# NUTRITIONAL ANTHROPOMETRIC AND MORTALITY SURVEY

## FINAL REPORT

## WAJIR EAST DISTRICT

## NORTH EASTERN PROVINCE, KENYA

**3rd to 17th November 2012**

**Caroline Njeri Kimere**

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.

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**Acronyms**

| | | |
|---|---|---|
| ALDEF | | Arid Lands Development Focus |
| ALRMP II | - | Arid Lands Resource Management Project II |
| APHIA | - | Aids Population Health Integrated Assistance Project |
| ASAL | - | Arid and Semi-Arid Lands |
| CDR | - | Crude Death Rate |
| CI | - | Confidence Interval |
| CMR | - | Crude Mortality Rate |
| CSB | - | Corn Soya Blend |
| ENA | - | Emergency Nutrition Assessment |
| EPI | - | Extended Programme of Immunization |
| GAM | - | Global Acute Malnutrition |
| GFD | - | General Food Distribution |
| HAZ | - | Height-for-Age Z-score |
| HINI | | High Impact Nutrition Interventions |
| HSNP | - | Hunger Safety Net Project |
| KFSSG | | Kenya Food Security Steering Group |
| L/HAZ | - | Length/ Height for Age –Z-score |
| MOH | - | Ministry of Health |
| MUAC | | Mid-Upper Arm Circumference |
| OPV | - | Oral Polio Vaccine |
| OTP | - | Out-patient Therapeutic Program |
| SAM | - | Severe Acute Malnutrition |
| SC | - | Stabilization Centre |
| SD | - | Standard Deviation |
| SFP | - | Supplementary Feeding Programme |
| SMART | | Standardized Monitoring and Assessment of Relief and Transitions |
| U5MR | - | Under Five-Mortality Rate |
| UNICEF | - | United Nations Children's Fund |
| URTI | - | Upper Respiratory Tract Infection |
| WAZ | - | Weight-for-Age Z-score |
| WFP | - | World Food Programme |
| WHM | - | Weight for Height Median |
| WHO | - | World Health Organization |
| WHZ | - | Weight-for-Height/length Z-scores |

# Executive summary

Wajir East district, also Wajir east constituency is one of the 8 districts within the larger Wajir County. The district currently comprises of 6 divisions namely Wajir Bor, Tarbaj, Kutulo, Central, Mansa and Khorofharar. The district lies around 3° north of the Equator and borders Somalia to the East, Wajir South to the South, Wajir West to the West, Wajir North to the North West and Mandera Central District to the North. The district, measuring approximately 14,471 km², is one of the districts gazetted as Arid and Semi-Arid Lands of Kenya (ASAL). Wajir town is the district headquarters and is the largest urban town in Wajir County. The population is currently estimated at 226,086[1] persons.

The main livelihood activity in the district is pastoralism and being predominantly arid, the district experiences chronic food insecurity and high incidences of malnutrition. Predictable rainy and dry seasons can no longer be counted upon to provide adequate dry season grazing and water for pastoral populations, whose resilience is increasingly eroded by broader economic factors in the region. Food aid continues to be a key source of food for a majority of the population.

Save the Children has been present in Wajir east since 2009 with interventions in nutrition (treatment of the acutely malnourished, nutrition surveillance and promotion of infant and young child feeding), health (capacity building and health systems strengthening for maternal and child health), Water, Hygiene and Sanitation (WASH) and food security and livelihoods. Save the Children in collaboration with the Ministry of Health and on behalf of the district steering group undertakes annual nutrition surveys (before the long rains) to monitor the nutrition situation. This survey was undertaken in November to evaluate the nutrition status of the population in the context of a severe drought.

## *Survey objectives*

The specific objectives of this survey were to estimate:

1. The prevalence of acute and chronic malnutrition in children aged 6-59 months;
2. The nutrition status pregnant women and mothers with children <5 years;
3. The crude and under five mortality rate and causes of death;
4. The proportion of households with access to improved water and sanitation;
5. Infant and young child feeding (IYCF) practices;
6. The coverage and content of the general food distribution;
7. The food access and dietary diversity at household level;
8. The Coverage of measles and BCG vaccination among target children;
9. The Coverage rate of Vitamin A. supplementation and de worming;
10. The Morbidity rates of children 6-59 months 2 weeks prior to the survey;
11. To recommend appropriate interventions based on the survey findings;

## *Area covered*

The survey was conducted from 3rd to 17th of October 2012 and covered the 6 administrative divisions of Wajir East District namely: Central, Wajir Bor, Kotulo, Khorofharar, Mansa and Tarbaj.

[1] Figures from the DDO office

## *Methodology*

Two different sampling methodologies were applied. Emergency Nutrition Assessment (ENA) for Standardized Monitoring of Relief and Transition (SMART) was used to calculate Anthropometry and mortality samples while IYCF multi survey sampling calculator was used to calculate for IYCF sample. Probability of Proportion to Population Size (PPS) was used to identify clusters within a study area after collecting population data from all villages/ sub location that were considered as clusters.

The target population for the anthropometric survey was children aged 6-59 months while that for IYCF was children 0-<24 months. The total sample size of households was arrived at by collating both the Anthropometry, IYCF and Mortality samples. The final sample size was 459 households from 36 clusters.

Data was collected on anthropometry, morbidity, vaccination and de-worming status, Vitamin A supplementation, hygiene and sanitation practices, IYCF, food security and livelihoods. This data was triangulated with feeding programme data to help in the interpretation of results.

Retrospective information on mortality was collected using the current household census method, with a recall period of 86 days, from all households visited including those without children under the age of five. A total of 484 households were visited and 651 children from 6 to 59 months were assessed for anthropometry and other indicators. The final analysis was on 651 with no exclusion.

Anthropometric and mortality data were analyzed using the ENA software beta version May 2011. IYCF data was analysis on Excel and Qualitative and quantitative data was analysed using the SPSS software.

## *Main survey results*

**Table 1: Results Summary**

| **Characteristic** | **% ( 95% CI)** |
|---|---|
| **GAM (WFH <-2 Z score or presence of oedema) - WHO 2006** | 16.9 % (13.6-20.8) |
| **SAM (WFH <-3 Z score or presence of oedema) - WHO 2006** | 2.0% (1.6-5.3) |
| Prevalence of GAM by MUAC (<12.5cm) | |
| Proportion of children sick two weeks prior to survey | 37% |
| Proportion of caretakers seeking medical care when child is ill | 73.1% |
| BCG Scar | |
| Measles immunization (card and confirmation) | 93.3% |
| OPV1 immunization (card and confirmation) | 98.2% |
| OPV3 immunization (card and confirmation) | 97.8% |
| Vitamin A supplementation coverage (>12 month) -1 time | 64.6% |
| Vitamin A supplementation coverage (>12 month) -2 times | 27.1% |
| Vitamin A supplementation coverage (6-11 months)- 1 time | 76% |
| Proportion of children >1 year de-wormed 1 time | 57.2% |
| Proportion of children >1 year de-wormed 2 time2 | 9.6% |
| Iron-folate Supplementation for pregnant mothers | 31.1% |
| Appropriate hand-washing with soap/ash | 44.8% |

| | |
|---|---|
| Proportion of children 6-59 months supplemented with Zinc the last time they had diarrhoea | 17.8% |
| IYCF Key Indicator - Timely Breast-feeding Initiation | 81.9% |
| IYCF Key Indicator - Exclusive Breastfeeding | 66.9% |
| IYCF Key Indicator - Minimum Dietary Diversity->3 times BF<br>Minimum Dietary Diversity->4 times NBF | 13.8%<br>23.5% |
| IYCF Key Indicator Minimum Feeding Frequency->2 times 6-8 MTS BF<br>Minimum Feeding Frequency->3 times 9-23 MTS BF<br>Minimum Feeding Frequency->4times 6-23 MTS NBF | 41.4%<br>32%<br>50.5% |
| **Crude mortality rate (deaths/10000/day)** | 0.19 (0.08-0.44) |
| **Under-five mortality rate (deaths/10000/day)** | 0.39 (0.13-1.23) |

## *Conclusion:*

In light of the above findings, the prevalence of Global Acute Malnutrition (GAM) rates in this survey is considered "alarming" with GAM of 16.9 % (13.6%-20.8% 95% CI) and SAM 2.0(1.6%-5.3%). However these rates indicate an decrease in malnutrition as compared with the nutrition survey conducted in the district during the same time last year which showed a GAM of 30.6% (25.8 - 35.8) and SAM 7.6 % (5.3 - 10.7 95% C.I) and SAM of 4.3% (2.8% - 6.6% 95% C.I) with the improvement being significant (P-value 0.000 and 0.005 respectively upon analysis with the CDC calculator.

In spite of this improvement however analysis of other indicators showed suboptimal IYCF practices with high percentage of children not receiving optimal infant feeding practices especially on dietary diversity, feeding frequency and timely introduction of complementary foods. Vitamin A supplementation was relatively low especially in the group >12 months with most of the children having receiving Vitamin A twice in the previous year reported at only 27%. This was also true deworming with those children reported to have been dewormed twice in the previous year being only 9.6%. Use of Zinc in diarrhoea management was poor, reported by only around a fifth of the respondents (17.8%).
This coupled with deplorable water, sanitation and hygiene situation with around 63% of all the respondents reporting use of water from unsafe sources with only 17.7% treating their water. Appropriate hand washing (with water and soap or ash) was also poor reported by less than 50% of the respondents. In addition toilet facilities were only accessible to 42% of the respondents with the remainder using mainly the bush for faecal waste disposal for both adults and children. Under five Morbidity were also high with ARIs and diarrhoea taking lead. Both crude and under five mortality rates are below emergency levels, however there is need to urgently address the above issues to prevent the situation worsening further.

## *Recommendations*

### Immediate

- To improve on Zinc in diarrhoea management and Iron folate supplementation,

health workers and community members' sensitization will be conducted.

- More emphasis on proper hand-washing techniques through Health and nutrition promotion activities.
- Promotion of HH water treatment through up-scaling availability of reagents at HH level and chlorination of shallow wells (main source of water in the district) . This coupled with health promotion and demonstration on use of reagents.
- Sensitize communities on home-based agriculture i.e. kitchen gardening, Multi-storey gardens, poultry keeping, bee-keeping etc. to improve on HH and Infant dietary diversity through improved income generation and also improved HH food security.
- Improve supplementation coverage for deworming and VAS (especially for the12-59 month's age group) through targeting Dhuksis and Madrasas.
- Activate the health and Nutrition sub-DSG- GOK line ministries and implementing partners since the findings from the survey represent findings relevant to different actors in the district and to address them concerted effort is required.

## Medium term

- Establish more and strengthen existing MTMSGs to advocate for better IYCF knowledge and practices. Special effort should be put towards dietary diversity and meal frequency.
- Introduction of livestock feeding alternatives to complement the existing pastures i.e. concentrates, hay, fodder for lactating herds to have better returns on sale of livestock and livestock products since most of their food source is through purchases.
- Provision of LLITNs and malaria repellents in a bid to reach the universal net coverage.
- Use CLTS and PHAST methodologies in improving toilet access and coverage. Also explore use of interventions like FFW (Food For Work), FFA(Food For Assets) in supporting the community to construct toilets
- Improve water harvesting techniques i.e rain water harvesting, rehabilitation of existing boreholes to improve acess to safe water sources
- Advocate for recruitment and retention of more skilled health personnel.
- Through the DMOH activate and coordinate the monthly coordination meetings.

## Long term

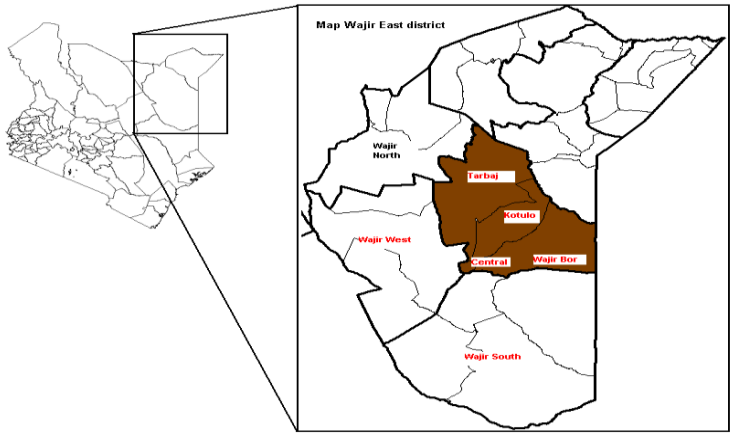
- Promote community dialogue, conflict resolution and peace building to reduce inter clan conflicts.
- Advocacy on products processing at the district level i.e milk, meat, livestock fodder e.t.c
- Accelerating establishment of a Kenya Medical Training College (KMTC) in Wajir to train more local nurses to enhance retention in the district.
- Establish value addition of vegetables and fruits cultivated during the rainy seasons. Same case to the animals fodder.

# 1. Introduction

Wajir East district is one of the 8 districts within the larger Wajir County. The district currently comprises of 6 divisions namely Wajir Bor, Tarbaj, Kutulo, Central, Mansa and Khorofharar. The district lies around 3° North of the Equator and borders Somalia to the East, Wajir South to the South, Wajir West to the West, Wajir North to the North West and Mandera Central District to the North. The district, measuring approximately 14,471 km², is classified as arid within agro-ecological zone six and is characterised by long dry spells and short rainy seasons. Wajir town is the district headquarters and is the largest urban town in Wajir County. The population is predominantly Muslim and of Somali ethnicity, and is divided into clans, with community elders being in charge of daily affairs. Fai is the predominant clan and other clans include Masare, Garre, Degodia, Murule, Ogaden and Ajuran.

The survey area covered all six divisions of the district (Fig 1). The current estimated population living in this area is 226,086[2].

**Figure 1: Map of Wajir East district**




## *1.1. Geography*

Wajir East District is a featureless plain, which is prone to flooding during the rainy season. The district has some seasonal swamps and perennial river beds/drainage lines ('laghas') that flow in the rainy season. These serve as dry season grazing zones and also allow some cultivation when it rains. The area receives bimodal rains with the onset of the long rains in April. The months succeeding the long rains, June to September, are very dry but vegetation continues to thrive because the lower temperatures reduce the rate of evaporation. The short rains fall from September/October to December. The average annual rainfall is 250-300mm and quantitatively, it rains more during the short rains than during the long rains[3]. However the rains have become increasingly unpredictable and erratic.

The topography of the district is a slightly elevated plateau, which lies between 150-200m above sea level. The mean annual temperature of the district is 29°C and ranges from 28°-39°C. The district lies within the sahelian climatic region, which is characterized by long dry spells and short rainy seasons. In the classification of areas by aridity, the district is

[2] Current Estimates from DDO's Office- Wajir Town based on 2009 census
[3] District Development Office- Summary document for Key Investment Opportunities in Wajir East District

categorized as Zone VII (i.e. 100% Arid with cyclic droughts).

## *1.2. Livelihoods*

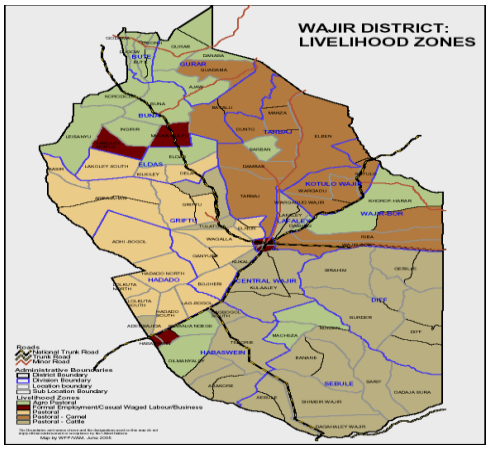



**Figure 2: Livelihood Zones**

Wajir East District 70% of the population solely depends on livestock for their livelihood. The main form of land use is nomadic pastoralism which is seen as the most efficient method of exploiting the rangelands hence pastoral activities are practised all over the district. As shown in the adjacent map, most of the area covers the Pastoral Camel Zone (Eastern Bush land) where predominantly camel herding occurs. Small pockets of agro-pastoral activity are found in Tarbaj and Wajir Bor divisions. The crops cultivated include maize, sorghum, beans, cowpeas (kunde) [4], tomatoes, sweet pepper and pawpaw. In addition, small-scale irrigated horticulture is emerging in peri-urban areas (kitchen gardens) with crops such as watermelon, pawpaw, lemons and vegetables thriving[5].

There are peri-urban and urban settlements in the district's Central Division which has the highest population density of 27 persons per sq. km. This is due to the fact that Wajir town is the county headquarters with government offices, markets, employment opportunities (formal/waged labour) and Small and Medium Enterprises (SMEs). Other peri-urban/urban settlements can be found in and around the divisional headquarters which serve as market centres and watering points. These have grown steadily as a result of people who have 'dropped out' of the pastoralist lifestyle following recurrent shocks. Other pull factors that have also encouraged settlement include free primary education, school feeding programmes, better access to healthcare, increased water points and markets in urban/semi-urban settings.

## *1.3. Current Climatic Conditions and Food Security*

Persistent incidences of drought and their increasing unpredictability in the province in recent years have continued to threaten the livelihoods of many pastoralists subjecting them to food insecurity (due to the short recovery phase between droughts), high malnutrition rates (above the emergency thresholds of 15%) and increased disease burden. In 2011, the district, including the rest of the ASALS suffered severe drought conditions, which further eroded the already diminishing livelihoods causing critical food insecurity, lack of water and high malnutrition rates. The October – December 2011 short rains came as expected with above normal rainfall performance reported in most parts of the province. Whilst the rains have brought relief in increased water availability and pasture, they also signalled a shift in needs due to the flooding and the ensuing reduced accessibility to most parts of the districts.

**Figure 3: Seasonal Timeline**

| Short Dry Spell (Jilaal) | Long Rainy Reason (Gu') | Long Dry Spell (Hagai) | Short Rainy Season (Deyr) |
|---|---|---|---|

[4] District Steering Group Combined Report for Wajir North, East, West and South Districts-Rapid Assessment and Sectoral Report on the Impact of the Short Rains in the District- January 2009.

[5] Ministry of Agriculture- Wajir East Food and Crop Situation Report-April 2009

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Migration, Conflicts, Watering of Livestock, Pressure on boreholes | | | Pasture Surveys, mating season, Planting | | | Livestock diseases, Labour Demand | | | Calving, Kidding Period | Migration, Conflict | |

## 1.4. Humanitarian interventions in Wajir East district

Save the Children has been implementing programmes in Wajir East district since August 2009. Currently we have adopted the HINI approach in dealing with malnutrition with support (logistical and Human resource) being provided to the MOH to accelerate a package of 11 essential services (CMAM, Deworming, Vitamin A supplementation, Zinc in diarrhoea management among others). Other programs supported by Save The children in the district include Health (Safe motherhood, Education, Child protection and Food security and Livelihoods Support programmes. All this programs aim to address the underlying causes of malnutrition through strengthening health systems, treatment for acute malnutrition and enhancement of house hold food security and livelihoods in the medium term while at the same time linking these to long term livelihood strategies.

The World Food Programme (WFP) through Arid Lands Development Focus (ALDEF) has been carrying out general food distribution (GFD) in this area. The GFD food basket provides a 75% ration scale of 2,100Kcal/person, the daily per capita energy requirement[6] and is as follows:

**Table 2: WFP Food Basket Commodities**

| Commodity | Ration Sizes |
|---|---|
| Cereals | 10.35kgs |
| Pulses | 1.80 kgs |
| CSB | 1.20 kgs |
| Vegetable Oil | 0.60 kgs |

The Ministry of special programmes through the District Commissioner's office occasionally supplies food to the region and this is usually divided equally among the divisions. School feeding programme is also available in all government schools which is run by WFP.

Other actors on the ground include:
**OXFAM GB** supporting ALDEF administratively to implementing Hunger Safely Net Programme (HSNP) and water and sanitation programmes.
**Kenya Red Cross society** undertaking emergency relief operations
**AMREF** has been supporting the MoH in combating HIV /AIDS and in matters related to reproductive health.

## 1.5. Survey Objectives

The survey was undertaken from 3rd to 17th October 2012 with MOH taking a leadership role supported by Save the Children. This survey aimed to provide surveillance information on the

[6] Based on UNHCR/UNICEF/WFP/WHO Guidelines for Food and Nutrition Needs in Emergencies

nutrition status in Wajir District.

The specific objectives of this survey were to estimate:

- The prevalence of acute and chronic malnutrition in children aged 6-59 months;
- The nutrition status pregnant women and mothers with children <5 years ;
- The crude and under five mortality rate and causes of death;
- The proportion of households with access to improved water and sanitation;
- Infant and young child feeding practices
- The coverage and content of the general food distribution;
- The food access and dietary diversity at household level;
- The Coverage of measles and BCG vaccination among target children;
- The Coverage rate of Vitamin A supplementation, de worming, zinc supplementation and iron folate supplementation;
- The Morbidity rates of children 6-59 months 2 weeks prior to the survey;
- To recommend appropriate interventions based on the survey findings;

# 2 Methodology

## *2.1. Sample size calculation:*

The sample size for the anthropometric survey will be calculated using the SMART survey calculator. The projected population sizes for 2012 for the district will be used as the sampling frame. The population will be gotten from the District development officer. For the infant young child nutrition the IYCF sample size calculator recommended in the survey guidelines will be used as shown below

### 2.1.1. Sample size calculation anthropometry

The malnutrition/anthropometric sample size will be based on the following parameters:

1. The GAM Prevalence of 25.8%[7]
2. A Design Effect of 2 is used after taking into consideration the results of the last year survey
3. Precision of 5% will be used (following the survey guidelines)
4. Average household size 5.92[8]
5. Proportion of under-fives 27%[9]
6. The under 5 population per household of 1.57[10]

Using the above parameters, the sample for anthropometry was arrived at as shown in the table below;

**Table 3: Sampling Anthropometry**

| Estimated Prevalence | Precision | Design Effect | % of Non-Response | Sample Size (Children to be Included) | HH to be included (proportion U5 in population 27%) | No. of HH per day | Number of Clusters |
|---|---|---|---|---|---|---|---|
| **25.8%** | 5% | 2.0 | 3% | 640 | 459 | 15 | 31 |

### 2.1.2. Sample size calculation IYCF

For the IYCF sample size, as is indicated in the survey guidelines, five indicators namely Exclusive breastfeeding, timely initiation of breastfeeding, minimum dietary diversity and minimum meal frequency were used in the calculation of the sample size as shown in the excel table below.

**Table 4: Sampling IYCF**

| Indicator | Estimated prevalence | desired precision | Design effect | Sample size in no of children | Average household size | % children under 5 | % non-response households | Households to be included |
|---|---|---|---|---|---|---|---|---|
| **Exclusive breastfeeding** | 28.6 | 8 | 2 | 267 | All children to be included in the survey | | | |
| **Timely initiation of breastfeeding** | 73.4 | 8 | 2 | 255 | 5.92 | 27 | 3 | 411 |

[7] Lower confidence interval from the November, 2011 Wajir SMART Survey
[8] Based on the November, 2011 Wajir SMART Survey
[9] Based on the November, 2011 Wajir SMART Survey
[10] This is based on the November, 2011 Wajir SMART Survey

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Minimum dietary diversity** | 3.8 | 8 | 2 | 48 | 5.92 | 27 | 3 | 77 |
| **Minimum meal frequency** | 9.1 | 8 | 2 | 108 | 5.92 | 27 | 3 | 174 |

From the figures above, 267 children will be included in the survey for the exclusive breastfeeding indicator. Since 31 clusters will be covered for the survey these children will be equally distributed per cluster giving rise to 9 children 0-5M per cluster. Initially these children will be sought in the houses where anthropometry will undertaken; however, in case they are not found from the selected households, they will then be selected purposively. On the other IYCN indicators, since timely initiation of breastfeeding has the highest number of children 0-23 sampled it will be considered translating to 9 children 0-23 months per cluster. Comparing the number of HH from the IYCN and anthropometry, the anthropometry number is and therefore this number of HH will be considered.

## *2.2. Sampling procedure: selecting households and children*

The second sampling stage comprised of the household selection. Only the randomly sampled villages were assessed during data collection. In the selected village, the Expanded Programme on Immunization (EPI) method was applied in order to determine the starting point. At the center of the village, a pen was spun to determine the starting direction. The team then moved to the periphery along the pointed direction. At the end of the village, the pen was re-spun and a direction obtained. Just like the first stage, the survey team moved along the pointed direction but this time counting all households in that direction to the edge. A table of random numbers was used to determine the first household. Mortality and anthropometric questionnaires were administered accordingly and subsequent households determined by going to the next house to the right. In villages with more than one cluster, the village was subdivided and the centre of each subdivision determined and households selected as described above. In a cluster that was sparsely populated, all the households in the cluster were visited.

A household was defined as a group of people who lived together and shared a common cooking pot. In polygamous families with several structures within the same compound but with different wives having their own cooking pots, the structures were considered as separate households and assessed separately. All children aged 6-59 in every household visited were included in the anthropometric survey and 0-24 month category included in IYCF survey. In cases where there was no eligible child, a household was still considered part of the sample and its mortality data were collected. If a respondent was absent during the time of household visit, the teams left a message and re-visited later to collect data for the missing person, with no substitution of households allowed. The teams visited the nearest adjacent village (not among those sampled) to make up for the required number of households if the selected village yielded a number below 22 children and 17 households, following the SMART methodology[8].

### 2.2.1. Case definitions and inclusion criteria

#### *2.2.1.1. Anthropometric data:*

***Age:*** the age of the child was recorded based on a combination child health cards, the

[8]SMART (2006): Measuring Mortality, Nutritional Status and Food Security in Crises Situations: SMART METHODOLOGY

mothers'/caretakers' knowledge of the birth date and use of a calendar of events for the district developed in collaboration with the survey team.

***Sex:*** it was recorded whether a child was male or female.

***Bilateral oedema:*** normal thumb pressure was applied on the top part of both feet for 3 seconds. If pitting occurred on both feet upon release of the fingers, nutritional oedema was indicated.

***Weight:*** the weights of children were taken with minimal or light clothing on, using UNICEF Salter Scales with a threshold of 25kgs and recorded to the nearest 0.1kg.

***Length/height:*** children were measured bareheaded and barefooted using wooden UNICEF height boards with a precision of 0.1cm. Children under the age of two years were measured while lying down (length) and those over two years while standing upright (height). If child age could not be accurately determined, proxy heights were used to determine cases where height would be taken in a supine position (<87cm) or in an upright position (≥87cm). Height rods with a marking at 87cm were used to assist in determining measuring position.

***Mid Upper Arm Circumference (MUAC):*** the MUAC of children was taken at the midpoint of the upper left arm using a MUAC tape and recorded to the nearest 0.1cm.

#### *2.2.1.2. Retrospective morbidity of children:*

The caretaker with the child at the time of the survey was asked to recall if the child had any illness in the 2-weeks prior to the survey.

#### *2.2.1.3. Vaccination status and coverage:*

For all children 6-59 months, information on Penta valent 1 and Oral polio Vaccine (OPV) 1 and Penta valent 3 and OPV 3 and measles vaccination was collected using health cards and recall from caregivers. The vaccination coverage was calculated as the proportion of children immunized based on records and recall.

**BCG**: For all children 6-59 months, the information was collected by checking whether the characteristic BCG scar was present or not.

**Vitamin A supplementation status:** For all children 6-59 months of age, information on Vitamin A supplementation was collected using the child welfare cards and recall from caregivers. Information on how many times the child had received supplementation in the last 6 months was collected. Vitamin A capsules were also shown to the mothers to aid in recall.

**De-worming status**: Information was solicited from the care takers as to whether their child/children 6-59 months had been de-wormed in the last 3 months. A local calendar of events was used to refer to 3 months recall period.

#### *2.2.1.4. Infant and Young Child feeding (IYCF)*

Data on IYCF was collected from children aged 0-<24 months and was based on mothers recall of feeding practices including a 24 hour dietary recall.

### 2.2.2. Mortality data

Retrospective mortality data was collected using the current household census method in all the visited households, including those with no children aged less than five years old.

The recall period was 94 days with the reference period being the last 10 days of IDD at the end of August. Information was collected on the age and sex of the household members, their residence status, the number of household members present within the recall period, the number of persons who arrived or left, and the number of births and deaths over the recall period. The presumed causes of death were recorded based on the following case definitions:

- Diarrhea (watery stool >3/24H);

- Bloody diarrhea;
- Measles (fever with rash);
- Fever;
- Lower respiratory tract infection (fever, cough, chest pin, difficulty breathing);
- Malnutrition;
- Injury;
- Other (specify);
- Unknown;

### 2.2.3. Causes data

Secondary data on causes of malnutrition was mainly obtained from previous surveys undertaken in the area.
Primary data on the causes of malnutrition was obtained from interviewing mothers/caretakers of children based on the household questionnaire that contained questions of water sources and hand washing practice, main sources of food and income, use of mosquito nets, dietary diversity and nutritional status of mothers/caretakers. The questionnaires were based on the national guidelines for nutritional assessments in Kenya, and modified slightly to collect context specific data for Wajir East. Data was collected from 578 households.
Government officials and other NGOs working in the area were visited to provide information on the on-going interventions in the area.

### 2.2.4. Nutritional Status Cut-off Points

The following nutritional indices and cut-off points were used in this survey:

#### *2.2.4.1. Weight-for-height (WFH) and MUAC – Wasting among Children*

The prevalence of wasting (a reflection of the current health/nutritional status of an individual) are presented as global acute malnutrition (GAM) and severe acute malnutrition (SAM) using weight-for-height (WFH) z-scores and MUAC indices. The results on wasting were presented as global acute malnutrition (GAM) and severe acute malnutrition (SAM):

- Children whose WFH z-scores fell below -2 standard deviations from the median of the WHO standards (WHO-GS) or had bilateral oedema were classified as wasted (to reflect GAM)
- Children whose WFH z-scores fell below -3 standard deviations from the median of the WHO-GS or had bilateral oedema were classified as severely wasted (to reflect SAM)

Like weight for height, MUAC is used to quantify wasting in a population.
The guidelines used are as follows:
MUAC <11.5 cm severe acute malnutrition and high risk of mortality
MUAC ≥11.5 cm and <12.5cm moderate acute malnutrition and moderate risk of mortality
MUAC≥12.5 cm and <13.5 cm high risk of malnutrition
MUAC≥13.5 cm adequate nutritional status
A cut-off point of <12.5cm MUAC was used to denote GAM among the underfives.

#### *2.2.4.2. Weight-for-age (WFA) – Underweight*

The measure of underweight gives a mixed reflection of both the current and past nutritional experience by a population and is a very useful tool in growth monitoring.

- Children whose WFA z-scores fell below -2 standard deviations from the median of the WHO-GS or had bilateral oedema were classified as underweight
- Children whose WFA z-scores fell below -3 standard deviations from the median of the WHO-GS or had bilateral oedema were classified as severely underweight.

#### *2.2.4.3. Height-for-age (HFA) – Stunting*

Height-for-age is a measure of linear growth and therefore an unequivocal reflection of the cumulative effects of past nutritional inadequacy and/or illness episodes.

- Children whose HFA z-scores fell below -2 standard deviations from the median of the WHO-GS were classified as stunted (to reflect Global Stunting)
- Children whose HFA z-scores fell below -3 standard deviations from the median of the WHO-GS were classified as severely stunted.

### 2.2.5. Mortality Indices

The Crude Death Rate is defined as the number of people in the total population who died between the start of the recall period and the time of the survey. It is calculated using the following formula. The result was expressed per 10,000 people / day.

**Crude Mortality Rate (CMR) = 10,000/a*f/ (b+f/2-e/2+d/2-c/2),** Where:

a = Number of recall days
b = Number of current household residents
c = Number of people who joined household
d = Number of people who left household
e = Number of births during recall
f = Number of deaths during recall period

**Table 5: Mortality Thresholds**

| | **Total population CMR** | **Under-five population U5MR** |
|---|---|---|
| **Alert level:** | 1/10,000 people/day | 2/10,000 children/day |
| **Emergency level:** | 2/10,000 people/day | 4/10,000 children/day |

### 2.2.6. Questionnaire, training and supervision

#### *2.2.6.1. Questionnaire*

The standard nutrition survey questionnaire as recommended in the nutrition guidelines was adapted to include additional information on the high Impact nutrition interventions. The IYCF questionnaire as recommended in the CARE IYCF step by step guide was used to collect information on IYCF.

The questionnaire was developed in English and the enumerators trained on the questionnaire. During the training session, the enumerators translated the questionnaires as they would ask during data collection and an agreed way of asking the questions during data collection was agreed upon. The questionnaires were not translated into Somali language however, all interviews were conducted in Somali language. The questionnaire was pre-tested a day before the actual survey began and the final questionnaire used is annexed in the report.

#### *2.2.6.2. Survey teams and supervision*

The survey was executed by 6 teams each comprising of 1 team leader and 2 anthropometric measurers. Four of the team leaders were from Ministry of Health (MOMS/MOPHS), 1 from Arid Lands Resource Management Project (ALRMP) and one from the District development Office.

The survey was led and supervised by trained staff from Save the Children UK. The anthropometric measurers were recruited from the district and spoke the local language as

well as English. The measurers were required to be literate and at least have completed high school to participate in the study. The team leaders were practitioners either in health, food security and nutrition and were sourced from the government and Save the Children. The survey was supervised by the nutrition technical specialist from save the Children UK.

#### *2.2.6.2. Training*

Training for the survey teams was undertaken by Save the Children staff (the nutrition technical specialist). The training was undertaken for 3 days and covered an introduction to nutrition and nutrition assessments, the survey objectives, anthropometric measurements, household selection procedures, data collection and interviewing skills and the survey questionnaire. The anthropometric standardization exercise, as recommended by the SMART methodology was undertaken with 10 children, each measurer taking measurements on each child twice. Each enumerator was closely observed and guided by supervisors and manually given a score of competence based on performing measurements with accuracy and precision.

After the class room training, practical field experience was conducted to pre-test the questionnaire, take anthropometric measurements of children and caretakers, conduct interviews and fill questionnaires; pre-testing exercise was performed on 12 households. The pre-testing exercise facilitated some changes on the structure of the questionnaire. In addition, a team of data clerks who were trained on the operation of ENA for SMART for the data entry and these were closely supervised by the M&E officer from Save the Children.

#### *2.2.6.3. Data analysis*

Anthropometric and mortality data entry and processing was done using the ENA for SMART software Beta version May 2011 where the World Health Organization Growth Standards (WHO-GS) data cleaning and flagging procedures were used to identify outliers which enabled data cleaning as well as exclusion of discordant measurements from anthropometric analysis. The SMART/ENA software generated weight-for-height, height-for-age and weight-for-age Z scores to classify them into various nutritional status categories using WHO[9] standards and cut-off points. IYCF data was analysed in Excel using guidance from the Infant and Young Child Feeding Practices collecting and using data: a step- by- step guide. All the other quantitative data were entered and analysed in the SPSS version.

[9] WHO 2006

# 3. Results

**Table 6: General Characteristics of Study population and Households**

| | |
|---|---|
| Number of children 6-59 months surveyed | 651 |
| Number of children 6-59 months analysed | 651 |
| Number of anthropometry data excluded using Plausibility Check | 0 |

**Household Census:**

| | |
|---|---|
| Number of total population surveyed for mortality | 2999 |
| Number of children under five surveyed for mortality | 890 |
| Number of HH covered in the mortality survey | 463 |
| Number of persons who joined the household during the recall period | 40 |
| Number of persons who left the household during the recall period | 31 |
| Number of under five children who joined the household during the recall period | 4 |
| Number of under five children who left the household during the recall period | 14 |
| Number of births during the recall period | 105 |
| Number of deaths during the recall period | 8 |

| **DEMOGRAPHY** | |
|---|---|
| Number of persons per HH | 2999/463= 6.43 |
| Number of children per HH | 890/463=1.92 |
| % of children under five in the population | 29.6% |

## *3.1 Anthropometric results (based on WHO standards 2006):*

**Table 7: Acute malnutrition definitions**

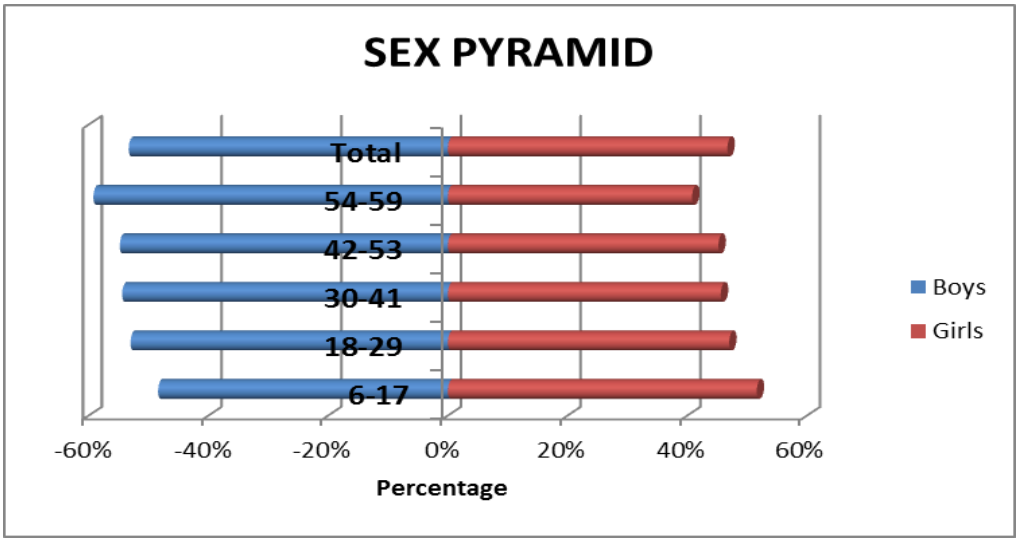
| | **WFH z-score** | **MUAC** |
|---|---|---|
| Global Acute Malnutrition | < -2 SD and/or oedema | <12.5 CM and/or Oedema |
| Moderate Acute Malnutrition | < -2 SD and -3≥ SD | ≥11.5cm and <12.5cm |
| Severe Acute Malnutrition | < -3 SD and/or oedema | <11.5cm and /or oedema |

Exclusion of z-scores from Observed mean SMART flags: WHZ -3.0 to 3.0; HAZ -3 to 3; WAZ -3 to 3. No exclusion were made in this survey

**Table 8: Distribution of age and sex of sample**

| | **Boys** | | **Girls** | | **Total** | | **Ratio** |
|---|---|---|---|---|---|---|---|
| **AGE (mo)** | **no.** | **%** | **no.** | **%** | **no.** | **%** | **Boy:girl** |
| **6-17** | 62 | 48.4 | 66 | 51.6 | 128 | 19.7 | 0.9 |
| **18-29** | 96 | 53.0 | 85 | 47.0 | 181 | 27.8 | 1.1 |
| **30-41** | 86 | 54.4 | 72 | 45.6 | 158 | 24.3 | 1.2 |
| **42-53** | 74 | 54.8 | 61 | 45.2 | 135 | 20.7 | 1.2 |
| **54-59** | 29 | 59.2 | 20 | 40.8 | 49 | 7.5 | 1.5 |
| **Total** | 347 | 53.3 | 304 | 46.7 | 651 | 100.0 | 1.1 |

**Figure 4: Population age and Sex Pyramid**




may be attributed to the difficulty in estimating actual ages of children due to absence of health cards. Age estimation was mainly done through use of the events calendar.

**Table 9: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex**

| | **All** n = 651 | **Boys** n = 347 | **Girls** n = 304 |
|---|---|---|---|
| **Prevalence of global malnutrition (<-2 z-score and/or oedema)** | (108) 16.6 % (13.4 - 20.3 95% C.I.) | (73) 21.0 % (16.0 - 27.2 95% C.I.) | (35) 11.5 % (8.1 - 16.2 95% C.I.) |
| **Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)** | (88) 13.5 % (10.9 - 16.7 95% C.I.) | (60) 17.3 % (13.0 - 22.6 95% C.I.) | (28) 9.2 % (6.2 - 13.4 95% C.I.) |
| **Prevalence of severe malnutrition (<-3 z-score and/or oedema)** | (20) 3.1 % (1.6 - 5.7 95% C.I.) | (13) 3.7 % (1.7 - 7.8 95% C.I.) | (7) 2.3 % (1.1 - 4.7 95% C.I.) |

The prevalence of oedema is 0.0 %

**Table 10: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema**

| | | **Severe wasting (<-3 z-score)** | | **Moderate wasting (>= -3 and <-2 z-score )** | | **Normal (> = -2 z score)** | | **Oedema** | |
|---|---|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 4 | 3.1 | 17 | 13.3 | 107 | 83.6 | 0 | 0.0 |
| **18-29** | 181 | 5 | 2.8 | 15 | 8.3 | 161 | 89.0 | 0 | 0.0 |
| **30-41** | 158 | 6 | 3.8 | 13 | 8.2 | 139 | 88.0 | 0 | 0.0 |
| **42-53** | 135 | 1 | 0.7 | 33 | 24.4 | 101 | 74.8 | 0 | 0.0 |

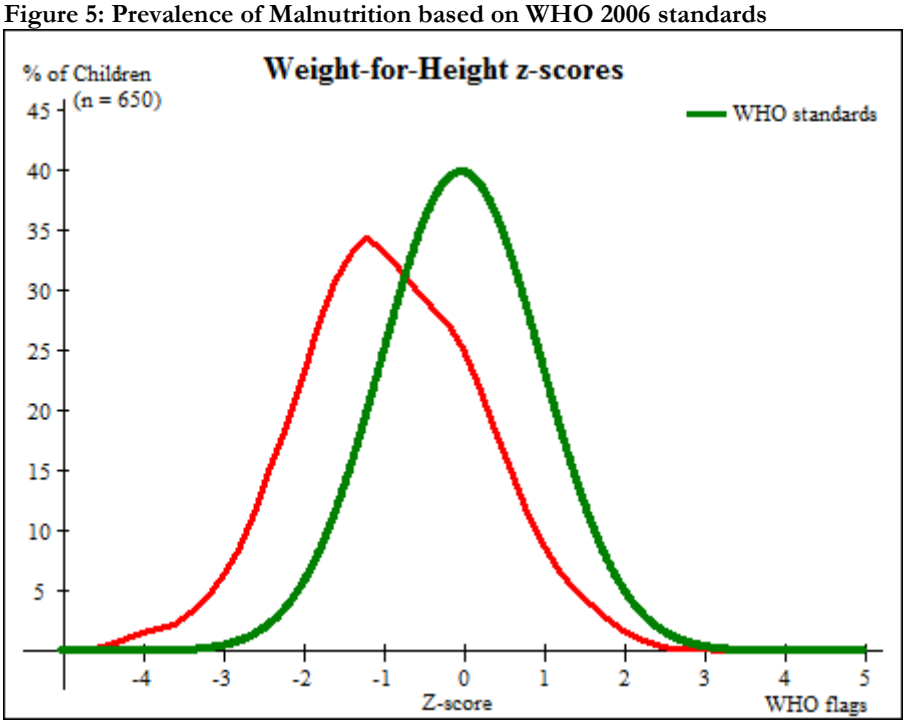
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **54-59** | 49 | 4 | 8.2 | 10 | 20.4 | 35 | 71.4 | 0 | 0.0 |
| **Total** | 651 | 20 | 3.1 | 88 | 13.5 | 543 | 83.4 | 0 | 0.0 |

**Table 11: Distribution of acute malnutrition and oedema based on weight-for-height z-scores**

| | **<-3 z-score** | **>=-3 z-score** |
|---|---|---|
| **Oedema present** | Marasmic kwashiorkor<br>No. 0<br>(0.0 %) | Kwashiorkor<br>No. 0<br>(0.0 %) |
| **Oedema absent** | Marasmic<br>No. 20<br>(3.1 %) | Not severely malnourished<br>No. 631<br>(96.9 %) |

21 children out of the sample were wasted but there were no cases of oedema found during the survey.

**Figure 5: Prevalence of Malnutrition based on WHO 2006 standards**




## *3.2. Malnutrition based on MUAC cut offs.*

**Table 12: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex**

| | **All**<br>n = 651 | **Boys**<br>n = 347 | **Girls**<br>n = 304 |
|---|---|---|---|
| **Prevalence of global malnutrition (< 125 mm and/or oedema)** | (23) 3.5 % | (9) 2.6% | (14) 4.6 % |
| **Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)** | (19) 2.9 % | (8) 2.3 % | (11) 3.6 % |
| **Prevalence of severe malnutrition (< 115 mm and/or oedema)** | (4) 0.6% | (1) 0.3 % | (3) 1% |

## *3.3. Chronic Malnutrition.*

### 3.3.1. Prevalence of underweight

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

| | **All** n = 651 | **Boys** n = 347 | **Girls** n = 304 |
|---|---|---|---|
| **Prevalence of underweight (<-2 z-score)** | (112) 17.2 % (13.7 - 21.4 95% C.I.) | (70) 20.2 % (15.1 - 26.4 95% C.I.) | (42) 13.8 % (10.3 - 18.3 95% C.I.) |
| **Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)** | (92) 14.1 % (11.0 - 17.9 95% C.I.) | (56) 16.1 % (12.0 - 21.4 95% C.I.) | (36) 11.8 % (8.6 - 16.0 95% C.I.) |
| **Prevalence of severe underweight (<-3 z-score)** | (20) 3.1 % (1.7 - 5.6 95% C.I.) | (14) 4.0 % (2.1 - 7.8 95% C.I.) | (6) 2.0 % (0.8 - 5.0 95% C.I.) |

The prevalence for underweight was reported at a GAM of17.2% (13.7-21.4 95 CI) and a SAM of 3.1% (1.7-5.6 95 CI) with no significance difference between the sexes

**Table 14: Prevalence of underweight by age, based on weight-for-age z-scores**

| | | **Severe underweight (<-3 z-score)** | | **Moderate underweight (>= -3 and <-2 z-score )** | | **Normal (> = -2 z score)** | | **Oedema** | |
|---|---|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 4 | 3.1 | 16 | 12.5 | 108 | 84.4 | 0 | 0.0 |
| **18-29** | 181 | 9 | 5.0 | 21 | 11.6 | 151 | 83.4 | 0 | 0.0 |
| **30-41** | 158 | 4 | 2.5 | 22 | 13.9 | 132 | 83.5 | 0 | 0.0 |
| **42-53** | 135 | 1 | 0.7 | 26 | 19.3 | 108 | 80.0 | 0 | 0.0 |
| **54-59** | 49 | 2 | 4.1 | 7 | 14.3 | 40 | 81.6 | 0 | 0.0 |
| **Total** | 651 | 20 | 3.1 | 92 | 14.1 | 539 | 82.8 | 0 | 0.0 |

### 3.3.2. Prevalence of stunting

The prevalence for stunting was reported at a GAM of 16.3 %( 13.3-19.8 95% CI) and a SAM 4.8% (3.4-6.7 95% CI). Further analysis indicated a significant difference in the levels of stunting among the sexes at GAM level-it was higher in boys compared to girls (P=0.005) and no difference however in the SAM level (P value 0.073)

**Table 15: Prevalence of stunting based on height-for-age z-scores and by sex**

| | **All** | **Boys** | **Girls** |
|---|---|---|---|

| | n = 651 | n = 347 | n = 304 |
|---|---|---|---|
| **Prevalence of stunting (<-2 z-score)** | (106) 16.3 % (13.3 - 19.8 95% C.I.) | (70) 20.2 % (16.1 - 24.9 95% C.I.) | (36) 11.8 % (8.4 - 16.4 95% C.I.) |
| **Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)** | (75) 11.5 % (9.2 - 14.4 95% C.I.) | (49) 14.1 % (10.8 - 18.3 95% C.I.) | (26) 8.6 % (5.7 - 12.7 95% C.I.) |
| **Prevalence of severe stunting (<-3 z-score)** | (31) 4.8 % (3.4 - 6.7 95% C.I.) | (21) 6.1 % (4.0 - 9.1 95% C.I.) | (10) 3.3 % (1.9 - 5.6 95% C.I.) |

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

| | | **Severe stunting (<-3 z-score)** | | **Moderate stunting (>= -3 and <-2 z-score )** | | **Normal (> = -2 z score)** | |
|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 6 | 4.7 | 7 | 5.5 | 115 | 89.8 |
| **18-29** | 181 | 8 | 4.4 | 26 | 14.4 | 147 | 81.2 |
| **30-41** | 158 | 10 | 6.3 | 26 | 16.5 | 122 | 77.2 |
| **42-53** | 135 | 6 | 4.4 | 13 | 9.6 | 116 | 85.9 |
| **54-59** | 49 | 1 | 2.0 | 3 | 6.1 | 45 | 91.8 |
| **Total** | 651 | 31 | 4.8 | 75 | 11.5 | 545 | 83.7 |

**Table 17:Mean z-scores, Design Effects and excluded subjects**

| Indicator | n | Mean z-scores ± SD | Design Effect (z-score < -2) | z-scores not available* | z-scores out of range |
|---|---|---|---|---|---|
| Weight-for-Height | 651 | -0.92±1.16 | 1.35 | 0 | 0 |
| Weight-for-Age | 651 | -1.11±0.98 | 1.64 | 0 | 0 |
| Height-for-Age | 651 | -0.87±1.28 | 1.24 | 0 | 0 |

* contains for WHZ and WAZ the children with edema.

## *3.3 Children's morbidity*

Out of the 651 children sampled for the survey, a total of 243 had been sick two weeks prior to the survey

**Table 18: Prevalence of reported illness in children in the two weeks prior to interview (n=651)**

| | **6-59 months** |
|---|---|
| **Prevalence of reported illness** | 37% |

**Table 19: Symptom breakdown in the children in the two weeks prior to interview**

| | **6-59 months*** |
|---|---|
| **Diarrhoea** | 29% |
| **Vomiting** | 28% |

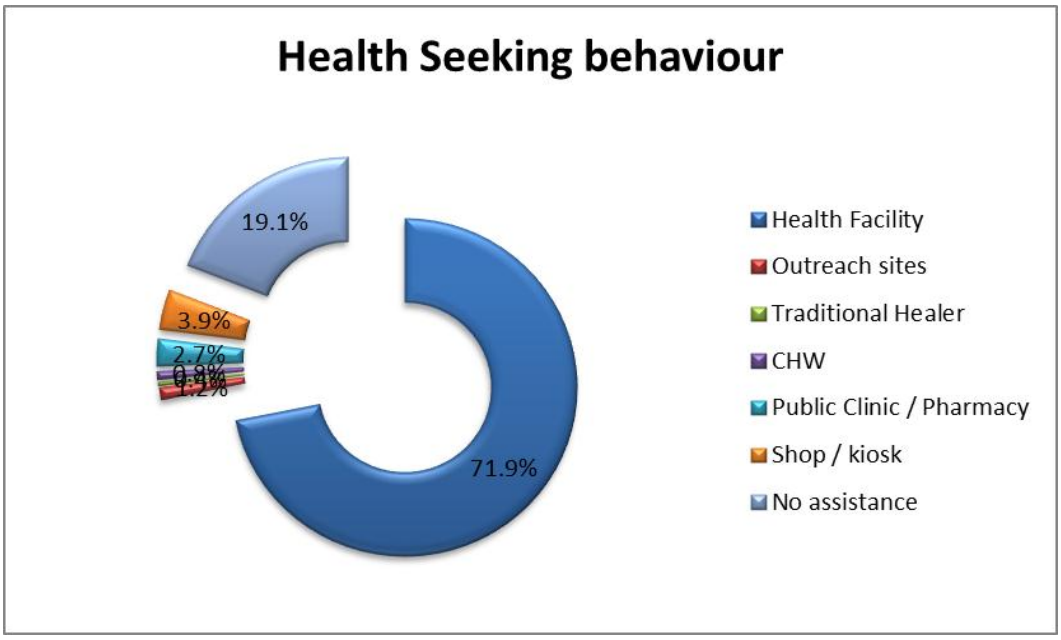
| | |
|---|---|
| **Cough** | 37% |
| **Fever** | 6% |
| **Other** | 13% |

**This question was multiple responses*

### 3.3.1. Health seeking behaviour

Most of the respondents reported to having sought help while their children were sick in the health facility (71.1%), 1.2% from SCUK supported outreach sites and 2.7% from public clinics. However there were a 19.1% of the respondents who reported to not seeking care and a 3.9% who reported to self- medication from shops and Kiosks

**Figure 6: Health Seeking Behaviour**




## *3.4 Vaccination Results*

Immunization coverage for OPV1, OPV 3 and measles were above the recommended EPI coverage of >80% both by card and by recall. The same was also true for the BCG scar which was present in 96.5% of all the children sampled as shown in the figure below

**Figure 7: Immunization OPV/Measles/Pentavalent**

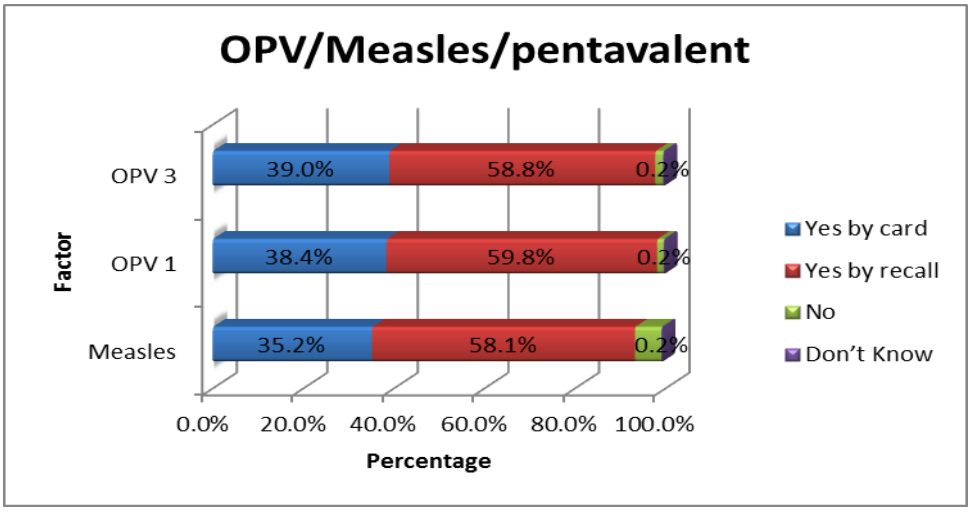



Table 20: Vaccination coverage: BCG, Vitamin A and deworming for 6-59 months

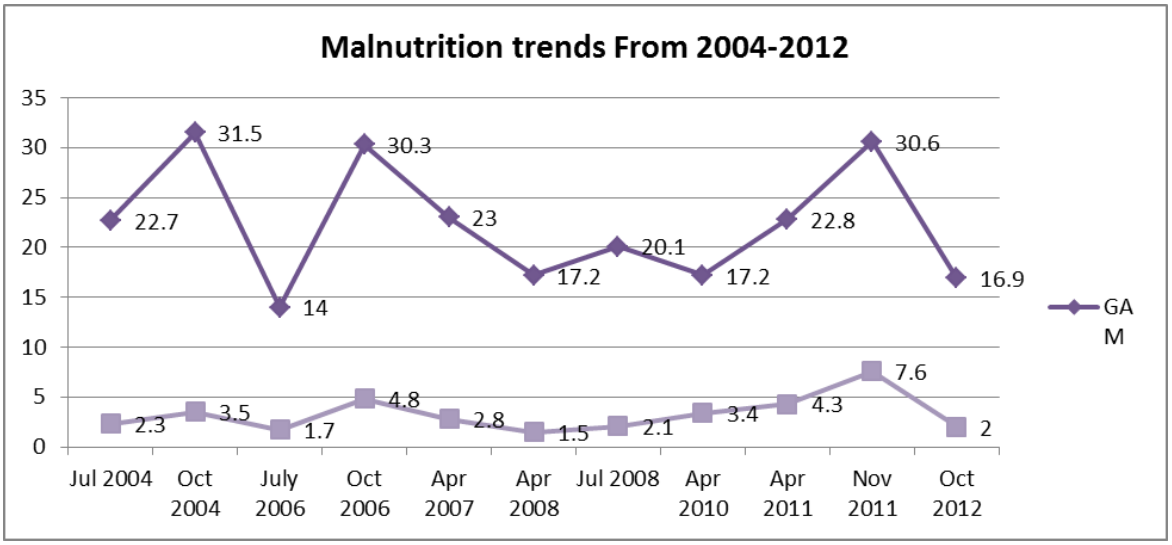
| Factor | Interpretation | Wajir East |
|---|---|---|
| **BCG Scar** | Present | 96.5 |
| **Vitamin A supplementation (6-11 months)** | 1 time | 76% |
| **Vitamin A supplementation (≥12months)** | 1 time | 64.6% |
| | 2 times | 27.1%) |
| **De-worming Children aged ≥ 12 months** | 1 time | 57.2% |
| | 2 times | 9.6% |
| **Iron/folate supplementation** | Pregnant women | 31.1% |
| **Zinc** | In Diarrhoea management | 17.8% |

# 4. Discussion

## *4.1 Nutritional status*

The findings from this survey recorded a prevalence of Global Acute Malnutrition (GAM) of 16.9 % (13.6%-20.8% 95% CI) and SAM 2.0(1.6%-5.3%). This rates are critical according WHO cut offs for Wasting. Compared to the previous survey, this was an improvement in nutrition status from GAM of 30.6% (25.8 - 35.8) and SAM 7.6 % (5.3 - 10.7 95% C.I) with the improvement being significant (P-value 0.000 and 0.005 respectively upon analysis with the CDC calculator.

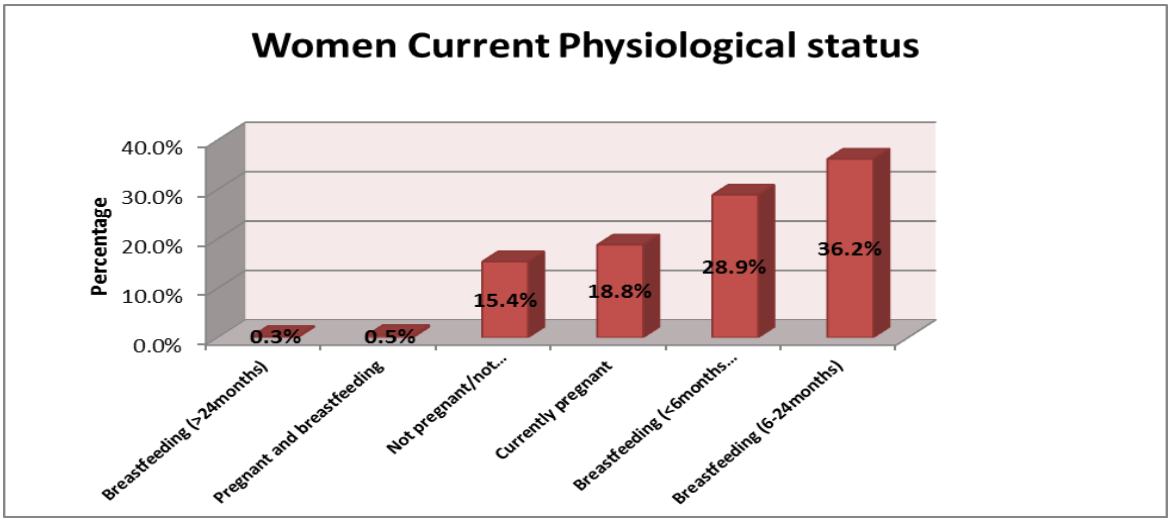
**Figure 8: Malnutrition trends**[11]




### 4.1.1. Caretaker's nutrition status

Most of the female respondents were either pregnant (18.8%) or lactating (65.1%).

**Figure 9: Women Current Physiological Status**




[11] From 2004 to 2008 the surveys covered the larger Wajir District and the findings were reported in NCHS.

#### 4.1.1.1. Caretakers MUAC

Malnutrition rates by MUAC for all the women were reported at 10% with 95 women having MUAC less than 21cm. Among the PLWs, malnutrition was reported at 11.7% of all the PLW respondents.

**Table 21: Caretakers MUAC**

| Category | MUAC <21 CM | MUAC <21 CM |
|---|---|---|
| All Women | 10% (95) | 90 % (409) |
| Pregnant Lactating | 11.7% (47) | 88.3% (355) |

#### 4.1.1.2. Iron and Folic Acid Supplementation

91 women reported to being pregnant at the time of the survey. Of those only 31 were using iron and Folic Acid supplements

**Table 22: Iron Folic Supplementation**

| Iron Supplementation | Status | Number | % |
|---|---|---|---|
| Currently Pregnant | Yes | 91 | 18.8 % |
| Supplemented with iron/folic acid | Yes | 31 | 31.1% |

## 4.2 Mortality results (retrospective 82days prior to the interview)

There were 8 reported cases of death 5 among the children under the age of 5 and 3 among the adults. This translated to a crude mortality rate of 0.19/10000 people and an under five mortality rate of 0.39/10,000 children. Both these rates are within the acceptable levels. Compared to results of the survey conducted the same time the previous year, there was no difference between the CMR and U5MR reported then now and then at p values 0.478 and 0.234 respectively.

Table 3.12: Mortality rates

| | |
|---|---|
| CMR (total deaths/10,000 people / day) | 0.19 (0.08-0.44) (95% CI) |
| U5MR (deaths in children under five/10,000 children under five / day) | 0.39 (0.13-1.23) (95% CI) |

## *4.3 Causes of malnutrition*

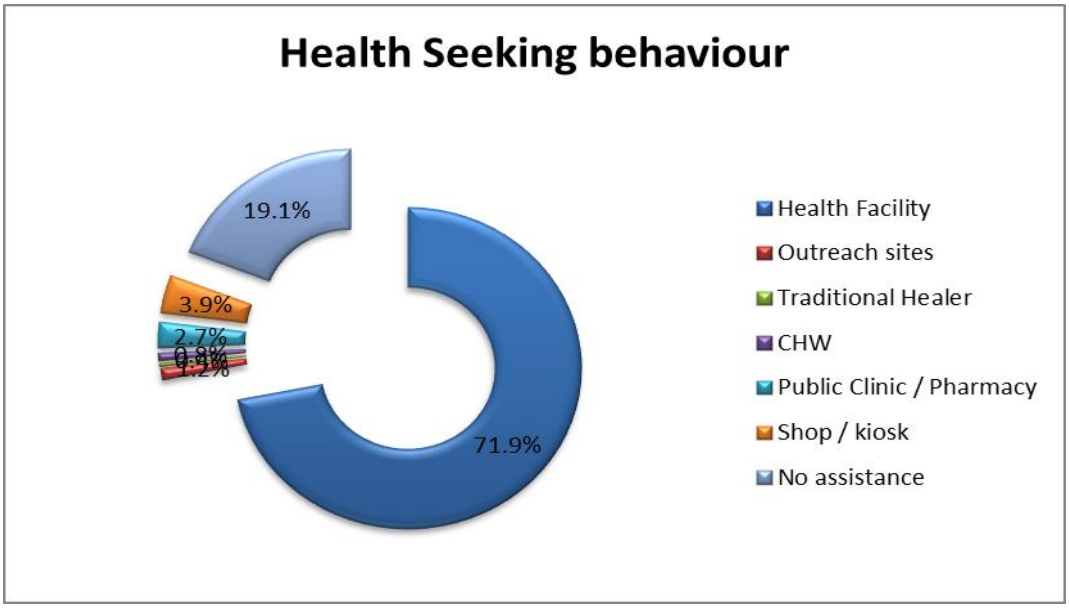
The nutrition survey was undertaken towards the start of the short rains therefore at the end of the Jilaal dry season. At the point of the survey . Malnutrition amongst children in the district were affected by the following factors:

### 4.3.1. Health status:

#### *4.3.1.1. Morbidity:*

Morbidity was high with sickness in the last two weeks reported among 37 % of the children. The mainly reported diseases were; acute respiratory tract infections (37%), followed by diarrhoea (29%), Vomiting (28%), fever with chills like Malaria (6%) among others. The disease patterns in the community were said to be typical for the season.

**Figure 10: Health Seeking Behaviour**




#### *4.3.1.2. Vaccination, Micronutrient supplementation and De-worming coverage*

The immunization coverage for all antigens BCG, Measles and Pentavalent/OPV 1& 3 were all above the recommended government rates of above 80% both by card and by recall. These good coverage were consistent with previous findings and could be attributed to Malezi bora campaigns and integrated outreached provided in the community.

Vitamin A supplementation however was suboptimal with the age group above 12 months (post immunization) reporting 27.1% to supplementation twice in the previous year. Deworming and Iron Folate supplementation was also low reported at 57.2% and 31.1% respectively. The same was true for Zinc in the management of diarrhoea which was reported among only 17.8% of the children who had diarrhoea in the previous two weeks.

### 4.3.2. Infant and Young Child Feeding (IYCF)

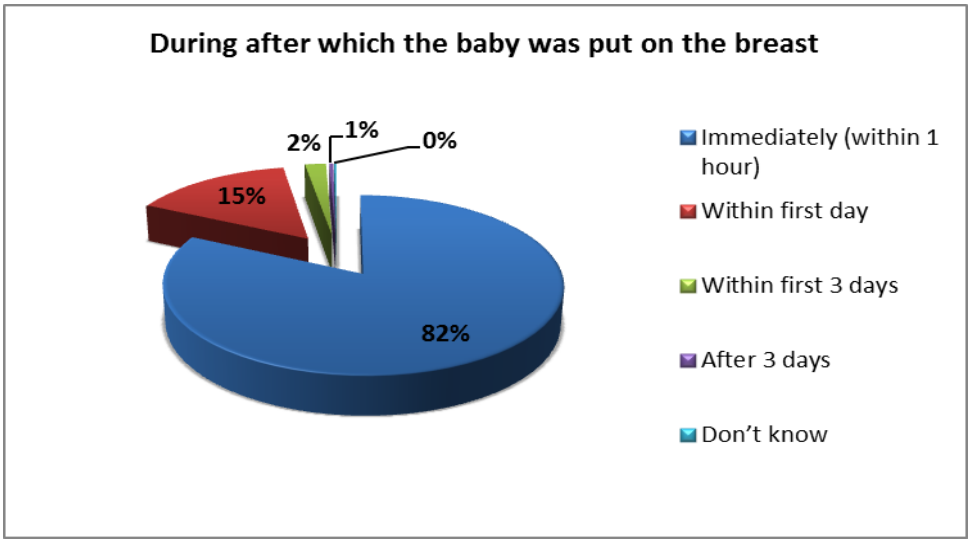
Infant and young child feeding is a continuum of critical nutrition and health practices that begin during pregnancy and continue through at least the first two years of life. The sharpest increase in malnutrition occurs between 6 and 24 months of age, the time when children grow most rapidly and are introduced to other foods in addition to breast milk. Appropriate IYCF practices include timely initiation of breastfeeding within 1 hour of birth, exclusive

breastfeeding for the first 6 months, complementary feeding after 6 months with continued breastfeeding up to 2 years, and improved feeding during and after illness. In this survey, the IYCF practices were considered to be sub-optimal and likely to contribute to the high malnutrition rates.

### *4.3.2.1. Timely Introduction to breastfeeding (n=512)*

Most of the respondents reported to having ever having breastfed their children reported at 98.4%. of these, 82 % reported to putting the baby on the breast within one hour on birth which exceeds the national targets of above 80% as shown in the figure below. The other respondents reported to putting the baby within the first day (15%) with around 2% reporting to putting the baby within the first three days.

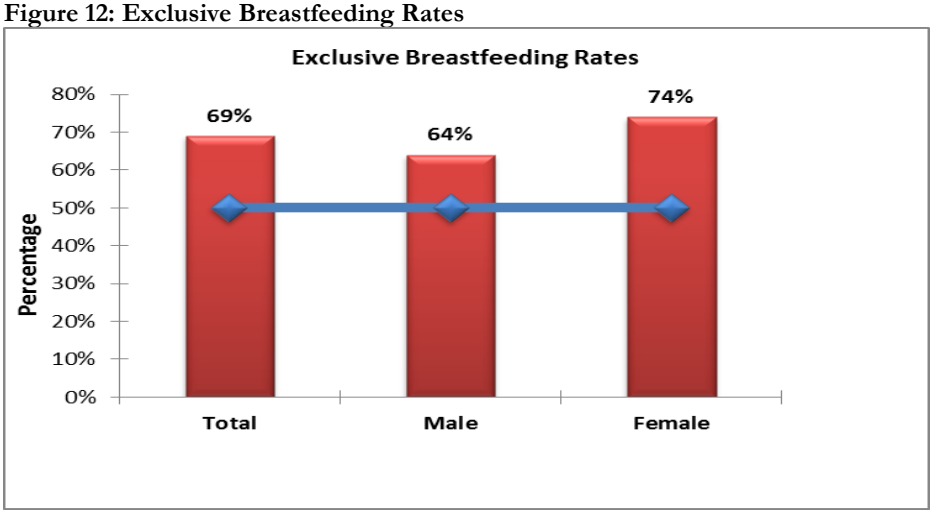
**Figure 11: Timely Initiation of Breastfeeding**




### *4.3.2.2. Exclusive Breastfeeding 0 to 5 months (n=254)*

Exclusive breastfeeding rates were reported at 69% among the two sexes but were reported slightly higher in boys compared to girls as indicated below. This was higher than the national target of above 50%.

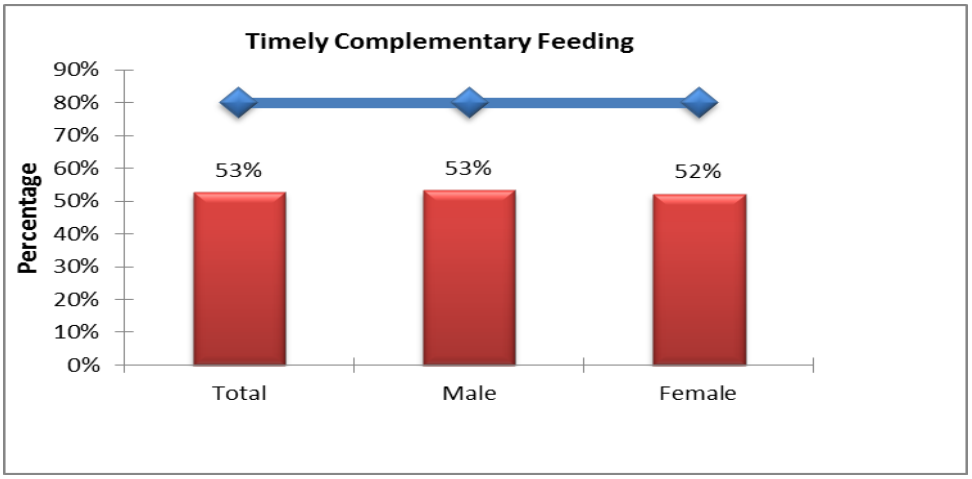
**Figure 12: Exclusive Breastfeeding Rates**



### *4.3.2.3. Timely Introduction to complementary Feeding 6 to 9 months (n=38)*

Timely introduction to complementary foods to children aged between six months was reported at 53% below the recommended national target of above 80%. The rates were similar between boys and girls.

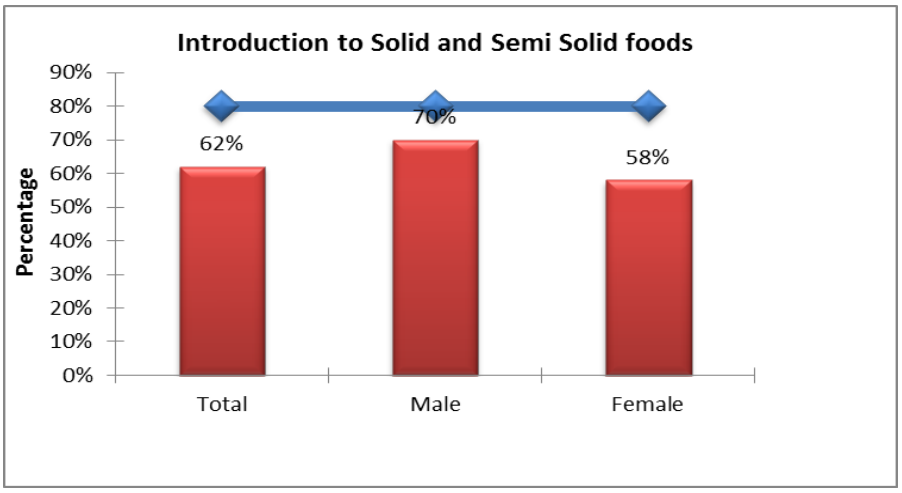
**Figure 13: Timely introduction to complementary feeding**




### *4.3.2.4. Introduction to Solid and semi-solid foods 6 to 8 months (n=29)*

Introduction to solid and semi-solid foods was reported at 62% of all the respondents. This was below the recommended above 80 national targets. The introduction to these foods was reported higher in boys compared to girls at 70% and 58% respectively.

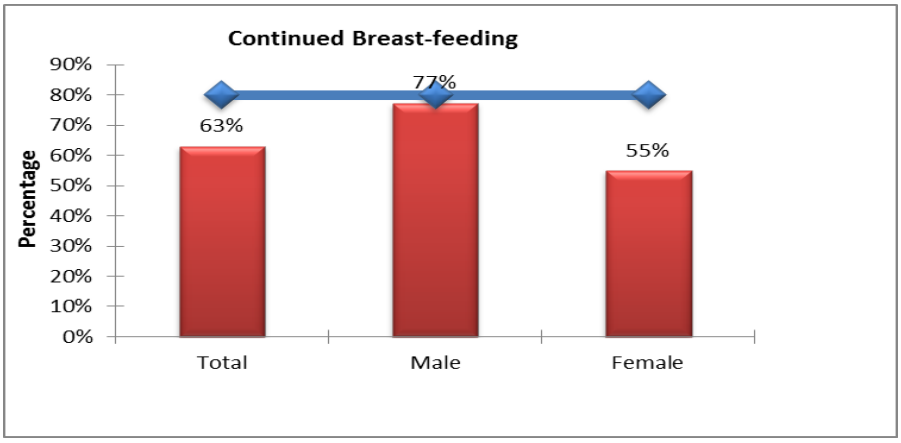
**Figure 14: Introduction to Solid and Semi solid Foods**




### *4.3.2.5. Continued Breastfeeding 12-15 months (n=60)*

Continued breastfeeding at 12 to 15 months was reported at 63 % for both sexes whichh was below the recommended above 80% coverage. It was reporetd higher in boy compared to girls at 77% and 55% respectively.

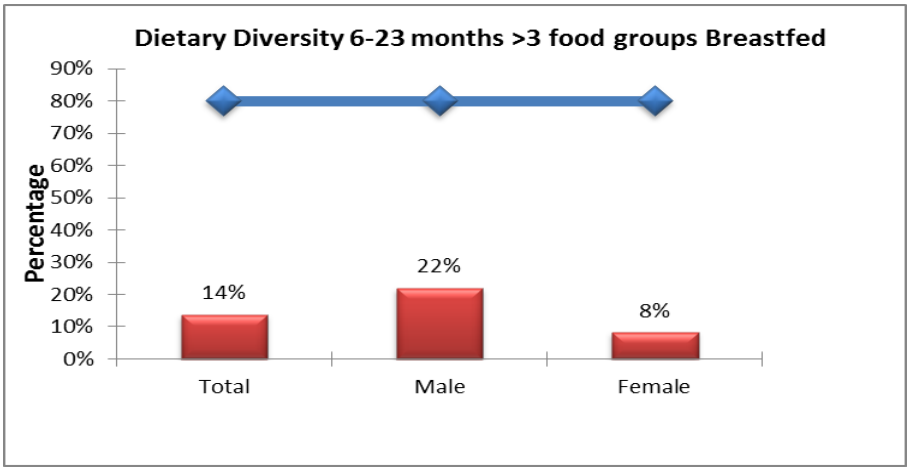
**Figure 15: Continued Breastfeeding**




### *4.3.2.6. Dietary Diversity 6-23 months more than 3 food groups breast fed children (n=260)*

Dietary diversity among breastfed children aged between 6 to 23 months (above three food types) was poor reported at 14%. Again this was higher in boys compared to girls at 22% and 8% respectively.

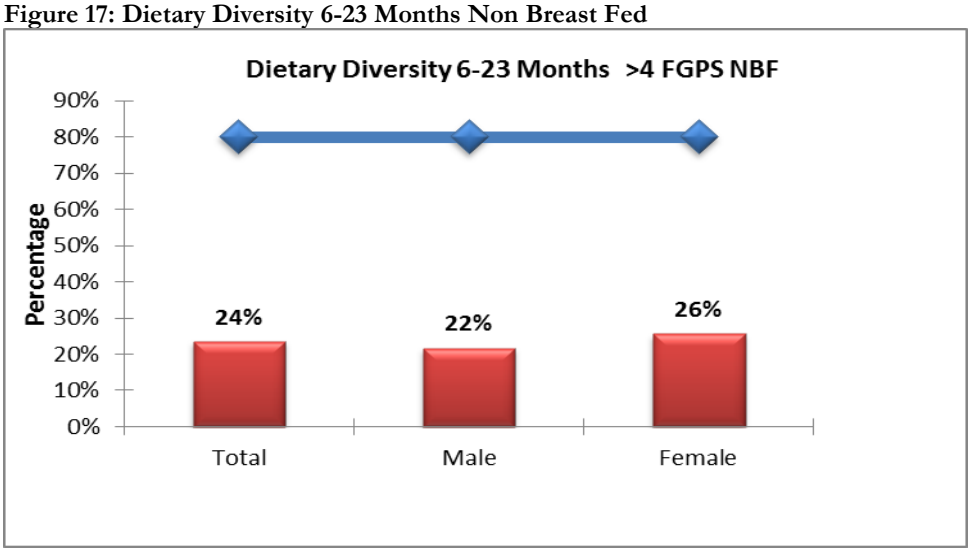
**Figure 16: Dietary Diversity 6-23 BF children**




### *4.3.2.7. Dietary Diversity among non-breastfed children6-23 months (n=85)*

Overall, dietary diversity was slightly better in non-breastfed children compared to breastfed children reported at 24%. The trends were similar comparing across the sexes reported at 22% and 26%for boys and girls respectively.

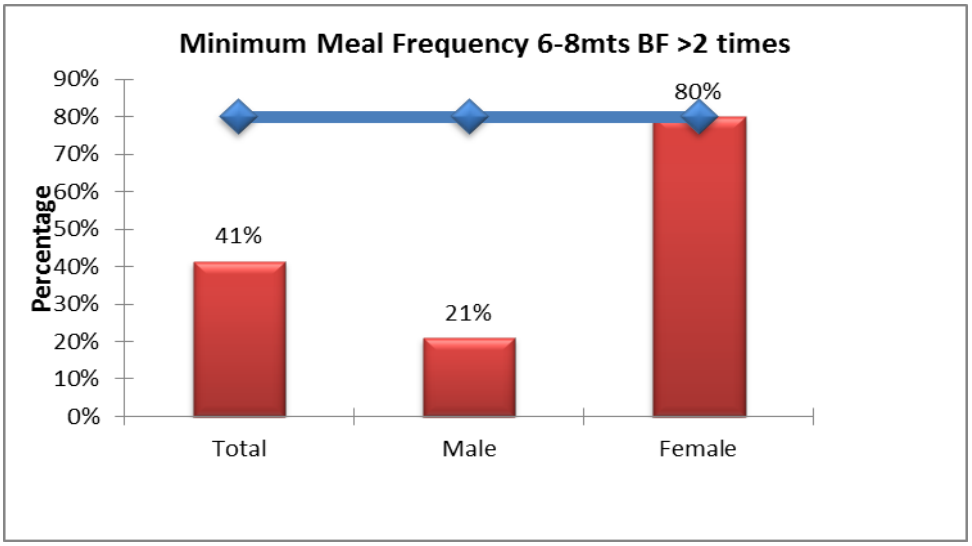
**Figure 17: Dietary Diversity 6-23 Months Non Breast Fed**




### *4.3.2.8. Minimum meal frequency among children 6-8 months (n=29)*

The recommended meal frequency of more than two times among the children aged 6 to 8 months was met in 41% of the respondents who met the criteria. The national target was met among the girls (80%) compared to boys (21%).

**Figure 18: Minimum Meal frequency 6-8 Months Breast Fed**

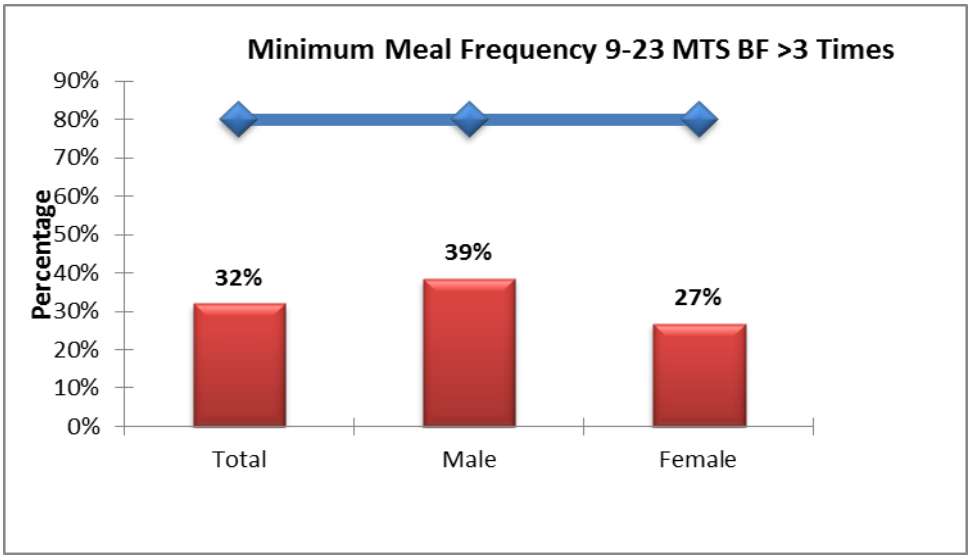



### *4.3.2.9. Minimum Meal frequency breastfed children 9-23 months (n=231)*

Children fed the recommended above three times among the breastfed children between 9 and 23 months was reported at 32% way below the recommended above 80%

The rates were higher in boys compared to girls reported at 39% and 27% respectively.

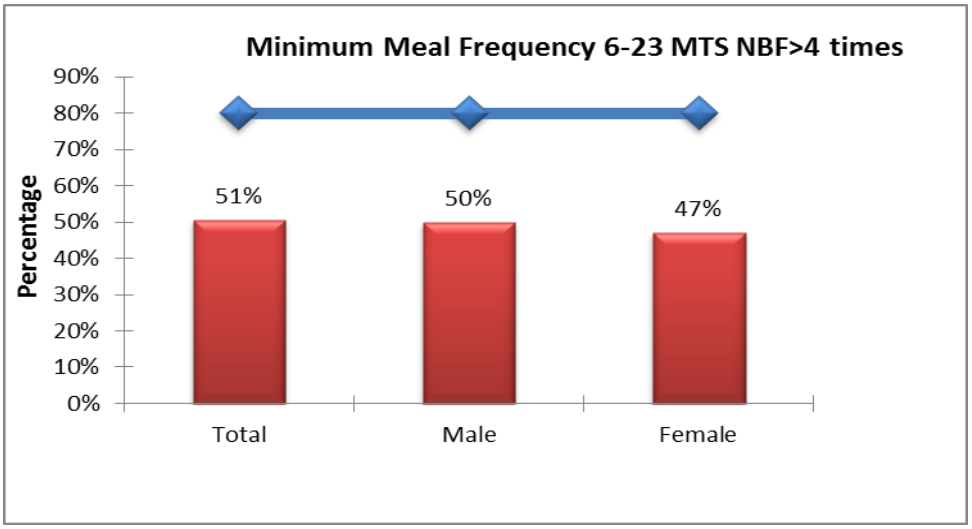
**Figure 19: Minimum Meal Frequency 9-23 Months Breast fed**




### *4.3.2.10. Minimum Meal frequency for non-breastfed children aged 6 to 23months (N=89)*

51% of the respondents aged between 6 and 23 months met the recommended > 4 times feeding times for non-breastfed children. The rates were similar among the boys compared to the girls reported at 50% and 47% respectively.

**Figure 20: Minimum Meal Frequency 6-23 months Non Breast Fed**

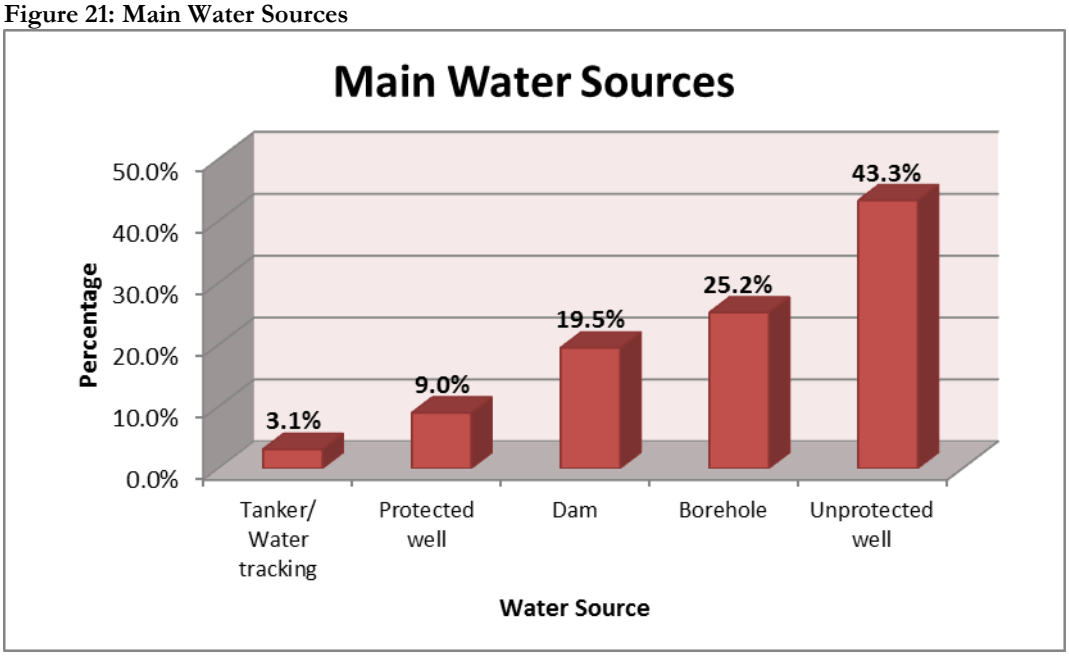



## *4.4. Water Sanitation and hygiene*

### 4.4.1. Main water sources

The main sources of water for a majority of the population were borehole (33.9%), unprotected wells (29%), and private and public dams (18.3%). A few of the households got water from protected wells and water taps as shown below;

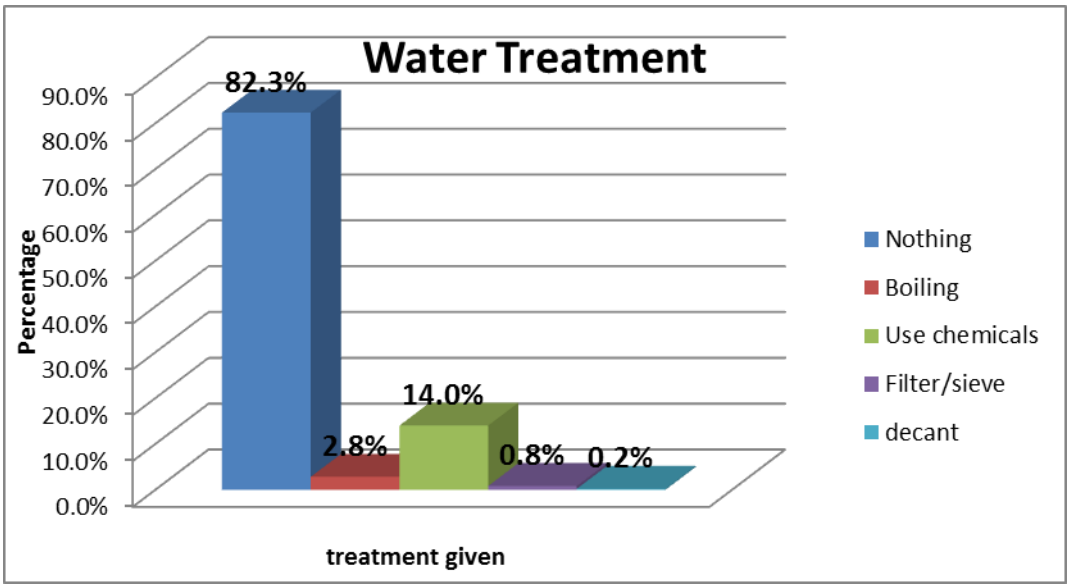
**Figure 21: Main Water Sources**




## 4.4.2. Water treatment

Though quite a numebr of the repondednts reported to having used water for unsafe sources (around 47%), most respondent did not do anything to their drinking water (94.3%). Chemical use in water treatment was reported by around 7% of the respondents as shown in the figure below;

**Figure 22: Water Treatment**




## 4.4.3. Hand washing practices

Around two thirds of the respondents reported to washing hands at the most critical times. However it is worth noting that most of them used water only (85%) as shown in figure 4.11 and 4.12 below;

**Figure 23: When hands were washed**

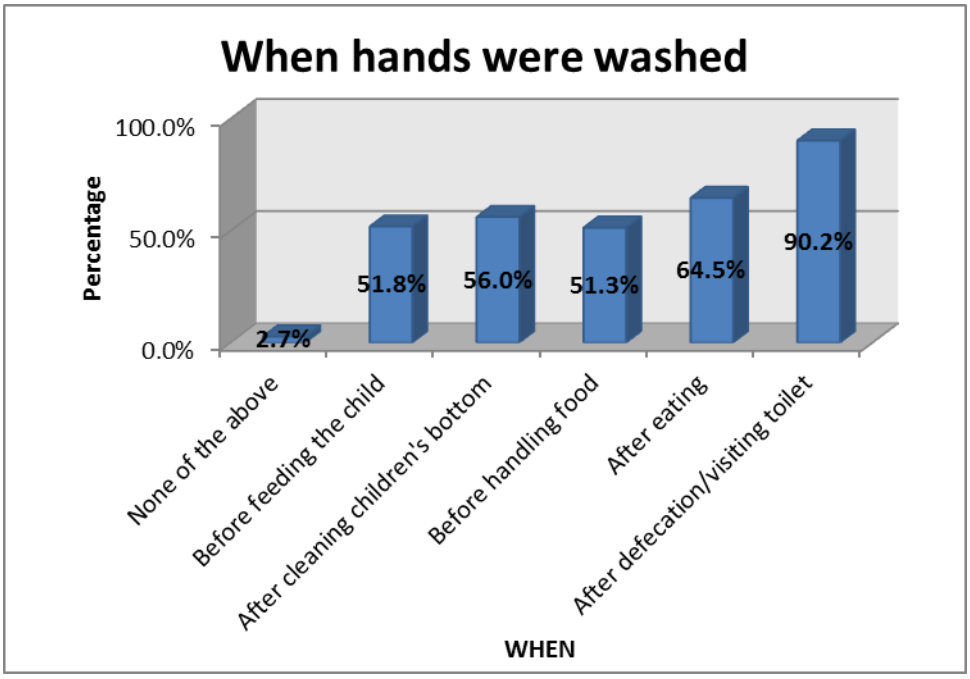
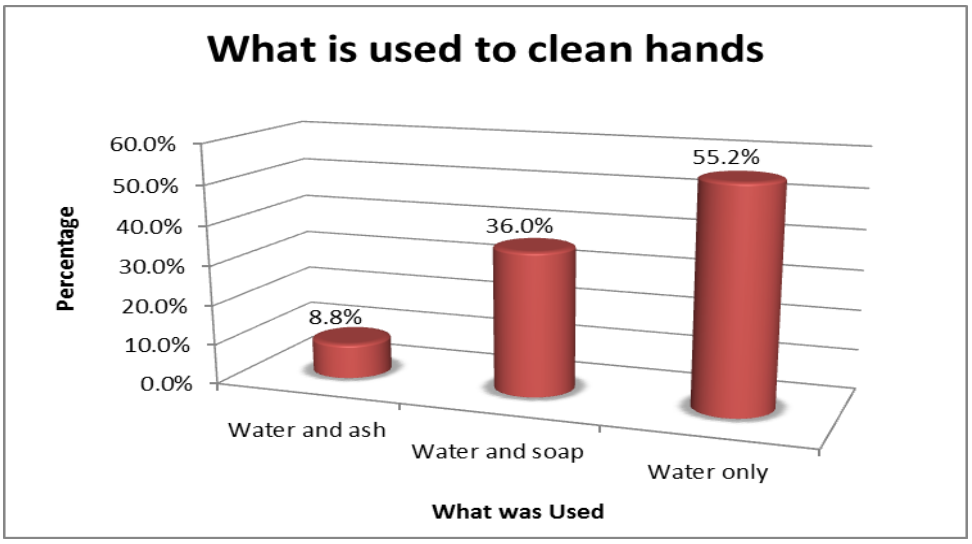


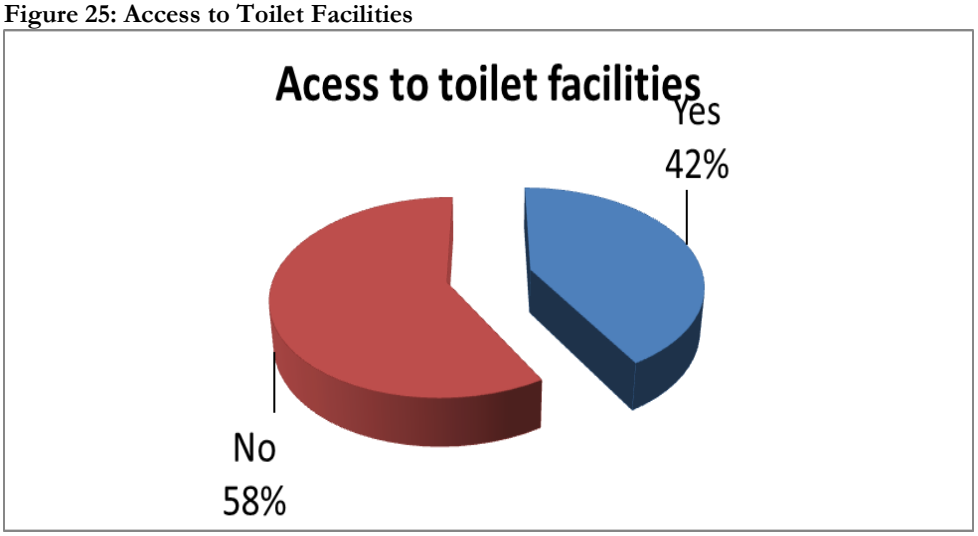

**Figure 24: what was used to clean hands**




## 4.4.4. Access to toilet facilities

More than half of the respondents reported to not having access to a toilet facilities with 54% of them using the bush as the alternative for both adult and child faeces disposal

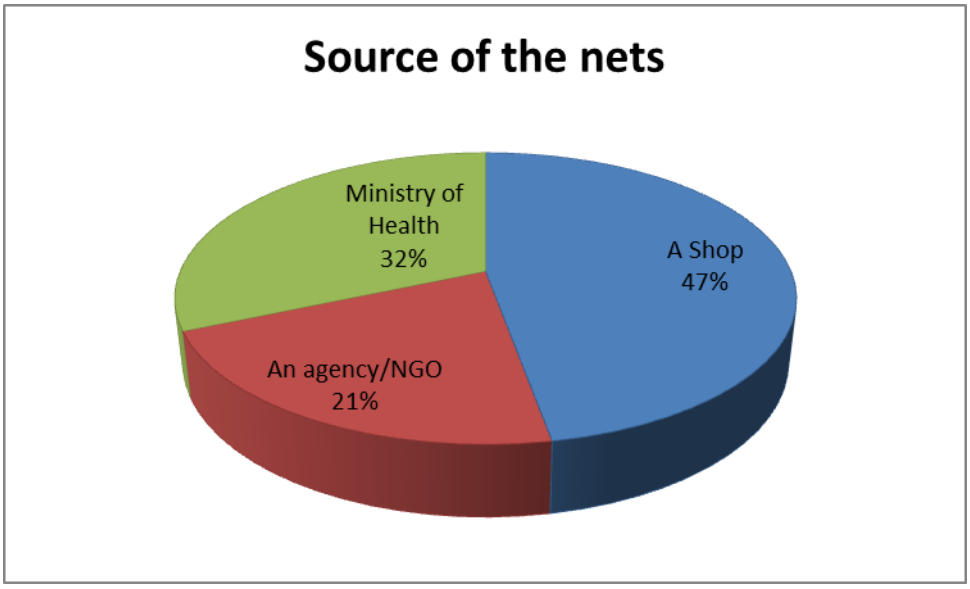
**Figure 25: Access to Toilet Facilities**




## *4.5. Malaria*

79.1% of the respondents reported to having at-least one mosquito net in the house. However looking at achievement of universal nets coverage (2 nets or above in the HH) only 46.6% met the criteria. Most of them had bought the nets from the shop (47%) with the remainder having received them either from the Ministry of Health (32%) or from Non-Governmental organizations (21%). Of all households who reported to having got the nets from the shop, only 29% of the respondents reported to having ever treated their nets.

**Figure 26: Mosquito Net Sources**

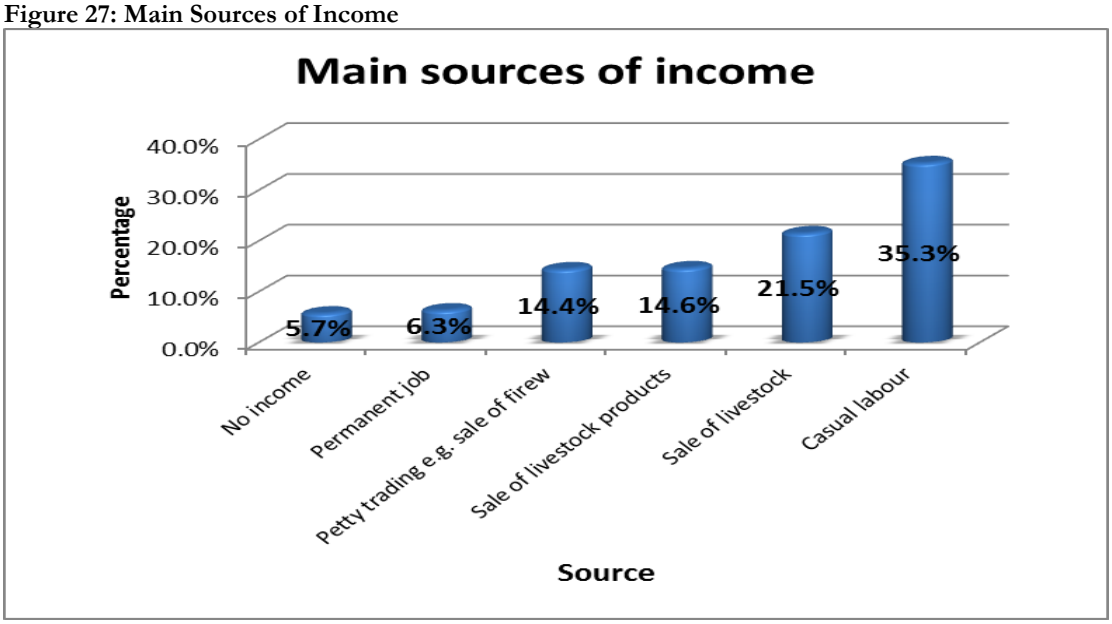



## *4.6. Food security and livelihoods*

### 4.6.1. Main sources of income

Most of the respondents reported to casual labour as their source of income followed by sale of livestock and livestock products.

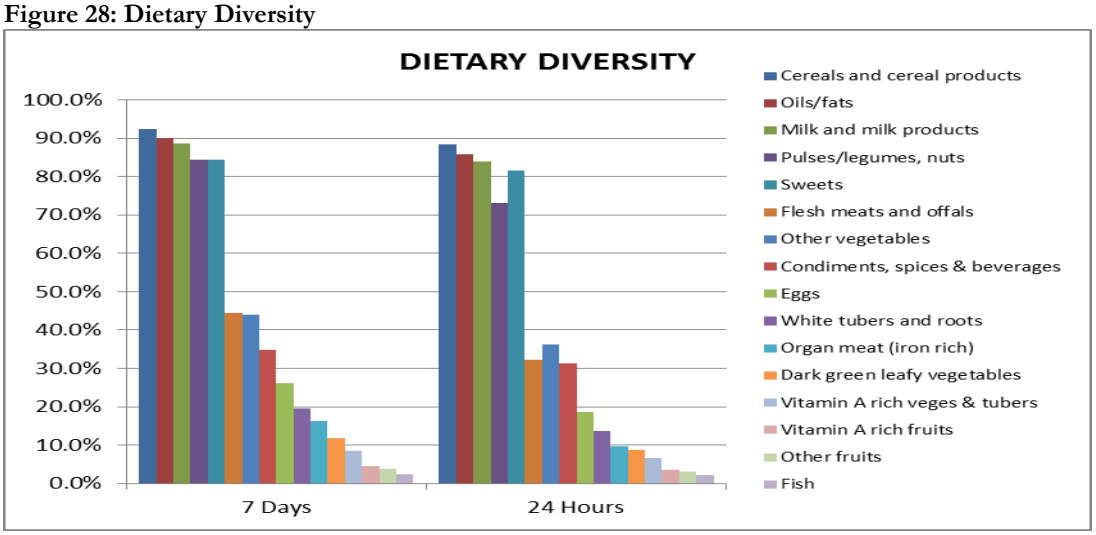
Figure 27: Main Sources of Income




## 4.6.2. Dietary diversity

Most of the households reported to consuming foods from five main groups both from 7 days and 24 hour recall namely Cereal and cereal products, oils and fats, milk and milk products, Pulses/legumes and nut, and sweets against the recommended 8 food groups. Other categories consumed by about 40% of the respondents included flesh meats and offal, other vegetables (not dark green) and condiments. The least consumed foods were fish, vitamin A rich fruits, vegetable and tubers and iron rich foods (organ meats and dark green vegetables). Most of the HH reported purchase as their main source of food for all categories.

Figure 28: Dietary Diversity




## 4.6.3. Food aid

61.7% Reported to have received GFD in the last 3 months all the Food Aid was from WFP/Lead Agency. 97.5% reported to consuming the food within the HH with around 1.5% sharing with kin. Most of the respondents reported to having received Cereals (87.9%) compared to the other products which form part of the food basket which were reported at

on average 15.9% (CSB, oil and pulses). For most of the respondents, the food aid lasted on average for two weeks.

**Figure 29: Households that had received Food Aid**

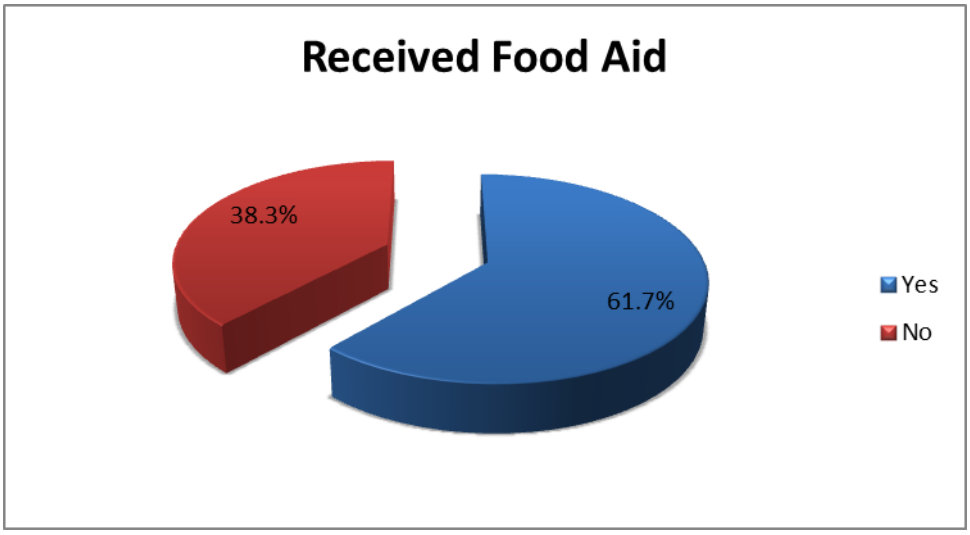



**Figure 30: GFD Food Basket**

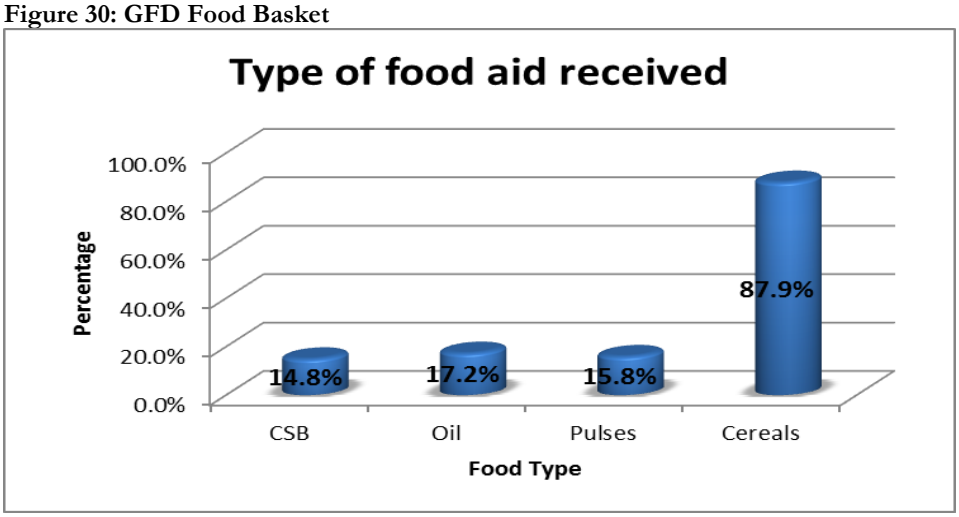
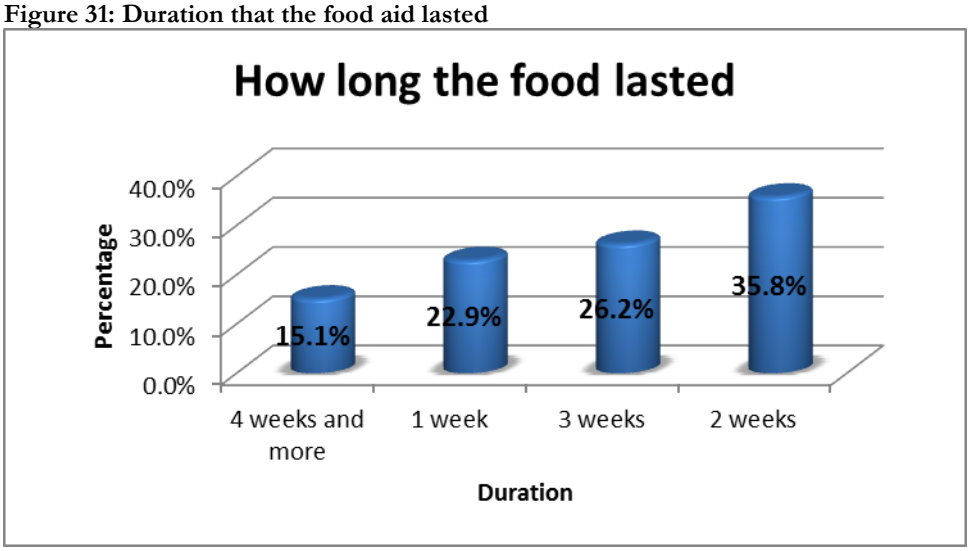



**Figure 31: Duration that the food aid lasted**



### 4.6.4. Coping Strategies

82.5 % of the respondents reported to having experienced an incidence in the previous six months that affected their ability to purchase or eating preferred items. The most commonly employed coping strategies was purchase of food on credit (33.4%), reducing the number of meals (30.5%) and reducing the size of the meals (16.9%) as shown in the figures below;

**Figure 32: Households that had experienced Shock in the last 6 months**

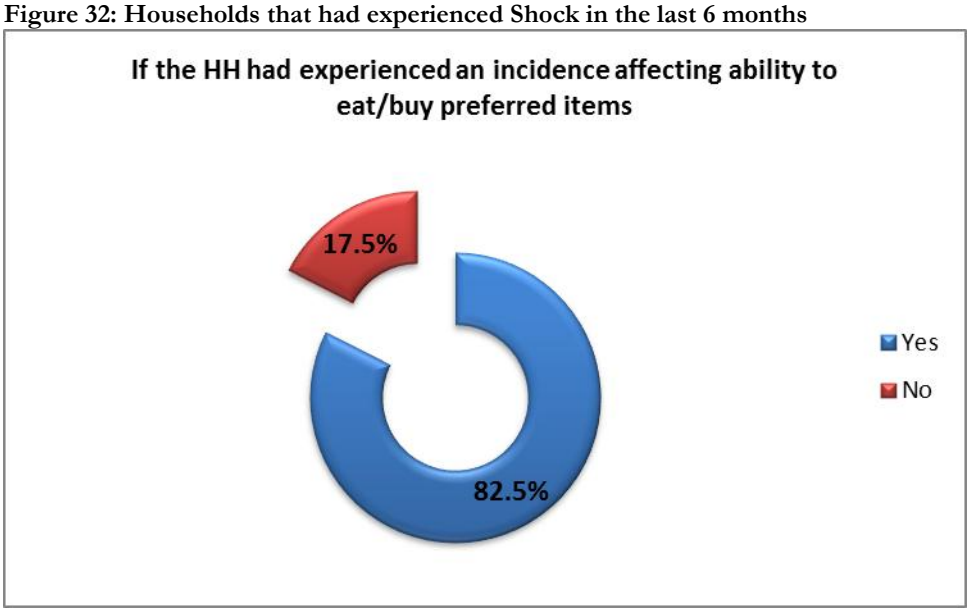
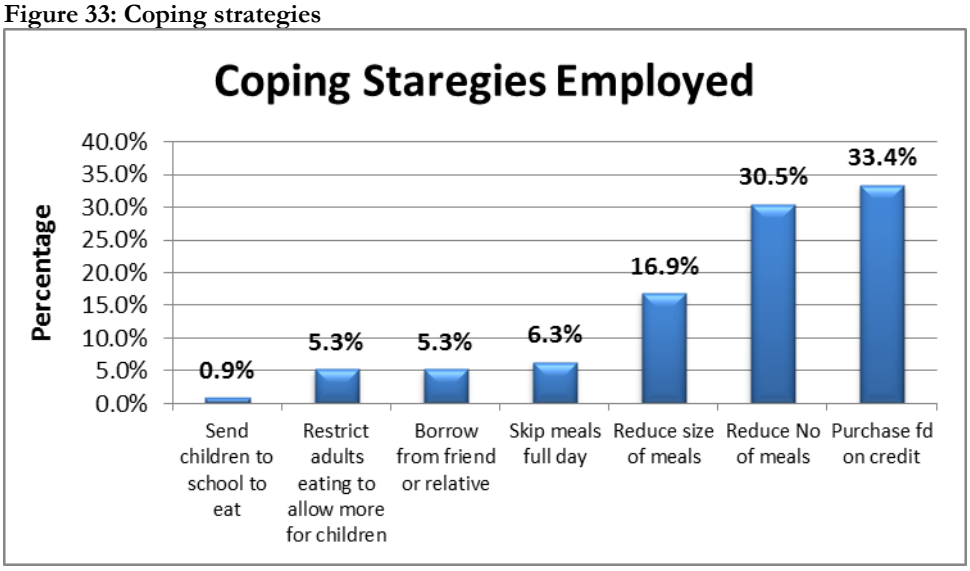



**Figure 33: Coping strategies**



# 5. Conclusions

In light of the above findings, the prevalence of Global Acute Malnutrition (GAM) rates in this survey is considered "alarming" with GAM of 16.9 % (13.6%-20.8% 95% CI) and SAM 2.0(1.6%-5.3%). However these rates indicate an decrease in malnutrition as compared with the nutrition survey conducted in the district during the same time last year which showed a GAM of 30.6% (25.8 - 35.8) and SAM 7.6 % (5.3 - 10.7 95% C.I) and SAM of 4.3% (2.8% - 6.6% 95% C.I) with the improvement being significant (P-value 0.000 and 0.005 respectively upon analysis with the CDC calculator.

In spite of this improvement however analysis of other indicators showed suboptimal IYCF practices with high percentage of children not receiving optimal infant feeding practices especially on dietary diversity, feeding frequency and timely introduction of complementary foods. Vitamin A supplementation was relatively low especially in the group >12 months with most of the children having receiving Vitamin A twice in the previous year reported at only 27%. This was also true deworming with those children reported to have been dewormed twice in the previous year being only 9.6%. Use of Zinc in diarrhoea management was poor, reported by only around a fifth of the respondents (17.8%).

This coupled with deplorable water, sanitation and hygiene situation with around 63% of all the respondents reporting use of water from unsafe sources with only 17.7% treating their water. Appropriate hand washing (with water and soap or ash) was also poor reported by less than 50% of the respondents. In addition toilet facilities were only accessible to 42% of the respondents with the remainder using mainly the bush for fecal waste disposal for both adults and children. Under five Morbidity were also high with ARIs and diarrhoea taking lead.
Both crude and under five mortality rates are below emergency levels, however there is need to urgently address the above issues to prevent the situation worsening further.

# 6. Recommendations and priorities

## *6.1. Immediate*

- To improve on Zinc in diarrhoea management and Iron folate supplementation, health workers and community members' sensitization will be conducted.
- More emphasis on proper hand-washing techniques through Health and nutrition promotion activities.
- Promotion of HH water treatment through up-scaling availability of reagents at HH level and chlorination of shallow wells (main source of water in the district) . This coupled with health promotion and demonstration on use of reagents.
- Sensitize communities on home-based agriculture i.e. kitchen gardening, Multi-storey gardens, poultry keeping, bee-keeping etc. to improve on HH and Infant dietary diversity through improved income generation and also improved HH food security.
- Improve supplementation coverage for deworming and VAS (especially for the12-59 month's age group) through targeting Dhuksis and Madrasas.
- Activate the health and Nutrition sub-DSG- GOK line ministries and implementing partners since the findings from the survey represent findings relevant to different actors in the district and to address them concerted effort is required.

## *6.2. Medium term*

- Establish more and strengthen existing MTMSGs to advocate for better IYCF knowledge and practices. Special effort should be put towards dietary diversity and meal frequency.
- Introduction of livestock feeding alternatives to complement the existing pastures i.e. concentrates, hay, fodder for lactating herds to have better returns on sale of livestock and livestock products since most of their food source is through purchases.
- Provision of LLITNs and malaria repellents in a bid to reach the universal net coverage.
- Use CLTS and PHAST methodologies in improving toilet access and coverage. Also explore use of interventions like FFW (Food For Work), FFA(Food For Assets) in supporting the community to construct toilets
- Improve water harvesting techniques i.e. rain water harvesting, rehabilitation of existing boreholes to improve access to safe water sources
- Advocate for recruitment and retention of more skilled health personnel.
- Through the DMOH activate and coordinate the monthly coordination meetings.

## *6.3. Long term*

- Promote community dialogue, conflict resolution and peace building to reduce inter clan conflicts.
- Advocacy on products processing at the district level i.e milk, meat, livestock fodder e.t.c
- Accelerating establishment of a Kenya Medical Training College (KMTC) in Wajir to train more local nurses to enhance retention in the district.
- Establish value addition of vegetables and fruits cultivated during the rainy seasons. Same case to the animals fodder.

# 7. References

The SPHERE Project Handbook (2011), Humanitarian Charter and Minimum Standards in Disaster Response

WHO 2006 growth standards

Infant and Young Child Feeding Practices: Collecting and Using Data: A Step-by- Step Guide. Cooperative for Assistance and Relief Everywhere, Inc. (CARE). 2010.

# 8. Appendices

## *8.1. Appendix 1: Plausibility Report*

### Overall data quality

| Criteria | Flags* | Unit | Excel. | Good | Accept | Problematic | **Score** |
|---|---|---|---|---|---|---|---|
| Missing/Flagged data | Incl | % | 0-2.5 | >2.5-5.0 | >5.0-10 | >10 | |
| (% of in-range subjects) | | | 0 | 5 | 10 | 20 | **0** (1.1 %) |
| Overall Sex ratio | Incl | p | >0.1 | >0.05 | >0.001 | <0.000 | |
| (Significant chi square) | | | 0 | 2 | 4 | 10 | **2** (p=0.092) |
| Overall Age distrib | Incl | p | >0.1 | >0.05 | >0.001 | <0.000 | |
| (Significant chi square) | | | 0 | 2 | 4 | 10 | **4** (p=0.001) |
| Dig pref score - weight | Incl | # | 0-5 | 5-10 | 10-20 | > 20 | |
| | | | 0 | 2 | 4 | 10 | **0** (2) |
| Dig pref score - height | Incl | # | 0-5 | 5-10 | 10-20 | > 20 | |
| | | | 0 | 2 | 4 | 10 | **2** (10) |
| Standard Dev WHZ | Excl | SD | <1.1 | <1.15 | <1.20 | >1.20 | |
| | | | 0 | 2 | 6 | 20 | **2** (1.11) |
| Skewness WHZ | Excl | # | <±1.0 | <±2.0 | <±3.0 | >±3.0 | |
| | | | 0 | 1 | 3 | 5 | **0** (0.07) |
| Kurtosis WHZ | Excl | # | <±1.0 | <±2.0 | <±3.0 | >±3.0 | |
| | | | 0 | 1 | 3 | 5 | **0** (-0.26) |
| Poisson dist WHZ-2 | Excl | p | >0.05 | >0.01 | >0.001 | <0.000 | |
| | | | 0 | 1 | 3 | 5 | **0** (p=0.438) |
| Timing | Excl | Not determined yet | | | | | |
| | | | 0 | 1 | 3 | 5 | |
| OVERALL SCORE WHZ = | | | 0-5 | 5-10 | 10-15 | >15 | **10** % |

At the moment the overall score of this survey is 10 %, this is good.

## *8.2. Appendix 2: Assignment of Clusters*

| Village | Population | Cluster |
|---|---|---|
| Barwaqo | 3270 | 1 |
| Kalkacha | 2453 | |
| Bagdad | 818 | |
| Bangal | 818 | |
| Bulla Hewa | 818 | 2 |
| Wagberi1 | 2020 | |
| Wagberi2 | 2020 | |

| | | |
|---|---|---|
| Bulla Kom | 1515 | 3 |
| Maalim Salad | 1515 | |
| Lanbib | 1010 | |
| Abdiaziz | 1010 | |
| Meigag | 1010 | |
| Hodhan | 2759 | 4 |
| Shalete | 2759 | |
| Godrahma | 1839 | 5 |
| Bulla Majina | 1839 | |
| Jogoo | 6833 | 6 |
| Bulla Isiolo | 2000 | 7 |
| Makoror | 8221 | RC |
| God- Ade | 6706 | 8,9 |
| Bulla power | 5364 | 10 |
| Halane | 1341 | |
| Township | 7382 | 11 |
| Alimao | 4282 | 12 |
| Bulla Gadud | 1071 | |
| Tarbaj | 11339 | 13,14 |
| Haragal | 1620 | RC |
| Katote | 3240 | |
| Dambas | 9037 | 15,16 |
| JaiJai | 1004 | |
| Hassan Yarrow | 1200 | |
| Elben | 12197 | 17,18 |
| Berjanai | 4584 | 19 |
| Dunto | 8913 | RC,20 |
| Basanicha | 1926 | |
| Gunana | 2600 | 21 |
| Mansa | 10201 | 22,23 |
| Ogoralle | 4655 | 24 |
| Sarman | 7742 | 25 |
| Wajir Bor | 4591 | 26 |
| Arbaqaranso | 2754 | |
| Sitawario | 918 | 27 |
| Riba | 6451 | 28 |
| Qarsa | 2764 | |
| Krof Harar | 11450 | 29,30 |
| Kotulo | 8888 | 31,32 |
| Lafaley | 3638 | 33 |
| Jowhar | 3358 | |
| Dasheq | 5579 | RC |
| Kajaja1 | 2274 | 34 |
| Kajaja2 | 2274 | |
| Wargadud | 3682 | 35 |
| Hungai | 6467 | 36 |

## *8.3: Appendix 3: Evaluation of Enumerators*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Standardisation test results | | | | Precision | | | | Accuracy | OUTCOME | | |

| Weight | | subjects | mean | SD | max | Technical error | TEM/mean | Coef of reliability | Bias from superv | result | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | # | kg | kg | kg | TEM (kg) | TEM (%) | R (%) | Bias (kg) | | | |
| | Supervisor | 10 | 13.7 | 1.9 | 0.1 | 0 | 0.2 | 100 | - | TEM good | R value good | |
| | Enumerator 1 | 10 | 13.6 | 1.8 | 0.1 | 0 | 0.3 | 99.9 | -0.2 | TEM acceptable | R value good | Bias good |
| | Enumerator 2 | 10 | 13.6 | 1.8 | 0.1 | 0.1 | 0.4 | 99.9 | -0.1 | TEM acceptable | R value good | Bias good |
| | Enumerator 3 | 10 | 13.6 | 1.8 | 0.2 | 0.1 | 0.7 | 99.7 | -0.1 | TEM acceptable | R value good | Bias good |
| | Enumerator 4 | 10 | 13.6 | 1.7 | 0.1 | 0 | 0.3 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 5 | 10 | 13.7 | 1.8 | 0.1 | 0 | 0.2 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 6 | 10 | 13.7 | 1.8 | 0.1 | 0 | 0.2 | 100 | 0 | TEM good | R value good | Bias good |
| | Enumerator 7 | 10 | 13.7 | 1.8 | 0.1 | 0 | 0.2 | 100 | 0 | TEM good | R value good | Bias good |
| | Enumerator 8 | 10 | 13.6 | 1.7 | 0.1 | 0 | 0.3 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 9 | 10 | 13.6 | 1.8 | 0 | 0 | 0 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 10 | 10 | 13.4 | 2.1 | 0 | 0 | 0 | 100 | -0.3 | TEM good | R value good | Bias good |
| | Enumerator 11 | 10 | 13.6 | 1.8 | 0 | 0 | 0 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 12 | 10 | 13.6 | 1.7 | 2.3 | 0.5 | 3.8 | 90.6 | -0.1 | TEM reject | R value poor | Bias good |
| | Enumerator 13 | 10 | 13.7 | 1.8 | 0.2 | 0.1 | 0.4 | 99.9 | 0 | TEM acceptable | R value good | Bias good |
| | Enumerator 14 | 10 | 13.6 | 1.8 | 0 | 0 | 0 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 15 | 10 | 13.8 | 1.8 | 0 | 0 | 0 | 100 | 0.1 | TEM good | R value good | Bias poor |
| | enum inter 1st | 15x10 | 13.6 | 1.8 | - | 0.3 | 2.2 | 97 | - | TEM reject | R value acceptable | |
| | enum inter 2nd | 15x10 | 13.6 | 1.7 | - | 0.4 | 2.6 | 95.8 | - | TEM reject | R value acceptable | |
| | inter enum + sup | 16x10 | 13.6 | 1.8 | - | 0.3 | 2.4 | 96.6 | - | TEM reject | R value acceptable | |
| | TOTAL intra+inter | 15x10 | - | - | - | 0.4 | 2.6 | 95.8 | -0.1 | TEM reject | R value acceptable | Bias good |
| | TOTAL + sup | 16x10 | - | - | - | 0.4 | 2.6 | 96 | - | TEM reject | R value acceptable | |
| | | | | | | | | | | | | |
| Height | | subjects | mean | SD | max | Technical error | TEM/mean | Coef of reliability | Bias from superv | result | | |

| | | # | cm | cm | cm | TEM (cm) | TEM (%) | R (%) | Bias (cm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Supervisor | 10 | 97.9 | 9.2 | 0.2 | 0.1 | 0.1 | 100 | - | TEM good | R value good | |
| | Enumerator 1 | 10 | 97.8 | 9.2 | 0.1 | 0.1 | 0.1 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 2 | 10 | 97.8 | 9.1 | 0.1 | 0.1 | 0.1 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 3 | 10 | 97.4 | 8.7 | 1.2 | 0.4 | 0.4 | 99.8 | -0.5 | TEM good | R value good | Bias good |
| | Enumerator 4 | 10 | 97.5 | 9.1 | 0.1 | 0.1 | 0.1 | 100 | -0.3 | TEM good | R value good | Bias good |
| | Enumerator 5 | 10 | 97.4 | 8.8 | 0.1 | 0 | 0 | 100 | -0.5 | TEM good | R value good | Bias good |
| | Enumerator 6 | 10 | 97.7 | 9.1 | 0.5 | 0.1 | 0.1 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 7 | 10 | 97.8 | 9.1 | 0.1 | 0 | 0 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 8 | 10 | 97.7 | 9.2 | 2.6 | 0.6 | 0.6 | 99.6 | -0.2 | TEM acceptable | R value good | Bias good |
| | Enumerator 9 | 10 | 97.8 | 9.1 | 0 | 0 | 0 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 10 | 10 | 94.9 | 11.7 | 0 | 0 | 0 | 100 | -3 | TEM good | R value good | Bias good |
| | Enumerator 11 | 10 | 97.8 | 9.1 | 0 | 0 | 0 | 100 | -0.1 | TEM good | R value good | Bias good |
| | Enumerator 12 | 10 | 96.7 | 8.4 | 13.4 | 3 | 3.1 | 87.2 | -1.1 | TEM reject | R value reject | Bias good |
| | Enumerator 13 | 10 | 96.8 | 9.3 | 0.7 | 0.2 | 0.2 | 100 | -1.1 | TEM good | R value good | Bias good |
| | Enumerator 14 | 10 | 97.5 | 8.8 | 0 | 0 | 0 | 100 | -0.4 | TEM good | R value good | Bias good |
| | Enumerator 15 | 10 | 98 | 8.6 | 0 | 0 | 0 | 100 | 0.1 | TEM good | R value good | Bias good |
| | enum inter 1st | 15x10 | 97.4 | 9 | - | 2.2 | 2.3 | 94.1 | - | TEM reject | R value poor | |
| | enum inter 2nd | 15x10 | 97.3 | 9 | - | 2.5 | 2.5 | 92.6 | - | TEM reject | R value poor | |
| | inter enum + sup | 16x10 | 97.4 | 9 | - | 2.3 | 2.3 | 93.7 | - | TEM reject | R value poor | |
| | TOTAL intra+inter | 15x10 | - | - | - | 2.5 | 2.5 | 92.5 | -0.5 | TEM reject | R value poor | Bias good |
| | TOTAL + sup | 16x10 | - | - | - | 2.4 | 2.5 | 92.9 | - | TEM reject | R value poor | |
| | | | | | | | | | | | | |
| MUAC | | subjects | mean | SD | max | Technical error | TEM/ mean | Coef of reliability | Bias from superv | result | | |
| | | # | mm | mm | mm | TEM (mm) | TEM (%) | R (%) | Bias (mm) | | | |
| | Supervisor | 10 | 14.6 | 0.7 | 0.1 | 0 | 0.2 | 99.9 | - | TEM good | R value good | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Enume rator 1 | 10 | 14. 9 | 0.8 | 0.1 | 0 | 0.3 | 99.7 | 0.4 | TEM good | R value good | Bias good |
| | Enume rator 2 | 10 | 15 | 0.8 | 0.1 | 0.1 | 0.4 | 99.6 | 0.4 | TEM good | R value good | Bias good |
| | Enume rator 3 | 10 | 15. 1 | 0.5 | 0.9 | 0.2 | 1.6 | 77.4 | 0.5 | TEM good | R value reject | Bias good |
| | Enume rator 4 | 10 | 14. 9 | 0.7 | 0.1 | 0.1 | 0.4 | 99.3 | 0.4 | TEM good | R value good | Bias good |
| | Enume rator 5 | 10 | 15. 1 | 0.6 | 0.1 | 0 | 0.3 | 99.5 | 0.5 | TEM good | R value good | Bias good |
| | Enume rator 6 | 10 | 14. 9 | 0.8 | 0.1 | 0 | 0.1 | 99.9 | 0.3 | TEM good | R value good | Bias good |
| | Enume rator 7 | 10 | 15 | 0.7 | 0.1 | 0 | 0.3 | 99.7 | 0.4 | TEM good | R value good | Bias good |
| | Enume rator 8 | 10 | 14. 9 | 0.7 | 2 | 0.5 | 3 | 54.1 | 0.3 | TEM good | R value reject | Bias good |
| | Enume rator 9 | 10 | 15 | 0.8 | 0 | 0 | 0 | 100 | 0.4 | TEM good | R value good | Bias good |
| | Enume rator 10 | 10 | 14. 9 | 0.6 | 0 | 0 | 0 | 100 | 0.3 | TEM good | R value good | Bias good |
| | Enume rator 11 | 10 | 14. 8 | 0.9 | 0 | 0 | 0 | 100 | 0.2 | TEM good | R value good | Bias good |
| | Enume rator 12 | 10 | 15 | 0.6 | 1.3 | 0.3 | 2 | 72.3 | 0.5 | TEM good | R value reject | Bias good |
| | Enume rator 13 | 10 | 14. 8 | 0.7 | 0.2 | 0.1 | 0.5 | 98.6 | 0.3 | TEM good | R value accept able | Bias good |
| | Enume rator 14 | 10 | 15 | 0.8 | 0 | 0 | 0 | 100 | 0.4 | TEM good | R value good | Bias good |
| | Enume rator 15 | 10 | 15. 2 | 0.8 | 0 | 0 | 0 | 100 | 0.6 | TEM good | R value good | Bias good |
| | enum inter 1st | 15x10 | 15 | 0.7 | - | 0.3 | 2.2 | 77.5 | - | TEM good | R value reject | |
| | enum inter 2nd | 15x10 | 15 | 0.7 | - | 0.4 | 2.5 | 72.9 | - | TEM good | R value reject | |
| | inter enum + sup | 16x10 | 14. 9 | 0.7 | - | 0.4 | 2.5 | 73 | - | TEM good | R value reject | |
| | TOTAL intra+i nter | 15x10 | - | - | - | 0.4 | 2.6 | 70.3 | 0.4 | TEM good | R value reject | Bias good |
| | TOTAL + sup | 16x10 | - | - | - | 0.4 | 2.7 | 68.8 | - | TEM good | R value reject | |

## *8.4: Appendix 4: Result Tables for NCHS growth reference 1977*

**Table 23: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex**

| | **All** n = 651 | **Boys** n = 347 | **Girls** n = 304 |
|---|---|---|---|
| **Prevalence of global malnutrition (<-2 z-score and/or oedema)** | (110) 16.9 % (13.6 - 20.8 95% C.I.) | (71) 20.5 % (15.6 - 26.4 95% C.I.) | (39) 12.8 % (9.2 - 17.6 95% C.I.) |
| **Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no** | (97) 14.9 % (12.1 - 18.2 95% C.I.) | (61) 17.6 % (13.7 - 22.2 95% C.I.) | (36) 11.8 % (8.3 - 16.7 95% C.I.) |

| | | | |
|---|---|---|---|
| **oedema)** | | | |
| **Prevalence of severe malnutrition (<-3 z-score and/or oedema)** | (13) 2.0 % (0.9 - 4.3 95% C.I.) | (10) 2.9 % (1.3 - 6.5 95% C.I.) | (3) 1.0 % (0.3 - 3.1 95% C.I.) |

The prevalence of oedema is 0.0 %

**Table 24: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema**

| | | **Severe wasting (<-3 z-score)** | | **Moderate wasting (>= -3 and <-2 z-score )** | | **Normal (> = -2 z score)** | | **Oedema** | |
|---|---|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 3 | 2.3 | 13 | 10.2 | 112 | 87.5 | 0 | 0.0 |
| **18-29** | 181 | 6 | 3.3 | 28 | 15.5 | 147 | 81.2 | 0 | 0.0 |
| **30-41** | 158 | 2 | 1.3 | 17 | 10.8 | 139 | 88.0 | 0 | 0.0 |
| **42-53** | 135 | 0 | 0.0 | 30 | 22.2 | 105 | 77.8 | 0 | 0.0 |
| **54-59** | 49 | 2 | 4.1 | 9 | 18.4 | 38 | 77.6 | 0 | 0.0 |
| **Total** | 651 | 13 | 2.0 | 97 | 14.9 | 541 | 83.1 | 0 | 0.0 |

**Table 25: Distribution of acute malnutrition and oedema based on weight-for-height z-scores**

| | **<-3 z-score** | **>=-3 z-score** |
|---|---|---|
| **Oedema present** | Marasmic kwashiorkor<br>No. 0<br>(0.0 %) | Kwashiorkor<br>No. 0<br>(0.0 %) |
| **Oedema absent** | Marasmic<br>No. 13<br>(2.0 %) | Not severely malnourished<br>No. 638<br>(98.0 %) |

**Table 26: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex**

| | **All**<br>n = 651 | **Boys**<br>n = 347 | **Girls**<br>n = 304 |
|---|---|---|---|
| **Prevalence of global malnutrition (< 125 mm and/or oedema)** | (651) 100.0 % (0.0 - 0.0 95% C.I.) | (347) 100.0 % (0.0 - 0.0 95% C.I.) | (304) 100.0 % (0.0 - 0.0 95% C.I.) |
| **Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)** | (0) 0.0 % (0.0 - 0.0 95% C.I.) | (0) 0.0 % (0.0 - 0.0 95% C.I.) | (0) 0.0 % (0.0 - 0.0 95% C.I.) |
| **Prevalence of severe malnutrition (< 115 mm and/or oedema)** | (651) 100.0 % (0.0 - 0.0 95% C.I.) | (347) 100.0 % (0.0 - 0.0 95% C.I.) | (304) 100.0 % (0.0 - 0.0 95% C.I.) |

**Table 27: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema**

| | | Severe wasting (< 115 mm) | | Moderate wasting (>= 115 mm and < 125 mm) | | Normal (> = 125 mm ) | | Oedema | |
|---|---|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 128 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| **18-29** | 181 | 181 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| **30-41** | 158 | 158 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| **42-53** | 135 | 135 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| **54-59** | 49 | 49 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| **Total** | 651 | 651 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |

**Table 28: Prevalence of acute malnutrition based on the percentage of the median and/or oedema**

| | n = 651 |
|---|---|
| **Prevalence of global acute malnutrition (<80% and/or oedema)** | (57) 8.8 % (6.6 - 11.5 95% C.I.) |
| **Prevalence of moderate acute malnutrition (<80% and >= 70%, no oedema)** | (54) 8.3 % (6.3 - 10.9 95% C.I.) |
| **Prevalence of severe acute malnutrition (<70% and/or oedema)** | (3) 0.5 % (0.1 - 1.4 95% C.I.) |

**Table 29: Prevalence of malnutrition by age, based on weight-for-height percentage of the median and oedema**

| | | Severe wasting (<70% median) | | Moderate wasting (>=70% and <80% median) | | Normal (> =80% median) | | Oedema | |
|---|---|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 0 | 0.0 | 10 | 7.8 | 118 | 92.2 | 0 | 0.0 |
| **18-29** | 181 | 2 | 1.1 | 14 | 7.7 | 165 | 91.2 | 0 | 0.0 |
| **30-41** | 158 | 0 | 0.0 | 9 | 5.7 | 149 | 94.3 | 0 | 0.0 |
| **42-53** | 135 | 0 | 0.0 | 12 | 8.9 | 123 | 91.1 | 0 | 0.0 |
| **54-59** | 49 | 1 | 2.0 | 9 | 18.4 | 39 | 79.6 | 0 | 0.0 |
| **Total** | 651 | 3 | 0.5 | 54 | 8.3 | 594 | 91.2 | 0 | 0.0 |

**Table 30: Prevalence of underweight based on weight-for-age z-scores by sex**

| | **All** n = 651 | **Boys** n = 347 | **Girls** n = 304 |
|---|---|---|---|
| **Prevalence of underweight (<-2 z-score)** | (158) 24.3 % (20.1 - 29.0 95% C.I.) | (93) 26.8 % (21.0 - 33.5 95% C.I.) | (65) 21.4 % (16.6 - 27.1 95% C.I.) |
| **Prevalence of moderate** | (138) 21.2 % | (78) 22.5 % | (60) 19.7 % |

| | | | |
|---|---|---|---|
| **underweight (<-2 z-score and >=-3 z-score)** | (17.3 - 25.7 95% C.I.) | (17.5 - 28.5 95% C.I.) | (15.0 - 25.6 95% C.I.) |
| **Prevalence of severe underweight (<-3 z-score)** | (20) 3.1 % (1.5 - 6.1 95% C.I.) | (15) 4.3 % (2.0 - 9.0 95% C.I.) | (5) 1.6 % (0.6 - 4.7 95% C.I.) |

**Table 31: Prevalence of underweight by age, based on weight-for-age z-scores**

| | | **Severe underweight (<-3 z-score)** | | **Moderate underweight (>= -3 and <-2 z-score )** | | **Normal (> = -2 z score)** | | **Oedema** | |
|---|---|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 3 | 2.3 | 23 | 18.0 | 102 | 79.7 | 0 | 0.0 |
| **18-29** | 181 | 11 | 6.1 | 41 | 22.7 | 129 | 71.3 | 0 | 0.0 |
| **30-41** | 158 | 4 | 2.5 | 31 | 19.6 | 123 | 77.8 | 0 | 0.0 |
| **42-53** | 135 | 0 | 0.0 | 33 | 24.4 | 102 | 75.6 | 0 | 0.0 |
| **54-59** | 49 | 2 | 4.1 | 10 | 20.4 | 37 | 75.5 | 0 | 0.0 |
| **Total** | 651 | 20 | 3.1 | 138 | 21.2 | 493 | 75.7 | 0 | 0.0 |

**Table 32: Prevalence of stunting based on height-for-age z-scores and by sex**

| | **All** n = 651 | **Boys** n = 347 | **Girls** n = 304 |
|---|---|---|---|
| **Prevalence of stunting (<-2 z-score)** | (80) 12.3 % (10.0 - 15.1 95% C.I.) | (54) 15.6 % (12.2 - 19.6 95% C.I.) | (26) 8.6 % (5.7 - 12.6 95% C.I.) |
| **Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)** | (62) 9.5 % (7.5 - 12.0 95% C.I.) | (43) 12.4 % (9.3 - 16.3 95% C.I.) | (19) 6.3 % (4.0 - 9.6 95% C.I.) |
| **Prevalence of severe stunting (<-3 z-score)** | (18) 2.8 % (1.8 - 4.1 95% C.I.) | (11) 3.2 % (1.9 - 5.1 95% C.I.) | (7) 2.3 % (1.1 - 4.6 95% C.I.) |

**Table 33: Prevalence of stunting by age based on height-for-age z-scores**

| | | **Severe stunting (<-3 z-score)** | | **Moderate stunting (>= -3 and <-2 z-score )** | | **Normal (> = -2 z score)** | |
|---|---|---|---|---|---|---|---|
| **Age (mo)** | **Total no.** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| **6-17** | 128 | 2 | 1.6 | 9 | 7.0 | 117 | 91.4 |
| **18-29** | 181 | 6 | 3.3 | 22 | 12.2 | 153 | 84.5 |
| **30-41** | 158 | 4 | 2.5 | 17 | 10.8 | 137 | 86.7 |
| **42-53** | 135 | 5 | 3.7 | 12 | 8.9 | 118 | 87.4 |
| **54-59** | 49 | 1 | 2.0 | 2 | 4.1 | 46 | 93.9 |
| **Total** | 651 | 18 | 2.8 | 62 | 9.5 | 571 | 87.7 |

**Table 34: Mean z-scores, Design Effects and excluded subjects**

| Indicator | n | Mean z-scores ± SD | Design Effect (z-score < -2) | z-scores not available* | z-scores out of range |
|---|---|---|---|---|---|
| Weight-for-Height | 651 | -1.09±0.99 | 1.45 | 0 | 0 |
| Weight-for-Age | 651 | -1.34±0.93 | 1.69 | 0 | 0 |
| Height-for-Age | 651 | -0.71±1.21 | 1.00 | 0 | 0 |

* contains for WHZ and WAZ the children with edema.

## *8.5. Appendix 5: Questionnaires*

**MANDERA WEST/BANISA DISTRICT NUTRITION SURVEY QUESTIONNAIRE DECEMBER 2012**
**SECTION 1: CHILDREN 6-59 MONTHS (ONE SHEET PER CLUSTER)**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name of Division** | | **Name of the Village** | | **Cluster No** | | **Team No** | | **Date of Interview (DD/MM/YY)** | | | **Name of Interviewer** | | **Name of Team Leader** | | | |
| | | | | Anthropometry | | | | Child Health | | | | | | | | |
| 1.1 HH No. | 1.2 Child No. | 1.3 Sex 1= Male 2= Female | 1.4 Age (months) Use LOCAL EVENTS CALENDER | 1.5 WEIGHT (Kg) nearest 100g | 1.6 HEIGHT (CM) NEAREST 0.1 CM | 1.7 Bilateral Oedema 1= Yes 0= No | 1.8 MUAC (cm) NEAREST 0.1cm | 1.9 Measles Vaccination 0=No 1=Yes, card 2= Yes, recall 8=DK | 1.10 Has child received pentavalent 1/OPV1? 1=Yes (by card) 2=Yes (by recall) 3=No 8=DK | 1.11 Has child received pentavalent 3/OPV3? 1=Yes (by card) 2=Yes (by recall) 3=No 8=Don't know | 1.12 In the last one year, how many times has the child received VitaminA (Show the mother the capsule so that she recalls or understand). 1=Once 2=Twice 3=No 8=DK | 1.13 BCG mark 0= No 1= Yes Check SCAR on Left Lower Arm | 1.14 In the last one year, how many times has the child been dewormed(Show the mother the tablet so that she recalls or understands). 1=Once 2=Twice 3=No 8=DK | 1.15 Has the child been sick in the last 2 weeks? 1=Yes 2=No 8= DK | 1.16 If yes, What illness did your child have in last two weeks? MORE THAN 1 ANSWER POSSIBLE 1= Diarrhea 2=Vomiting 3=Fever with chills like malaria 4=Fever, cough, difficult in breathing 5=Intestinal Parasite 6= Measles 7=Eye infections 8=Skin infections 9= Accident 10=Malnutrition 11=Stomachache 12=Toothache 13=other (specify) | 1.17 When the child was sick where did you seek assistance? (More than one answe is possible) |
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**Q1.17. 1=Traditional healer/Sheikh, 2=Community health worker, 3=Private clinic/ pharmacy, 4=Shop/kiosk, 5=Public clinic, 6=Mobile clinic/Outreach, 7=Relative or friend, 8=No assistance sought**

**Section 2: SURVEY QUESTIONNAIRRE DECEMBER 2012 (ONE SHEET PER CLUSTER)**

| Name of Division | Name of Village | Cluster No | Team No | HH No | Date of Interview (dd/mm/yy) | Name of Interviewer | Name of Team Leader |
|---|---|---|---|---|---|---|---|
| | | | | | ____/____/____ | | |

| HH No. (Copy from main page) | 2.11 If diarrhoea is yes in the morbidity question. Was he/she given any of the following at any time since he/she started having the diarrhea? A fluid made from a special packet called Oralite or ORS? A home-made sugar-salt solution? Another home-made liquid such as porridge, soup, yoghurt, coconut water, fresh fruit juice, tea, milk? ORS plus Zinc (Show the Tablet). 5. Others (specify)_____ | 2.12 At what times do you usually wash your hands? (Multiple answers possible) 1. After defecation/visiting toilet 2. Before handling food 3. After eating 4. Before feeding the child 5. After cleaning children's bottom. 6. None of the above 7. Others (specify) | 2.13 What do you use to clean (wash) your hands? (Multiple responses) 1.Water only 2. Water and soap 3. Water and ash 4. Other (specify) | 2.14 What is the woman's current physiological status? (Ask carefully) 1=Currently pregnant 2=Breastfeeding (<6months infant) 3=Breastfeeding (6-24months) 4=Pregnant and breastfeeding 5=Not pregnant/not breastfeeding 6-breastfeeding (>24months) | 2.15 Question addressed to the pregnant mothers In your current pregnancy, have you taken iron pills, sprinkles with iron, or iron syrup (Show the capsule)? YES NO DNK N/A | 2.16 Mothers MUAC (CM) | 2.17 Average daily water consumption Approximately, how many 20L jericans do you currently use in this HH in a day? No used …… (Request to see the 20L jericans and help to approximate the number used per day) |
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**SECTION 3: FOOD SECURITY AND LIVELIHOODS (ONE SHEET PER CLUSTER)**

| Name of Division | Name of Village | Cluster No | Team No | Date of Interview (DD/MM/YY) | Name of Interviewer | Name of Team Leader |
|---|---|---|---|---|---|---|
| | | | | ____/____/____ | | |

| HH No | 3.1 Status of the Household<br><br>1=Resident 2=IDP 3=temporary resident 4=Resettled 5=Refugee | 3.2 Sex of respondent<br><br>1=Male 2=Female | 3.3 What is your main livelihood activity/s?<br>1=Agricultural labour<br>2=Livestock herding<br>3=Own farm labour<br>4=Employed (salaried)<br>5=Waged (Casual)<br>6=Petty trade<br>7=Unemployed<br>8=Student<br>9=Merchant/trader<br>10=Housewife<br>11=Domestic help<br>12=Hunting, gathering<br>13=Firewood/charcoal<br>14=handicraft<br>15=Others (Specify)…… | 3.4 What is/are your main current source/s of income<br><br>1=No income<br>2= Sale of livestock<br>3= Sale of livestock products<br>4= Sale of crops<br>5= Petty trading e.g. sale of firewood<br>6=Casual labour<br>7=Permanent job<br>8= Sale of personal assets<br>9= Remittance<br>10=Other-Specify | 3.5 Has your HH received food aid in the last three (3) months?<br><br>1= Yes<br>2= No | 3.6 If Yes what were the sources?<br><br>1=WFP/Lead agency<br>2=Red cross<br>3=Government<br>4=ADRA<br>5=Others (specify) | 3.7 What food commodities were received<br><br>1= CSB<br>2=Oil<br>3=Salt<br>4=Pulses<br>5=Cereals<br>6=others-specify | 3.8 Of the food aid received for what purpose was it used? (multiple answers allowed)<br><br>1=Resold in the market<br>2=Bartered for other item<br>3=Shared with kin<br>4=Saved for seed<br>5=Consumed by the HH members<br>6= Other | 3.9 How many weeks on average did the food commodities last?<br><br>1=1 Week<br>2= 2 weeks<br>3=3weeks<br>4= 4 weeks and more |
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**SECTION 4: WATER, SANITATION AND HYGIENE PRACTICES (ONE SHEET PER CLUSTER)**

| Name of Division | Name of Village | Cluster No | Team No | Date of Interview (DD/MM/YY) | Name of Interviewer | Name of Team Leader |
|---|---|---|---|---|---|---|
| | | | | ____/____/____ | | |

| HH No. | 4.1 What is your household main current water source? (one answer)<br><br>1=River<br>2=Water tap/water kiosk<br>3=Borehole<br>4=Unprotected well<br>5=Protected well<br>6=Public pan-<br>7=Tanker/Tracking<br>8=Dam-<br>9=Laga<br>10=Rain harvest (from the roof)<br>11=Other (specify) | 4.2 What is the total time to and from the current main water source?<br><br>1= less than 30 min<br>2= 30 min- 1 hour<br>3= More than 1 hour<br>8=DK | 4.3 What do you do to water before drinking?<br>1= Nothing<br>2=Boiling<br>3=Use of traditional methods<br>4=Use chemicals<br>5=filter/sieve<br>6=decant<br>(Multiple responses) | 4.4 Does your household have access to a toilet facility?<br><br>1=Yes<br>2= No | 4.5 If yes, what type of toilet facility?<br><br>1=Traditional pit latrines<br>2=Ventilated improved pit latrine<br>3=Flush toilet<br>4=Other Specify | 4.6 If No, where do you go/use? (probe further)<br><br>1= Bush<br>2=Open field<br>3 =Near the river<br>4 =Behind the house<br>5 =Other (specify) | 4.7 How do you dispose of children's feaces?<br><br>1= Bush<br>2=Open field<br>3 =Near the river<br>4 =Behind the house<br>5=Latrine<br>6 =Other (specify |
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| HH No | 5.1<br>Does this household have a mosquito net? If NO go to next section)<br><br>1 = Yes<br>2 = No | 5.2<br>Where did you get it from<br>1 = A Shop<br>2 = An agency/NGO<br>3 = Ministry of Health<br>4=Other (specify) | 5.3<br>If you got it from the shop, have you ever treated your net (soaked or dipped it in dawa or chemical to repel mosquito or insects)?<br><br>1 = Yes<br>2 = No | 5.4<br>If YES,<br>When did you last treat it?<br><br>1=Less than one month ago<br>2=Between one and six months ago<br>3=More than six months ago<br>4=Cannot remember | 5.5<br>Who slept under the mosquito net last night?<br>(Probe - enter all responses mentioned)<br><br>1) Children less than 5 years<br>2) Children over 5 years<br>3) Pregnant woman<br>4) Mother<br>5) Father<br>6) Nobody uses |
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N/B; Let the respondent answer the questions and only code what they day; do not assume an answer before asking the question

**SECTION 5: MALARIA (ONE SHEET PER CLUSTER)**

| **Name of Division** | **Name of Village** | **Cluster No** | **Team No** | **Date of Interview** (DD/MM/YY) | **Name of Interviewer** | **Name of Team Leader** |
|---|---|---|---|---|---|---|
| | | | | _____/_____/_____ | | |

**SECTION 6: COPING STRATEGIES (ONE QUESTIONNARE PER CLUSTER)**

| **HH NO.** | **6.1:** During the Last 6 **Months**, did your household experience any incident that affects its usual ability to eat and/or buy foods of the quality, quantity or variety you prefer?<br>1 = Yes 2 = No | **6.2.:** What is the action your household took to compensate the effect of that incident? Multiple answers allowed e.g.<br>(**See options attached** | **6.3** For options in Q 6.2, How Often<br>N=Never 3= Twice per week<br>1=Once per month 4= 3-6 times per week<br>2=Once per week 5= All the time/everyday |
|---|---|---|---|
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**Question 6.2**

| | | |
|---|---|---|
| A. Reduction in the number of meals per day | I. Consume wild foods (normal wild food) | Q. Individual migration out of the area |
| B. Skip food consumption for an entire day | J. Consume immature crops | R. Household migration out of the area |
| C. Reduction in size of meals | K. Consume toxic/taboo foods (acacia pod/bitter fruit) | S. Sale of farm implements |
| D. Restrict consumption of adults to allow more for children | L. Food consumption of seed stock | T. Sale of milking livestock |
| E. Feed working members at expense of non-working | M. Send household members to eat elsewhere | U. Sale of household goods |
| F. Swapped consumption to less preferred or cheaper foods | N. Withdraw child(ren) from school | V. Disintegration of families |
| G. Borrow food from a friend or relative | O. Send children to school to eat | W. Abandonment of children or elderly |
| H. Purchase food on credit | P. Begging or engaging in degrading jobs | X. Sell of charcoal and/or fire wood |
| | | Y. Part of family migrating with animals to look for grazing |
| | | Z. Others |