children were ill and where. Those who indicated that their child/children suffered from watery diarrhea were probed on the kind of treatment that was given to them. Acute Respiratory Tract Infections (ARI/Cough) had the highest prevalence, at 14.7% (n=124), and the highest disease incidence in 2023 (56.6%) compared to 2022 (50.9%). Some of the illnesses in the other category of morbidities were skin diseases, injuries etc.

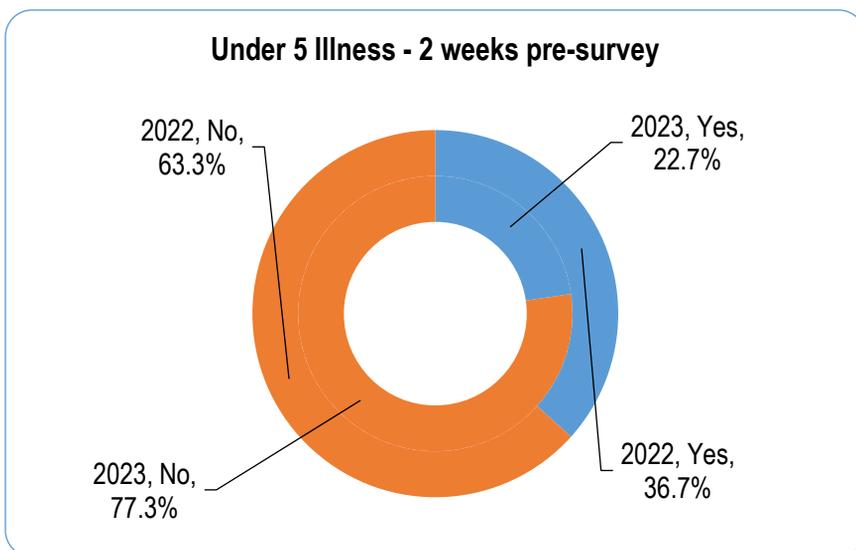


Figure 16: Child morbidity in the past two weeks

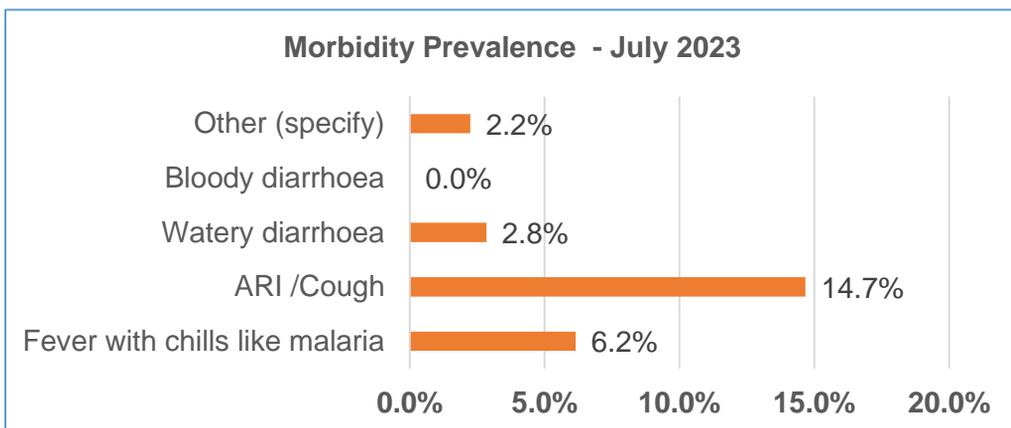


Figure 17: Prevalence of morbidity in Garissa

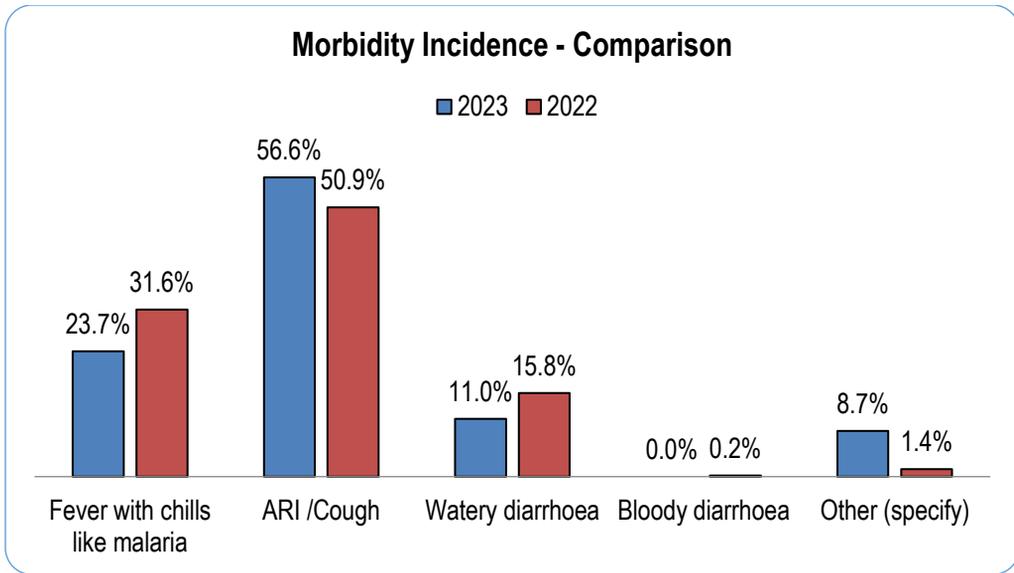


Figure 18: Comparison of Morbidity incidence in 2022 and 2023

Health Seeking Behaviour

The survey indicated that for those who reported illness, 62% (n=119) sought medical assistance, a slight improvement from 57.2% reported in July 2022. Seeking assistance from public health facilities observed to reduce from 70% reported in July 2022 to 52% (n=64) in July 2023. Poor health seeking behavior could be attributed to long distances to health facilities, high transport costs and staff shortage that sometimes may lead to closure of public health facilities when staff take a break.

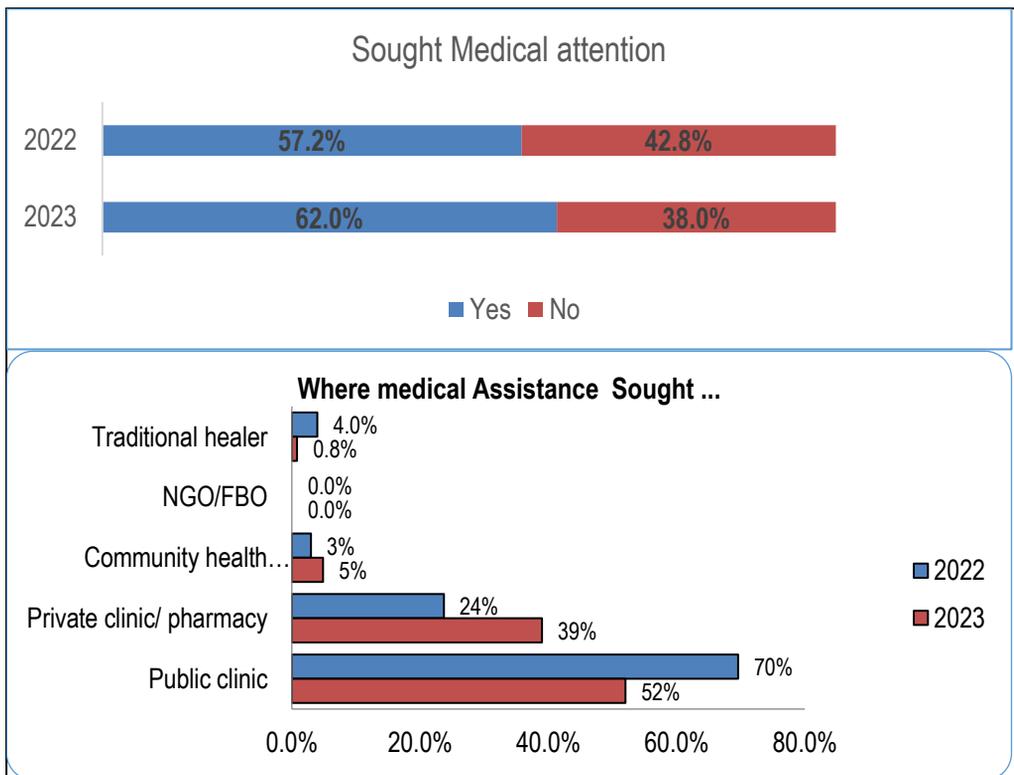
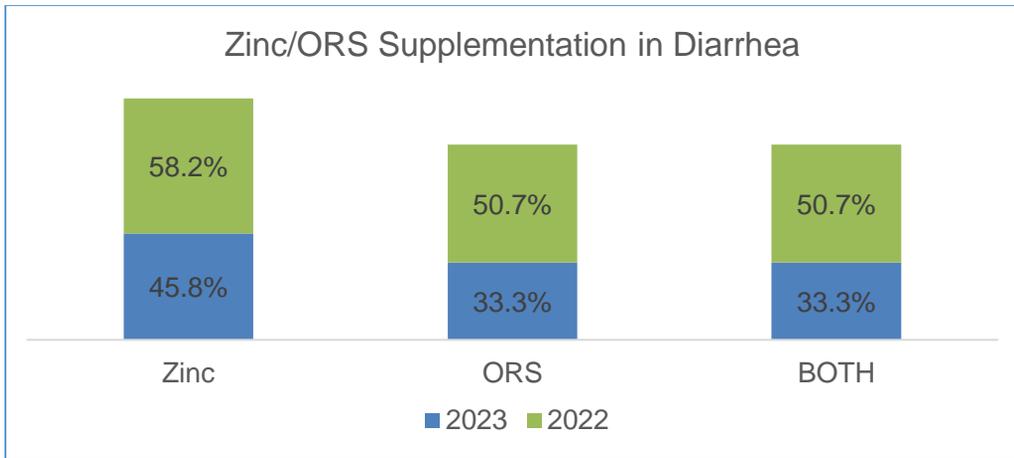


Figure 19: Health seeking behavior in Garissa County

Zinc Supplementation

Utilization of both Zinc & ORS reduced in 2023, at 33.3%, which could be attributed to stock outs of the commodity in some health facilities.



Child Immunization, supplementation and deworming

Immunization

The ministry of health through the Division of Vaccines and Immunization supports scale up of immunization services under the Kenya Expanded Programme on Immunization (KEPI) in order to reduce morbidity and mortality related to vaccine preventable diseases⁴. The immunization coverage in Garissa County, for all the antigens remained high above the national target of 80%, with BCG immunization being confirmed by presence of scar and oral polio and measles being confirmed by either cards or recall or both. The high coverage could be attributed to intensified outreach activities in response to the drought situation that increased awareness of the caregivers on immunization especially on the second dose of measles vaccination.

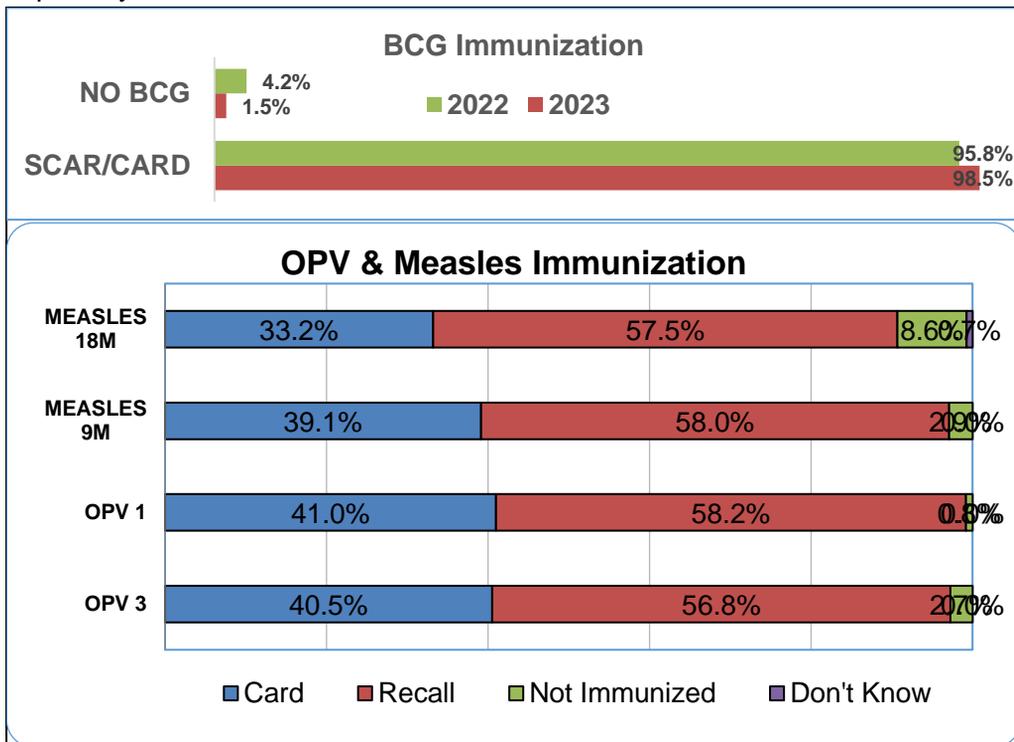


Figure 20: Child Immunization Coverage in Garissa County

Vitamin A Supplementation

Kenya's ministry of health recommends that all children 6-59 months be supplemented with vitamin A after every six months. This can be done at the health facility, at the medical outreach sites, community level or at the ECDE centers. Provision of vitamin A supplements every six months is an inexpensive, quick, and effective way to improve vitamin A status and reduce child morbidity and mortality in the long term.

⁴ Kenya comprehensive multiyear plan for 2011-2015



Vitamin A coverage was assessed for the past one year (July 2022 to July 2023), through recall and documentation on the mother child booklet.

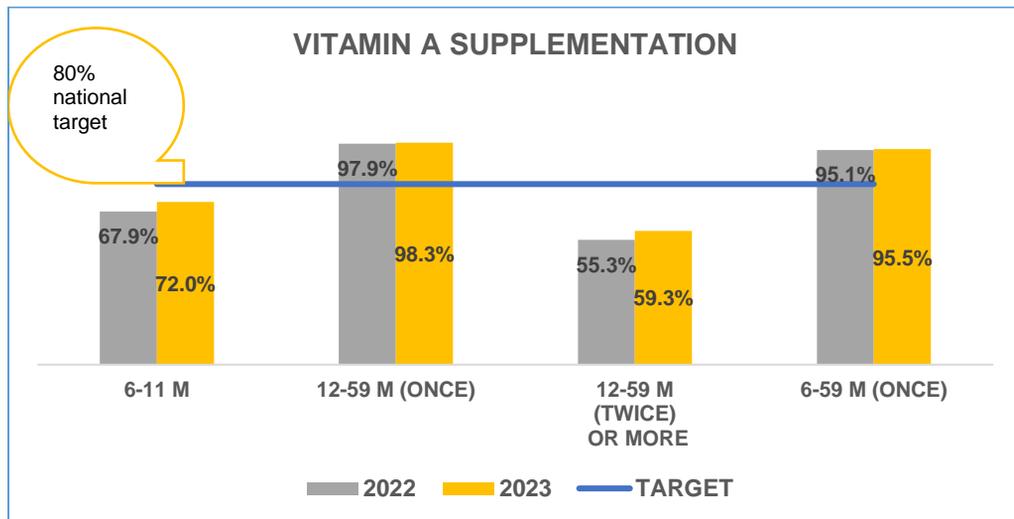


Figure 21: Vitamin A Supplementation coverage and utilization

Vitamin A supplementation for children aged 6-11 months slightly improved in July 2023 (at 72.0%) compared to July 2022 (at 67.9%) although it remained below 80% national target. VAS coverage in children aged 11-59 and 6-59 months supplemented once remained above the national target (see figure 21). However, VAS twice for children 11 to 59 months also remained below the national target of 80%, indicating poor utilization of the service. Major factors attributed to coverage remaining high include acceleration of vitamin A supplementation during integrated outreaches and Malezi bora weeks, increased awareness among caregivers at the health facility and community, availability of the vitamin A supplements and improved linkage between community supplementation data (ECDE, outreach sites) to facility data.

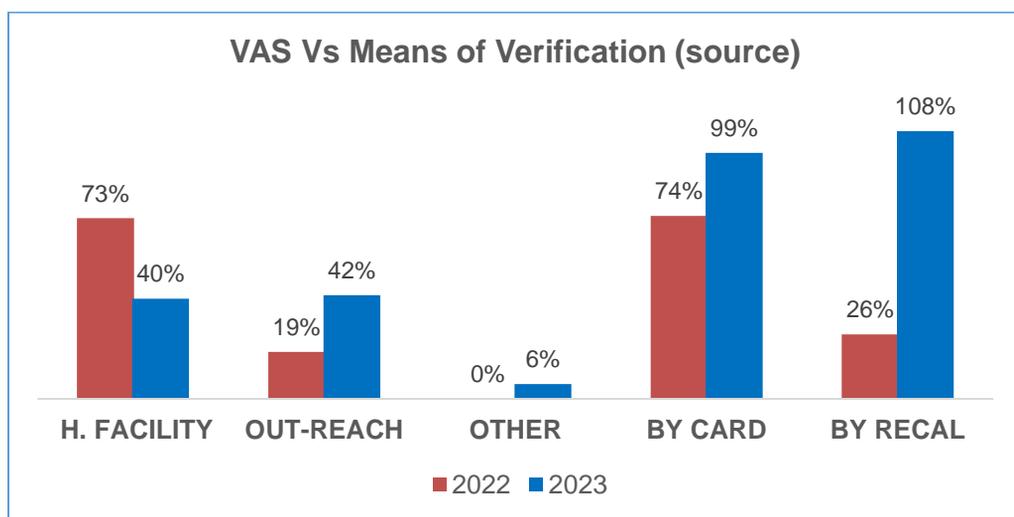


Figure 22: Information source on VAS

Deworming

Deworming of children routinely helps to combat soil-transmitted helminthes that worsen child nutritional status through intestinal bleeding, loss of appetite, and mal-absorption of micronutrients. Periodic treatment (deworming) of children supported with improvement of water and sanitation, and health education can reduce the transmission of Schistosoma and soil-transmitted helminth infections⁵. The proportion of both Children dewormed once and twice in Garissa greatly improved in 2023, at 74.9% and 34.6% from 57.5% and 8.9%

⁵ Hotez, P. J et al, Helminthic infections: soil-transmitted helminth infections and schistosomiasis, 2006. Oxford University Press and World Bank.



respectively. The trends indicate that deworming in coverage has always been below the national target of 80%, in Garissa, with deworming at least twice performing poorly indicating poor utilization of the service. The improvement in 2023 could be attributed to acceleration of VAS+D during integrated outreaches and Malezi bora weeks, increased awareness among caregivers at the health facility and community, availability of the deworming tables and improved linkage between community supplementation data (ECDE, outreach sites) to facility data.

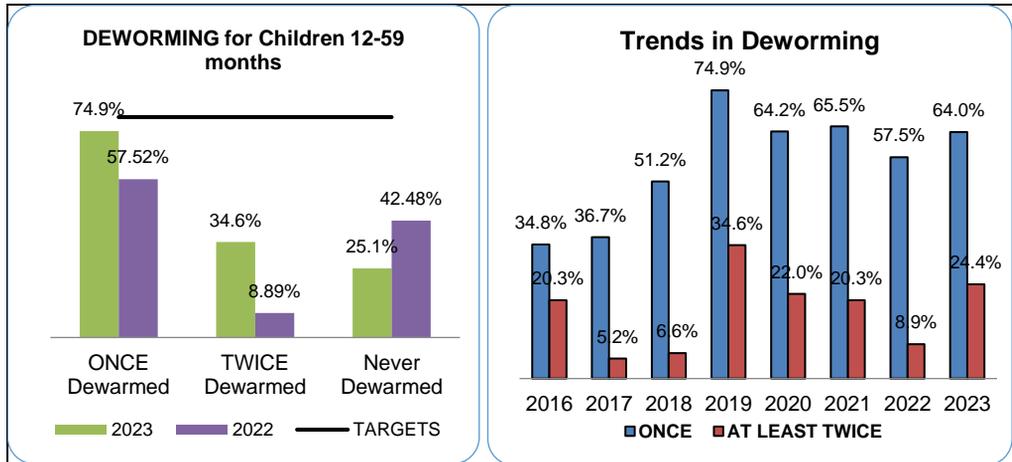


Figure 23: Deworming Status and Trends in Garissa

Maternal Health and Nutrition

Physiological status of Women of Reproductive Age

During the survey women were asked about their current physiological status on whether pregnant, lactating, pregnant and still lactating or none. The survey unveiled that; pregnant, lactating and, pregnant and lactating were 11%, 38% and 0% respectively. More than half of the WRA assessed were neither pregnant nor lactating. WRA with children under two were only 38%. The proportion of WRA and PLWs reduced compared to the previous one.

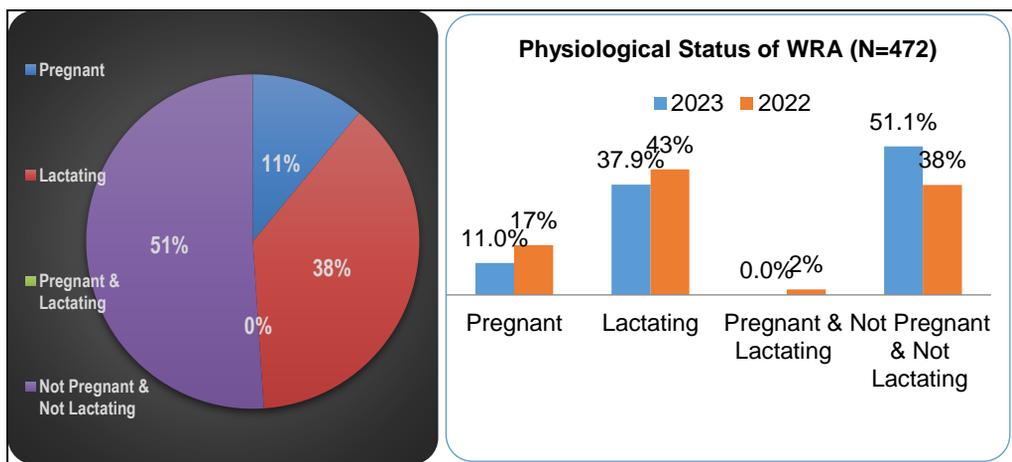


Figure 24: Physiological status of Women of Reproductive Age

Maternal nutrition status based on Mid Upper Arm Circumference (MUAC)

Maternal mid upper arm circumference is a proxy indicator of maternal nutritional status. Nutritional status of 472 women aged 15-49 years was assessed using MUAC. Nutrition status (MUAC <21cm) among all women had improved from 9.6% reported in July 2022 to 4.0% reported in July 2023. Similarly, the nutrition situation among pregnant and lactating women had improved from 12.7% to 4.8%. There was also an observed improvement in the proportion of women, both WRA and PLWs at risk for malnutrition in 2023 compared to 2022. The increase could be attributed to improved household food security following above average performance of the March to May long rains.



Antenatal Care Practices

On Antenatal care practices, 90.7% of women confirmed to have attended ANC services during the last pregnancy of their youngest child, an improvement in 2023, compared to that reported in July 2022 at 78.4%. Most of the WRA with under twos reported to have attended their 1st ANC visit during their 2nd trimester. Improved attendance during the 1st trimester observed in July 2023 survey, at 29.3% compared to July 2022, at 16.0%. Most caregivers confirmed to have received counselling during the ANC visits and were able to identify some of the counseling topics. Majority of the WRA in the smaller proportion that never sought for ANC services during pregnancy cited distance to the service delivery points and lack of awareness of the services as the main reasons for non-attendance.

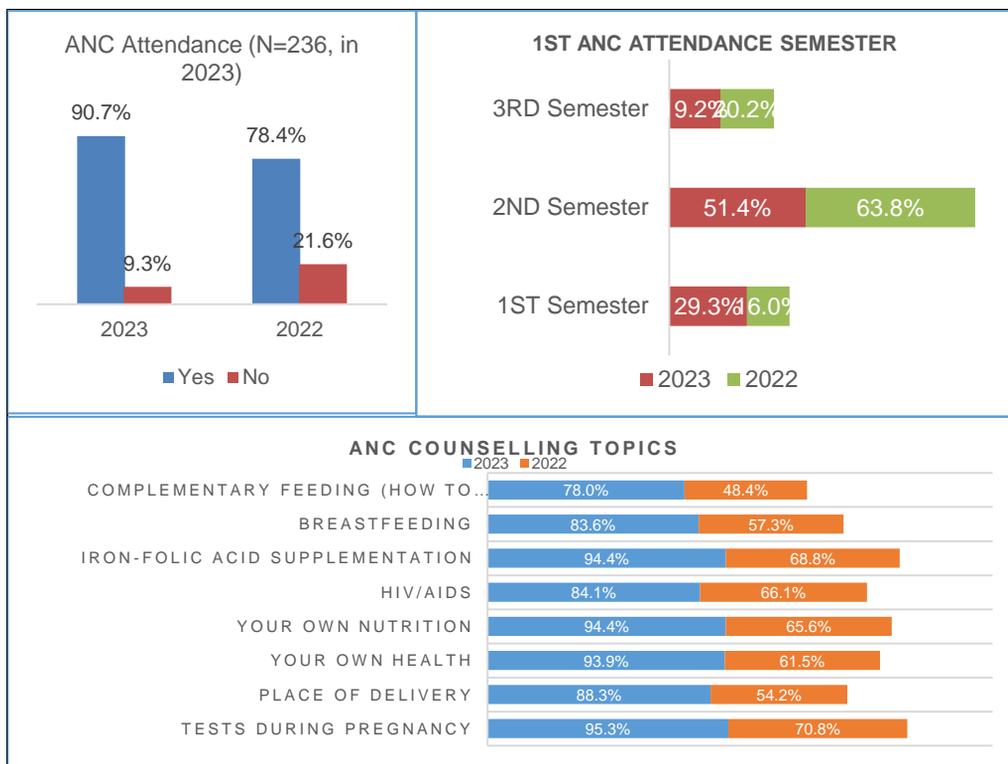


Figure 25: Antenatal Care practices in Garissa County

Iron Folate Supplementation during Pregnancy

Anemic women are more likely to deliver low birth weight infants and low folic acid levels are associated with an increased risk of low birth weight and birth defects. Iron folic acid supplementation is recommended as part of antenatal care to reduce risk of low birth weight, maternal anaemia and iron deficiency, ultimately improving maternal and perinatal health. WHO recommends routine intake of Iron tablets and folate supplements (IFAS), for all pregnant women together with appropriate dietary advice. Majority of the caregivers (93.5%) with under twos confirmed through retrospective inquiry having consumed iron folate in their last pregnancy, an improved from 90.45% reported in July 2022. Most of the assessed mothers sourced their IFAS from public (government) health facilities, at 94.5%. Most mothers with under twos consumed IFAS during pregnancy of the youngest child; at 43.5% and 48.9% in <90 days and between



90-180 days respectively, with a notable improvement in the category consuming 90-180 days from 20.0%.

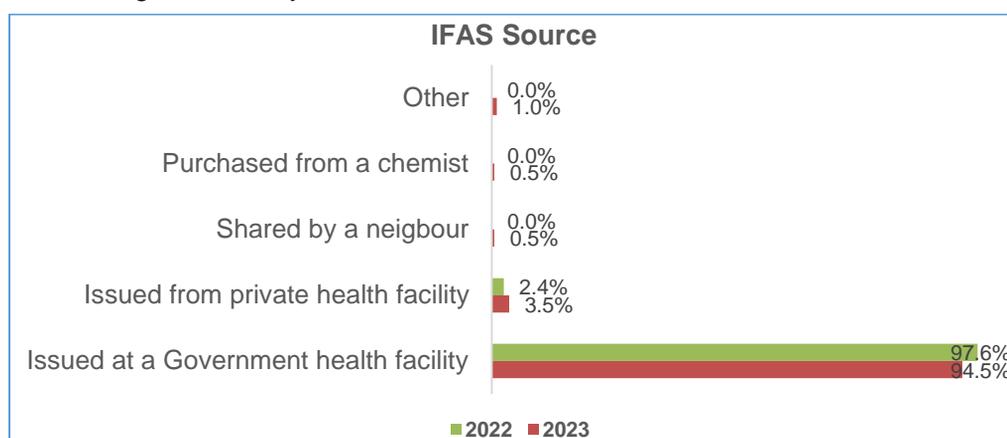


Table 21: A summary of Iron Folic Acid Supplementation and utilization

IFAS Consumption			
	Yes	No	
No of mothers	186	13	
% (2023)	93.5%	6.5%	
% (2022)	90.3%	9.7%	
Duration of consumption			
Category	N	% (2023)	% (2022)
<90 days	81	43.5%	77.3%
90-180day	91	48.9%	20.0%
>180 days	14	7.5%	2.7%

Water, Sanitation and Hygiene (WASH)

Water Sources

The integrated SMART survey indicated that the main water source (see table 22) in Garissa County is Piped water system (42.1%) and earth pan/dam (23.8%), an increase in both proportions compared to 52.9% and 7.8% reported in July the previous year. The significant increase in the proportion of households sourcing water from the Earth pans or dams is attributed to a recharge of the water bodies following good performance of the March to May 2023 long rains. A significant decrease in the proportion of households sourcing water from unprotected shallow well observed from 20.5% in July 2023 to the current 1.8%. Overall, the proportion of households fetching water safe water sources in Garissa improved from 47.7% reported in July 2022 to the current 57% (figure 26).

Table 22: Current Main Water Sources in Garissa

Main Water Source	N	2023	2022
Piped water system	283	42.1%	26.9%
Borehole/protected spring /protected shallow wells	103	15.3%	20.8%
Unprotected shallow well	12	1.8%	20.5%
River/spring	18	2.7%	2.5%
Earth pan/dam	160	23.8%	7.0%
Earth pan/dam with infiltration well	11	1.6%	9.9%
Water trucking / Boozer	77	11.4%	14.1%
Water vendor	3	0.4%	0.3%
Harvested water (Jabiya)	0	0.0%	0.0%
Cart with small tank	0	0.0%	0.0%
Other	6	0.9%	0.0%

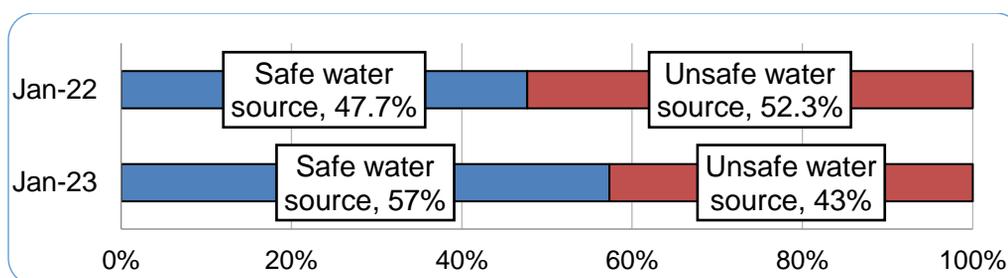


Figure 26: Proportion of households obtaining water from safe and unsafe sources

Return Distance to and Queuing Time in the main water source

The proportion of households who spent a return distance of more than 2 kilometers (>2km) to the water source reduced from 5.2% reported in July 2022 to the current 2.6%, while the proportion walking between 500m to 2km increased from 19.2% reported in July 2022 to the current 31%. A slight increase in the proportion of households queuing for water from 20.5% reported in July 2022 to the current 23.5%, with more than half queuing for less than (<) 30 minutes (see table 23). The decreased distance and queuing time is attributed increased drilling of boreholes, de-silting and water tracking as the county's contribution to supporting interventions towards increasing access to water sources during the drought period. Additionally, during the survey period, there was adequate recharge of water sources as a result of adequate rains received in March to May 2023.

Table 23: Return Distance to and Queuing Time in the main water source

Distance travelled	n	2023	2022
<500m (<15 min)	440	66.4%	75.5%
0.5 TO 2km (15 to 1 hour)	206	31.1%	19.2%
>2 km (1 – 2 hrs)	17	2.6%	5.2%
Others	0		0.0%
Queuing for Water?	n	2023	2022
Yes	138	23.5%	20.5%
No	535	76.5%	79.5%
Time Queuing for Water	n	2023	2022
Less than 30 minutes	70	50.7%	64.19%
30-60 minutes	60	43.5%	29.05%
More than 1 hour	8	5.8%	6.76%

Water Storage and Treatment

Household water treatment and safe storage (HWTS) interventions is associated with improved quality of drinking water and reduction in water borne diseases such diarrheal diseases. This makes an immediate difference to the lives of those who rely on water from polluted rivers, lakes and, in some cases, unsafe wells or piped water supplies. From the survey findings, a slight decrease in the proportion of households storing water in closed containers from 83.1% in July 2022 to the current 78.5%. There was observed increase in the proportion of households treating water from 17.8% in July 2022 to the current 27.6%, with majority (80.1%) using chemicals currently, almost similar proportion reported in July 2022.

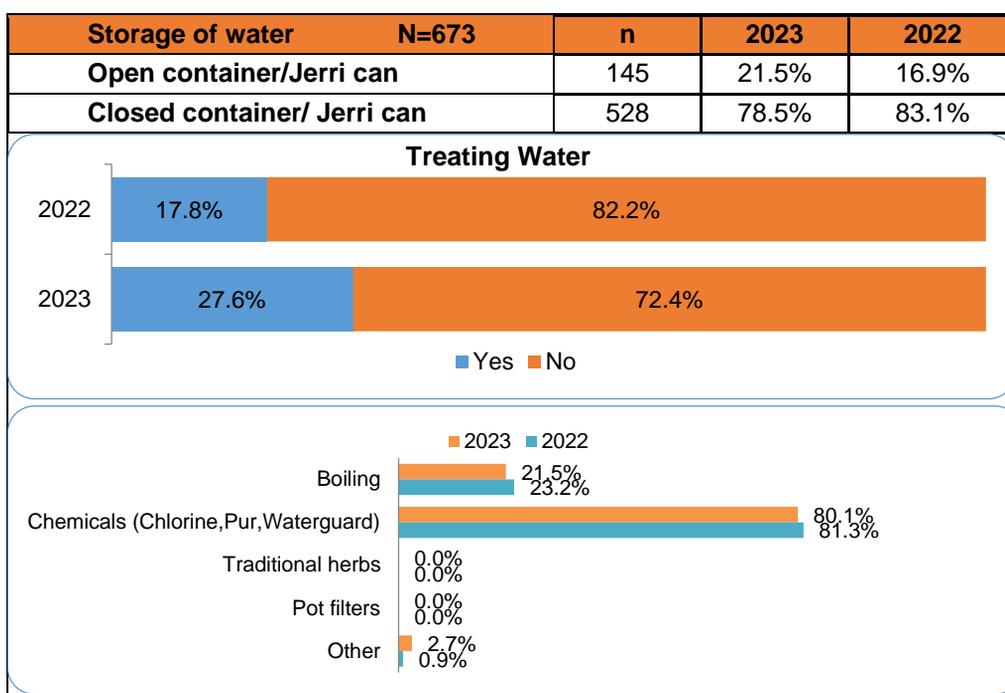


Figure 27: Water Storage and Treatment

Water Consumption and Purchase

The proportions of households in Garissa County purchasing water @Ksh. 13 per 20l jerrican were 53.6% while the rest were paying for water monthly at an average of Ksh. 1,786. There is observed slight increase in both payment methods compared to July 2022. Only 24.7% HHs are consuming the recommended amount of water of equal to or more than 15l/p/day as per the SPHERE indicator threshold.

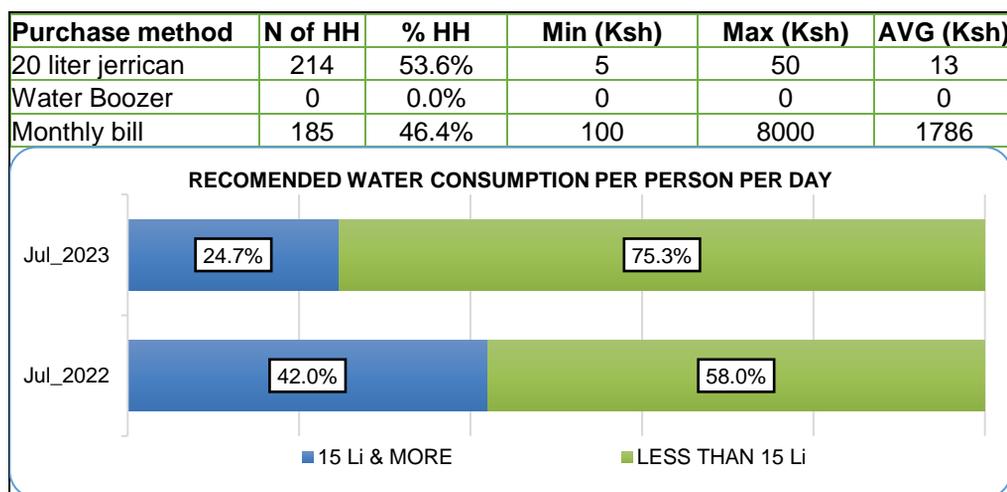


Figure 28: Water consumption and purchase

Sanitation Practices

Appropriate sanitation practices are crucial in reducing food and waterborne diseases. Poor sanitation such as open defecation has been linked to increase in chronic malnutrition in children⁶. The survey showed high proportion of households (39.7%), practiced open defecation, 54.5% used latrines while 2.7% used flush toilets. Open defecation reduced slightly from 47.5% to 45.4%. The poor sanitation practices could be attributed to migration and cultural beliefs

⁶ Spears D, Ghosh A, Cumming O (2013) Correction: Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts. PLoS ONE 8(9)



making open defecation socially acceptable in the county especially the nomadic-pastoral communities.

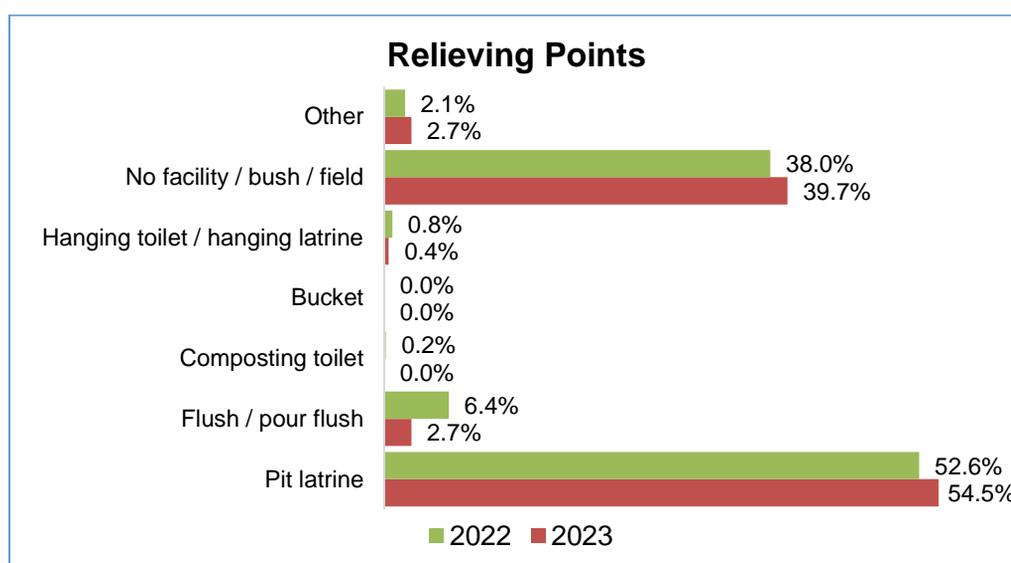


Figure 29: Relieving Points in Garissa County

Hygiene Practices

Hand washing, especially with soap and water, is one of the most effective and inexpensive methods of reducing diarrhea and pneumonia which are the major causes of child death and under nutrition. Hand washing in critical times such as before eating or preparing food could reduce diarrhea by up to 40%⁷. Table 15 shows the proportion of caregivers assessed who washed their hands in various critical times. In Garissa County, awareness on handwashing remained high, at 59.1%, with knowledge on handwashing at critical times and use of soap and water improving from 17.2% and 45.4%, to 53.0% and 56.5% respectively. However, handwashing at 4 critical times and use of soap and water practice remains very low in Garissa with only 14.1% having washed their hand in all the four critical times, a slight increase from 6.8% reported in 2023. There was an insignificant drop in the proportion of caregivers who used soap and water to wash their hands from 12.3% in July 2022 to the current 10.6%.

Table 24: Handwashing Awareness

	Yes	No	Don't know
Aware of Handwashing	398	133	142
2023	59.1%	19.8%	21.1%
2022	60.9%	32.1%	7.0%
Handwashing Awareness	n	2023	2022
After toilet	395	99.2%	76.8%
Before cooking	295	74.1%	36.6%
Before eating	390	98.0%	83.0%
After taking children to the toilet	237	59.5%	38.4%
At 4 critical times	211	53.0%	17.2%
Soap and water	225	56.5%	45.4%
Others (At Prayer time)	0	0.0%	0.0%

Table 25: Handwashing practice

Handwashing Practice with or without awareness	n	2023	2022
After toilet	638	30.0%	34.1%
Before cooking	492	23.1%	15.5%
Before eating	657	30.9%	36.1%
After taking children to the toilet	339	15.9%	14.4%
At 4 critical times	300	14.1%	6.8%

⁷ UNICEF "Fast Facts And Figures About Hand washing"



Soap and water	225	10.6%	12.3%
Others (At Prayer time)	0	0.0%	0.0%

Food Security and Livelihoods

Food Security Information

Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. A person is considered nutrition secure when she or he has a nutritionally adequate diet and the food consumed is biologically utilized such that adequate performance is maintained in growth, resisting or recovering from disease, pregnancy, lactation and physical work.⁸The indicators used to measure food security in the survey included FCS, rCSI, IDDS for WRA, Child Dietary Diversity, HDDS and Household Hunger Scale (HHS).

The Early Warning Information System indicated an improved food security situation in Garissa County that could translate to improved household food security. This was attributed to improved water, pasture and milk availability following good performance of the March to May 2023 long rains. However, the effects of the prolonged drought following five consecutive failed rainfall seasons coupled with increased food prices and reduced market prices for livestock, owing to reduced purchasing power for households due to the current inflation rate could contribute majorly to slow improvement in the household food security (NDMA Bulletin June 2023).

Household Dietary Diversity

Household dietary diversity is used as a proxy measure of the socio-economic level of a household. Household dietary diversity was assessed by 7 days recall period. A total of 16 food groups later aggregated to 12 were assessed. Only 42.8% of the households consumed more than five food groups. The food groups consumed in bigger proportions by households in Garissa County were cereals, oils/fats, pulses/legumes and milk with fruits, Eggs and meats being least consumed food groups.

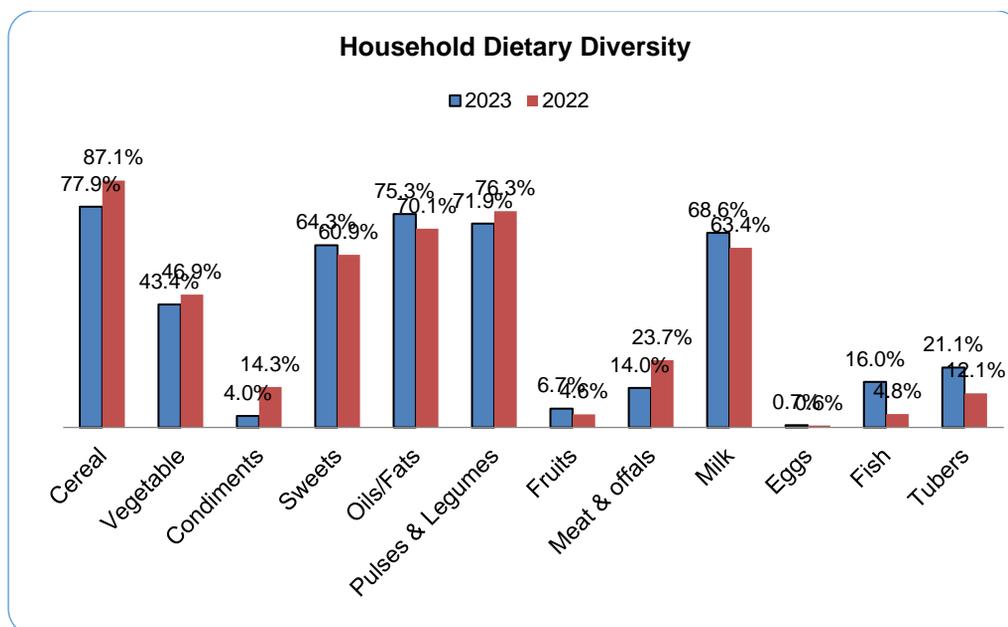


Figure 30: Household Dietary Diversity Score

⁸http://www.fao.org/fileadmin/user_upload/food-security-capacity-building/docs/Nutrition/NairobiWorkshop/5.WFP_IndicatorsFSandNutIntegration.pdf Food security indicators

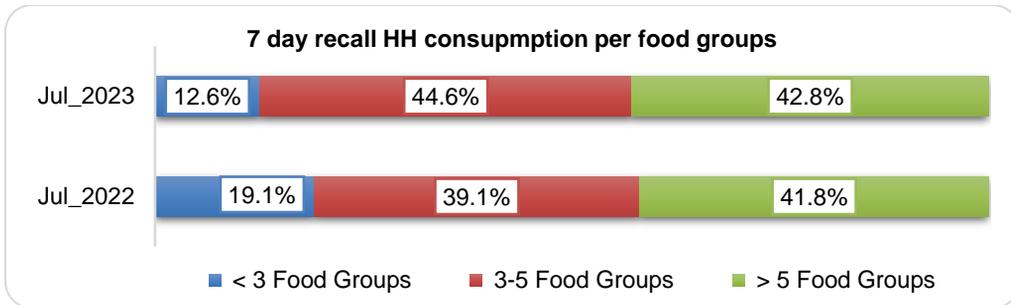


Figure 31: 7 day recall HH consumption per food groups

Micronutrient Consumption from Household Dietary Diversity

Majority of the households frequently (6-7 days) consumed staple (58.1%), protein rich foods (73.4%) and oils (56.3%). However, the results showed that Vitamin A rich and iron rich foods were poorly consumed with only 3.9% and 14.3% of the population consuming Vitamin A and iron rich foods, respectively, for six (6) or more days. Poor consumption of Vitamin A rich foods is highly associated to low availability and access of Vitamin A rich foods coupled with high market prices. Information on Micronutrient consumption from household dietary diversity is shown in [Figure 32](#).

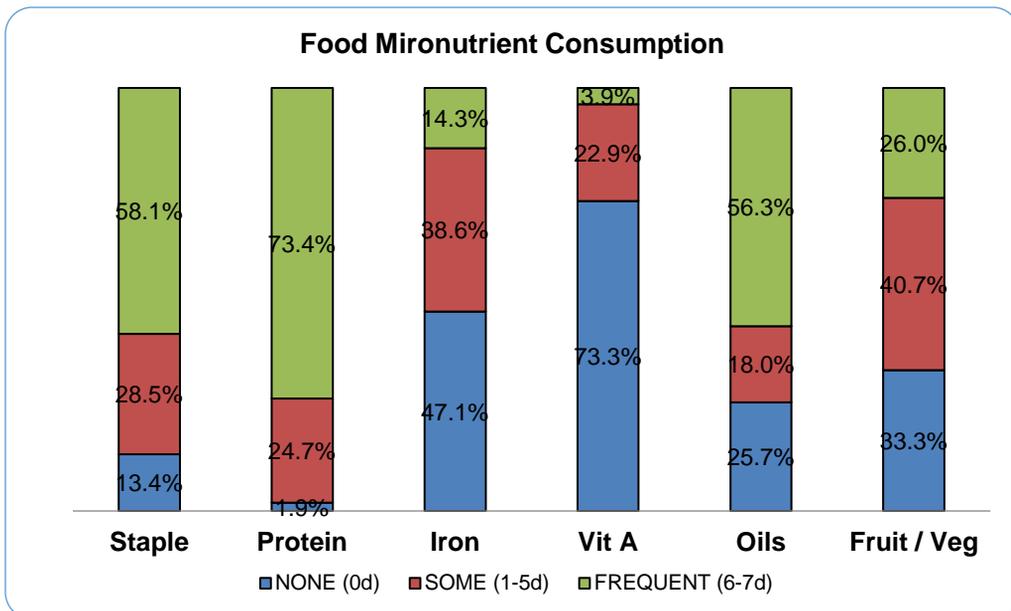


Figure 32: Micronutrient Consumption from HH dietary Diversity

Food Consumption Score (FCS)

Food consumption score (FCS) is a proxy indicator of household food security that combines measurements of dietary diversity, the frequency with which different foods are consumed and the relative nutritional importance of various food groups. The proportion of households in the poor and borderline categories of FCS were at 15% and 22% an increase compared to 2% and 16% respectively, classification of July 2022. This is an indication that some households from the acceptable and borderline categories classification in July 2022 had moved to the poor and borderline categories food consumption classification in July 2023.

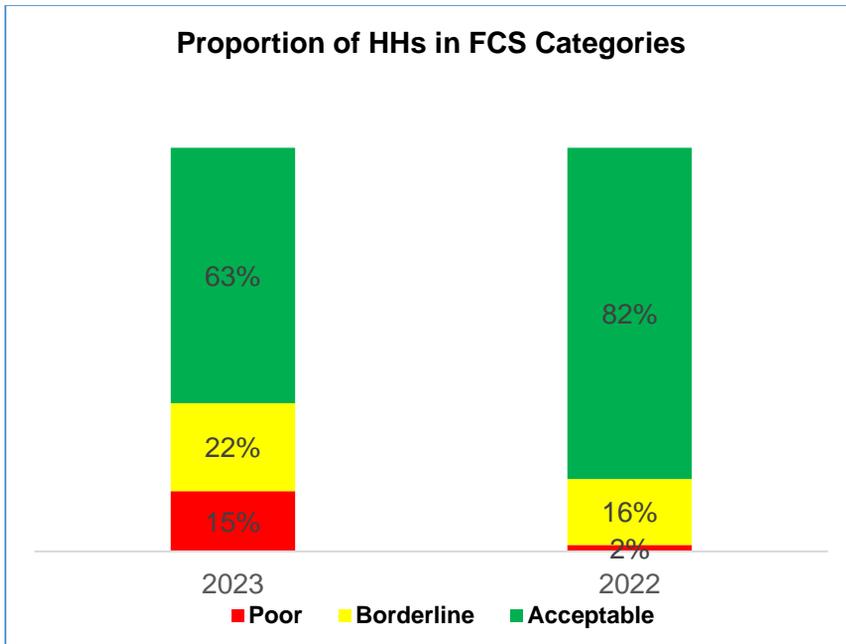


Figure 33: Proportion of HHs in each FCS Category

Table 26: Food Consumption Score categories and proportion of HHs

Main Threshold	Nomenclature	Proportion of Households (%)	
		2022	2023
0-21	Poor food consumption manly cereal and sugar	2.0	15.0
21.5-35	Borderline food consumption Cereal, legumes, milk, oil, sugar	16.0	22.0
>35.5	Good food consumption Cereal, legumes, milk, condiment, flesh meat, vegetable, oil, sugar	82.0	63.0

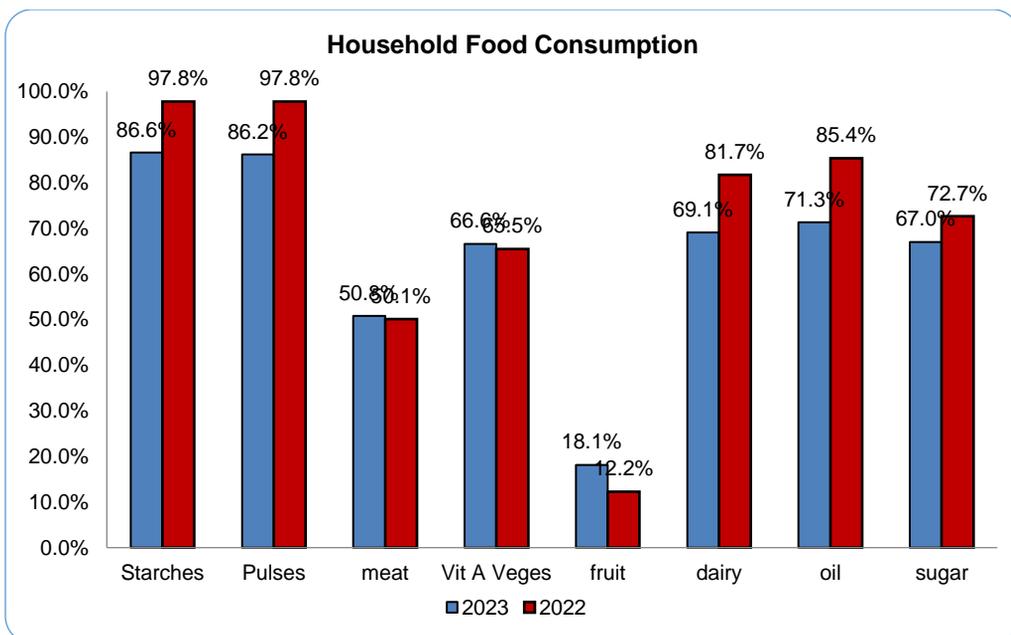


Figure 34: 7 day recall Household Food Consumption

Food Consumption Score Frequency

52.6% and 36.7% of HHs in both acceptable and poor/borderline categories respectively did not consume iron rich foods in the last 7 days. Majority of the households in the acceptable FCS category frequently (6-7 days) consumed proteins and Vitamin A rich foods at 93.2% and 84.3% respectively. Households in the poor and borderline categories that frequently (6-7 days) consumed



protein, Iron and Vitamin A were 38.4%, 10.0% and 64.2% respectively. Poor consumption of vitamin A rich food attributed to poor knowledge on vitamin A rich food, low food availability and poor purchasing power at household level (figure 35).

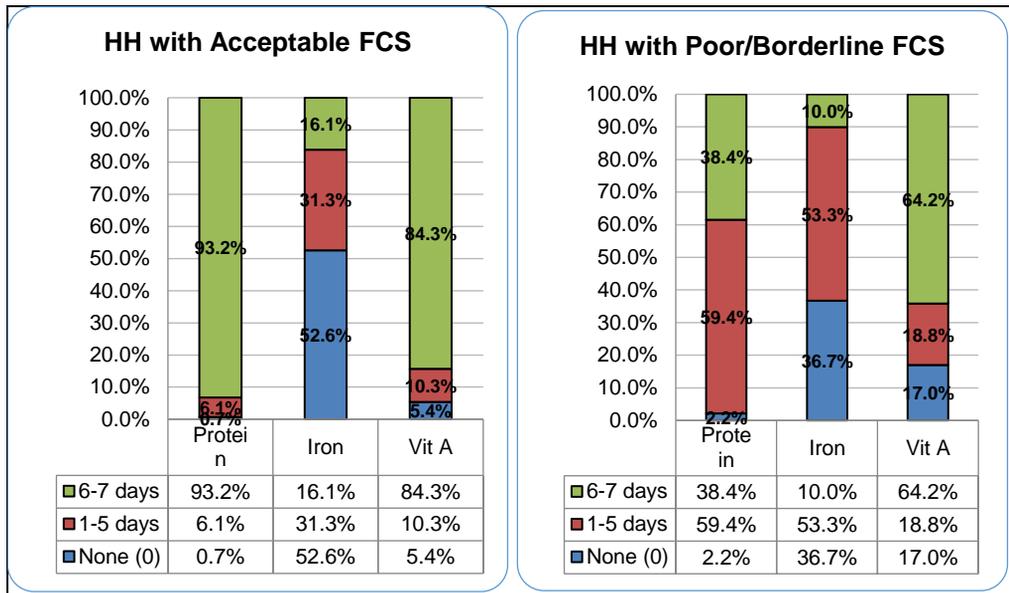


Figure 35: Food consumption Frequency per FCS category

Minimum Dietary Diversity – Women

Proxy for the probability of micronutrient adequacy of women’s diets Reflects micronutrient adequacy, which is one critical dimension of diet quality. It is looking at 10 food groups; all foods consumed at home or outside home, within the last 24 hours, were included. The food groups consumed in bigger proportions by WRA in Garissa County were cereals, pulses and dairy products Eggs and meats were least consumed. The MDD-W score slightly improved, with consumption of < 5 food groups currently at 24.5% from 20.2% reported in July 2023. The improvement in dietary diversity for women is attributed to improved food security situation owing to good performance of the long rains. However, high fuel and food prices still affects the gains realized from the rainfall performance hence household food insecurity remains a challenge in most households.

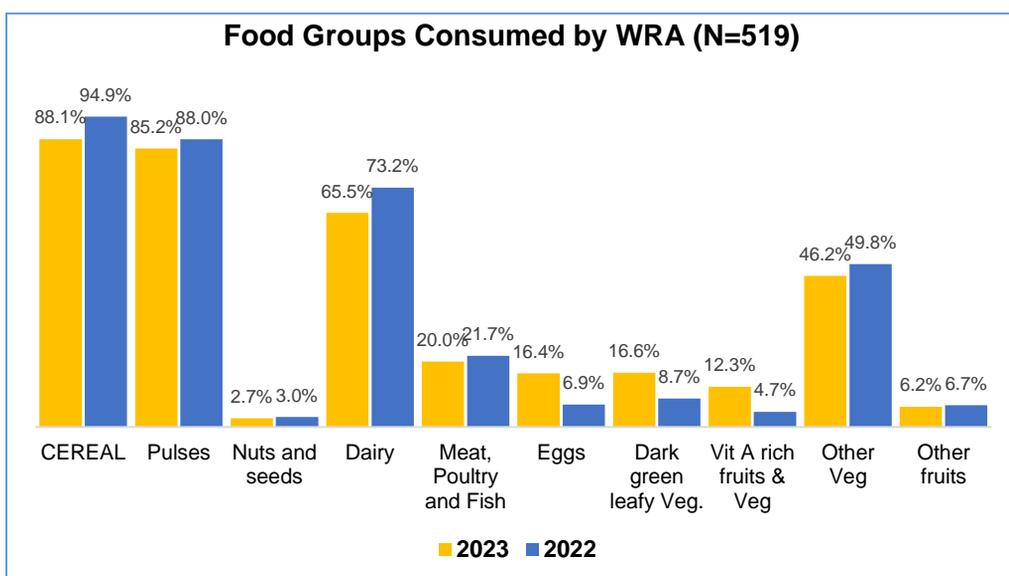


Figure 36: Foods Consumed by Women in the last 24 hours

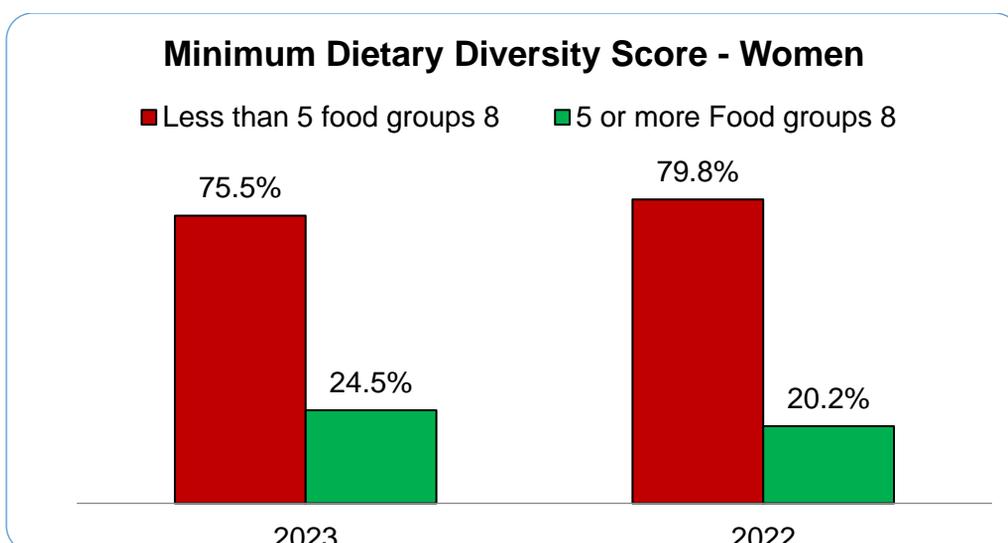


Figure 37: Minimum Dietary Diversity Score - Women

Infant and Young Child Feeding Practices

Infant and young child feeding (IYCF) practices directly affect the health, development and nutritional status of children less than two years of age and, ultimately, impact child survival. Improving IYCF practices in children 0–23 months of age is therefore critical to improved nutrition, health and development. Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children to their full potential. Poor nutrition increases the risk of illness, and is responsible, directly or indirectly, for deaths in children less than 5 years of age⁹. Inappropriate nutrition can also lead to childhood obesity, which is an increasing public health problem in many countries. The first two years of life provide a critical window of opportunity for ensuring children's appropriate growth and development through optimal feeding. Based on evidence of the effectiveness of interventions, achievement of universal coverage of optimal breastfeeding could prevent 13% of deaths occurring in children less than 5 years of age globally, while appropriate complementary feeding practices would result in an additional 6% reduction in under-five mortality¹⁰.

Children 6 to 23 months in Garissa County were consuming inadequate diet with the proportion consuming Minimum Dietary Diversity and Minimum Adequate Diet being 23.4% each. Egg and/or flesh consumption equally remained low with only 20.5% of the assessed children aged 6 to 23 months consuming the same during the previous day (24 hours). More than half of the children in Garissa County did not continue breastfeeding up to 2 years of age.

Table 27: A Summary of Complementary feeding indicators

Complementary feeding indicators	n(Yes)	N	%
Minimum dietary diversity 6-23 months(MDD)	56	239	23.4%
Minimum meal frequency 6–23 months(MMF)	147	239	61.5%
Minimum acceptable diet 6–23 months(MAD)	56	239	23.4%
Zero vegetable or fruit consumption 6–23 months (ZVF)	154	239	64.4%
Egg and/or flesh food consumption 6–23 months (EFF)	49	239	20.5%
Continued breastfeeding 12–23 months	74	154	48.1%
Unhealthy Food Consumption (UFC)	1	239	0.4%

⁹ World Health Organization. The global burden of disease: 2004 update. Geneva: World Health Organization; 2008.

¹⁰ Black RE, et al. Maternal and child undernutrition: global and regional exposures and health consequences. Lancet. 2008;371:243–60. [PubMed]



The food groups consumed in bigger proportions by children aged 6 to 23 months in Garissa County were dairy products and breast milk. Eggs and meats were the least consumed food groups.

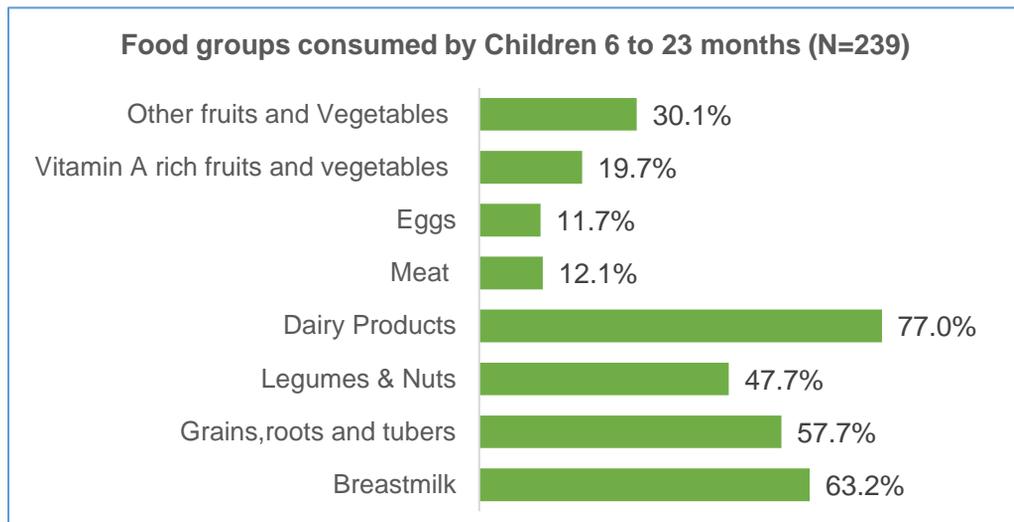


Figure 38: Food groups consumed by Children 6 to 23 months

Reducing Coping Strategy Index

The coping strategy index assesses how a household copes in times of food shortage or lack of food. Households were assessed based on five strategies, which were then weighted based on their severity. The current total weighted score is 13.8, a drop compared to 16.2 reported in July 2022. An estimated 22.3% (150HHS) reported to have experienced food insecurity in the past 7 days compared to 42.8% (269 HHS) reported in July 2022. The most utilized form of coping strategy by households were; rely on less preferred and less expensive food, limit portion sizes and reduce number of meals. All the households employing CSI relied on less expensive or less preferred foods. An estimated 65.3% of households employed the most severe strategy of restricting consumption of food by adults for young children to eat.

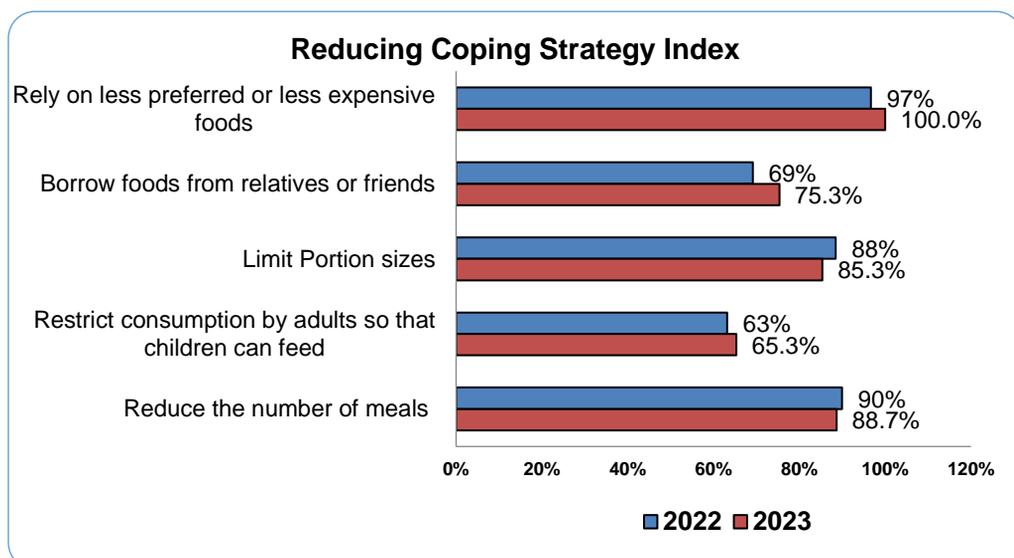


Figure 39: Proportion of households Reducing Coping Strategy Index

Household Hunger Scale

Household Hunger Scale (HHS) is a simple indicator to assess severe household hunger. HHS is a household food deprivation scale, that is, it informs on lack of food – food quantity indicator. The HHS consists of three questions and three frequencies that, when administered in a population-based household survey, allows for estimating the percent of households affected by three different severities of household hunger over a 30-day period. This indicator was developed following the cross-cultural validation study for the Household Food



Insecurity (Access) Scale (HFIAS). FAO and USAID/FFP NGO partners use it; it is increasingly used in large-scale WFP surveys, especially in severe situations. An estimated 37% (249 out of 673) of the households reported to have experienced a form of hunger. Half (50%) of the households reported experiencing hunger sometimes within 30 days. Almost half (48.2%) of HHs reported to experience hunger sometimes within 24 hours. Majority of the households were in the little to no hunger category; a reduction in proportion of HHs in moderate hunger from 18.8% in July 2022 to the current 11.3%.

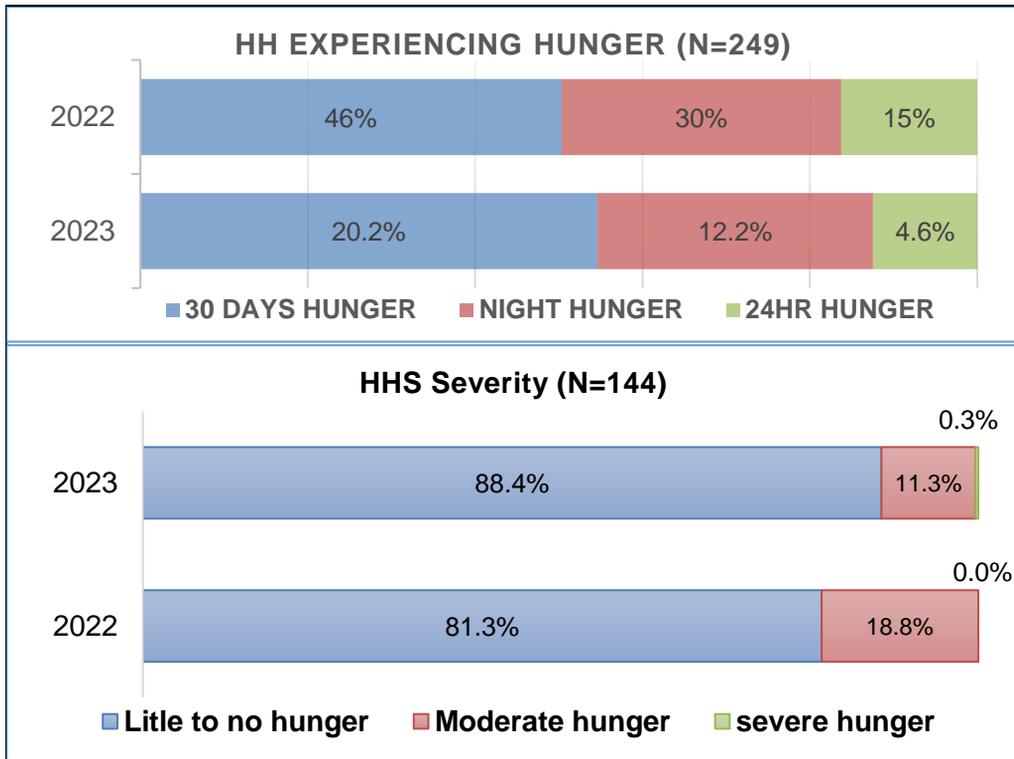


Figure 40: Household Hunger Scale and Frequency

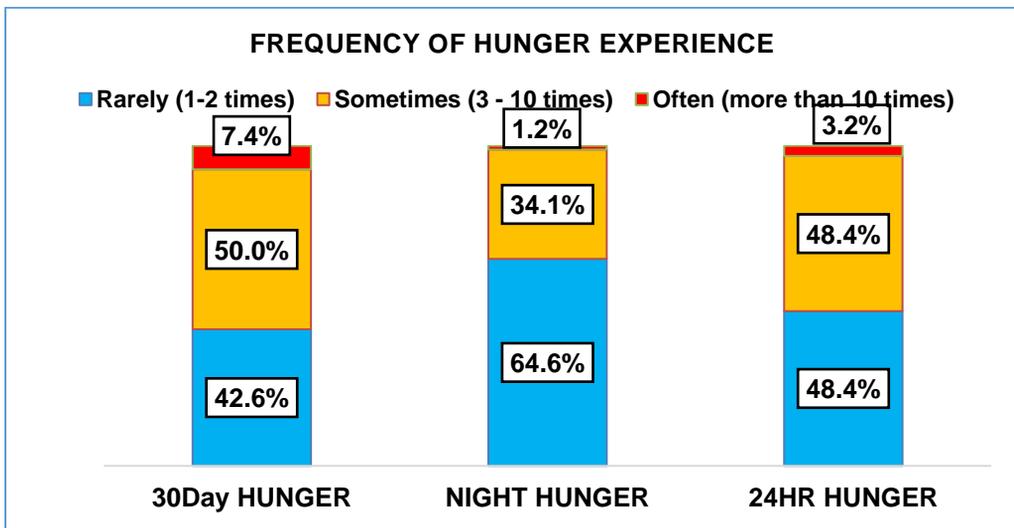


Figure 41: Frequency of Hunger Experience and the Proportion of Households



DISCUSSION AND CONCLUSION

Acute malnutrition in Garissa County has remained critical (above 15%) according to IPC acute malnutrition classification since 2019 with the highest level being in July 2022 (GAM level of 20.3%). This year's GAM prevalence has improved but within the same phase (phase 4). The improvement is attributed to scaled up response in the county including cash transfer programs and more so good rainfall performance observed during the long rains period leading to improved food security, pastures, animal body condition, milk availability and food stocks across households, low disease burden, and scaled up multi-sectoral response including early detection and treatment of acute malnutrition. Despite the improved nutrition situation, the following remain the main contributing factors to poor nutrition status in Garissa County;

- **Food Consumption:** Poor dietary diversity and quality are evidenced by low prevalence for MDD, 23.4% and MAD, 23.4% in children aged 6 to 23 months, and Minimum Dietary Diversity – Women (MDD-W, 20.2%).
- **Diseases:** Diseases exacerbate the nutrition situation with prevalence rates of 3% for diarrhea, 15% for Acute Respiratory Infection (ARI), 2,853 cases of cholera or Acute Watery Diarrhea (AWD), and 52 cases of measles. Despite low prevalence of diseases, the threat of increased prevalence of diarrhea may increase due to worsening water scarcity, limited access to clean water and sanitation, along with potential surge in refugees' influx due to porous borders could further increase diseases outbreak.
- **Caring and Feeding Practices:** Sub-optimal breastfeeding practices are a concern, with only 48.1% of mothers continuing breastfeeding at one year. The current economic hardships and food insecurity could disrupt feeding practices (high fuel, food and milk prices). Deterioration of water situation during the long dry period will lead to increase in caregivers' workload.
- **Health Services and Health Environment:** Coverage of key immunization services with measles vaccination at 97.1%, polio vaccination at 97.3%, and Vitamin A supplementation at 59.3%. However, poor health-seeking behavior and limited healthcare infrastructure may struggle to cope with potential disease outbreaks.
- **Food Dimensions:** an IPC AFI Phase 3 due to the good performance of the long rains leading to improved Food security. However, high fuel and food prices, livestock diseases and disruptions to food supply chains due to insecurity in the county, remain a threat to food security situation in the County.
- **Basic Causes:** Underlying socio-economic challenges, such as high illiteracy levels(42.9%), high unemployment rates, and a high fertility rate(5.6%) limit households' ability to access and utilize health and nutrition services, contribute to food insecurity, and affect care practices, thereby exacerbating the malnutrition situation

In conclusion, there is need for Garissa County to sustain early detection and treatment of acute malnutrition through health facilities coupled with integrated outreaches in far to reach areas, address inadequate food consumption at household level and poor dietary intake among children 6 to 23 months, poor WASH, and high morbidity.

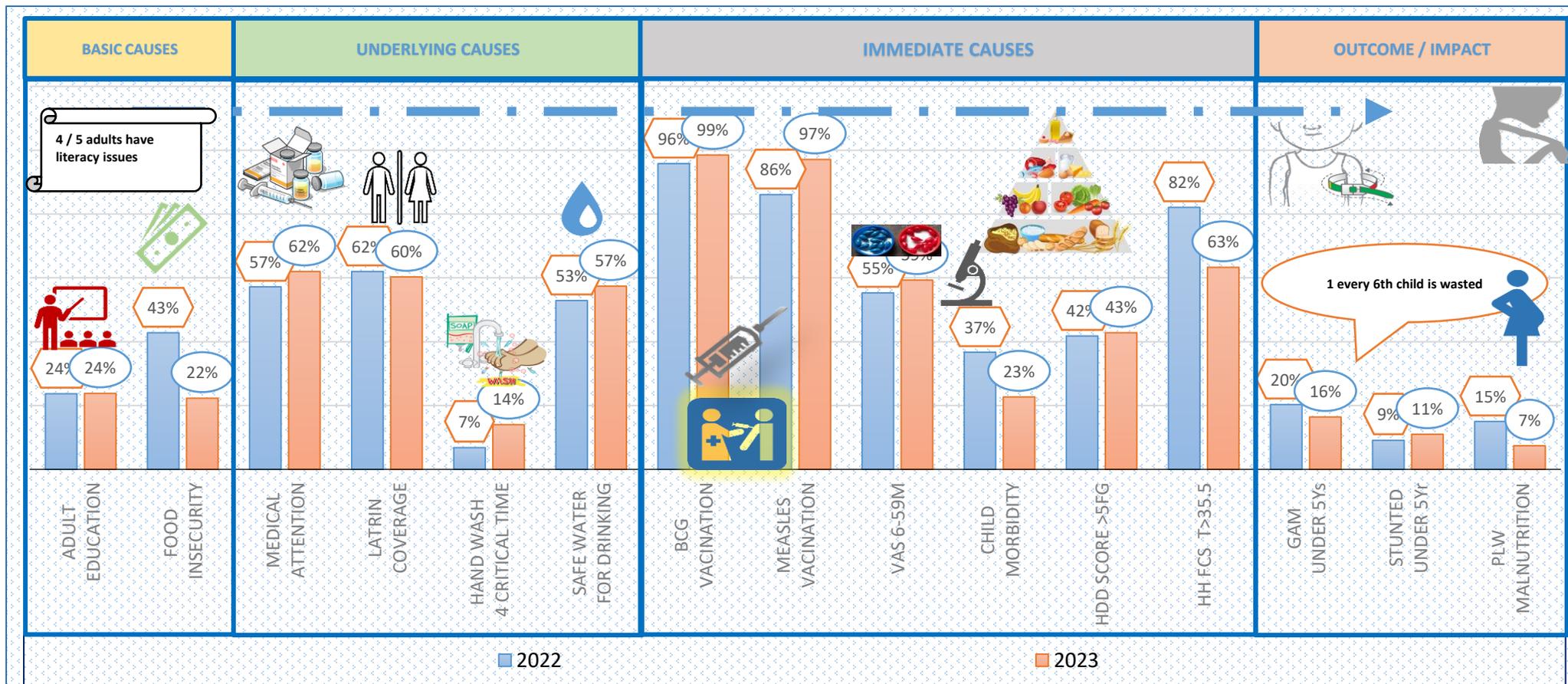


Figure 42: A causal analysis for malnutrition in Garissa County



			0	1	3	5	0 (0.08)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	1 (-0.32)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	0 (p=0.066)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	6 %

The overall score of this survey is 6 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 46 %

Table 30: Sampled Clusters

Geographical unit	Population size	Cluster
BALAMBALA JUNCTION	240	1
DANYERE TOWNSHIP	4140	RC
MAGATHOW	312	2
ABBAYQALA	286	RC
BELIF DAM	70	3
BULA LABI	470	4
BULLA ABAQ	211	5
BULLA BARRIER	3113	6
BULLA GARASH	1947	7
BULLA HUT	472	8
BULLA MADINA	915	9
BULLA SAFARICOM	2123	10
CRUSH	1179	11
DAIDAI 2	5278	12
DARYOLE	406	13
HUD	1254	14
MANYAGABO	2200	15
SARIRA	1900	16
WELDONI	2206	17
DEKAHARJA	1200	18
MANSABUBU CENTRE	1641	19
BALICH TOWNSHIP	660	RC
BULLA GESTO	4800	20
BULLA MADINA	6000	21
BULLA PUNDA	6600	22
BULLA SHEIKH	6600	23
DEKABUR	3900	24
GARISSA TOWNSHIP	10200	25
KAMBI MOTO	600	26
NUNOW	504	27
SANKURI	3060	28
TAWAKAL	4350	29
BULLA BALDOS	304	RC
BULLA RIIG (GESIREB)	136	30
ELKAMBERE CENTRE A	3245	31
GELMAL	245	32
HULUGHO TOWNSHIP A	12642	33
HULUGHO TOWNSHIP B	7124	34
KORAHINDI	4115	35
MARRE CENTRE	11647	RC



MUHUMED JIBAS	775	36
WAKAB MARER	277	37
BULLA GELODAN	50	38
BULLA SCHOOL	225	39
MOHAMMED DAHIR A	3447	40
BARKUKE	3900	41
ELDERE TOWN SHIP	7200	42
HAGARJERER	1080	43
LABILE	1620	44
SHANTABAQ TOWNSHIP	3420	45