WAJIR COUNTY SMART SURVEY REPORT

JUNE 2019

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Save the Children.

Acknowledgements

This survey was successfully carried out with the support and participation of our various partners. The department of Medical services, Public Health and Sanitation is grateful to the County government of Wajir for funding this survey for the second year in row, this demonstrates not only the commitment but also the investment in data for decision making.

We acknowledge not only the financial support from UNICEF Kenya Country Office through PCA with Save the Children but also technical support during training, data collection and data analysis.

I applaud County Nutrition Coordinator, Nuria Ibrahim for taking the lead in ensuring the whole process went on smoothly and presentation of methodology and results at NIWG. Tom Hongo and Edward Kutondo (UNICEF KCO), Oliver Kamar – Nutrition support officer, Mark Gathii (NIWG) and Hassan Abdillle (SCI) Special thanks to: -

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- Survey team (supervisors, team leaders, enumerators and drivers) for your tireless efforts to ensure that the survey was conducted professionally and on time.
- Village guides and Community members who willingly participated in the survey and provided the information needed.

The data generated will go a long way to inform decision making in Wajir County for improved health and nutrition status of women of reproductive age and children.

Dr. Dahir Somow
County Director of Health
Wajir County

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Acronyms

ARI	Acute Respiratory Infections
BCG	Bacillus Calmette Guerin
ENA	Emergency Nutrition Assessment
FEWSNET	Famine Early Warning Network
GAM	Global Acute Malnutrition
HAZ	Height for Age Z-score
ITN	Insecticide Treated Nets
IVM	Integrated Vector Management
KNBS	Kenya National Bureau of Statistics
LLINS	Long Lasting Insecticidal Nets
MUAC	Mid Upper Arm Circumference
MDD-W	Minimum Dietary Diversity- Women
ODK	Open Data Kit
OPV	Oral Polio Vaccine
SAM	Severe Acute Malnutrition
SMART	Standardized monitoring Assessment on Relief and Transition
SPSS	Statistical Package for Social Science
UNICEF	United Nation Children's Fund
WASH	Water Hygiene and Sanitation
WAZ	Weight for Age Z-score
WHZ	Weight for Height Z- score

Executive Summary

Introduction

Wajir County Department of Health Services with the support of UNICEF and Save the Children other partners carried out a SMART Survey covering the entire County.

The purpose of this survey was to find out the nutrition situation in Wajir County. The results will form a solid basis for planning appropriate future interventions. The main objective of the survey was to determine the prevalence of malnutrition among the children aged 6- 59 months old and women of reproductive age in Wajir County. Specifically, the survey aimed at determining the nutrition status of children 6 to 59 months, the nutritional status of women of reproductive age (15-49 years) based on maternal mid upper arm circumference, immunization coverage; measles (9-59 months), OPV1/3 and Vitamin A for children aged 6-59months. The survey also was meant to determine deworming coverage for children aged 12 to 59 months, the prevalence of common illnesses as well to assess maternal and child health care practices, water, sanitation and hygiene practices and prevailing situation of household food security in the County.

Methodology

The survey was cross sectional and descriptive by design. Standardized Monitoring and Assessment on Relief and Transition methodology was adopted in the study. Two stage sampling was used in the survey. The first stage involved random selection of clusters from the sampling frame based on probability proportion to population size (PPS). Emergency Nutrition Assessment (ENA) for Standardized Monitoring for Assessment for Relief and Transition (SMART) July 2015 was used in calculation of sample size. Household was used as the sampling unit in the second stage sampling or basic sampling unit. The sample size obtained using ENA software (689 households) was used as the survey sample size. Based on logistical factors, it was possible to visit 16 households per cluster per day translating to a minimum of 44 clusters. Simple random sampling was used in household selection. Data Collection was done for 6 days by 8 teams. For the data collection purpose, ODK questionnaire was used. Every team was composed of 3 members. The team was trained for 4 days prior to field work. On the 3rd day standardization test was done. The purpose of standardization test was to test the team's accuracy and precision in taking anthropometric measurements. The data collection tool was pilot tested in a cluster not selected to be part of the survey. Anthropometric data processing was done using ENA software version 2015 (July). The ENA software generated weight-for-height, height-for-age and weight-for-age Z scores to classify them into various nutritional status categories using WHO standards and cut-off points. All the other quantitative data were analyzed in Ms. Excel and the SPSS (Version 20) computer package. Table 1 below summarizes the survey results.

Table 1: Result Summary table

Result Summary		
Indicator	N	% (at 95% C.I.)
Prevalence of GAM based on WHZ (-2SD) and/or Edema (DEFF= 1.34)	810	16.4 % (13.6 - 19.7 95% C.I.)
Prevalence of SAM based on WHZ (<3SD) and or oedema	810	2.7 % (1.8 - 4.1 95% C.I.)
Prevalence of GAM based on MUAC <125mm and or edema	816	4.8 % (3.2 - 7.0 95% C.I.)
Prevalence of SAM based on MUAC <115mm and or oedema	816	1.5 % (0.9 - 2.4 95% C.I.)
Prevalence of stunting based on HFA (<-2SD)	796	9.7 % (7.2 - 12.9 95% C.I.)
Prevalence of Severe stunting based on HFA (<-3SD)	796	0.9 % (0.3 - 2.4 95% C.I.)
Prevalence of underweight based on WFA (<-2 z score	812	13.7 % (11.0 - 16.9 95% C.I.)
Prevalence of severe underweight based on WFA (<-3 z score)	812	2.0 % (1.1 - 3.4 95% C.I.)
Child Morbidity (2 weeks retrospective morbidity		
Indicator	N	Percent
Morbidity in the past 2 weeks	164	20.0%
Fever with chills	70	42.7%
ARI	93	56.7
Watery diarrhea	50	30.5%

Analyzing the nutrition situation in Wajir County using the UNICEF conceptual framework on the causes of malnutrition, the survey revealed the following; Overall the acute nutrition status is at the serious phase (IPC phase 4) with GAM of 16.4% (13.6- 19.7, 95% CI). The stunting levels however remained low at 9.7%.

Morbidity could be partially attributed to the current status of acute malnutrition since it remained relatively high at 20.7%. The main diseases that affected children included; acute respiratory infections. Among those children who were sick during the survey period, 56.7% of them suffered from ARI, while 42.7% suffered from watery diarrhea and 30.5% from fever with chills. There were reported incidences of cholera cases during the survey period which could have been the reason for high incidences of diarrhea. On dietary intake, taking women minimum dietary diversity as a proxy indicator for dietary intake, more than three quarters of the women of reproductive age (77.4%) did not meet the minimum dietary intake based on the 24-hour food recall. This ultimately would mean even children do not meet their minimum dietary needs. At the household level; 18.8% of the households consumed less than 3 food groups while 52.2% consumed 3 to 5 food groups. The main food groups consumed were cereals, oils and fats, sugars, milk and milk products with very minimal intake of protein-based foods such as meats, eggs and fish and also fruits. In terms of food consumption score 17.6% of the household had their FCS classified as poor or borderline this implies that they did not consume staples and vegetables on daily basis and never consumed protein rich foods such as meats and dairies. Under this category (poor) there is 9.2%. On the borderline are the households that consume staples and vegetables on daily basis accompanied by oils and pulses few times a week. Almost a third of household surveyed (30.6%) fall under this category. As far as coping strategies are concern, 20.7% of all household can be classified as food insecure as they within 1 week prior to the survey did not have enough foods or money to buy food. This forced majority of them to borrow food and rely on less preferred or less expensive foods as well as limit their portion sizes. Overall the weighted CSI was 14.82. From the analysis dietary intake could be a contributory factor to the current critical status of malnutrition. In terms of underlying causes (insufficient health services and unhealthy environment), Wajir County experienced low coverage of vitamin A and deworming with only 65.5% of children 6 to 11 months being supplemented with vitamin A. while 56.3% of children 12 to 59 months were supplemented with vitamin A, only 31.0% were supplemented twice. Equally, the proportion of children dewormed are low with 36.9% of children 12 to 69 months being dewormed once and 17.4% who were dewormed once as recommended. Although the Proportion of children immunized with most of the antigens surpassed 80%, a relatively low percentage (61.1%) were immunized with the second dose of measles (at 18 months) which is a health concern.

The water hygiene and Sanitation situation in the County is also an area of concern. Some of the notable issues of concern included the trekking distances to water sources where more than 40% of the households between 15 minutes to more than 2 hours to the current water source limiting the time available for child care.

Chapter One: Introduction

1.1. Geographic description of survey area

Wajir County is located in the North Eastern Region of the Republic of Kenya. The County borders the Republic of Somalia to the east, the Federal Democratic of Ethiopia to the north, Mandera County to the north eastern side, Marsabit and Isiolo Counties to the west and Garissa County to the south. Administratively, Wajir County is sub-divided in to 6 sub counties namely; Wajir North, Wajir West, Eldas, Wajir East, Tarbaj and Wajir South Sub Counties and further in to 30 Wards.

1.2. Description of the population

Wajir County had an estimated population of approximately 661, 924 people as at 2009 (KNBS 2009). The projected county population as at 2019 is 852, 963 people. According to the reference census, the male: female ratio is 1:0.9. The estimated under-five population proportion is 12.4 percent. It is estimated that a quarter of the population resides in the Counties urban population (Wajir CIDP 2018- 2022). Wajir East constituency which hosts the County headquarters is the most densely populated with a population density of 37 people per square kilometer. This can be attributed to vibrant economy in the town because of the large businesses, employment opportunities and informal sector income generating activities are concentrated. Wajir South Constituency has the lowest population density of 8 people per square kilometer.

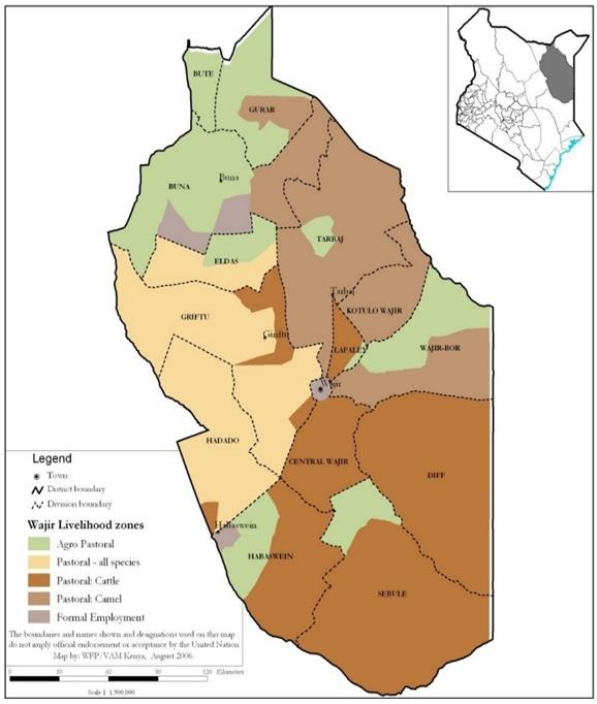

Figure 1: Wajir livelihood map

According to 2011, FEWSNET, Kenya livehood zones, Wajir County lies in KE07 (North Eastern Agro pastoral zone), KE09(North Eastern Pastoral zone) and KE10 (Eastern Pastoral) livelihood zones. The County receives approximately 300- 600 mm rainfall annually with frequent drought mainly in July- September. Figure 1 below show the livelihood map of Wajir County

1.3. Survey Objectives

1.3.1. Main Objective

The main objective of the survey was to determine the prevalence of malnutrition among the children aged 6-59 months old, and women of reproductive age in Wajir County.

1.3.2. Specific Objectives

The specific objectives of the survey were;

- To determine the nutrition status of children 6 to 59 months
- To determine the nutritional status of women of reproductive age (15-49) years based on maternal mid upper arm circumference (MUAC).
- To determine immunization coverage; measles (9-59 months), OPV1/3 and Vitamin A for children aged 6-59months.
- To determine deworming coverage for children aged 12 to 59 months.
- To determine the prevalence of common illnesses (diarrhea, measles and ARI).
- To assess maternal and child health care practices.
- To assess water, sanitation and hygiene practices.
- To assess the prevailing situation of household food security
- To formulate appropriate recommendations to address the identified health and nutrition gaps

Chapter Two: Methodology

2.1. Survey Design

The survey was cross sectional and descriptive by design. Standardized Monitoring and Assessment on Relief and Transition methodology was adopted in the study. The study applied quantitative approach.

2.2. Study Population

The study population included the entire population of 6 sub counties of Wajir County. For anthropometric, morbidity, immunisation, vitamin A supplementation, children 6 to 59 months were the main subjects while women of reproductive age were targeted in anthropometric measurements, maternal nutrition as well as MDD-W. WASH and food security targeted all households. The main respondents were caregivers of children 6- 59 months. Villages (clusters/sampling units) in the County which were accessible, secure or not deserted were included in the primary sampling frame.

2.3. Sampling Methods and Sample Size Calculation

Two stage sampling was used for the entire survey. The first stage involved random selection of clusters (Sub locations since the updated list of villages with their respective population was not available) from the sampling frame based on probability proportion to population size (PPS). Villages were randomly sampled (Stage 2) from the respective sub locations that had been selected in stage 1. Emergency Nutrition Assessment (ENA) for Standardized Monitoring for Assessment for Relief and Transition (SMART) July 2015 was used in calculation of sample size. Table 2 below illustrates the values used in ENA for sample size calculation and the rationale of using each value. Segmentation was done where necessary in villages that had more than 150 households or those that households were dispersed.

Table 2: Sample size calculation

Sample size calculation parameter	Value	Rationale
Estimated Prevalence (GAM)	14.7%	Based on contextual data (DHIS, SRA, NDMA EWS) and mass screening data the situation is projected to deteriorate. thus, using Weighted SMART survey results of 2018, **12.20 %** (10.0 - 14.7 95% C.I.), upper CI of 14.7% will be used
Desired Precision	3.8%	From SMART global project rule of thumb based on the estimated Prevalence
Design Effect	1.5	No value from previous survey, using the rule of the thumb for SMART survey
Average Household size	7	KNBS 2009 Census
Non Response rate	3.0%	Based on 2011 SMART Survey Results
Proportion children under 5 years	12.94%	Data from DHIS, HSSP
Estimated Children Sample size	545	
Estimated Households Sample Size	689	

2.4. Sampling Methods

2.4.1. First Stage Sampling

The first stage involved selection of clusters from a sampling frame. A list of villages with their respective populations was used. The sample size obtained using ENA software (689 households) was used as the survey sample size. Based on logistical factors (time taken to arrive from the clusters, introductions, sampling, inter household movement, lunch and time back to the base), it was possible to interview 15 households per cluster per day translating to a minimum of 44 clusters. The list of villages provided was entered in ENA software where 44 clusters were sampled. Since village was the smallest sampling unit, one or two cluster were randomly sampled from the respective villages as selected by ENA software in respect to PPS principle.

2.4.2. Second Stage Sampling

Simple random sampling was used in household selection. Led by a village guide, the survey teams developed a sampling frame in each of the village sampled during the 1st stage sampling in case such a list never existed. From the list the survey teams randomly selected 16 households using Random UX android app, where they administered household questionnaire (in all households) and anthropometric, morbidity and immunization questionnaire in household with children aged 6 to 59 months.

2.5. Data Collection Procedure

Data Collection was done for 6 days (from 18th June to 23rd June 2018) by 8 teams. Every team was composed of 3 members who included 1 team leader and 2 Enumerators. One community guide appointed by the village leader guided the survey team in households' identification. All survey teams were trained for 4 days at a central place prior to field work. The teams were trained on, the survey objectives, methodology, malnutrition diagnosis, anthropometric measurements, sampling methods, data collection tools, ODK data collection process as well as interviewing skills. A role play was included in the training to give the teams practical skills on data collection. On the 3rd day standardization test was done. The purpose of standardization test was to test the team's accuracy and precision in taking anthropometric measurements. The data collection tool was pilot tested in a cluster not selected to be part of the survey. Additionally, during the piloting the enumerators were required to undertake the entire process of the survey which included household selection, taking anthropometric measurements and also filling of the data collection forms. The overall coordinator of the survey was Wajir County Nutrition Coordinator supported by UNICEF-nutrition support officer, Save the Children project manager and the Nutrition Information Technical Working Group representative. The supervisor's main responsibilities were to ensure that the methodology was followed, measurements were taken appropriately and tackling any technical issue which came up during data collection. On daily basis plausibility checks were done and gaps noted were communicated to all the teams before going to the field every morning.

2.6. Data Collection Tools and Variables

For the data collection purpose, electronic questionnaire was used. Each questionnaire consisted of identification information, household information, demographic information, anthropometric information, morbidity, immunization, maternal, WASH and food security data. Household, demographic and food security information were collected in all the sampled households. The rest of the data was collected from only households with children aged 6 to 59 months.

2.7. Data Analysis

Anthropometric data processing was done using ENA software version 2015 (July). World Health Organization Growth Standards (WHO-GS) data cleaning and flagging procedures was used to identify outliers which would enable data cleaning as well as exclusion of discordant measurements from anthropometric analysis. The ENA software generated weight-for-height, height-for-age and weight-forage z scores to classify them into various nutritional status categories using WHO standards and cut-off points and exported to SPSS for further analysis. All the other quantitative data were analyzed in Ms. Excel and the SPSS (Version 20) computer package.

2.8. Data Quality Control Measures

To ensure data collected was valid and reliable for decision making, a number of measures were put in place. They included;

- Training: This was carried out for 4 days for all survey participants, the training dwelt on SMART methodology, survey objectives, interviewing techniques and data collection tools.
- Ensuring all anthropometric equipment's were functional and standardized. On daily basis each team was required to calibrate the tools.
- During the training exercise, standardization test was done; in addition, piloting of tools was done to ensure all the information was collected with uniformity.
- Conducting a review of data collection tools during training and after the pilot test.
- All the survey teams were assigned a supervisor during data collection. The anthropometric data collected was entered daily on ENA software and plausibility check was run. Any issues noted were communicated to the teams before they proceeded to the field the following day.
- Teams were followed up by the supervisors to ensure all errors were rectified on time. More attention was given to the teams with notable weaknesses.
- Adequate logistical planning beforehand and ensuring the assigned households per clusters were be comfortably surveyed.

Chapter Three: Results

3.1. Survey Coverage

The survey involved collection of information from 819 children aged 6 to 59 months in 686 households. Eighteen households sampled did not participate in the survey as they were found absent upon repeat visits. The non-response rate was therefore 2.6%. Based on household data, where information of 3188 household members were collected in 686 households The average household size was 4.6. Out of the total household members, 28.1% were children under five years, 32.5% were children aged 5 to 18 year while 39.4% were adults. Table 2 below summarizes the number of households, children and clusters reached compared to the target.

Table 3: Survey Coverage

	Target as per protocol		**Actual Reached (Survey)**				
No of HHds	No of children	No of Clusters	HHDs	Clusters	Children reached	HHD Members	Response rate (%)
704	545	44	686	44	819	3188	97.4

3.2. Residency and Marital Status

Majority of the households (84.4%) were permanent residents while 15.2% were pastoralist residents during the Survey period. Almost all respondents (89.10%) were married with 6.4% of them being windowed and 2.2% being divorced.

3.3. School enrollment for children and highest education level for adults

Overall 60.9% of children aged 3 to 18 years were enrolled in school. Among those who did not attend school, majority of them indicated that they did not do so due to their parents' perceptions that the children had not attained the school going age (55.5%) and 15.5% were attending informal education mainly duksi. Other reasons mentioned are as shown in table 4 below.

Table 4: Main reason for school non-enrollment

Reason for school not enrollment	Frequency	Valid Percent
Chronic Sickness	2	0.4%
Family labor responsibilities	54	10.0%
Working outside home	4	0.7%

lack of fees or money to meet other costs	6	1.1%
Household doesn't see value of schooling	59	10.9%
No food in the schools	4	0.7%
Migrated/ moved from school area	3	0.6%
No school Near by	3	0.6%
Married	7	1.3%
Pregnant / Taking care of her own child	2	0.4%
Others (specify)	397	73.4%
Total	541	100

Table 5: Others specific reasons

	Frequency	Valid Percent
Too Young	300	76%
Informal education- Attending Duksi	85	21%
Family issues	8	2%
Disability	2	1%
Sick	2	1%

As far as the highest education level attained by adults is concerned, 70.0% of the adults had formal education with 13.0% having attended religious school (Madarasa/Duksi), 8% secondary education while 4% had attained primary school as the highest education level in figure 2 below.

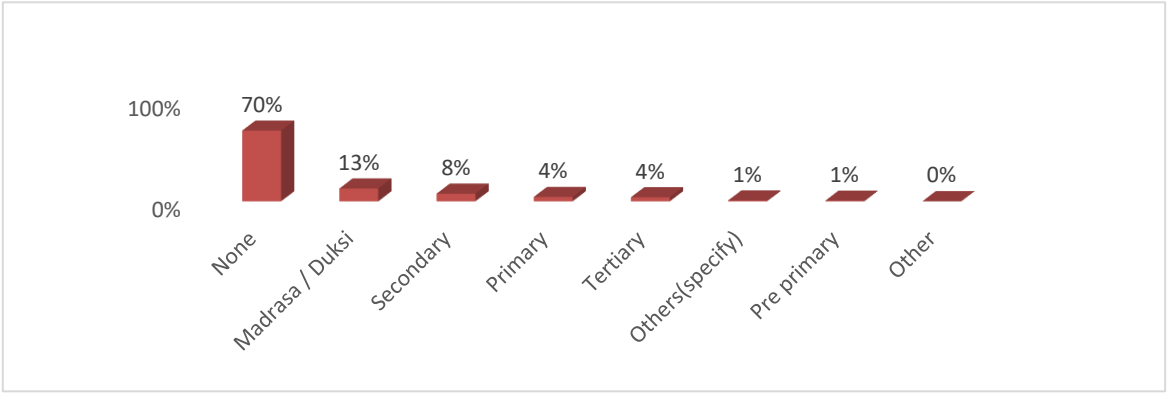

Figure 2: Highest education level for adults

3.4. Main Household head occupation and Income Sources

The main occupation of most household heads was livestock herding (53.4%) and waged or casual labor at (20.8%) as illustrated in table 6.

Table 6: Main livelihood for household head

Main Livelihood	Frequency	Percentage
Livestock herding	366	53.4%
Waged labour (Casual)	143	20.8%
Petty trade	83	12.1%
Employed (salaried)	47	6.9%
Firewood/charcoal	20	2.9%
Others (Specify)	14	2.0%
Merchant/trader	8	1.2%
Crop farming/Own farm labour	4	0.6%
Fishing	1	0.1%
Total	686	100.0%

Sale of livestock and casual labour formed bulk of income source for most households with 37.8% and 20.8% respectively implying that the current drought situation might have a significant impact on the households' income sources and eventually households' food insecurity as illustrated in figure 3 below.

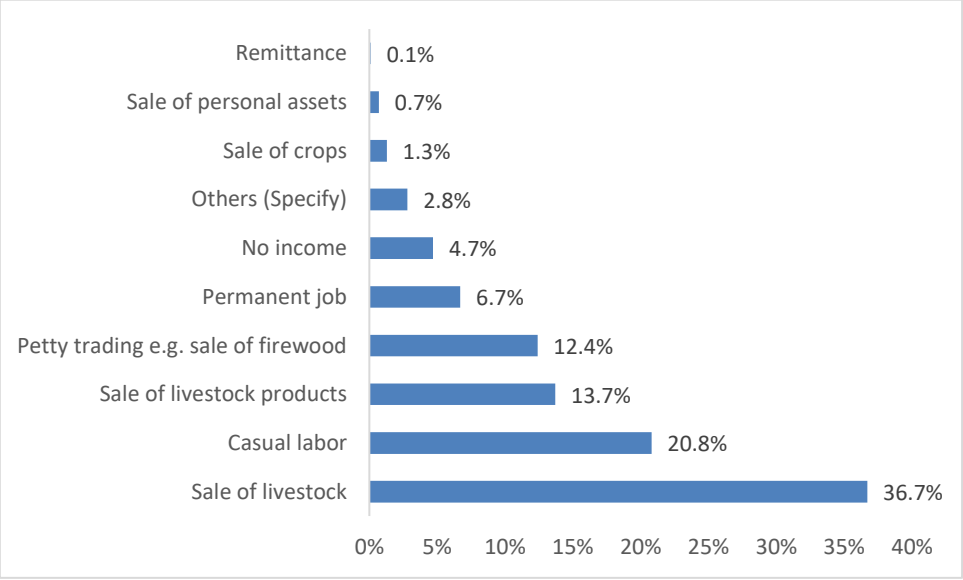

Figure 3: Income Sources

3.5. Mosquito net ownership and Utilization

According to Kenya Malaria strategy 2009- 2018, Malaria is a major public health concern and fighting the disease is a National priority requiring a focused, comprehensive and consistent approach because three quarters of the population are at risk of malaria. Children under the age of five, pregnant women, the chronically ill and immune-compromised persons, such as those living with HIV and AIDS, are considered to be at highest risk. Wajir County is classified as a low malaria risk zone (0- 1% risk). The first objective of the National Malaria

Strategy is to have at least 80% of people living in Malaria risk zones using appropriate interventions by 2018. These interventions include vector control through LLINS, IRS and IVM. LLINs are distributed through mass campaigns every three years in endemic and epidemic-prone areas through ANC for pregnant women; child welfare clinics for children under one year and retail points that sell subsidized or full-price nets.

Overall 82.4% of the households owned at least one mosquito net. In terms of utilization, 79.6% of children under-five, 65.9% of children aged 5 – 18 years and 66.7% of adults slept under mosquito net a day prior to the survey.

3.6. Children Nutrition Status

3.6.1. Children distribution (Age and Sex)

A total of 816 children under age of 6 to 59 months were assessed during the survey. They included 443 boys (54.3%) and 373 girls (45.7%) representing a sex ratio of 1.19 (p= 0.014) meaning that, overall boys were over represented compared to girls. Age ratio of 6-29 months to 30-59 months: 0.9 (The value should be around 0.85). P-value = 0.121 (as expected). Table 7 below is a summary of sex distribution of boys and girls assessed. Figure 4 illustrates the age sex distribution of children. Under five nutrition status was assessed using anthropometric measurements. This included weight, height and MUAC. Analysis was based on 2006 WHO reference standards.

Table 7: Sex and age distribution of children 6 – 59m

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	114	54.0	97	46.0	211	25.9	1.2
18-29	97	52.2	89	47.8	186	22.8	1.1
30-41	112	57.7	82	42.3	194	23.8	1.4
42-53	89	54.9	73	45.1	162	19.9	1.2
54-59	31	49.2	32	50.8	63	7.7	1.0
Total	443	54.3	373	45.7	816	100.0	1.2

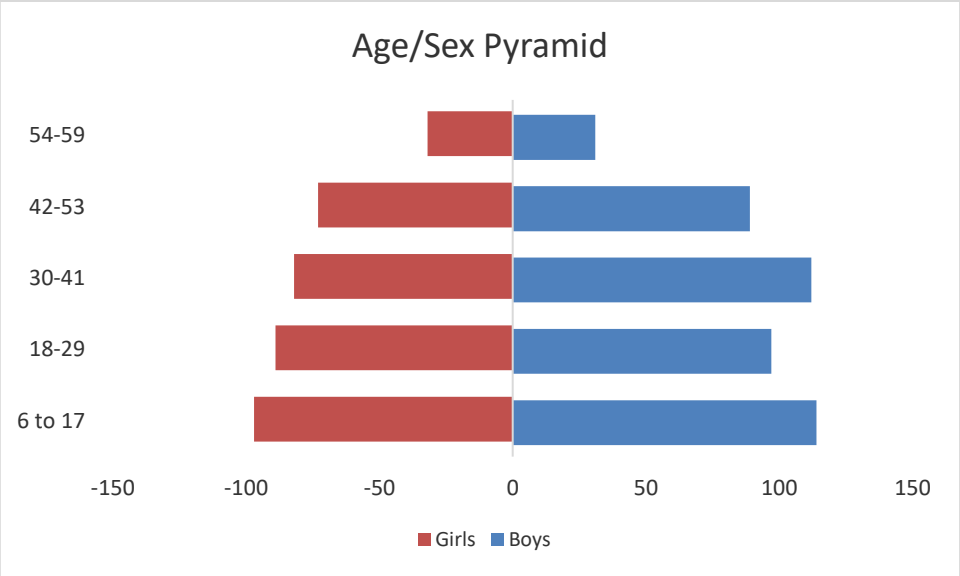

Figure 4: Age sex pyramid for children 6- 59m

3.6.2. Prevalence of Acute Malnutrition (Wasting)

According to UNICEF nutrition glossary (2012), malnutrition is defined a state in which the body does not have enough of the required nutrients (under nutrition) or has excess of the required nutrients (over nutrition). Acute malnutrition is defined as low weight for height in reference to a standard child of a given age based on WHO growth standards. This form of malnutrition reflects the current form of malnutrition. Acute malnutrition can further be categorized as severe acute malnutrition and moderate acute malnutrition. Severe acute malnutrition is defined as weight for height < -3 standard deviation in comparison to a reference child of the same age. It also includes those children with bilateral oedema as well as those with MUAC less than 11.5cm. Moderate Acute Malnutrition on the other hand is defined as weight for height >= -3 and <-2 standard deviation in comparison to a reference child of the same age and sex, but also include those children with MUAC < 12.5 cm and >= 11.5 cm. The Sum of all children with moderate and severe acute malnutrition is referred as global acute malnutrition (GAM).

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

Analysis of acute malnutrition included 810 (439 boys and 371 girls) children aged 6 to 59 months with exclusion of 6 children who were flagged off as outliers. From the assessment the GAM rate for Wajir County was 16.4% (13.6 – 19.7, 95% C.I.) while SAM rate was 2.7% (1.8- 4.1, 95% C.I.) as indicated in table 7 below. The prevalence of acute malnutrition by oedema was 0.0%.

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Table 3.2: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

Table 8: prevalence of acute malnutrition based on weight-for-height z-score (and/or oedema) and by sex

	All n = 810	**Boys** n = 439	**Girls** n = 371
Prevalence of global malnutrition **(<-2 z-score and/or oedema)**	(133) 16.4 % (13.6 - 19.7 95% C.I.)	(62) 14.1 % (10.8 - 18.2 95% C.I.)	(71) 19.1 % (14.6 - 24.6 95% C.I.)
Prevalence of moderate malnutrition **(<-2 z-score and >=-3 z-score, no oedema)**	(111) 13.7 % (11.2 - 16.7 95% C.I.)	(52) 11.8 % (8.9 - 15.6 95% C.I.)	(59) 15.9 % (12.0 - 20.9 95% C.I.)
Prevalence of severe malnutrition **(<-3 z-score and/or oedema)**	(22) 2.7 % (1.8 - 4.1 95% C.I.)	(10) 2.3 % (1.3 - 4.0 95% C.I.)	(12) 3.2 % (2.0 - 5.3 95% C.I.)

The prevalence of oedema is 0.0 %

Figure 5 below is a graphical representation of distribution of weight for height of children surveyed in relation to the WHO standard curve (reference children). The curve slightly shifts to the left with a mean of -0.68 (SD ±1.05) an indication of under nutrition in comparison to reference children.

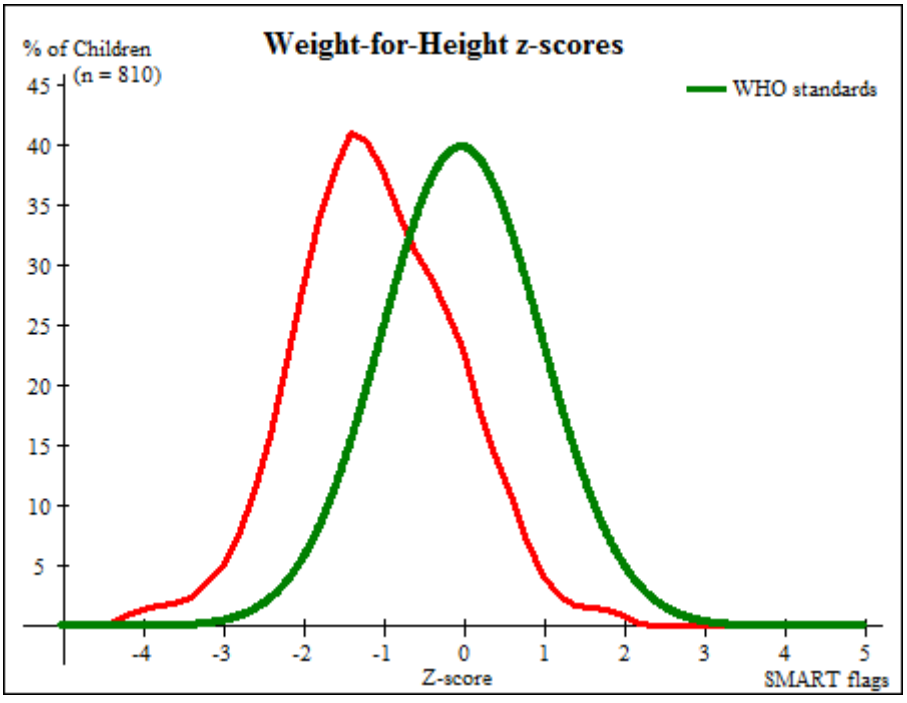


Figure 5: Graphical representation of WHZ for children assessed compared to WHO (2006) standard

Analysis of Acute Malnutrition by Age

Further analysis was done on prevalence of acute malnutrition based on sex and age as indicated in table 9 below. From the analysis older children (30 to 59 months) were more affected by severe and moderate malnutrition as compared to younger children (6 to 29 months).

Table 9: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or edema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	208	10	4.8	19	9.1	179	86.1	0	0.0
18-29	186	2	1.1	17	9.1	167	89.8	0	0.0
30-41	193	2	1.0	26	13.5	165	85.5	0	0.0
42-53	160	6	3.8	33	20.6	121	75.6	0	0.0
54-59	63	2	3.2	16	25.4	45	71.4	0	0.0
Total	810	22	2.7	111	13.7	677	83.6	0	0.0

Analysis of Acute Malnutrition based on Presence of Edema

Presence of bilateral edema is a sign of severe acute malnutrition. Analysis was therefore done based on this indicator. As shown in table 10 below, no edema case was recorded among the children surveyed.

Table 10: Prevalence of Acute Malnutrition based on presence of oedema

	<-3 z-score	**>=-3 z-score**
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 23 (2.8 %)	Not severely malnourished No. 793 (97.2 %)

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

Malnutrition can also be diagnosed using MUAC. MUAC is a good indicator of muscle mass and can be used as a proxy of wasting (United Nation System Standing Committee on Nutrition). It is also a very good predictor of the risk of death. Very low MUAC (< 115 mm for children 6 to 59 months), is considered a high mortality risk and is a criteria for admission of outpatient therapeutic or in patient therapeutic program (when accompanied with complications) for treatment of severe acute malnutrition. A MUAC reading of 115 mm to <125 mm is considered as moderate malnutrition. Analysis of the nutrition status for children aged 6 to 59 months based

on MUAC and or presence of oedema resulted to GAM of 4.8% (3.2 -7.0, 95% C.I.) and SAM of 1.5% (0.9-2.4, 95% C.I.) as indicated in table 11 below. Girls were more affected by malnutrition compared to boys.

Table 11: Prevalence of Acute Malnutrition by MUAC

	All n = 816	**Boys** n = 443	**Girls** n = 373
Prevalence of global malnutrition (< 125 mm and/or oedema)	(39) **4.8 %** (3.2 - 7.0 95% C.I.)	(11) **2.5 %** (1.4 - 4.5 95% C.I.)	(28) **7.5 %** (4.5 - 12.2 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(27) **3.3 %** (2.0 - 5.3 95% C.I.)	(6) **1.4 %** (0.6 - 2.9 95% C.I.)	(21) **5.6 %** (3.0 - 10.2 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(12) **1.5 %** (0.9 - 2.4 95% C.I.)	(5) **1.1 %** (0.5 - 2.7 95% C.I.)	(7) **1.9 %** (0.9 - 3.8 95% C.I.)

3.6.3. Prevalence of underweight Based on WAZ

Underweight is defined as low weight for age relative to National Centre for Health and Statistics or World Health Organization reference median. In this survey, the later was used. Children with weight for age less than -2 SD in relation to a reference children are classified as underweight while those with less than -3 SD are classified as severe underweight. As indicated in table 9 below, the prevalence of underweight among children aged 6 to 59 months in Wajir County was 13.7% (11.0– 16.9, 95% C.I.) while severe underweight was 2.0% (1.1- 3.4, 95% C.I).

Table 12: Prevalence of Underweight based on Weight for Age Z-score and by sex

	All n = 812	**Boys** n = 440	**Girls** n = 372
Prevalence of underweight (<-2 z-score)	(111) **13.7 %** (11.0 - 16.9 95% C.I.)	(61) **13.9 %** (10.3 - 18.4 95% C.I.)	(50) **13.4 %** (10.1 - 17.7 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(95) **11.7 %** (9.4 - 14.5 95% C.I.)	(50) **11.4 %** (8.4 - 15.3 95% C.I.)	(45) **12.1 %** (8.9 - 16.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(16) **2.0 %** (1.1 - 3.4 95% C.I.)	(11) **2.5 %** (1.2 - 5.0 95% C.I.)	(5) **1.3 %** (0.6 - 3.1 95% C.I.)

3.6.4. Prevalence of Stunting based on HAZ

Stunting is the impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation. Children are defined as stunted if their height-for-age is more than two standard deviations below the WHO Child Growth Standards median (WHO). It is a primary manifestation of malnutrition in early childhood, including malnutrition during fetal development brought on by

the malnourished mother. Thus, it is a measure of chronic malnutrition. Once set-in, it may run from one generation to next.

On a population basis, high levels of stunting are associated with poor socioeconomic conditions and increased risk of frequent and early exposure to adverse conditions such as illness and/or inappropriate feeding practices. Similarly, a decrease in the national stunting rate is usually indicative of improvements in overall socioeconomic conditions of a country.

Analysis of stunting prevalence based on height for age revealed an overall stunting rate of 9.7% (7.2- 12.9, 95% C.I.) and a severe stunting (HFA< -3 in reference to standard population) rate of 0.9% (0.3- 2.4, 95% C.I.) as shown in table 13 below.

Table 13: Prevalence of Stunting based on height for age z-score and by sex

	All n = 796	**Boys** n = 431	**Girls** n = 365
Prevalence of stunting **(<-2 z-score)**	(77) **9.7 %** (7.2 - 12.9 95% C.I.)	(49) **11.4 %** (8.2 - 15.5 95% C.I.)	(28) **7.7 %** (5.0 - 11.6 95% C.I.)
Prevalence of moderate stunting **(<-2 z-score and >=-3 z-score)**	(70) **8.8 %** (6.5 - 11.8 95% C.I.)	(47) **10.9 %** (8.0 - 14.8 95% C.I.)	(23) **6.3 %** (3.9 - 10.1 95% C.I.)
Prevalence of severe stunting **(<-3 z-score)**	(7) **0.9 %** (0.3 - 2.4 95% C.I.)	(2) **0.5 %** (0.1 - 3.5 95% C.I.)	(5) **1.4 %** (0.6 - 3.3 95% C.I.)

3.6.5. Mean z-scores, Design Effects and excluded subjects

The table below summarises all the three indices as assessed in the survey. There were a total of 816 children in the survey. For each of the index (WHZ, WAZ, and HAZ), information is provided on the number of children used in the final analysis. The table also shows the z-scores which were not available as well as the ones out of range. Considering the design effect, there was homogeneity in the distribution of malnutrition by WHZ, with a significant homogeneity for WHA and WAZ.

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	810	-1.08±0.99	1.34	0	6
Weight-for-Age	812	-1.05±0.92	1.47	0	4
Height-for-Age	796	-0.65±1.02	1.80	0	20

* contains for WHZ and WAZ the children with edema.

3.7. Child Morbidity and Health Seeking

3.7.1. Prevalence of Childhood Morbidity

Based on the UNICEF conceptual framework of the causes of malnutrition, disease is categorized as one immediate cause alongside inadequate diet. There is a relationship between the two whereby disease may alter food intake while inadequate intake of some key nutrients may lead to infection. Ultimately, they all lead to one outcome; malnutrition.

Assessment was done on the diseases that affected children 6 to 59 months in the past 2 weeks. Caregivers were asked whether their children had been ill in the past 2 weeks prior to the survey date. Those who answered affirmatively were further probed on what illness affected their children and whether and where they sought any assistance when their child/children were ill. Those who indicated that their child/children suffered from watery diarrhea were probed on the kind of treatment that was given to them.

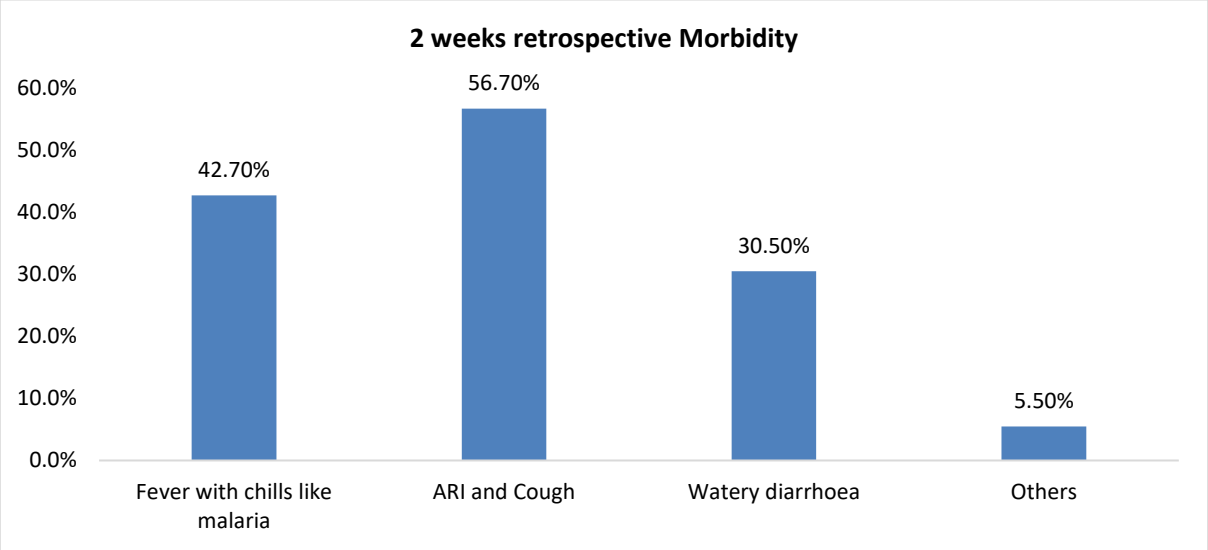
Overall 20% of children aged 6- 59 months reported to have been sick 2 weeks prior to the survey as illustrated in table 14 below.

Table 14: 2 weeks retrospective morbidity

Has the child been sick 2 weeks prior to the survey?	Frequency	Percent	Valid Percent
Yes	164	5.1	20
No	655	20.5	80
Total	819	25.7	100

Among those who reported illness in the past 2 weeks, majority (56.70%) suffered from ARI and Cough. Followed by fever with chills as well as watery diarrhea (30.5%) as shown in the figure 6 below. All children who suffered from diarrhea were treated with zinc, due to combined ORS and zinc.

Figure 6: Specific childhood diseases



3.7.2. Health Seeking Places

Among those caregivers whose children were reportedly sick in the past 2 weeks, 76.2% sought some assistance. Among those who sought assistance, majority did it in a public clinic (81.0%) while 13.4% did it from a private clinic or pharmacy 4.0% did so from shop or kiosk. Overall 94.5% of those who sought assistance did so from appropriate places where they were likely to obtain treatment and proper care such as public clinic, private clinic or pharmacy and mobile clinic as illustrated in figure 7 below.

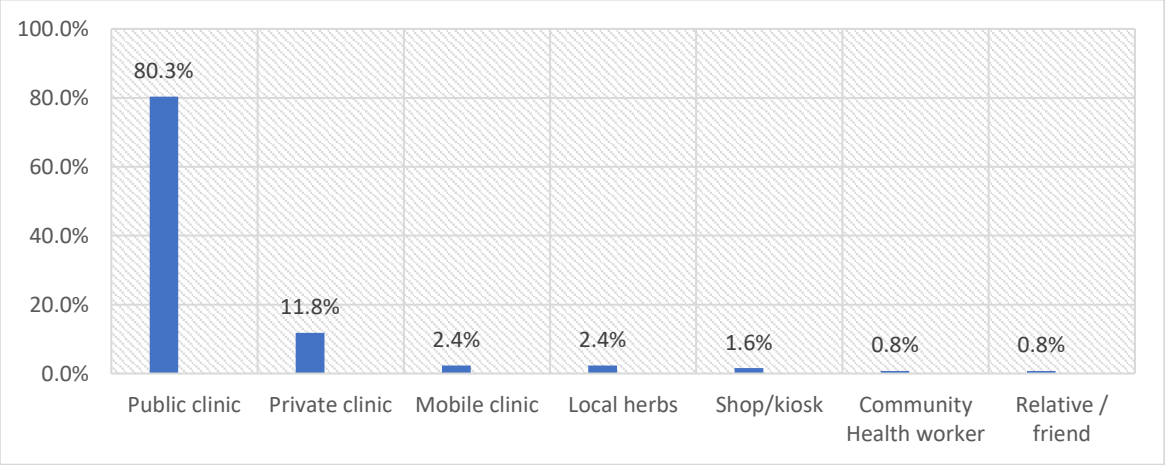


Figure 7: Health seeking places

3.8. Child Immunization, Vitamin A supplementation and Deworming

3.8.1. Child Immunization

As a member of a highly networked global community, it is in the interest of the Government of Kenya that its citizens are adequately protected against as many life- threatening communicable diseases as possible. Vaccination has been shown time and again to be very cost effective in the prevention or amelioration of disease. It is envisioned that where the opportunity arises to provide this protection at the earliest possible age, it should be through the availability of safe, efficacious and relevant vaccines. The Kenya guideline on immunization define a fully immunized child is one who has received all the prescribed antigens and at least one Vitamin A dose under the national immunization schedule before the first birthday.

This survey assessed the coverage of 4 vaccines namely, BCG, OPV1, OPV3, and measles at 9 and 18 months. From this assessment, 96.6% of children were confirmed to have been immunized by BCG based on the presence of a scar. Those who were immunized (combining yes by card and recall) OPV1 and OPV3 were 98.7% and 95.1% respectively while 96.1% had been immunized for measles at 9 months. However, only 61.1% of the eligible children would confirm to have been immunized with the second dose of measles antigen at 18 months as indicated in figure 8 below.

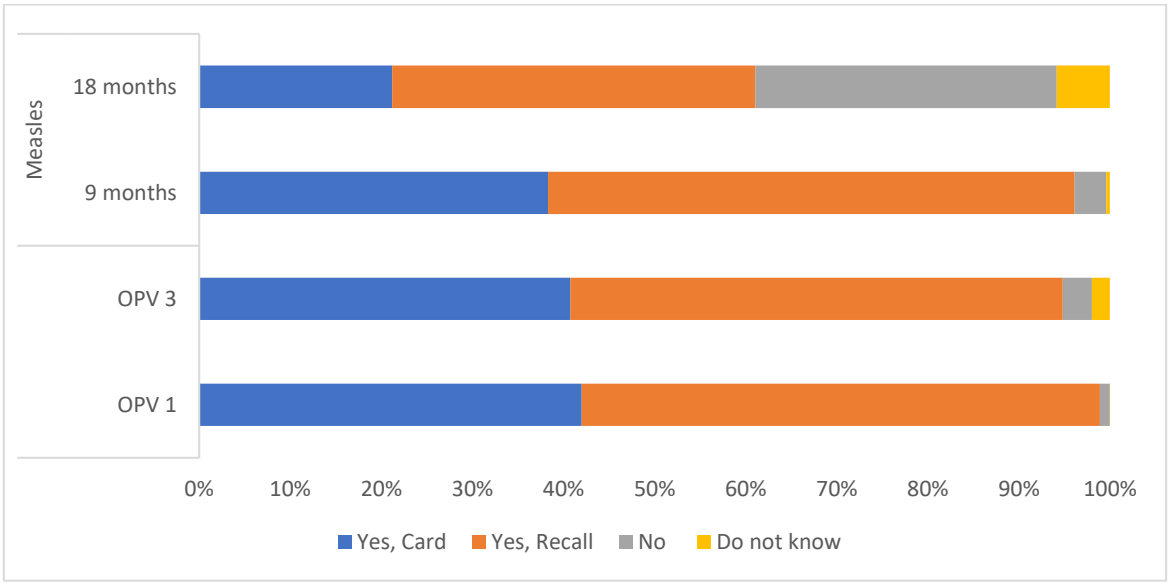


Figure 8: Child Immunization Status

3.8.2. Vitamin A Supplementation and Deworming

Evidence shows that, giving vitamin A supplements to children reduces the rate of mortality and morbidity. Vitamin A reduces mortality risk by 24% (WHO 2011). Guaranteeing high supplementation coverage is critical, not only to eliminating vitamin A deficiency as a public-health problem, but also as a central element of the child survival agenda. Delivery of high-dose supplements remains the principal strategy for controlling vitamin A deficiency. Food-based approaches, such as food fortification and consumption of foods rich in vitamin A,

are becoming increasingly feasible but have not yet ensured coverage levels similar to supplementation in most affected areas (UNICEF 2007).

Poor data management on vitamin A logistics, inadequate social mobilization to improve vitamin uptake and placement of vitamin A at lower level of priority among other interventions has been cited as major challenges in achieving the supplementation targets (MOH Vitamin A supplementation Operational Guidelines for Health Workers 2012).

To assess vitamin A supplementation, parents or caregivers were probed on the number of times the child had received vitamin A in the past one year. Reference was made to the child health card and in case the card was not available recall method was applied. Among those who were supplemented, 54.6% was confirmed by the use of health cards with 45.4% who were confirmed by recall. Analysis of vitamin A supplementation for children aged 6months to 1 year indicates that 65.5% of this age group had been supplemented with vitamin A. Among those aged 12 to 59 months, 37.1% had been supplemented with vitamin A for 2 times in the past one year whereas 62.1% were supplemented at least once. In terms of deworming among children aged 12- 59 months, almost two thirds (36.9%) had been dewormed at least once. However, only a small proportion (16.9%) had been dewormed twice as recommended in the past 12 months, low deworming coverage attributed to stock outs of deworming tablets in most facilities prior to the survey.

3.9. Water Hygiene and Sanitation

3.9.1. Main Water Sources and Accessibility

Everyone has the right to water. This right is recognized in international legal instruments and provides for sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses. An adequate amount of safe water is necessary to prevent deaths due to dehydration, to reduce the risk of water-related disease and to provide for consumption, cooking, and personal and domestic hygienic requirements. According to SPHERE handbook for minimum standards for WASH, the average water use for drinking, cooking and personal hygiene in any household should be at least 15 liters per person per day. The maximum distance from any household to the nearest water point should be 500 meters. It also gives the maximum queuing time at a water source which should be no more than 15 minutes and it should not take more than three minutes to fill a 20-litre container. Water sources and systems should be maintained such that appropriate quantities of water are available consistently or on a regular basis.

The main source of drinking water was borehole/protected spring or protected shallow well (30.0%), unprotected shallow well (25.0%) and piped waters system at 20.0%. Majority (60%) of the households accessed water from sources less than 500m or less than 15minutes.

3.9.2. Water Treatment, storage and Consumption

Analysis on treatment of drinking water indicated that 23.0% of the household treated their drinking water. Among the households that treated their drinking water, majority used chemical treatment (59.8%) to treat their drinking water. 21.2% used boiling while 15.3% and 3.7% used traditional herbs and pot filters.

Despite the fact that majority of the household surveyed not treating their water, it is apparent that they store their drinking water properly in closed containers/jerry cans (88.2%) where it is less likely to have physical water contamination. The rest (11.8%) indicated that they stored their water in open containers/jerry cans exposing it to physical contamination. 38.7% of the households consumed less than 15 liters of water a day prior the survey date. The mean water consumption per household was 17.5 liters which is above 15 liters recommended by the SPHERE standards

3.9.10 Sanitation and Hygiene

Sanitation and hygiene are still sub-optimal across the county which may have contributed to outbreak of water borne diseases being reported. Majority (43.0%) have no relieving point and used either bush or field with 40.3% reporting having a pit latrine within their households. 6.7% used for the neighbor or school latrine. In terms of hand washing practices, 60.8% washed their hands at all 4 critical times with only 20.6% washing with soap and water as shown in table 15 below.

Table 15: Hand washing practices

HYGIENE	2019
HH Aware of hygiene practices	79.2%
After toilet	93.9%
Before cooking	72.6%
Before eating	94.7%
After taking children to the toilet	67.2%
Hand washing in all 4 critical times	**60.8%**
Hand washing with soap and water	20.6%

3.10. Household and Women Dietary Diversity

3.10.1. Household Dietary Diversity (HDD)

The household dietary diversity score (HDDS) is meant to reflect, in a snapshot form, the economic ability of a household to access a variety of foods. Studies have shown that an increase in dietary diversity is associated with socio-economic status and household food security (household energy availability) (FAO 2010). The HDDS is meant to provide an indication of household economic access to food, thus items that require household resources to obtain, such as condiments, sugar and sugary foods, and beverages, are included in the score. Individual dietary diversity scores aim to reflect nutrient adequacy. Studies in different age groups have shown that an increase in individual dietary diversity score is related to increased nutrient adequacy of the diet. Dietary diversity scores have been validated for several age/sex groups as proxy measures for macro and/ or micronutrient adequacy of the diet.

Household dietary diversity assessment was based on a 24 hour recall period. At the data collection, 16 food groups as described in FAO 2010 guideline were used. The groups were combined at the analysis stage to come up with 12 food groups. As shown in figure 13 below, there was a high consumption of five food groups namely; Cereals (77.4%), Oils and fats (77.3%), milk (77.3%), sweets and sugars (76.8%) as shown in figure 10 below.

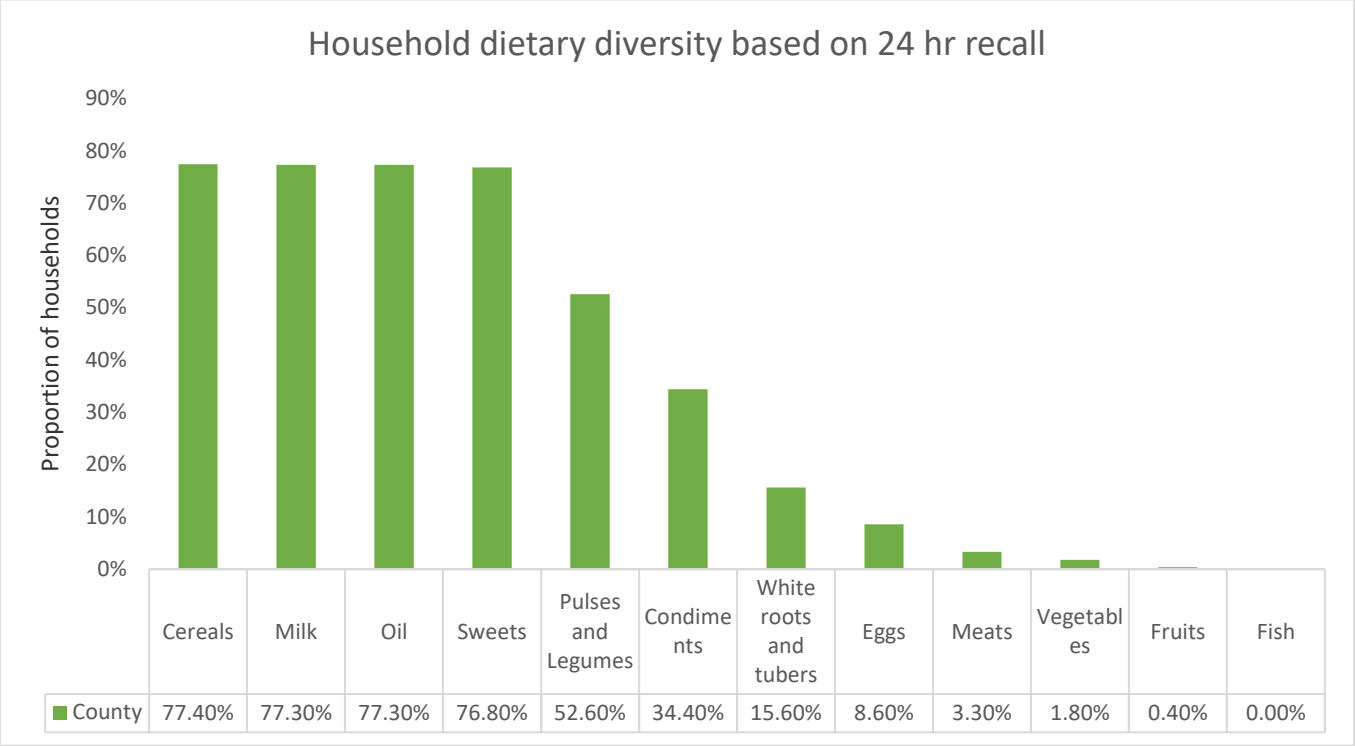


Figure 9: household dietary diversity based on 24hr recall

More than half of the households (52.2%) consumed between 3 to 5 food groups classified as medium dietary diversity with majority (77.6%) from agro pastoral livelihood zone. Only 29.0% consumed 5 or more food groups. However, this does not reflect the quality of diet consumed as the consumed included, sweets and sugars, cereals, milk and milk products, oils and fats and condiments.

Table 16: household dietary diversity classification

	Frequency	County
Household consuming < 3FGs	129	18.8%
Household consuming 3 to 5 food groups	358	52.2%
Households consuming > FGs	199	29.0%
Total	686	100

3.10.2. Minimum Dietary Diversity for Women (MDD-W)

The Minimum Dietary Diversity for WRA (MDD-W) indicator is a food group diversity indicator that has been shown to reflect one key dimension of diet quality: micronutrient adequacy. MDD-W is a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality, it was observed that only 22.6% of WRA consumed 5 or more food groups.

3.10. 3. Food Consumption Score (FCS)

The Food Consumption Score is a composite score based on dietary diversity, food frequency and relative nutrition importance of different food group (WFP 2015). FCS is a proxy for household food security and is designed to reflect the quality of people's diet. The FCS is considered as an outcome measure of household food security. Food consumption score classifies households in to 3 categories namely, poor, borderline and acceptable. In computing FCS, 16 food groups were collapsed to 8 groups namely; cereals, pulses, vegetables, fruits, meats (meats, fish and eggs), dairies, sugars and oils. The frequency of consumption (maximum 7 days) was multiplied by an assigned weight factor i.e. cereals (2), pulses (3), vegetables (1), fruits (1), meats (4), dairies (4), oils (0.5) and sugar (0.5). Food consumption score (FCS) was obtained by summing up the product of each food item after which classification was done as illustrated in figure 16 below. Households with a score of 0 to 21 are classified as poor while those with a score of 21.5 to 35 are classified as borderline. Those with a score of 35.5 and above are classified as acceptable. As the figure illustrates, a large proportion of the households (82.5%) met the acceptable food consumption while partly 3.1% had poor food consumption score.

Table 17: Food Consumption score Categorization

FCS- Category	Frequency	Valid Percent
Poor (0 – 21)	21	3.1%
Borderline (21.5- 35)	99	14.5%
Acceptable ≥ 35.5)	564	82.5%
Total	684	100

3.10.4. Coping Strategy Index (CSI)

The Coping Strategies Index is a simple and easy-to-use indicator of household stress due to a lack of food or money to buy food. The CSI is based on a series of responses (strategies) to a single question: "What do you do when you don't have adequate food, and don't have the money to buy food?" The CSI combines, the frequency of each strategy (how many times was each strategy was adopted) and the severity (how serious is each strategy). This indicator assesses whether there has been a change in the consumption patterns of a given household. For each coping strategy, the frequency score (0 to 7) is multiplied by the universal severity weight. The weighted frequency scores are summed up into one final score (WFP 2012).

Among the household surveyed, 20.7 % household were food insecure in the past 7 days (they at one point lacked food or did not have money to buy food at one point. Table 16 below summarizes the coping strategies adopted by the households in such instances.

Table 18: Reduced coping strategies

Coping Strategy	N	Frequency	Severity score	Weighted CSI
Rely on less preferred or less expensive foods				
Borrow	116	1.7	2	3.4
Limit portion sizes	122	2.2	1	2.2
Restrict consumption of adults so that children can eat	76	1.3	3	3.9
Reduce No. of meals	108	1.97	1	1.97
Total				**14.82**

Analysis of households CSI categorization indicated that among the households that experienced food insecurity in the past 1 week, 76.8% adopted high (severe coping strategies) with only 4.2% experiencing low CSI as illustrated in table below.

Table 19: rCSI households' classification

Household CSI classification	Frequency	Percent
Low CSI	6	4.2%
Medium CSI	27	19.0%
High CSI	109	76.8%
Total	142	100.0%

Chapter Four: Conclusion and Recommendations

4.1. Conclusion

Analyzing the nutrition situation in Wajir County using the UNICEF conceptual framework on the causes of malnutrition, the survey revealed the following; Overall the acute nutrition status is at the serious phase (IPC phase 4) with GAM of 16.4% (13.6- 19.7, 95% CI). The stunting levels however remained low[1] at 9.7%

Morbidity could be partially attributed to the current status of acute malnutrition since it remained relatively high high at 20.7%. The main diseases that affected children included; acute respiratory infections. Among those children who were sick during the survey period, 56.7% of them suffered from ARI, while 42.7% suffered from watery diarrhea and 30.5% from fever with chills. There were reported incidences of cholera cases during the survey period which could have been the reason for high incidences of diarrhea. On dietary intake, taking women minimum dietary diversity as a proxy indicator for dietary intake, More than three quarters of the women of reproductive age (77.4%) did not meet the minimum dietary intake based on the 24 hour food recall. This ultimately would mean even children do not meet their minimum dietary needs. At the household level; 18.8% of the households consumed less than 3 food groups while 52.2% consumed 3 to 5 food groups. The main food groups consumed were cereals, oils and fats, sugars, milk and milk products with very minimal intake of protein based foods such as meats, eggs and fish and also fruits. In terms of food consumption score 17.6% of the household had their FCS classified as poor or borderline this implies that they did not consume staples and vegetables on daily basis and never consumed protein rich foods such as meats and dairies. Under this category (poor) there is 9.2%. On the borderline are the households that consume staples and vegetables on daily basis accompanied by oils and pulses few times a week. Almost a third of household surveyed (30.6%) fall under this category. As far as coping strategies are concern, 20.7% of all household can be classified as food insecure as they within 1 week prior to the survey did not have enough foods or money to buy food. This forced majority of them to borrow food and rely on less preferred or less expensive foods as well as limit their portion sizes. Overall the weighted CSI was 14.82. From the analysis dietary intake could be a contributory factor to the current critical status of malnutrition. In terms of underlying causes (insufficient health services and unhealthy environment), Wajir County experienced low coverage of vitamin A and deworming with only 65.5% of children 6 to 11 months being supplemented with vitamin A. while 56.3% of children 12 to 59 months were supplemented with vitamin A, only 31.0% were supplemented twice. Equally, the proportion of children dewormed are low with 36.9% of children 12 to 69 months being dewormed once and 17.4% who were dewormed once as recommended. Although the Proportion of children immunized with most of the antigens surpassed 80%, a relatively low percentage (61.1%) were immunized with the second dose of measles (at 18 months) which is a health concern.

[1] Low as per the revised WHO/UNICEF threshold means stunting levels 2.5% to <10.0%

The water hygiene and Sanitation situation in the County is also an area of concern. Some of the notable issues of concern included the trekking distances to water sources where more than 40% of the households between 15 minutes to more than 2 hours to the current water source limiting the time available for child care.

Recommendations

Health and Nutrition Gap	Recommendations to address the gap	Responsible persons, Jordanianization's	Implementation time line
Deterioration of nutrition situation – critical from serious observed in July 2018	Active case finding at facility and community on monthly basis through CHVs	CGW/ Partners	August – October 2019
Low vitamin A and deworming coverage	Vitamin A and Deworming through ECDs, Dugsi and community through *malezi bora*	SCI	October 2019
Low IFAS coverage	Sensitization of health care workers, CHWS and mothers on IFAS and duration for continuum	THS	October 2019
Poor documentation of services on mother child booklets	On job training of health care workers on use of mother child booklet	CGW	July 2020
Low coverage of handwashing with soap and water (20.6%)	Community sensitization on hand washing though community units and school health clubs	CGW	July 2020
Poor dietary diversity	Sensitization of caregivers and household members by CHVs and care group members	CGW/ AVCD/WVI	July 2020

Annexes

5.1 Anthropometric Plausibility Report

Plausibility check for: KEN_20190624_WAJIR_MoH

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	**0** (0.7 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**4** (p=0.014)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	**0** (p=0.121)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	**0** (4)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	**0** (0.99)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.04)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	**0** (0.16)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	**0** (p=0.231)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**4** %

The overall score of this survey is 4 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 0 %

5.2 List of sampled Clusters

Sub-County	Ward	Village	Cluster No.
Wajir North	Batalu	Buna	1
Wajir North	Malkagufu	Ingirir	2
Wajir North	Korondile	Sirey	3
Wajir North	Korondile	Lensayu	4
Wajir North	Bute	Bute	5
Wajir North	Bute	Adadijole	6
Wajir North	Bute	Ogorji	7
Wajir North	Godoma	Dugo	8
Wajir North	Gurar	Garakilo	RC
Wajir North	Danaba	Danaba	9,10
Wajir North	Gurar	Gurar	11
Wajir South	Lagbogol south	Macheza	12
Wajir South	Dadajabula	Dadajabula	13
Wajir South	Benane	Dagahley	RC
Wajir South	Habaswein	Abakore	14
Wajir South	Habaswein	Habaswen	15
Wajir South	Lagbogol south	Leheley	16
Wajir South	Ibrahim Ure	Kulaaley	17
Wajir South	Benane	Biyamathow	18
Tarbaj	Tarbaj	Jowhar	19
Tarbaj	Wargadud	Kajaja1	20
Tarbaj	Tarbaj	Haragal	21
Tarbaj	Sarman	Dambas	22
Tarbaj	Elben	Elben	23
Tarbaj	Sarman	Dunto	24
Tarbaj	Sarman	Sarman	25
Tarbaj	Tarbaj	Hassan Yarrow	26
Wajir East	Wagberi	Bulla Kom	RC
Wajir East	Township	Bulla Madina	27
Wajir East	Barwaqo	Makoror	28
Wajir East	Wagberi	Bulla power	29
Wajir East	Township	Alimao	30
Wajir East	Khorof Harar	Afarshanley	31
Eldas	Eldas	Eldas	32,33
Eldas	Eldas	Kilkiley	RC
Eldas	Dela	Anole	34
Wajir west	Arbajahan	jagaher	35
Wajir west	Arbajahan	arabajahan	36
Wajir west	Ganyure/Wagalla	wagala	37
Wajir west	Ganyure/Wagalla	kukala	RC

Wajir west	Arbajahan	matho	38
Wajir west	Hadado/Athibohol	hadado north	39
Wajir west	Adamasajide	lolokuta south	40
Wajir west	Adamasajide	ademasajida	41
Wajir west	Adamasajide	wara	42
Wajir west	Arbajahan	Qara	43
Wajir west	Ganyure/Wagalla	wachirwells	44

5.3 Survey Teams

Team No	Team Leader	Enumerators
1	Yussuf Adow	Yussuf salat
		Hassan sirat
2	Dahira Ibrahim	Noor Adan
		Abdi mohamed
3	Ibrahim Issack	Ahmed N mohamed
		Nasteha Hussein
4	Maryan Barre	Salim guled
		Hassan mohamed
5	Abdinasir Yarrow	Kowthar Abass
		Mohamed Sugow
6	Habon Abdi	Abdirahman Ibrahim
		Mohamud Abdikadir
7	Ali Hussein	Muqima mohamed
		Mohamed Adan Abdi
8	Hassan Abdi	Deka Hassan
		Abdishukri Ibrahim