ATHROPOMETRIC AND MORTALITY SURVEY

LARGER KILIFI DISTRICT,

KILIFI COUNTY, COAST PROVINCE,

KENYA

DRAFT REPORT

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EXECUTIVE SUMMARY

Larger Kilifi District is in Coast province. It lies between 3° 16´ south and 4° south, and 39° 05´ east and 40° east. The shoreline is 144 Km from Mtwapa Creek to Mida Creek. The district borders Taita and Taveta districts to the west, Malindi and Magarini districts to the northwest, Kisauni, Kilindini and Kinango Districts to the south. The district covers an area of 4,779.2 Km² including the Arabuko Sokoke forest of 189 Km. The population is estimated to be 831,108 people according to 2009 census.

The District is divided into seven administrative divisions namely Kaloleni, Bahari, Chonyi, Kikambala, Ganze, Vitengeni and Bamba. Kaloleni and Ganze divisions have since been made into fully fledged Districts. It has thirty six Locations and one hundred and seven sub locations. Bamba Division is the largest with an area of 1,743.5 Km² sub divided into five locations and thirteen sub locations followed by Kaloleni Division with an area of 909 Km² while Chonyi Division is the smallest with area of 202.2 Km² with four Locations and nine sub locations as indicated in the above table. Politically the district is divided into three constituencies namely Kaloleni comprising of Kaloleni Division, Ganze comprising of Ganze, Vitengeni and Bamba Divisions and Bahari comprising of Bahari, Kikambala and Chonyi Divisions. The district is divided into three local authorities namely County Council of Kilifi which has twenty six electoral wards, Kilifi Town council with eight electoral wards and town council of Mariakani with seven electoral wards.

This area has for a long time experienced extreme food shortages as a result of poor rainfall and increasing food prices. This has led to high malnutrition rates, including acute malnutrition among children. Over the past four growing seasons (from late 2008), poor rainfall has resulted in crop failure and a 60-80 percent loss of maize crops in Kilifi. This has affected household food security, and has contributed to high numbers of children who are currently reported by health facilities in Kilifi as having moderate and severe acute malnutrition. In the recently conducted Short Rains Assessments, Kilifi district was classified as borderline food insecure and currently one of the districts under watch following the La Nina phenomenon. The districts are predominantly agro pastoralist and marginal mixed livelihood zones and thus highly vulnerable to food insecurity during the drought seasons.

In order to guide programming in these two districts, a nutrition survey is in need. The survey will provide not only nutrition information, but also those related to water and Sanitation and Hygiene (WASH), health and food security.

Objectives of the survey

1. Assess the prevalence of acute and chronic malnutrition in children aged 6-59 months.
2. Assess the prevalence of malnutrition in pregnant women and mothers
3. Assess Infant and young feeding practices.
4. Estimate coverage for SFP, OTP, measles and DPT 3 vaccination and vitamin A.
5. Estimate morbidity rates in children 6-59 months
6. Estimate crude and under five mortality rate.
7. Assess Household food security levels/situation

Methodology

Standardized Method for Relief and Transition (SMART) was used for planning, training and data collection for the nutrition survey. The Survey enumerators were trained for 4 days, standardization test was done to select the data recorders and pilot was done to make sure that enumerators are equipped with the necessary skills for data collection.

Using prevalence of 7.5 %, precision of 3 and design effect of 2, a sample size of 592 children was obtained. In the mortality session, an estimated prevalence of 0.3, a desired precision of 0.3 and a design effect of 2 resulted in a sample size 2,846 with a recall period of 97 days. A total of 577 households were sampled for the survey and a total of 40 clusters were selected for the survey.

At the second stage, a selection of the households to be visited within each cluster was done. Simple random method was used to select the households, the village elders gave the list of the households in a given village, using table of random numbers the households were selected. In cases where the villages had huge number of households, segmentation was done; the population was subdivided in to equal segments and one segment was selected using table of random numbers, the household were then listed, and the required households selected from the list by simple random method.

In each selected household, all children aged 6-59 months were included. If there was more than one wife (care taker) in the household[1], each wife was considered separately regardless of whether they were cooking together. If there were no children in a household, the house remained a part of the "sample" that contributed zero children to the nutritional part of the survey. The household was recorded on the nutritional data sheet as having no eligible children.

[1] A household refers to a caretaker and his/her children

Nutrition, mortality and vaccination coverage, IYCF and Water and Sanitation results

A total of 598 children were measured all the records were included in the analysis using WHO and NCHS references.

Anthropometric and Mortality data results		
Child Nutrition Status W/H (WHO)- Z scores (598)	Global Acute Malnutrition (GAM) (<-2 z-score and/or oedema)	4.0% [2.8- 5.8]
	Severe Acute Malnutrition (SAM) (<-3 z-score and/or oedema)	0.7% [0.3- 1.7]
Child Nutrition status W/H (NCHS)- Z-scores(598)	Global Acute Malnutrition (GAM) (<-2 z-score and/or oedema)	4.2% [3.0- 5.8]
	Severe Acute Malnutrition (SAM) (<-3 z-score and/or oedema)	0.5% [0.2- 1.5]
Child Nutrition status W/H (NCHS)- percentage of the median (598)	Prevalence of global acute malnutrition (<80% and/or oedema)	2.2 % [1.3 - 3.6]
	Prevalence of severe acute malnutrition (<70% and/or oedema)	1.7 %[1.0 - 2.9]
Child Nutrition Status H/A (WHO)- Z scores (598)	Prevalence of stunting (<-2 z-score)	48.8% [43.7-53.9]
	Prevalence of severe stunting (<-3 z-score)	19.6% [16.4-23.2]
Child Nutrition Status H/A (NCHS)- Z scores (598)	Prevalence of stunting (<-2 z-score)	39.1% [34.3-44.2]
	Prevalence of severe stunting (<-3 z-score)	14.2% [11.7-17.1]
Child Nutrition Status W/A (WHO)- Z scores (595)	Prevalence of underweight (<-2 z-score)	21.3% [17.8-25.3]
	Prevalence of severe underweight (<-3 z-score)	5.0% [3.4- 7.4]
Child Nutrition Status W/A (NCHS)- Z scores (595)	Prevalence of underweight (<-2 z-score)	27.2% [23.3-31.6]
	Prevalence of severe underweight (<-3 z-score)	4.4% [2.9- 6.5]
Mortality	Crude Death rate/10,000/day	0.38 [0.22-0.66]
	0-5 Death rate/10,000/day	0.61[0.18-2.04]
Child MUAC (598)	SAM (<115 mm) GAM (<125mm) At risk (>125-<134 mm)	0.7% 4.0% 6.7%
Maternal nutrition status (lactating and pregnant mothers)	Malnourished < 21.0 cm	4.1%
Vaccination coverage, Vitamin A and Iron supplementation		
Measles coverage ≥ 9 months (563)	Card According to mother Not Immunized	80.1% 9.9% 9.9%
DPT3 (594)	Card According to mother Not immunized	86.2% 9.3% 4.5%

Vitamin A coverage (last 6 months) (597)	Received Not received	55.3% 44.7%
Vitamin A coverage (6-11) Last 6 months (71)	Received Not received	80.3% 19.7%
Vitamin A coverage (12-59) Last 6 months (526)	Received Not received	51.9% 48.1%
Mother Iron supplementation (last pregnancy)	Yes No Don't Know	72.8% 23.9% 3.3%
Morbidity for the last 2 weeks		
Child Illness in the last 2 weeks	Yes No	57.3% 42.7%
Type of Illness	Fever Cough Watery Diarrhoea Blood Diarrhoea Others (vomiting, skin infection, eye problem, wound, stomach ache, ring worms)	37.0% 35.1% 15.7% 1.7% 10.5%
De-Worming	Yes No Don't Know	57.2% 41.6% 1.2%
Treatment Sought for diarrhoea	ORS Homemade sugar salt solution Another homemade liquid Zinc Other drugs nothing	56.8% 6.2% 2.5% 2.5% 13.6% 18.5%
Child Slept under mosquito net last night	Yes No	71.8% 28.2%
Infant and young child feeding practice[2]		
Given colostrums	0-23 Months (n=269)	75.9%
Exclusive breastfeeding	0-5 Months (=76)	22.4%
Early Initiation of breast feeding	0- 23 Months (n=269)	28.1%
Continued breastfeeding at 1year	12-15 Months (n=34)	91.2%
Introduction of solid, semi-solid or soft foods	6-8 Months (n=31)	96.8%
Minimum diet diversity	6-23 Months (n=193)	4.7%
Minimum meal frequency	6-23 Months (n=193)	61.1%

[2] As per Indicators for assessing infant and young child feeding practices Part 3 Country profiles

Minimum Acceptable diet	6-23 Months (n=193)	4.1%
Child ever breastfed	0-23 months (n=269)	99.3%
Continued breastfeeding at 2years	20-23 months (n=44)	63.6%
Water and Sanitation		
Main water source	Bore hole River Protected shallow well Household connection Dam	17.6% 4.6% 0.6% 56.5% 20.7%
Length from Water Source	<30 minutes >=30 minutes	75.4% 25.6%
House hold water	Minimum Maximum Average	20 litres 300 litre 67.5 litres
Water Treatment	Nothing Boiling Chlorination	83.6% 6.3% 10.1%
Toilet Use	Latrine Hole Designated Open Area Undesignated Area	64.3% 9.9% 3.1% 22.6%
House hold food consumption		
Number of meals normally eaten per day	One meal Two meals Three meals and above	4.2% 22.5% 73.3%
Number of meals eaten the day preceding the survey	One meal Two meals Three meals and above	8.2% 27.2% 64.6%
Household dietary diversity score	Average HDDS	5.1

2.0 Introduction

Larger Kilifi District is in Coast province. It lies between 3° 16´ south and 4° south, and 39° 05´ east and 40° east. The shoreline is 144 Km from Mtwapa Creek to Mida Creek. The district borders Taita and Taveta districts to the west, Malindi and Magarini districts to the northwest, Kisauni, Kilindini and Kinango Districts to the south. The district covers an area of 4, 779.2 Km² including the Arabuko Sokoke forest of 189 Km. The population is estimated to be 831,108 people according to 2009 census.

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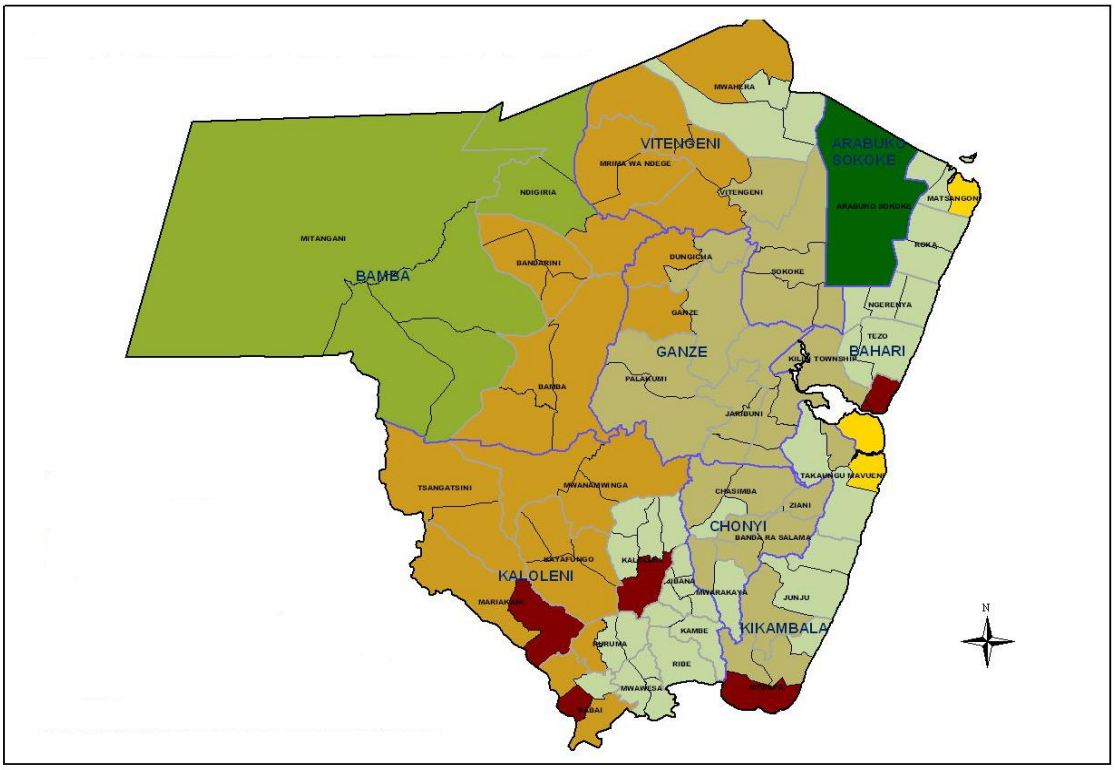


Map 1: Larger Kilifi district.

2.1 Food Economy of the area

The district has a total area of 4,779.2 km^{2} with the total arable land being 907 km2, water mass of 166 km2. The rainfall is usually at a high of 1,300 km2 and low of 400 km2. The main food crops grown are maize, cassava, cow peas and green grams while the cash crops grown include coconuts, cashew nuts, citrus fruits and mangoes.

The area experience moderate rainfall and hence agricultural activities especially production of food crops are only done for household consumption, most times even the food crops fail and the community would depend on selling the cash crops buy food. World Vision and ARIDLANDS have food security programs in the district particularly in Ganze and Bamba divisions that are drier. ARIDLAND food security projects include training on beekeeping, honey production and marketing of honey, meat goat upgrading and livestock disease surveillance. They also conduct poultry training, purchase of farm inputs, training of farmers groups on traditional crops such as cassava and sorghum. ARIDLANDS also conduct surveillance on food security, water and nutrition through sentinel sites they have established in the district. As a result of the food insecurity in the district World Vision has food security program food/cash for asset, where the communities are engaged in activities that promote agriculture and also construction of dams and they are given food rations for the work they have done; this is done in Bamba division.

2.2 Health and nutrition

The Larger Kilifi district has two DHMT's in Kaloleni and Kilifi, covering the area. According to kilifi strategic plan; Kilifi District has total of 73 health facilities distributed across the district. Accessibility of health services is, however low and 57% of the population live over 5kms to the nearest health facility. The doctor patient ratio stands at 1:100,000 which in itself a manifestation of staff shortages in the District. The most prevalent diseases include Malaria, Pneumonia and diseases of the digestive system.

Nutrition has been taken seriously in the district with programs such as IYCF, IMAM, health education, mother support groups being implemented in the district with leadership of Ministry of health in collaboration with other partners. The establishment of community units has already being done in the area with Kilifi having 10 units while Kaloleni has 18 functional units. As a result of the food insecurity and cases of malnutrition Kaloleni has one stabilization center, 7 OTP, and 4 SFP while Kilifi DHMT has one stabilization centre, 17 OTPS and 12 SFP. These nutrition treatment programs are run by the Ministry of Health with collaboration of World Vision and with Support of UNICEF and WFP.

3.1 METHODOLOGY

3.1 Type of Survey and Sample Size

A two-stage cluster sampling method was used. The anthropometric surveys target children aged between 6 and 59 months utilizing SMART methodology, which ensures accuracy and precision of data collected. Selection of accessible villages was done with the help of village elders. Information on population figures for was collected thorough the 2009 census results and the village elders a list of selected villages for the survey are at the annex.

The geographical units and their respective population were then inputted into the ENA for SMART software November 2008 for planning the survey.

At the first stage, the sample size was determined by inputting necessary information into the ENA for SMART both anthropometric and mortality surveys. The information included estimated population sizes, expected prevalence rates of mortality and malnutrition, the desired precision and the design effect.

3.2 Sample Size Calculation

Using prevalence of 7.5%, precision of 3 and design effect of 2, a sample size of 592 children was obtained. In the mortality session, an estimated prevalence of 0.3, a desired precision of 0.3 and a design effect of 2 resulted in a sample size 2,846 with a recall period of 97 days.

At the second stage, a selection of the households to be visited within each cluster was done. Simple random method was used to select the households, the village elders gave the list of the households in a given village, using table of random numbers the households were selected. In cases where the villages had huge number of households, segmentation was done; the population was subdivided in to equal segments and one segment was selected using table of random numbers, the household were then listed, and the required households selected from the list by simple random method.

In each selected household, all children aged 6-59 months were included. If there was more than one wife (care taker) in the household[3], each wife was considered separately regardless of whether they were cooking together. If there were no children in a household, the house remained a part of the "sample" that contributed zero children to the nutritional part of the survey. The household was recorded on the nutritional data sheet as having no eligible children.

The mortality questionnaire was only administered in households that were included in the anthropometric questionnaire and numbered correspondingly.

[3] A household refers to a caretaker and his/her children

3.3 Data Collection

For each selected child, information was collected during the anthropometric survey. The information included

- → **Age:** recorded with the help child health cards/mother and health booklet and a local calendar of events
- → **Gender:** male or female
- → **Weight:** children were weighed without clothes, with a SALTER balance of 25kg (precision of 100g).
- → **Height:** children were measured on a measuring board (precision of 0.1cm). Children less than 87cm were measured lying down, while those greater than or equal to 87cm were measured standing up.
- → **Mid-Upper Arm Circumference:** MUAC was measured at mid-point of left upper arm for measured children (precision of 0.1cm).
- → **Bilateral Oedemas:** assessed by the application of normal thumb pressure for at least 3 seconds to both feet.
- → **Measles vaccination:** assessed by checking for measles vaccination on EPI cards or by asking caretakers.
- → **DPT 3:** assessed by checking for measles vaccination on EPI cards or by asking caretakers.
- → **Vitamin A:** Asked the mother/caretaker whether the child received Vitamin A in the last 6 months

3.4 Indicators, Guidelines, and Formula's Used

3.4. 1 Acute Malnutrition

- ↳ **Weight for Height Index**

Acute malnutrition rates are estimated from the weight for height (WFH) index values combined with the presence of Oedemas. The WFH indices are expressed in both Z-scores and percentage of the median, according to both NCHS[4] and WHO references[5]. The complete analysis is done with the WHO reference.

The expression in Z-scores has mainly statistical meaning, and allows inter-study comparison. The percentage of the median, on the other hand, is used for the identification criteria of acute malnutrition in nutrition programs.

Guidelines for the results expressed in Z-score:

- Severe malnutrition is defined by WFH < -3 SD and/or existing bilateral Oedemas on the lower limbs Moderate malnutrition is defined by WFH < -2 SD and ≥ -3 SD and no Oedemas.
- Global acute malnutrition is defined by WFH < -2 SD and/or existing bilateral Oedemas.

Guidelines for the results expressed in percentage of median:

- Severe malnutrition is defined by WFH < 70 % and/or existing bilateral Oedemas on the lower limbs

[4] NCHS: National Center for Health Statistics (1977) NCHS growth curves for children birth-18 years. United States. Vital Health Statistics. 165, 11-74.

[5] WHO reference, 2005

- Moderate malnutrition is defined by WFH < 80 % and ≥ 70 % and no Oedemas.
- Global acute malnutrition is defined by WFH <80% and/or existing bilateral Oedemas

Children's Mid-Upper Arm Circumference (MUAC)

The weight for height index is the most appropriate index to quantify wasting in a population in emergency situations where acute forms of malnutrition are the predominant pattern. However the mid-upper arm circumference (MUAC) is a useful tool for rapid screening of children at a higher risk of mortality. MUAC measurements are significant for children with age of one year and above. The guidelines are as follows:

MUAC < 115 mm	Severe malnutrition and high risk of mortality
MUAC ≥ 115 mm and <125 mm	Moderate malnutrition and moderate risk of mortality
MUAC ≥ 125 mm and <135 mm	At risk of malnutrition
MUAC ≥ 135 mm	Good nutritional statuses

3.4.2 Stunting

Height for Age index

Stunting rates are estimated from the height for age (HFA) index values. The HFA indices are expressed in Z-scores according to both NCHS and WHO references. The complete analysis is done with the WHO reference.

Guidelines for the results expressed in Z-score:

- Severe stunting is defined by HFA < -3 SD
- Global stunting is defined by HFA< -2 SD.

3.4.3 Underweight

Weight for Age index

Underweight rates are estimated from the Weight for age (WFA) index values. The WFA indices are expressed in Z-scores according to both NCHS and WHO references. The complete analysis is done with the WHO reference.

Guidelines for the results expressed in Z-score:

- Severe underweight is defined by WFA < -3 SD
- Global underweight is defined by WFA< -2 SD.

3.4.4 Mortality

Mortality data was collected using Standardized Monitoring and Assessment of Relief. The crude mortality rate (CMR) is determined for the entire population surveyed for a given period. The CMR is calculated using ENA for SMART.

The formula below is applied:

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

Where:

a = Number of recall days (95)

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

The result is expressed per 10,000-people / day. The thresholds are defined as follows[6]:

Total CMR:

Alert level:	1/10,000 people/day
Emergency level:	2/10,000 people/day

Under five CMR:

Alert level:	2/10,000 people/day
Emergency level:	4/10,000 people/day

3.4.5 IYC Indicators[7]

1. **Early initiation of breastfeeding:** Proportion of children born in the last 23 months who were put to the breast within one hour of birth.

$$\frac{\text{Children born in the last 23 months who were put to the breast within one hour of birth}}{\text{Children born in the last 23 months}}$$

2. **Exclusive breastfeeding under 6 months:** Proportion of infants 0–5 months of age who are fed exclusively with breast milk.

$$\frac{\text{Infants 0–5 months of age who received only breast milk during the previous day}}{\text{Infants 0–5 months of age}}$$

[6] Health and nutrition information systems among refugees and displaced persons, Workshop report on refugee's nutrition, ACC / SCN, Nov 95.

[7] WHO, 2010. **Indicators for assessing infant and young child feeding practices. Part 3 country profiles**

3. **Continued breastfeeding at 1 year:** Proportion of children 12–15 months of age who are fed breast milk.

$$\frac{\text{Children 12–15 months of age who received breast milk during the previous day}}{\text{Children 12–15 months of age}}$$

4. **Introduction of solid, semi-solid or soft foods:** Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.

$$\frac{\text{Infants 6–8 months of age who received solid, semi-solid or soft foods during the previous day}}{\text{Infants 6–8 months of age}}$$

5. **Minimum dietary diversity:** Proportion of children 6–23 months of age who receive foods from 4 or more food groups.

$$\frac{\text{Children 6–23 months of age who received foods from} \geq 4 \text{ food groups during the previous day}}{\text{Children 6–23 months of age}}$$

6. **Minimum meal frequency:** Proportion of breastfed 6–23 months of age, who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more.

$$\frac{\text{Breastfed children 6–23 months of age who received solid, semi-solid or soft foods the minimum number of times or more during the previous day}}{\text{Breastfed children 6–23 months of age}}$$

7. **Minimum acceptable diet:** Proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breast milk).:

$$\frac{\text{Breastfed children 6–23 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day}}{\text{Breastfed children 6–23 months of age}}$$

8. **Children ever breastfed:** Proportion of children born in the last 24 months who were ever breastfed.

$$\frac{\text{Children born in the last 23 months who were ever breastfed}}{\text{Children born in the last 24 months}}$$

9. **Continued breastfeeding at 2 years:** Proportion of children 20–23 months of age who are fed breast milk.

$$\frac{\text{Children 20–23 months of age who received breast milk during the previous day}}{\text{Children 20–23 months of age}}$$

3.4.5 Health, food security and water and sanitation data

Health, food security and water and sanitation data were collected from same households the where anthropometry data was collected. The questionnaire was administered to the head of the household and/or to the spouse. The Questionnaires were in English language, surveyors competent in reading English were chosen to administer the questionnaires.

3.5 Data quality control assurance

The use of an anthropometric standardization test for the survey team, thorough enumerator training, close supervision during the actual survey for consistency, completeness and clarity of the questionnaires ensured that data collected was of good quality. Common historical events listed in the seasonal calendar were used to clarify the dates of childbirth in cases where the mother or the caretakers were not certain about the information.

3.6 Field Work

The surveys were carried out by six teams, each team comprising five members: 1 team leader, 2 data collectors and 2 measurers. All teams received 4 day intensive training in Kilifi Town prior the start of the survey. This training provided the theoretical background for team leaders, data collectors and the measurers. All team members did a pilot survey for one day before actual start of data collection. This train included the standardization test. All teams were closely supervised during their field work throughout the whole survey time by the consultant, MOH, ARIDLANDS and WVK staff.

3.7 Data Analysis

Data processing and analysis for both anthropometric and mortality were carried out using ENA for SMART November 2008 version using both NCHS and WHO references. Excel was used to carry out analyses on MUAC, measles immunization coverage, household composition. Health, food security, water and sanitation data was analysed using SPSS version 16.

3.8 Challenges faced during survey

The survey faced the limitation below.

- Logistical problems- Due to rains the movement of vehicles was really a great challenge as this resulted to team delays in the field
- Community mobilization of the chiefs and village elders was quite a challenge as the survey covered a wide area and it was impossible to reach all of them before the start of the survey.

4.0 RESULTS AND DISCUSSION

This section provides results and discussions from the data collected on nutrition/ anthropometrics, mortality as well as immediate and underlying causes of malnutrition such as morbidity, water and sanitation and food security. The topics are discussed in the following sections under the respective headings and sub-headings. Quantitative results are presented in tables, graphs and charts as applicable.

4.1 Health and nutrition status

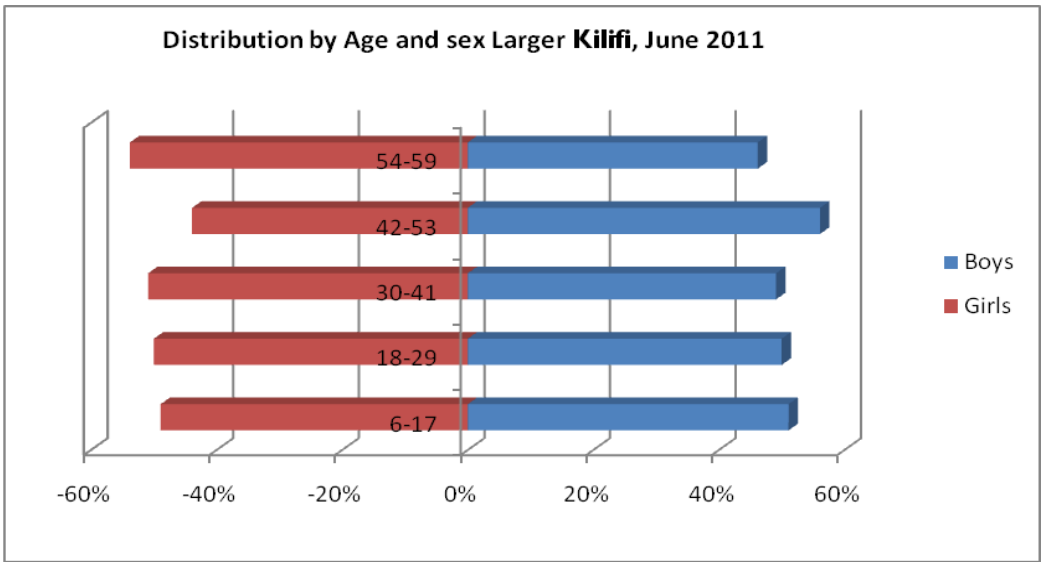
4.1 .1 Distribution by Age and Sex

The distribution of the nutrition survey sample by sex and age group shows that the total boy/girl sex ratio of the survey was within the normal limits (0.8 - 1.2). Similarly, sex ratio within the age groups indicates a normal distribution.

Table 1. Distribution of age and sex Larger Kilifi district June 2011

Age group (months)	Boys		Girls		Total		Ratio
	no	%	no	%	no	%	Boy: girl
6-17	68	51.1	65	48.9	133	22.2	1.0
18-29	70	50.0	70	50.0	140	23.4	1.0
30-41	78	49.1	81	50.9	159	26.6	1.0
42-53	64	56.1	50	43.9	114	19.1	1.3
54-59	24	46.2	28	53.8	52	8.7	0.9
Total	304	50.8	294	49.2	598	100.0	1.0

Figure 1: Distribution by Age and sex Larger Kilifi June 2011



4.1.2 Distribution of Acute malnutrition by Z-scores

The global acute malnutrition was 4.0% while severe acute malnutrition was 0.7% according to WHO standards

Table 2. Weight for height distribution by age Larger Kilifi district in Z-scores (WHO reference)

Age (months)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	133	1	0.8	4	3.0	126	94.7	2	1.5
18-29	140	0	0.0	7	5.0	133	95.0	0	0.0
30-41	159	0	0.0	4	2.5	154	96.9	1	0.6
42-53	114	0	0.0	3	2.6	111	97.4	0	0.0
54-59	52	0	0.0	2	3.8	50	96.2	0	0.0
Total	598	1	0.2	20	3.3	574	96.0	3	0.5

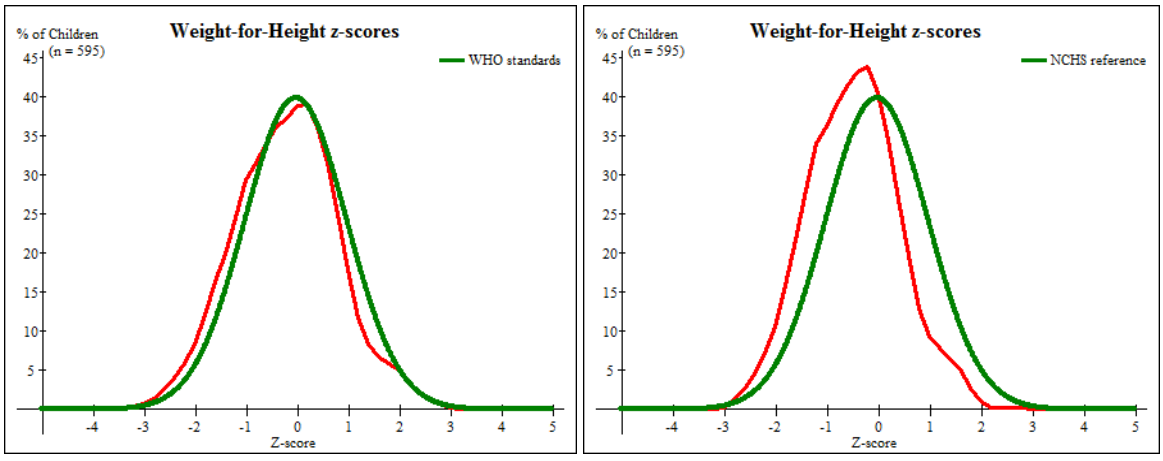
A chi-square revealed no significant difference of malnutrition between 6-29 months and 30-59 months age group but the relative risk showed that children aged between 6-29 months .

Table 3. Weight for height versus Oedema Larger Kilifi district in Z scores (WHO reference)

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 1(0.2 %)	Kwashiorkor No. 2(0.3 %)
Oedema absent	Marasmic No. 1 (0.2 %)	Not severely malnourished No. 594 (99.3 %)

Two children had with bilateral oedema.

Figure 2: Weight for height distribution Larger Kilifi district June 2011



The slight displacement of the sample curve to the left side of the reference curve indicates a few malnourished children detected in the surveyed population. The mean Z-Scores of the sample was -0.20 and the Standard Deviation is 0.99(WHO reference). The SD is within the interval 0.80 -1.20, which shows that the sample is representative of the population.

Table 4 Global and Severe Acute Malnutrition in Z score Larger Kilifi October 2010

	NCHS Reference	**WHO Reference**
Global Acute Malnutrition	4.2% [3.0-5.8]	4.0% [2.8-5.8]
Severe Acute Malnutrition	0.5% [0.2-1.5]	0.7[0.3-1.7]

4.1.3 Distribution of acute malnutrition in percentage of median

According to percentage of the Median GAM was 2.2% while SAM was 0.5%

Table 5: Distribution of Weight/Height by age in percentage of median (NCHS)

Age (Months)	**Total no.**	**Severe wasting (<70% median)**		**Moderate wasting (>=70% and <80% median)**		**Normal (> =80% median)**		**Oedema**	
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	133	0	0.0	2	1.5	129	97.0	2	1.5
18-29	140	0	0.0	5	3.6	135	96.4	0	0.0
30-41	159	0	0.0	2	1.3	156	98.1	1	0.6
42-53	114	0	0.0	1	0.9	113	99.1	0	0.0
54-59	52	0	0.0	0	0.0	52	100.0	0	0.0
Total	133	0	0.0	2	1.5	129	97.0	2	1.5

Table 6: Global and Severe Acute Malnutrition in percentage of Medium Larger Kilifi June 2011

	NCHS Reference
Global Acute Malnutrition	2.2 [1.3-3.6]
Severe Acute Malnutrition	0.5 [0.2-1.5]

4.1.4. Distribution of Underweight in Z scores Larger Kilifi June, 2 2011 (WHO reference

The global underweight was 21.3% while severe underweight was 5.0%

Table 7: Prevalence of underweight based on Weight-for age Z scores

Age (months)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	131	7	5.3	16	12.2	108	82.4	2	1.5
18-29	140	10	7.1	19	13.6	111	79.3	0	0.0
30-41	158	5	3.2	29	18.4	124	78.5	1	0.6
42-53	114	6	5.3	23	20.2	85	74.6	0	0.0
54-59	52	2	3.8	10	19.2	40	76.9	0	0.0
Total	595	30	5.0	97	16.3	468	78.7	3	0.5

4.1.5 Distribution of stunting in Z scores larger Kilifi June 2011 (WHO reference)

The prevalence of stunting was **48.8%** while severe stunting was **19.6%**

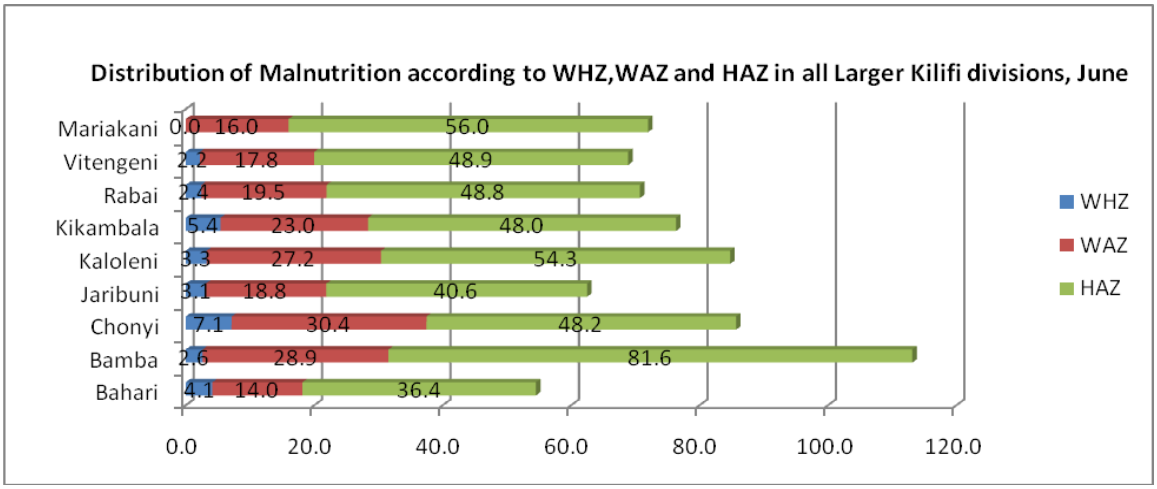
Table 8: Prevalence of stunting by age based on height-for-age Z scores

Age (months)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	133	23	17.3	23	17.3	87	65.4
18-29	140	30	21.4	47	33.6	63	45.0
30-41	159	30	18.9	61	38.4	68	42.8
42-53	114	29	25.4	26	22.8	59	51.8
54-59	52	5	9.6	18	34.6	29	55.8
Total	598	117	19.6	175	29.3	306	51.2

4.1.6 Distribution of Malnutrition according to WHZ, WAZ and HAZ in all Larger Kilifi divisions, June 2011

An analysis of individual divisions was done that showed Bamba with high chronic malnutrition compared to the rest of the divisions as shown in figure below

Figure 3: Distribution of malnutrition in Larger Kilifi, June 2011



4.1.7 Risk of mortality: children MUAC and mothers/care takers MUAC

All children measured were included in the MUAC analysis. As shown in the following table, the rates of acute malnutrition according to the MUAC status of the children were 0.7% and 3.3% severe and global malnutrition respectively, 6.7% were at risk of malnutrition.

Table 9: Child MUAC distribution Larger Kilifi June 2011

Nutrition status N=598	N	%
<115	4	0.7
>=110-<125	20	3.3
>125-<134	40	6.7
>=134	534	89.3

4.1.8 Vaccination coverage and Vitamin A supplementation

- **Measles Vaccination Coverage Larger Kilifi district June 2011**

Table below presents the measles vaccination coverage among the surveyed population. The source of Information on immunization was either the child's health card or the mother's recall. A child was considered fully vaccinated if he/she had received the last dose of the EPI programme (from 9 months of age).

Table 10: Measles vaccination coverage Larger Kilifi district June 2011

Population ≥ 9 months= 518	N	%
Immunized with Card	188	80.1%
Immunized without card	173	9.9%
Not immunized	154	9.9%

- **Vitamin A coverage**

Vitamin A coverage was established for the as shown by table below. Caretakers were asked if their child had received a vitamin A supplementation in the six months. The rates of supplementation appeared to be at a very low level.

Table 11 Vitamin A coverage

	6-11		12-59		6-59	
Population =597	**N**	**%**	**N**	**%**	**N**	**%**
Received	14	80.3%	273	51.9%	330	55.3%
Not received	57	19.7%	253	48.1%	267	44.7%

- **DPT 3 Coverage**

The children who had received the complete three doses of DPT3 were 86.2% according to card and 9.3% according to caretaker as shown in table 12 below.

Table 12: DPT 3 coverage

Population =594	**N**	**%**
Card	512	86.2%
Mother	55	9.3%
Not immunized	27	4.5%

4.19 Mortality

The retrospective death rate was calculated based on the data collected on the 97days recall. The recall date was April 1st.

Table 13: Mortality results

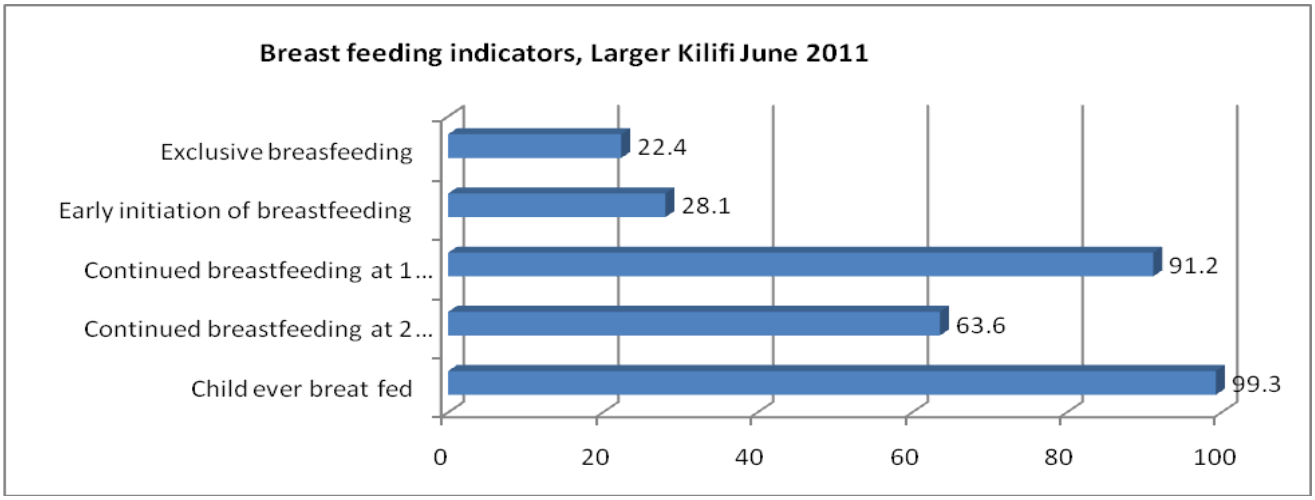
Demographic data	**Larger Kilifi district June 2011**
Number of current HH residents	3215
Number of people who joined HH	102
Number of births during recall	61
Number of death during recall	12
Number of 0-5	708
Number of 0-5 who joined HH	22
Number of deaths 0-5 during recall	20
Crude Death rate	0.38[0.22-0.66]
0-5 death rate	0.61[0.18-2.04]

The mortality rates remained below WHO emergency thresholds.

4.1.10 Breastfeeding and complementary feeding

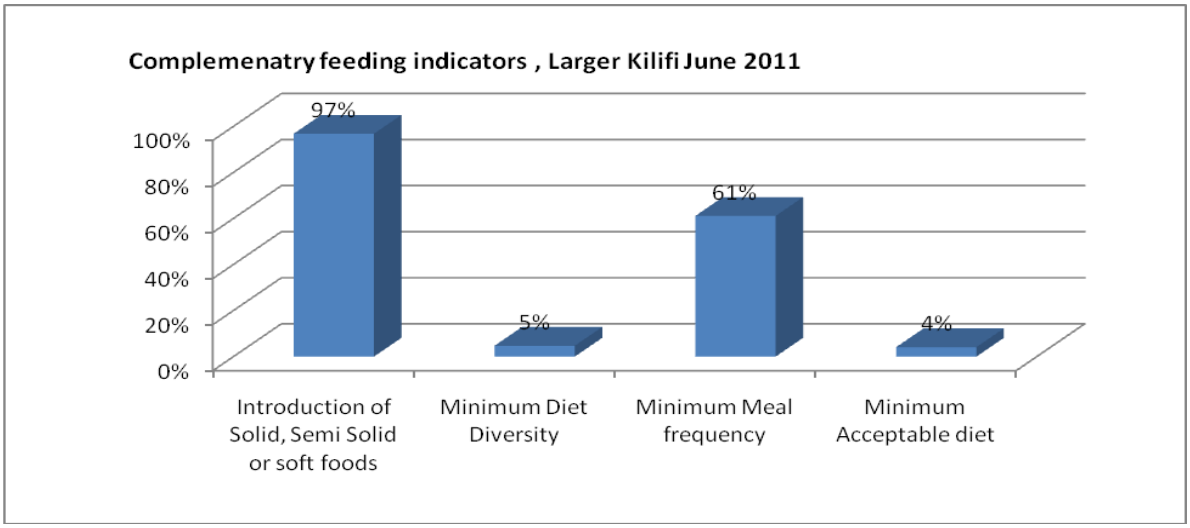
Mothers were asked when they do start breastfeeding their new born baby and when they introduce complementary food.

Figure 4: Breast feeding Indicators Larger Kilifi, June 2011



The breastfeeding indicators performed well especially on whether the child was ever breast fed, continued breastfeeding at 1 year, initiation of breastfeeding and continued breastfeeding at 2 years. Exclusive breast feeding 0-5 months was 22.4% is poor as children less than 6 months are supposed to be exclusively breast fed.

Figure 5: Introduction of complementary foods in larger Kilifi June 2011



The introduction of complementary foods at 6-8 months was good while meal frequency was moderate while minimum diet diversity and minimum acceptable diet are extremely low.

4.1.11 Child morbidity, de-worming and treatment seeking

In the survey 57.3% of the children had sickness in the last 2 weeks, out of them 37% had fever while 35.1% had cough as shown in table below.

Table 14: Disease patterns in the last two weeks before the survey Larger Kilifi June 2011

Disease	Percentage
Fever	37.0%
Cough	35.1%
Watery Diarrhoea	15.7%
Blood Diarrhoea	1.7%
Others (vomiting, skin infection, eye problem, stomach-ache, ring worms and wound)	10.5%

Among the mothers who had sick children 85% of them sought different treatment for their sick children, sought treatment from hospital and other available health facilities. Only 57.2% of the children were de-wormed in the last six months.

4.1.12 Mosquito net coverage

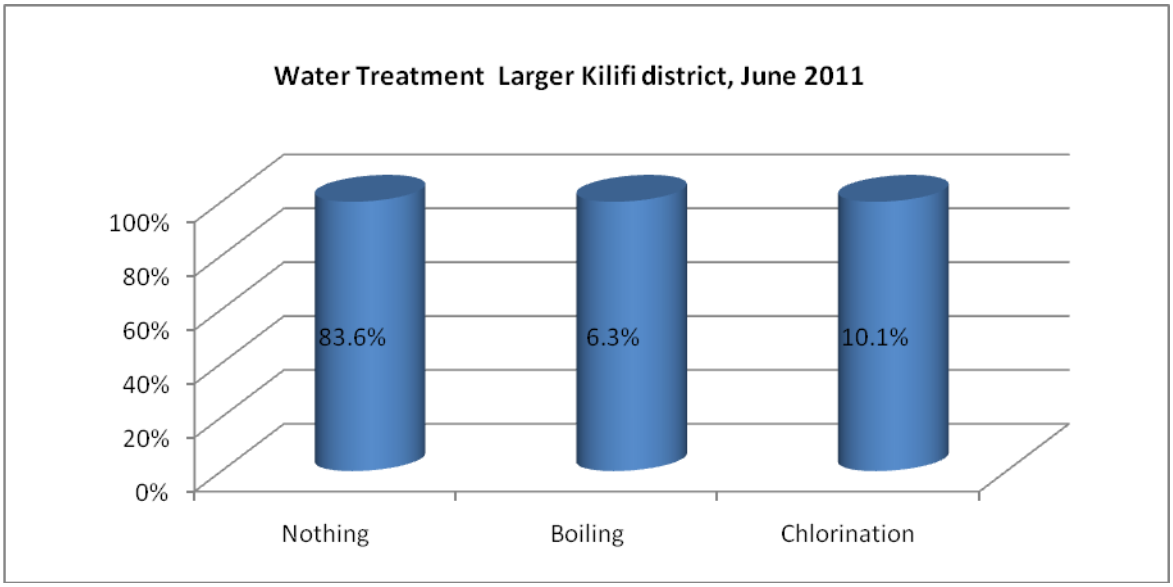
71.8% of the household reported that they owned mosquito net.

4.2 Water and Sanitation

4.2.1 Water source and use

Household connection (56.5%) was the major source of water for the households, while 20.7% had their water from dams.

Figure 6: Treatment of water at household level before use Larger Kilifi district, June 2011



As shown in the figure above 83.6% did not treat their water at household level, while only 10.1% and 6.3% did chlorination and boiling respectively.

4.2.2 Hand washing practice and Latrine ownership.

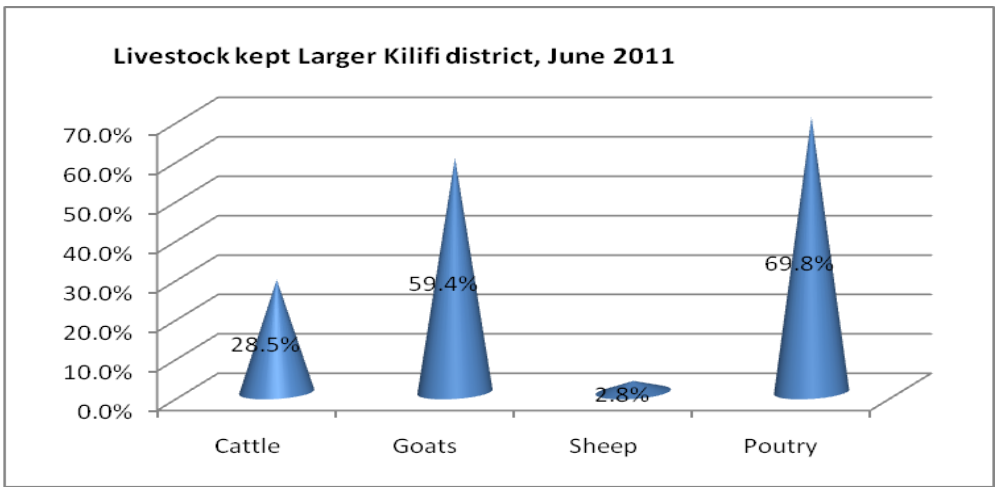
97.3% of the mothers washed their hands before handling food, 56.3% washed their hands after defecation/visiting toilet. Of those who washed their hands only 48.2% washed their hands with soap and water. Only 64.3% of the respondents used latrines or holes for defecation while 35.7% relieved themselves in either a designated or undesignated open area.

4.3 Food security

Food security situation of the region was assessed during the survey. 32.1% had main income from being employed while 20.1% were daily laborers. Above 80% Household heads were adult men with majority of them 56.5% had primary level as the highest education level while their spouses 42.2% and 40.2% had primary education and none respectively.

Most of the households (66.3%) kept livestock, majority (69.8%) keeping poultry. Of the household who kept livestock only 13.8% were milking. The figure below shows the different kind of livestock that the communities were keeping.

Figure 7: Livestock Kept Larger Kilifi, June 2011

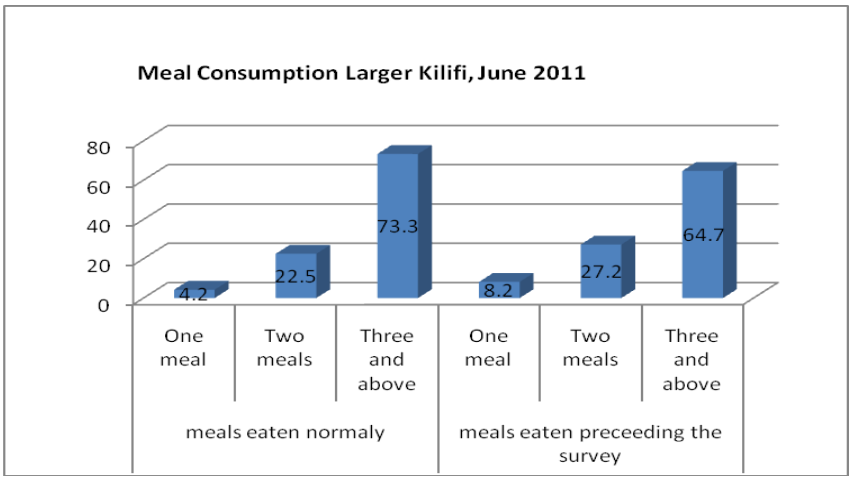


Crop farming was done by 89.1% of the respondents with 97.9% planting maize, cow peas 64.8%, cassava 47.3% and beans 12.8% among other crops; 26.6% of the respondents got food from own produce while majority 70.4% had their food from purchases. The picture below shows the poor state of crops in one of the division surveyed.

Picture 1: Total crop failure in Bamba division.

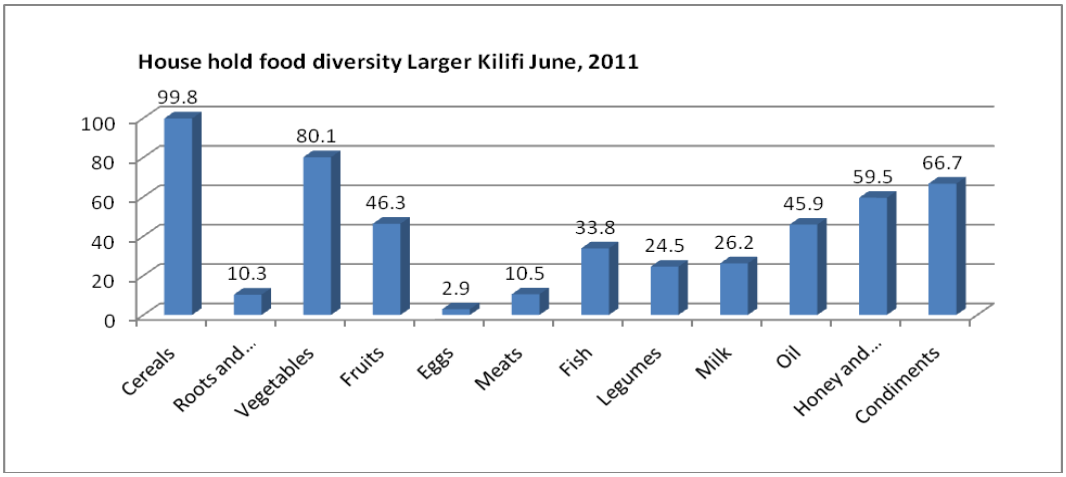
As a result of the total crop failure in most of the divisions the meals that the community consumed reduced as shown in the figure below.

Figure 8: Meals Consumption Larger Kilifi, June 2011



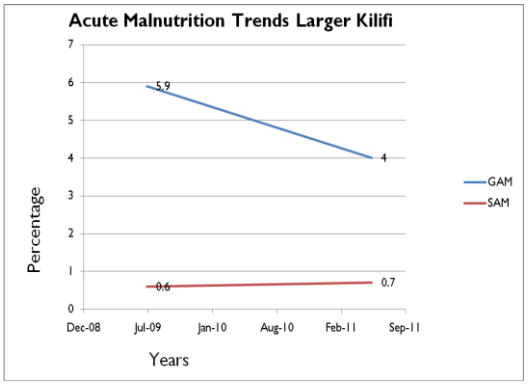
The house hold food diversity was also hampered by the current food scenario with a average score of 5.1, with most of the people consuming the cereals and vegetables as shown in the figure below.

Figure 9: Household food diversity Larger Kilifi, June 2011



5.0 DISCUSSION AND RECOMMENDATIONS

5.1 Health and Nutrition



GAM when compared to the WHO reference population, were below the WHO emergency threshold of 15%. This survey did not show significant difference between a survey done in July 2009 that had a GAM and SAM of 5.9% and 0.6% respectively. Though the malnutrition detected seems to be quite low; this could easily go up depending on the seasons of the year. The malnutrition rates could have been lower than what was detected during this time of the year. The stunting is quite high in the district with 48.8% of the children being stunted. The stunting could be linked to the poor IYCF practices.

The Infant and young child feeding practices (IYCF) in the surveyed area average, 28.1% of the mother's initiated breastfeeding within the 1st hour of birth, it should be noted that all mothers should initiate breast milk within 1st hour of birth as breast milk is the only food ideal for the children at these age. Exclusive breastfeeding for children less than 5 months was at 22.4% just average and WHO and UNICEF recommend that all children should be exclusively breastfed until they reach 6 months old. Colostrum was only given to 75% of the children the rest of the mothers expressed out the milk denying the children important nutrients that are critical for child development and immunity. The introduction of complementary foods was good as 96.8% of the mothers of children aged 6-8 months introduced complementary foods. Minimum meal frequency was average with only 61.6% having the required meal frequency. Minimum diversity was poor within only 4.7% of the mother managing to give the children at least 4 food groups within the last 24 hours. The minimum acceptable diets; a combination of meal frequency and minimum diet diversity

was also poor. After six months, infants need other nutritious foods, in addition to breastfeeding up to two years and beyond, to meet their growth and development needs[8].

Vaccinations (Measles and DPT 3) were above 80% while vitamin A coverage was just above 50%, the measles and DPT 3 coverage was quite good while the Vitamin A coverage was poor especially children between 12-59. Measles is known to interact particularly with deficiencies of protein−energy and of vitamin A. Children who are vitamin A deficient suffer an increased risk of death and illness, particularly from measles and diarrhoea[9]. Immunization is an essential part of child's right to the highest attainable standards of health. Immunization protect against dangerous disease s a child who is not immunized is more likely to become sick, undernourished or could die. This underscores the importance of vaccinations in children growth; poor immunization coverage could lead increased morbidity resulting to malnutrition.

Morbidity in the surveyed population showed that 57.3% of the children had sickness in the last two weeks before the survey; fever was the leading with 37.0%, cough (35.1%) and watery diarrhoea (15.7%).

5.2 Water and Sanitation

Portably water accessibility was of concern with only 56.5% had water from boreholes that's considered safe, while the rest had water from the river. Though they got water from unsafe places over 83.6% of the households did not treat their household water, only 10.1% and 6.2% chlorinated and boiling chlorination. Mothers washed their hands mostly before cooking, before eating and before feeding their children, though it's a good practice only 48.2% used soap when washing their hands. Only 64.3% of the respondents had latrine. The poor hygienic practices can explain the high incidents of water borne diseases such as vomiting and watery diarrhoea. Many illnesses can be prevented by good hygienic practices: washing hands with soap and water (or a substitute, such as ash and water) after defecating or cleaning a child who has defecated, using clean toilets or latrines, disposing of faeces away from play and living areas and water sources, washing hands before handling food, using water from a safe source, disinfecting drinking water if its safety is in question, and keeping food and water clean.

5.3 Food Security

The food security situation in the larger district is worrying. Crop diversity is a major concern as only cereals are grown in the region, this could affect the nutrition status of the populace as other food sources like pulses and vegetables that contribute to well being are not planted. This could be seen with the poor food diversity score for children less than 24 months detected. There is need for the community to be encouraged on food diversity and significant large farming to cater for their food need year all round. The region is agriculturally productive and the community could easily produce enough food for themselves.

[8] UNICEF (2010). Facts for life 4th Edition.

[9] Micronutrient Initiative: Vitamin A in child health weeks : A Toolkit for planning, implementing and monitoring.

In order to improve the nutrition status of the surveyed communities, the following is recommended.

Short term recommendations

1. Need to increase nutrition treatment services (OTP, SFP) in the area to increase coverage and to manage children who are malnourished- MMS/MOPHS, WFF, UNICEF and World Vision.
2. To establish community units where they haven't been established in the district as this will increase case referrals for malnourished children.- MOPHS, World Vision, APHIA.
3. Vitamin A supplementation improvement coverage throughout reaches and if possible campaigns – MOPHS, MMS
4. Conduct IYCF trainings to the Community health workers to improve the IYCF practices. MOPHS, MMS, APHIA
5. Latrine coverage improvement- through hygiene and sanitation – MOPHS
6. Continue with FFA program in areas that have total crop failure especially Bamba and Ganze divisions. WFP and WVK
7. Device ways of provision of clean water especially in Bamba division where water is scarce- water tracking.

Long term recommendations

1. Establish community units to cover the entire Larger Kilifi district this will enhance
    a. Quick and timely referrals for malnourished and sick children
    b. Access to health services
    c. Vaccination coverage and micro nutrient supplementation.
    d. Positively towards hygiene and sanitation practices
    e. Latrine coverage (MOPHS and other Health partners)
2. Introduce and advocate for drought resistance crops in the district. WVK, ARLMP, MOA
3. Establish positive deviance programs in order to have sustainable management of malnutrition in the district (MOPHS).
4. Provide long lasting solution for water problems in dry divisions like Bamba- boreholes and Dams (WVK, ARLMP,MOW.

6.0 ANNEXES

Annex 1: Assignment of clusters Larger Kilifi, June 2011

Division	Location	Geographical unit	Population size	Cluster
		MTONDIA/MAJAONI	14533	
	TEZO	KIBARANI	10163	1
		ROKA	8391	2
	ROKA	CHUMANI	9067	
		NGERENYA	6437	
		EZAMOYO	3634	
	NGERENYA	ZOWERANI	4575	
		MATSANGONI	5002	3
		UYOMBO	5716	4
	MATSANGONI	MKONGANI	5387	
		HOSPITAL	27017	5, 6, 7
		KONJORA	10695	8
		SOKONI	8010	
BAHARI	TOWNSHIP	MNARANI	7392	
		SHIMO LA TEWA	50846	9, 10, 11, 12
		KIJIPWA	9668	
		KANAMAI	15389	
	MTWAPA	KIDUTANI MAWAMBA	9586	13, 14
		JUNJU	10557	15
		KURUWITU/CHODARI	8739	
	JUNJU	GONGONI/VIPINGO	12456	16
		MAVUENI/MAJAJANI	8005	17, 18
		TAKAUNGU	6656	
		KIRIBA/WANGANI	3895	
KIKAMBALA	TAKAUNGU	MKOMANI/MKWAJUNI	7427	
		MWARAKAYA	5024	
	MWARAKAYA	KIZINGO	9842	
		ZIANI	9080	19, 20
	ZIANI	NGOMBENI	4901	
		CHASIMBA	15313	21, 22
		MWAKAMBI	4208	
	CHASIMBA	KITSOENI	5250	
		PINGILIKANI	4611	
CHONYI	BANDA RA SALAMA	MWEMBE KATI	5595	
VITENGENI	MWAHERA	MWAHERA	3235	23

		NDUGUMNANI	1452	
		KAEMBENI	3909	
		DZIKUNZE	3302	
		MWANGEA	2998	
		MITSEDZINI	1080	
		VITENGENI	2266	
	VITENGENI	MADAMANI	7433	
		RARE	2704	24
		NYARI	4863	
	SOKOKE	MAGOGONI	4667	25
		DULUKIZA	1514	
		MRIMA WA NDEGE	1537	
	MRIMA WA NDEGE	MILORE	2801	
		BALE	1702	
		KAHINGONI	967	
	DIDA	DIDA	1765	
		GANZE/TSANGALAWENI	6477	
	GANZE	PETANGUO	3399	
		PALAKUMI	5417	
	PALAKUMI	MARIANI/VITSAPUNI	3927	
		MWEZA/MIGODOMANI	1816	
GANZE	DUNGICHA	DUNGICHA	2280	
		MWAPULA	1425	
		MARERE	2167	
	JARIBUNI	CHIVARA	2179	
		VINAGONI	2587	26
		MAGOGONI/MATOLANI	2212	
	KAUMA	MDANGARANI	1353	
		VYAMBANI	1753	
JARIBUNI	VYAMBANI	NGAMANI	1938	27
		PAZIANI	4888	
	BAMBA	MWAKWALA	5544	
	MTSARA WA TSATSU	MTSARA WA TSATSU	11562	28
		MIRIHINI	2607	
		MWAMBANI	2520	
	NDIGIRIA	NDIGIRIA/MAPOTEA	2606	
		MITSEMERINI	2211	
		KIDEMU	2005	
		MIKAMINI	2745	
	BANDARI	KARIMANI	1183	
		MIDOINA	1040	
BAMBA	MITANGANI	MNAGONI	1122	

		DANGARANI	2022	
		GEDE	1605	
		GOSHI	982	29
		MIGUJINI	921	
		KALOLENI VISHAKANI	17734	
		KINANI/MAKOMBOANI	5439	30
		BIRINI/MWAMLEKA	3964	
		MIKIRIANI	5574	
	KALOLENI	CHALANI/MIHINGONI	6878	31
		CHILULU	3258	
		TSAGWA	3007	
		KWALE	4719	
	JIBANA	NYALANI	5453	32
		PANGANI/MAERENI	4708	
	KAMBE	KIKOMANI/MBWAKA	7272	
	RIBE	CHAURINGO	5331	
		MBALAMWENI	9790	
		KINAGONI	3234	33,34
		MRIMANI	8680	35
KALOLENI	KAYAFUNGO	MIYANI	3724	
		JIMBA	4337	
		MLEJI	9332	
	RURUMA	MIYUNI	8040	
		BUNI KISISMANI	9924	36
		MWELE KISURUTINI	7969	
		MGUMO /PATSA/MAZERAS	15909	37
	RABAI	KALIANG'OMBE/ JIMBA	9342	
		BWAGAMOYO	6349	38
		MWAMTSUNGA	4806	
RABAI	MWAWESA	MIKAHANI	3866	
		MITANGONI/MARIAKANI	29866	39
	MARIAKANI	KAWALA/ KADZONZO	13333	40
		VIRAGONI	7754	
		KITHENGWANI/MAZIA CHENDA	9099	
	MWANAMWINGA	KIBWABWANI	4621	
		TSANGATSINI	6005	
MARIAKANI	TSANGATSINI	MNYENZENI	3607	

Annex 2: Anthropometric and Health survey data form

(To be conducted in EVERY HH with children 6-59)

Team No:…….. Date:……../……../……..… Cluster No:/….. District:……. Division……. ……. Location:……..……... sub location……. ……. Village……

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Child No.	HH ref' No.	Sex (M,F)	Age in months	Weght in Kg ±0.1kg	Heig ht in cm ±0.1 cm	Billateral Oedema (N,Y)	MUAC in cm	Enrolled in feeding program in the last 3 months 0 = No 1 = SFP 2 = TFP 3= FBP 4 = SF	Currently in feeding program? **0** = No **1** = SFP **2** = TFP 3= FBP 4= SF	Vit. A in last 6 mths **0** = No **1** =Yes	Measles Vaccine **0** = No **1** =Yes with EPI card **2** =Yes recall	DTP3 **0** = No **1** =Yes with EPI card **2** =Yes recall	Has the child taken any drug for intestinal worms in the last six months? 0= No 1 = yes 2= Don't know	Illness in past 2 weeks **0** = No **1** =Yes (If no skip to Question 17)	Type of Illness **0** = No **1** = Fever **2** = Cough/flu/ cold **3** =Watery Diarrhea **4** = Bloody diarrhea **5** = Others(Specify)	If diarrhea is yes ,Was he/she given any of the following to drink at any time since he/she started having the diarrhea? 1. A fluid made from a special packet called Oralite or ORS? 2. A home-made sugar-salt solution? 3. Another home-made liquid such as porridge, soup, yoghurt, coconut water, fresh fruit juice, tea, milk, or rice water? 4. Zinc 5. Others (specify	Treatment **0** = None sought **1** =Hospital **2** = GOVT heath facility **3**= FBO heath facility **4** = Mobile/outreach clinic **5**=Village health care worker **6**=Private physician **7**=Relative/friend **8**=Shop **9**=Traditional practitioner **10**=Pharmacy **11**=Others(Specify)	Did the child sleep under a mosquito net(LLITN) last night? 1= Yes 2= No 3= Yes not LLITN	Female caetakers MUAC in cm	Physiological state of the female caretaker 1= Pregnant 2= lactating 3= Pregnant and Lactating 4= Not lactating nor pregnant	In your last pregnancy, did you take iron pills, sprinkles with iron, or iron syrup? 1= yes 2 = No 3= Don't know
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3																					
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Name Team Leader…… Signiture……

Annex 3: Calendar of events

MONTH	Seasons	2006	2007	2008	2009	2010	2011
JANUARY (MWEZI WA KWANZA)	opening of schools, mwaka mpya, hot month		53	41 post election violence	29	17	5
FEBRUARY (MWEZI WA HIRI)	Land preparation		52	40 formation of coalition government	28	16	4
MARCH (MWEZI WA HAHU)	Start of long rains, planting of crops		51	39	27	15	3
APRIL (MWEZI WA WANE)	holiday closing of schools, weeding, Pasaka (easter)		50 Great Giriama Kaya elder - Simba w anje died	38	26	14	2
MAY (MWEZI WA TSANO)	Heavy rains, opening of schools second term		49	37	25	13	1
JUNE (MWEZI WA HANDAHU)	windy, budget		48	36	24 drought and famile	12	
JULY (MWEZI WA FUNGAHE)	cold month, lots of cold (kipanya), roasting of maize	59	47	35	23	11	
AUGUST (MWEZI WA NANE)	closing of school, show mombasa, lots of weddings and cultural festivals (mabulu, nyere za mwezi)	58	46	34	22 census	10 referendum on constitution	
SEPTEMBER (MWEZI WA CHENDA)	opening of schools third term, harvesting of cowpeas, maize	57	45	33	21	9	
OCTOBER (MWEZI WA KUMI)	preparation of land and start of short rains start of planting	56	44	32	20	8	
NOVEMBER (MWEZI WA KUMI NA MWENGA)	continuing of planiting and weeding, national exams, closing of schools	55	43	31	19	7	
DECEMBER (MWEZI WA KUMI NA MBIRI)	siku kuu, xmas, roasting of maize	54	42 Elections , start of post election violence	30	18	6	

Annex 4: Household mortality form

(To be conducted in EVERY HH from the random starting point until a total of 18 HHs are completed)

Team No:…..Date:../…../…… Cluster N0:/….. District:……..Division…….. Location:……sub location……. Village…….

1	2	3	4	5	6	7	8	9
		Joined HH		Left HH				
HH ref' No.	TOTAL people in the HH (now)	Of the total, how many are children <5 years	TOTAL people who have joined HH since the 1st April 2011 and are present now	Of the total, how many are <5s	TOTAL people who have left HH since the Ist April 2011	Of the total, how many are <5s	No. of births since the April 1st	TOTAL No. of dealths in the family since April 1st	Of these deaths how many were children <5 who died since the April 1st
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26									

Name Team Leader…… Signature……

Annex 5. Infant and young Child feeding questionnaire

INFANT AND YOUNG CHILD FEEDING QUESTIONNAIRE

(To be conducted in every HH with children 0-24 months)

Team No:………….. Date:…..../…..…/…….. Cluster No:/………….. District:……………. Division……….. Location:………… sublocation……………… Village………………

Child No.	HH Ref No.	21 Age in Months	22 Has this child ever been breastfed? 1 = Yes 2 = No	23 How do you manage the first milk after birth (ndanga, kiswana) 1= Breast fed the child 2= expressed out that milk 3= not expressed but not breastfeed for days	24 Is this child still breastfeeding now? 1 = Yes 2 = No	25 How long after birth did you first put the child to the breast? **1** = Immediately in 1st hour **2** = More than 1 hour **3** = After first day	26 When did you start giving water to the child? Indicate month, weeks, days or 0= Not yet	27 At what age did you begin to feed this child daily with any food/fluids other than breastmilk? Indicate month, weeks, days or 0= Not yet	28 What different types of food were given to the child yesterday during the day and night? **1** =Grains/cereal s/tubers **2** = Meat/Fish/Poultry/Organ meats **3** = Legumes/ Nuts **4** = Dairy products **5** = Fruits/vegetables 6**=** Vitamin A rich fruits & Vegetables **7** = Eggs	29 Since this time yesterday, how many times was this child given solid,semi solid and soft foods? (put number)
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Name Team Leader……………………………… Signiture…………………………………………

Annex 6: Water and Sanitation questionnaire

(To be conducted in every HH visited for the anthropometric questionnaire)

Team No:……...Date:…../……../…… Cluster N0:/…… District:……..Division…….. Location:……sublocation…….
Village……

	30	31	32	33	34	35	36	37
HH Ref No.	What is the household's **main** drinking water source? --- **1**=Borehole **2**= Protected Shallow well **3**=HH connection / Stand pipe /Tanker **4**=Protected spring **5**=Dam / Pond **6**= River /Stream **7**= Open shallow well **8**= rain water roof harvesting **9=**other (specify)	How long does it take to collect HH water (including travel to and from and waiting)? --- **1** = ≤30 mins **2** = ≤1hr **3** = ≤ 2hrs **4** = ≤ 4hrs **5** = >4hrs	How many litres (jerrycans) of water did the HH use yesterday in total (excluding water for clothes washing)? (define how many litres in a jerrycan if the popn all use the same)	What is done to the water before households members drink it? **1.** Nothing **2**.Boiling **3.**Filtering with a cloth **4.** Letting it settle **5.** Chlorination **6.** Tree leaves **7.**Others(Specify)	Do you Wash Hands? 1= Yes 2= No	If yes, when do you usually wash your hands ? (more than one if appropriate - do not promt) --- 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	What do you use to wash hands? --- **1** = water only **2** = water + soap **3** = water + ash 4 = Water and Sand 5=Other (specify)	Where does the household usually go to dispose human waste? (include more than one if necessary)? --- **1** = Latrine **2** = Hole **3** = Designated open area **4** = Undesignated open area **5** = Flush Toilet **6**= Other (specify)

Name Team Leader…… Signature……

Annex 6: Food security questionnaire

(To be conducted in every HH visited for the anthropometric questionnaire)

Team No:…….. Date:.../...../…… Cluster N0:/….. District:……. Division…….. Location:…… sublocation……. Village……

	38	39	40	41	42	43	44	45	46	47	48
HH Ref No.	Who is the head of the household? 1. Adult Male 2. Adult Female 3. Child Male 4. Child Female	Main Occupation of the household head (enter code from list) 1. Livestock herding 2. Own farm labour 3. Employed(salaried) 4. Daily Labour 5. Small business/Petty trade 6. Unemployed 7. Retired 8. Housewife 9. Domestic help 10. Firewood/charcoal 11. Weaving/basketry 12. Fishing 13. Others (specify)	Highest educational status of the household head 1. None 2. Non formal 3. Primary Level 4. Secondary Level 5. Above secondary 6. Youth polytechniques 7. Other (Specify) ____	Highest educational status of the Spouse 1. None 2. Non formal 3. Primary Level 4. Secondary Level 5. Above secondary 6= Youth polytechniques 7. Other (Specify) ____	Does the household currently own livestock? 1. Yes 2. No 3. custodian of someelse cattle (If no skip to question 46)	If yes, which ones do you have? 1. Cattle 2. Goats 3. Sheep 4. Poutry 5. Donkey 6. Camels 7. Pigs 8. Rabbits	Did household milk any animal yesterday? 1. Yes 2. No	If yes what was the total amount milk produced? (ask in cups and convert it into litres)	Is the household currently engaged in crop farming? 1. Yes 2. No	If YES, type of crops have you planated in the current season? 1. Maize 2. Sorghum 3. Simsim 4. Beans 5. Tomatoes 6. Onion 7. Pawpaw 8. Mango 9. Watermelon 10. Orange 11. Kales/sukuma wiki 12. ground nuts 13. Pumpkins 14. Okra 15. Millet 16. Cowpeas 17. Cassava 18. Sweet potatoes 19. Coconut 20. Pigeon peas 21. Bananas 22.Sugarcane 23. Arrow roots 24. French beans 25. Green grams 26. Rice 27. Cabbage 28. Sunflowers 29. capscicm (hoho) 30. Mashrooms 31. Others (specify)	What is the main source of the dominant food item consumed 1=Own production 2= purchases 3=gifts from friends/ family 4= food aid 5= traded or bartered 6=borrowed 7=Gathering /wild 8= Others specify

Name Team Leader…… Signature……

(To be conducted in every HH visited for the anthropometric questionnaire)

Team No:…….. Date:.../...../…… Cluster N0:/….. District:……. Division…….. Location:……
sublocation……. Village……

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
HH Ref No.	Did the household eat the following yesterday during the day or night?														
	1. Any maize meal, pasta, rice, bread, or any food made from maize, sorghum, millet or wheat (1= yes, 0 =no)	2. Any potatoes, yams, beets or other foods from roots or tubers (1= yes, 0 =no)	3. Any vegetables? (1= yes, 0 =no)	4. Any fruits? (1= yes, 0 =no)	5. Any eggs? (1= yes, 0 =no)	6. Any meats (cattle, chicken, poultry/fowl, sheep, lamb, and organ meats (heart, liver, kidney, etc)? (1= yes, 0 =no)	7. Any fish or dried fish? (1= yes, 0 =no)	8. Any foods made from beans, peas, lentils, or nuts? (1= yes, 0 =no)	9. Any milk, yogurt, cheese, or other milk product? (1= yes, 0 =no)	10. Any foods made with oil, fat, ghee, or butter? (1= yes, 0 =no)	11. Any sugar or honey? (1= yes, 0 =1)	12. Any other condiments (coffee, chillies, tea)? (1= yes, 0 =no)	Including food eaten in the morning, how many meals does your family normally eat per day? (Please indicate the number of meals consumed e.g. 1, 2, 3, 4, 5 ,6)	Including food eaten in the morning, how many meals did your family eat **YESTERDAY?**	Have you received **FOOD AID** (general food distribution) in the last **three (3)** months? (1= yes 2=no)

Name Team Leader……
Signature……

Annex 7. Plausibility checks

Indicator	Survey
Digit preference - weight	5 (Good)
Digit preference - height	5 (Good)
WHZ (Standard Deviation)	0.99 (good)
WHZ (Skewness)	0.06 (Good)
WHZ (Kurtosis)	-0.04 (Good)
Percent of flags	0% (Good)
Overall data quality Score	4% (Good)
Age distribution (%)	
Group1 6-17 mo	22.2%
Group 2 19-29 mo	23.4%
Group 3 30-41 mo	26.6%
Group 4 42-53 mo	19.1%
Group 5 54-59 mo	8.7%
Age Ratio : G1+G2/G3+G4+G5	100
Sex Ratio	1.0 (good)