MERCY-USA FOR AID AND DEVELOPMENT

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ABBREVIATIONS

CMR	Crude Mortality Rate
FGD	Focus Group Discussion
FFA	Food for Asset
GAM	Global Acute Malnutrition
GOK	Government of Kenya
IYCN	Infant and Young Child Nutrition
IYCF	Infant and Young Child Feeding
KDHS	Kenya Demographic Health Survey
MoPHS	Ministry of Public Health and Sanitation
MUAC	Mid-Upper Arm Circumference
OTP	Outpatient Therapeutic Program
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Program
UNICEF	United Nation Children Fund
U5MR	Under-Five Mortality Rate

EXECUTIVE SUMMARY

This report presents the nutrition survey carried out in September 2012 in Kwale, Msambweni and Kinango districts in Kwale County. A total of 749 households and 4356 household members participated in this nutrition survey. The mean household size for Kwale County is 5.8± 2.375 and a male: female ratio of 1:1. School attendance of the children aged 5-18 years is 94.7% in the County. The main livelihood in Kwale County is livestock keeping in Kinango and parts of Msambweni districts and mixed farming in Kwale district and parts of Kinango and Msambweni districts.

Table 1: Summary of Findings

Demographic Characteristics			
Number of households	749		
Total household sample	4,356		
Household size	5.8± 2.375 : Range 2 to 17		
Males	50.0% (2179)		
Females	50.0% (2176)		
	All N = 849	**Boys N = 436**	**Girls N = 413**
Prevalence of GAM (<-2 z-score and/or oedema)	(77) 9.1 % (5.5 - 14.5 95% C.I.)	(36) 8.3 % (5.0 - 13.4 95% C.I.)	(41) 9.9 % (5.8 - 16.4 95% C.I.)
Prevalence of SAM (<-3 z-score and/or oedema)	(23) 2.7 % (1.5 - 4.7 95% C.I.)	(11) 2.5 % (1.0 - 6.1 95% C.I.)	(12) 2.9 % (1.6 - 5.1 95% C.I.)
Prevalence of underweight (<-2 z-score)	(164) 19.3 % (14.7 - 25.0 95% C.I.)	(89) 20.4 % (15.5 - 26.4 95% C.I.)	(75) 18.2 % (12.7 - 25.3 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(48) 5.7 % (3.3 - 9.4 95% C.I.)	(25) 5.7 % (3.2 - 10.0 95% C.I.)	(23) 5.6 % (3.0 - 10.0 95% C.I.)
Prevalence of stunting (<-2 z-score)	(290) 34.2 % (29.6 - 39.1 95% C.I.)	(163) 37.4 % (31.6 - 43.6 95% C.I.)	(127) 30.8 % (25.7 - 36.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(94) 11.1 % (8.3 - 14.5 95% C.I.)	(58) 13.3 % (9.8 - 17.8 95% C.I.)	(36) 8.7 % (6.0 - 12.4 95% C.I.)
Prevalence of GAM (< 125 mm and/or oedema)	(68) 8.0 % (4.8 - 13.0 95% C.I.)	(28) 6.4 % (3.4 - 11.7 95% C.I.)	(40) 9.7 % (5.9 - 15.5 95% C.I.)
Prevalence of MAM (< 125 mm and >= 115 mm, no oedema)	(52) 6.1 % (3.5 - 10.4 95% C.I.)	(21) 4.8 % (2.5 - 8.9 95% C.I.)	(31) 7.5 % (4.3 - 12.8 95% C.I.)
Prevalence of SAM (< 115 mm and/or oedema)	(16) 1.9 % (1.1 - 3.2 95% C.I.)	(7) 1.6 % (0.6 - 4.0 95% C.I.)	(9) 2.2 % (1.2 - 3.9 95% C.I.)
At risk (<135 mm and > 125 mm)	(106) 20.3%		
Immunization	**Yes by Card**	**Yes by Recall**	**Total Immunized**
OPV1/DPT1 N = 848	87.0% (738)	12.4% (105)	99.4% (843)
OPV3/DPT3 N = 848	85.3% (723)	12.1% (103)	97.4% (826)
Measles (=>9 months) N= 800	79.5% (636)	14.8% (118)	94.3%(754)
% of median: Prevalence of global acute malnutrition (<80% and/or oedema)			(54) 6.4 % (3.6 - 10.9 95% C.I.)
% of median: Prevalence of severe acute malnutrition (<70% and/or oedema)			(4) 0.5 % (0.2 – 1.2 95% C.I.)
CMR (total deaths/10,000 people / day): 0.23 (0.09-0.61) (95% CI) Design effect 2.08			
U5MR (deaths in children under five/10,000 children under five / day): 0.45 (0.09-2.17) (95% CI) Design effect 2.43			

Morbidity Children < 5 years sick N =848	**373**	**45.7%**
Among Sick: N = 373		
Watery diarrhoea	48	12.9%
Vomiting	20	5.4%
Fever with chills	97	26.0%
Fever, cough, colds, ARIs	217	58.2%
Parasites	6	1.6%
Eye infection	7	1.9%
Skin infection	28	7.5%
Treatment of diarrhoea with zinc N = 48	4	8.3%

Table 1: Summary of Findings Contd.			
Vitamin A Supplementation	**N**	**% (n)**	
6-11 months	96	77.1% (74)	
12-59 months (Received twice)	735	17.6% (129)	
6-59 months < 5 years (Received once)	831	73.0% (607)	
De-Worming 1-<5 years N = 734			
Yes by Card	61	8.3%	
Yes by Recall	235	32.1%	
Number of meals normally eaten per day by households			
• 3 meals	94.5 % (699)		
• 2 meals	5.5% (40)		
• 1 meal	----		
Number of meals eaten the day preceding the survey by households			
• 0 meals	0.1% (1)		
• 1 meals	1.8% (13)		
• 2 meals	21.5% (159)		
• 3 meals	76.5% (586)		
Nutrition Status of women caregivers of children aged 6-59 months			
% of women with MUAC < 21.0cm N =656	1.4% (9)		
% of women pregnant and lactating N = 656	68.1% (447)		
% of women pregnant and lactating with MUAC < 21.0cm N = 447	1.8% (8)		
% women supplemented with iron for 90 days in their last pregnancy	77.0% (506)		
% of lactating women receiving vitamin A supplementation N = 402	54.5% (219)		
Women attending ANC during last pregnancy N = 656	95.6% (626)		
Women de-wormed N = 656	49.8% (326)		
Food Security			
Livelihood zones include livestock in parts of Msambweni and Kinango , Mixed farming in Kwale and parts of Msambweni and Kinango districts and Fisheries minimal in Msambweni district			
Purchasing food as the main source of food for households	91.0%		
Mean household dietary score of households	6.20+ 2.847		
WASH • % HH who have access to safe drinking water • % HH treating drinking water before drinking • % HH with access to latrine • % HH washing hands appropriately	55.1% (428) 22.7% (168) 56.9% (421) 51.5% (381)		
Infant and Young Child Feeding (IYCF) Practices	ALL	Male	Females
Early initiation of breastfeeding children aged 0-23 months N = 456	89.6% (407)	46.0% (209)	43.6% (198)
Exclusive breastfeeding for children<6 months (N = 151)	52.3%% (79)		
Minimum Dietary diversity Children (% 6-23 months old (N =297) • Consuming 4+ food groups (breastfed and non-breastfed children respectively)	48.6% (144)	22.0% (65)	26.6% (79)
Minimum meal times (% 6-23 month old) N =297) • At least twice a day for 6-8 months old (breastfed children) N = 52 • At least 3+ times a day for 6-23 months old (breastfed children) N = 251 • 4+ times a day of children 6-23 months (non-breastfed children) N = 46	 51.0% (25) 43.8% (110) 21.8% (10)	 24.5%(12) 21.1%(53) 10.9%(5)	 26.5%(13) 22.7%(57) 10.9%(5)
Children consuming Minimum acceptable diet N =297	48.8% (145)	23,6%(70)	25.2%(75)

Nutrition Status of children 6-59 months

In the three districts (Kwale, Kinango and Msambweni), children malnourished using weight for height (WHZ) with global acute malnutrition (GAM) – 2 Z scores is 9.1% (5.5 - 14.5 95% C.I.) and those severely malnourished (SAM) -3 Z scores is 2.7% (1.5 - 4.7 95% C.I.). More girls, 9.9% are malnourished than 8.3% of the boys. Although there is a difference between the nutrition status of boys and girls, the difference is not significant at p =< 0.05. The global malnutrition situation is not significantly different from that in July 2009 for the then Kwale district at 8.4%. The prevalence of underweight – 2 Z scores is 19.3% (14.7 - 25.0 95% C.I.) and severe underweight – 3 z scores is 5.7%

(3.3 - 9.4 95% C.I.) for children in the three districts. The prevalence of stunting -2 Z scores in the three districts is 34.2% (29.6 - 39.1 95% C.I.) and severe stunting – 3 Z scores is 11.1% (8.3 - 14.5 95% C.I.). Prevalence of malnutrition using % of the median GAM <80% was for 6.4% (3.6 - 10.9 95% C.I.) while severe malnutrition <70% was for 0.5% (0.2 - 1.2 95% C.I.) of the children aged 6- 59 months. Prevalence of global malnutrition using MUAC <125mm is 8.0% (4.8 - 13.0 95% C.I.) and severe malnutrition < 115 mm is 1.9% (1.1 - 3.2 95% C.I.). More girls were malnourished than boys using MUAC although this is not significant at p<0.05. The trend of malnutrition using WHZ in June 2009 and September 2012 is shown in figure 1. Although the malnutrition situation in September 2012 is worse than in July 2009, the difference is not significant at p =<0.05.

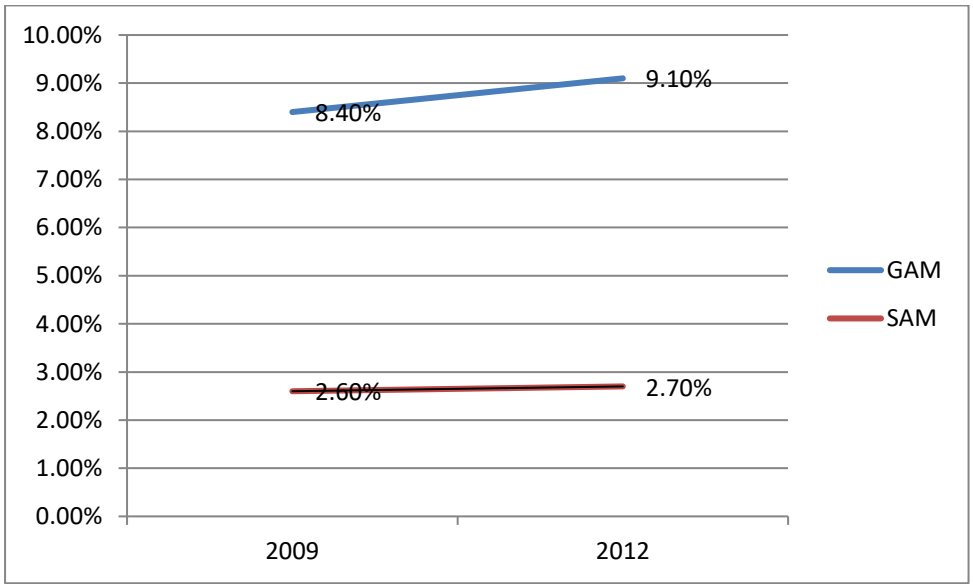

Figure 1: Trend of Malnutrition

Nutrition status of women aged 16-49 years

Of the women, 68.1% were pregnant and lactating. About 1.4% of the women aged 15-49 years were malnourished while 1.8% of the pregnant and lactating women were malnourished with MUAC < 21.0 cm. Over a third of the women, 77.0% were supplemented with iron during their last pregnancy while 54.5% of the lactating women had received vitamin A supplementation. About 49.8% of the women had been de-wormed.

Morbidity

A large proportion of under fives, 45.7% were sick two weeks prior to the survey in the three districts. This was lower than 55.8% children who were sick in Kwale in the July 2009 nutrition survey. About 84.2% of the sick children suffered from fever in combination with other symptoms. Many caregivers 60.3% sought health attention from public health services while for a proportion of 17.7% of the sick children, no health assistance was sought. Watery diarrhoea affected 12.9% of the sick children in the three districts. About 45.9% of the sick were malnourished. Odds ratio showed that those children who were sick were 0.966 times more likely to be malnourished than those who were not sick.

Mortality

The crude mortality rate (CMR) during this period is 0.23 deaths/per 10,000 persons/day and the under-five mortality rate (U5MR) is 0.45 deaths/10,000 children/day. These rates were lower than the CMR of 0.60 deaths/per 10,000 persons/day and the under-five mortality rate of 1.99 deaths/10,000 children/day in July 2009.

Coverage of Immunizations
Immunization coverage is high above the recommended 80% immunization coverage for all the three vaccinations which is commendable. This is due to the efforts by the Ministries of Health and partners in the three districts. Coverage is 99.4% for OPV1, 97.4% for OPV3 and 94.3% for measles. Immunization efforts through the health facilities, outreach programmes and immunization campaigns in the district have contributed to these commendable rates.

Vitamin A Supplementation for children and lactating women
Vitamin A supplementation coverage for children aged 6-11 months (received once) was 77.1% in the three districts and Vitamin A supplementation (received once) in the past six months was 73.0% for children 6-59 months. However coverage for children aged 12-59 months (received twice) which is the recommended rate was still very low at 17.6% which was far below the rate of 36.3 % in July 2009. The difference between vitamin A supplementation for children in July 2009 and September 2012 are significantly different at p=.000. The current poor coverage needs to be investigated and improved upon. Coverage of vitamin A supplementation for lactating women is 54.5% in the three districts in Kwale County. Vitamin A coverage for lactating women was not investigated in 2009 survey.

De-worming
De-worming rates in the district are low at 40.4% for children aged 12-59 months. This rate is similar to that of July 2009 of 39.4% children who were de-wormed.

Outpatient Therapeutic Programme (OTP) and Supplementary Feeding Programmes (SFP)
A small proportion of malnourished children are enrolled in the feeding programmes. Of the malnourished children, only 5.3% were in OTP and 7.9% in SFP. Poor enrolment is due to poor screening and inability for outreach programmes to identify children in the far remote areas at the community level.

Food security Situation
The food security situation was assessed just after the harvest season in August therefore families had food within the households. During food scarce periods, these households are likely to be consuming less food which would have negative effects on nutrition of family members. Households were consuming fewer meals than what they normally consumed. Households that consumed three or more meals the previous day were 76.5% compared to 94.5% of the households that normally consumed three or more meals. The households normally consumed 2.96$\pm$0.248 mean meals per day compared to 1.1.8$\pm$ 0.433 mean meals that the households consumed the day preceding the survey. There was a significant difference between the meals that the household consumed the previous day and the meals they normally consumes at p = 0.001. This shows that the families are consuming fewer meals than what they normally consumed.

Slightly over half, 53.8% of the children age group 6- 23 months who were breastfed consumed the recommended three or more food groups the day preceding the survey while children not breastfed consuming the recommended four or more food groups were 67.3%. On average, only 55.9% the children aged < 24 months consumed the recommended number of food groups.

The main source of income is wage labour by 29.7% of the households followed by petty trade by 15.6%, sale of own crops by 12.2% and salaried by 11.4% of the households. The main source of food is purchasing for majority 91.0% of the households.

Infant and Young Child Feeding Practices

All 151 children aged 0-5 months are still breastfeeding and had received colostrum in the first three days after birth. Exclusive breastfeeding is practiced by 52.3% of the children aged 0-5 months. Of the children aged 6-23 months, 84.6% of the caregivers/mothers were breastfeeding their children. About 89.6% of the caregivers started to breastfeed their children within the recommended 1 hour after delivery which is commendable.

About 63.5% of the breastfeeding children age group 6-8 months consume the recommended minimum two (2) meals per day, and breastfeeding children age group 9-23 months who consume the recommended three (3) meals per day was just over a third, 37.0% while only 21.7% of the non-breastfed children aged 6-59 months consume the recommended four (4) meals per day. On average, only about a half, 51.5% of the children aged 6-59 months consume the recommended number of meals per day Although there was a difference between the number of meals the males and females consumed, the difference was not significant at p=<0.05. About a half 55.9% of the children aged 6-23 months consume the recommended variety of 4 or more food groups.

WASH

A proportion of 55.1% of the households accessed safe water sources. With 74.7% of households taking 30 minutes or less to fetch water. Majority of the households, 77.3% did not treat their drinking water. About 56.9% of the households accessed toilet facilities in the three districts. Among those who accessed toilet facilities, 70.4% used traditional pit latrines and 27.2% used ventilated pit latrines. Disposal of child's faeces is hygienically done by 63.9% of the caregivers. At least about half of the caregivers, 49.2% washed hands before eating, 69.9% before handling food and 64.3% after defecation. Around a half, 51.5% of the caregivers used appropriate hand washing using soap and water.

Discussion

The nutrition situation in Kwale County due to the fact that the vegetation cover is good in quantity and quality except for some parts in the livestock livelihood zone in Kinango district hence there is satisfactory provision of some livestock products. This contributed to satisfactory livestock condition in the county. Water situation is fair in quantity and quality; however some areas of the county are still dry due to poor rains. There is minimal water treatment that predisposes families to water borne diseases that compromise nutrition situation in the county. In addition, food related stress continues to be felt across all livelihoods zone due to crop failure. The livestock condition is rated as good due to good forage and water availability. Water pans and dams are the main sources of water in Kwale County, however, in Kinango there are challenges due to shallow water pans. Nutritional status indicated a deteriorating trend in both livelihood zones but worst in Kinango district. Some farmers had just harvested crops especially maize in the mixed farming zone throughout the county. This contributed to satisfactory food security situation during the survey in September. Although Food Aid in Kwale and Msambweni and Food for Assets in Kinango is undertaken few of the households with malnourished children accessed food aid. This calls for strategies together with the community to be strengthened in identifying the most vulnerable for these programmes.

Conclusion

- The survey was undertaken after the rains in Kwale and Msambweni districts and just after the harvest season therefore some food in storage although in Kinango district there was no or poor harvest in last season.
- Water was available and not a main challenge in Msabweni and Kwale although in Kinango it is still a challenge. There is minimal treatment of drinking water in these districts.
- Malnutrition rates among under fives are highest in Kinango and parts of Msambweni

- Morbidity high in all districts with about half of the children being sick in the two weeks prior to the survey.
- Immunization coverage high all BCG, OPV1 and OPV3 with rates being above 90% in the county which is commendable.
- Vitamin A supplementation and de-worming for the under-fives are very low in the three districts
- Access to latrines poor and poor hand-washing practices partly due to water and lack of adoption of appropriate health education on these
- IYCF practices in terms of initiation of breastfeeding and continued BF are commendable whereas provision of pre-lacteals are undertaken by about half of the mothers
- Complementary feeding practices are low in terms of meals provided and variety of foods

Recommendation

Proper nutrition interventions should be put in place to address the cases of malnutrition that was observed in all the livelihood areas involving concerted efforts together with the community and households in Kwale County

- Screening for nutrition interventions in Kinango needs to be stepped up incorporating the community and partners in order to improve nutrition with community trained to undertake follow-ups

- Complementary feeding practices need to be focused on in terms of number of meals and variety of foods to provide to children 6-23 months in all the three districts by MOPHS and partners incorporating the caregivers at the community level

- There is need to deepen water pans or construct deeper pans to avoid drying up especially in Kinango district. Partners can undertake this with the community supporting in labour

- Latrines construction and use require to be undertaken with the local leaders such as chiefs spearheading this. Current CLTS training and follow-ups to monitor use need to be promoted by partners

- Water access and safety is required for effective practice of appropriate hand-washing. Education on hand-washing and access to be promoted by MoPHS and partners in conjunction with community leaders

- Water treatment initiatives need to be undertaken by partners and MoPHS and in addition policy on water treatment should be put in place and enforced in the area to avoid water related sicknesses

- There is need for a nutrition survey to be undertaken during the dry season to capture the situation especially during water and food scarcity. Besides separate nutrition surveys for each district is recommended due to different climatic and environmental situations in the three districts

- Vitamin A and de-worming of under fives need to be recorded on the health cards and coverage improved through campaigns and during routine contact

- Outreaches especially in Kinango and parts of Msambweni should be comprehensive and regular focusing on health and nutrition education promotion, complementary feeding, WASH, by partners - Mercy USA and incorporate a strong community monitoring component

1.0 Introduction

1.1 Background and Rationale

Mercy USA is an international Non Governmental Organization whose goal is to contribute towards the alleviation of human suffering through programs and projects focused on improving the general well-being of women, children and the community. Since April 2011, Mercy-USA has been supporting MOPHS to implement High Impact Nutrition Intervention in the County and the proxy coverage for MAM and SAM for children under five was 66.2% and 12.9% respectively. New admissions are relatively increasing at SFP and OTP centres. There has been no recent survey done to determine the nutrition situation in the County as the last one was done in 2009.

Kwale County experiences a bimodal rainfall pattern with the short rains occurring between October to December and the long rains occurring between March and June/July. Kwale is classified as food insecure whilst 40 percent fall into the absolute poverty category. Kinango district is among the poorest in Kenya with poverty levels of approximately 20 percent above the national average. The main livelihood zones in the county are mixed farming, livestock farming fisheries and formal employment/tourism. It is estimated that 40 percent of the population derive their livelihood from livestock activities. In the livestock farming zones, depressed livestock prices impacts negatively on access to food by households.

Mercy-USA, MoPHS and UNICEF partnered to conduct a detailed nutrition survey of the three districts in Kwale County; Kinango, Msambweni and Kwale districts in September 2013.

1.2 Objective of the Survey

The purpose of this survey was to collect information regarding the nutrition, health and WASH as well as food security status in Kwale County. The aim of the results is to be used as a baseline in advising the best strategy to be used in the intervention over the next one year.
The objective of this survey was to:

1. Determine the prevalence of global and severe acute malnutrition among children aged 6 to 59 months
2. Estimate both under-five and crude retrospective death rates in the three months prior to the survey
3. Assess the recent morbidity patterns among children 6- 59 months
4. To establish immunization coverage for BCG, Measles and OPV3/DPT3 among children aged < 5 years
5. Estimate coverage of key health services, including vitamin A supplementation, and de-worming.
6. Determine the nutritional status of mothers and/or primary caretaker of the surveyed children 6-59 months
7. Determine carers' knowledge and practice regarding Maternal Infant and Young Child Nutrition (MIYCN)
8. Determine carers' knowledge and practice regarding health seeking practice for the common illnesses in the County.
9. Determine the practice on food security at household level including coping mechanisms.
10. Establish the situation of water and sanitation, appropriate hygiene practices including hand washing among caretakers
11. Provide additional qualitative information on the likely causes of under nutrition and barriers to optimal maternal and child health and nutrition practices in the area

12. Assess trends in nutrition status based on repeated surveys
13. Formulate and provide practical and sustainable intervention based on the survey findings to improve the nutrition status of the population

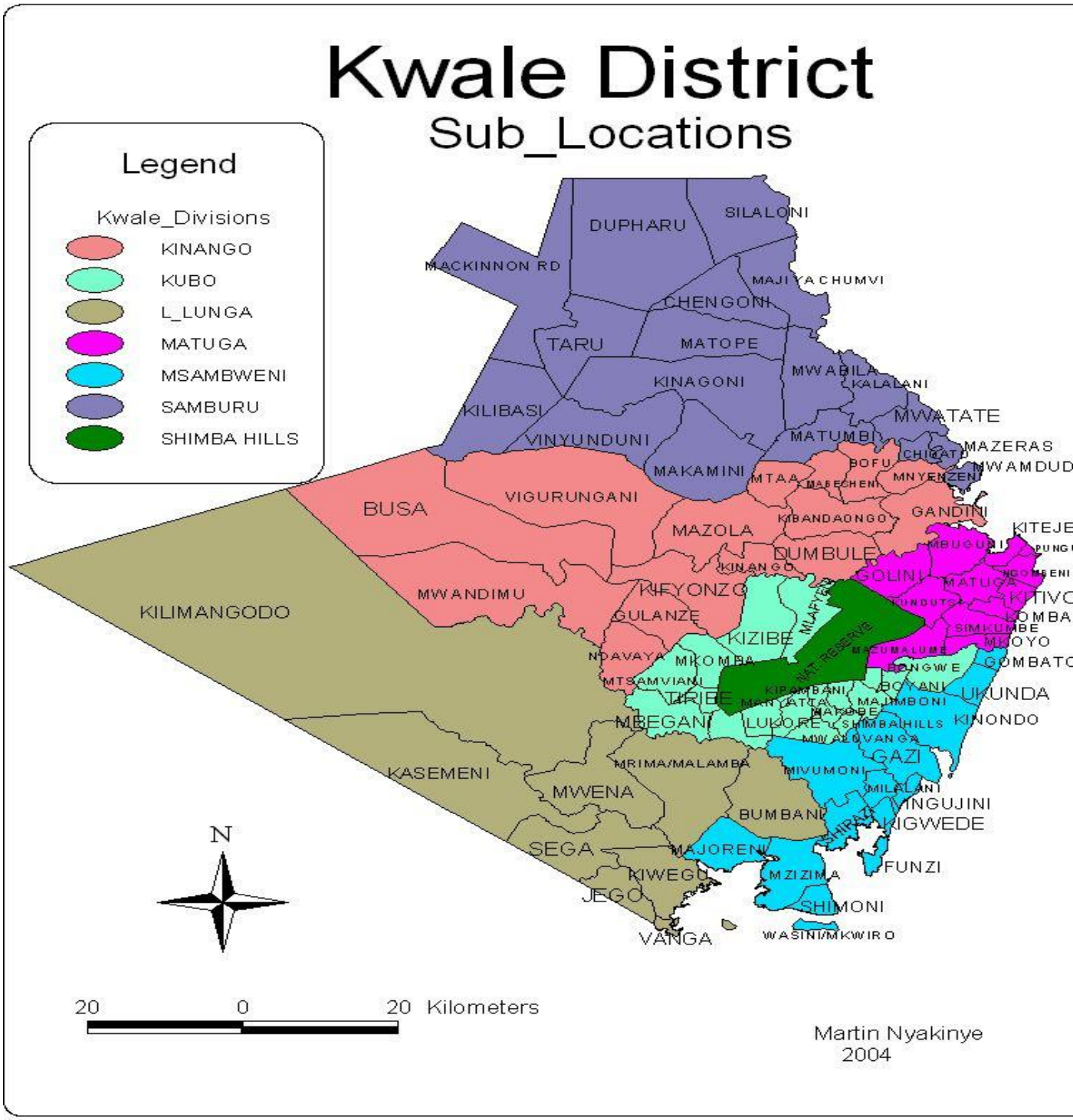

Figure 2: Map of Kwale County

2. 0 Methodology

2.1 Survey methodology

The survey was conducted in September 2012 in accordance with the National Guidelines for Nutrition Assessments in Kenya: Data collection analysis and interpretation was done using 2011 SMART updates with contextualization for Kenya.

2.2 Study Area:

The study area of the survey was Kwale County covering Kinango, Msambweni and Kwale districts located in the Coast Province Kwale County borders Taita Taveta District to the west, Mombasa District to the northeast and Tanzania to the south. Kwale County has monsoon type of climate; hot and dry from January to April and cool between June and August. The district experiences a bimodal rainfall pattern with the short rains occurring between October to December and the long rains occurring between March and June/July. The average annual rainfall ranges between 400mm and 1200mm. The districts are long rains dependent, with the exception of Samburu division in Kinango, which is short-rains dependent.

The main livelihood zones are mixed farming, livestock farming fisheries and formal employment/tourism. It is estimated that 40 percent of the population derive their livelihood from livestock activities. The main types of livestock kept in the two districts are cattle, chicken, goats and sheep. There were reported cases of suspected foot and mouth (FMD), and tuberculosis zoon sis in some pockets. In the livestock farming zones, depressed livestock prices impacts negatively on access to food by households.

The main water sources for livestock and domestic use in Kinango in Kwale are seasonal streams, water pans/dams, rock catchments and piped water. Despite this, water access is still a major problem as the sources are inadequate. Latrine coverage in the Kwale District has generally been low. Human waste disposal is mainly by bush method and other solid household waste is by pit. This may be responsible for high incidence in water borne diseases such as diarrhoea.

2.3 Target population

The proportion population size (PPS) of each cluster was used to randomly choose clusters using ENA for SMART version 2011.

2.4 Sample Size and sampling:

The sample size was determined using the ENA for SMART software version 2011. Up to date figures of the population for Kinango, Msambweni and Kwale based on projection by 2009 Census was used to calculate the sample size for both mortality and anthropometry. Probability of being selected proportional to the population was used to select the clusters.

2.5 Data collection

I. **Survey Tools**: the tools were derived from the national nutrition guideline; other indicators like the nutrition program coverage were incorporated. The tools used were Anthropometry, IYCF, mortality and household questionnaires adapted from the national guidelines.

II. **Data Collection Methods**: Using anthropometric measurements, household questionnaire and FGDs, the following information was collected;

1. Anthropometric measurements for < 5yrs (age, weight, height, MUAC &oedema)& Mothers (MUAC)
2. IYCN: Levels of exclusive breastfeeding and complementary feeding for children aged 0-23 months
3. Vaccination information and micronutrient supplementation (Measles, BCG, Vitamin A)
4. Incidents of childhood illnesses in the last 2 weeks
5. Crude and under 5 mortality rates over the last 3 months
6. Food security and water, hygiene and sanitation data at household level

2.5.1 Sample Size Calculation for the Anthropometric data

The parameters based on the last Kwale 2009 nutrition survey results were used to calculate anthropometric sample of children aged 6-59 months. These were the estimated population, the estimated prevalence of global acute malnutrition, design effect, desired precision and average household size and 20% children aged <5 years. These were keyed in the ENA for SMART planning template to generate the sample size of children 6-59 months and the number of households for the anthropometric survey (table 2).

Table 2: Anthropometric Sample Size Calculation for the Kwale, Kinango and Msabweni Districts

Population	Estimated Prevalence	Precision	Design effect	% non-response	Children <5 years	Sample size (6-59 mths)	HH to be included	Number of cluster
2,297,460	10.4%	3%	1.5	3%	**20%**	649	737	36

This gave a sample of 649 children aged 6-59 months and 715 households for the anthropometric data.

2.5.2 Sample Size Calculation for the Mortality Survey

The following parameters were considered for the mortality survey: the estimated population, estimated mortality rate per 10,000/day; expected CMR, design effect, precision, the recall period of 90 days and average household size based on the 2009 nutrition survey for the district. This generated the sample size and number of households for the mortality (table 3).

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Table 3: Mortality Sample Size Calculation for the Kwale, Kinango and Msabweni Districts

Estimated CDR/1000/day	Desired Precision/1000/day	Design effect	Recall period	% non-response	Sample size	HH to be included
0.6	.3	1.2	90 Days	3%	3717	737

This gave a sample size of 3717 from 737 households for the mortality data.The larger number of households generated of 737 using the mortality calculation was used in this survey. The actual sample size attained was 849 children aged 6-59 months for the anthropometry survey and 4414 persons for the mortality survey from 749 households.

2.5.3 Sample Size Calculation for the IYCN

The IYCN sample size was calculated only for the children aged 0-5 month's old since they are not part of the anthropometric sample size. The parameters found in the last survey of exclusive breastfeeding were 9.9%. So in this case, 50% was used as no other parameters were available. This was entered into the excel spread-sheet for calculating sample size to obtain the sample for this age group in the district. This gave the largest sample size shaded in purple of 162 for children <6 months and 665 children 0-23 months. All children aged 6-23 months in the selected households formed part of the IYCN sample. The actual sample size attained for children aged 0-5 months was 156 while for children 6-23 months was 301 giving a sample size of 457 of children aged 0-23 months for IYCN.

2.5.4 Cluster Selection

All accessible sub-locations were included in the initial sample selection with each village considered a cluster and clusters sampled with probability proportional to size. All sub-locations along with their respective populations were entered into the ENA software and 36 clusters selected using ENA for SMART software version 2011. Within each cluster 21 households were selected using SMART methodology. The targeted households were of 752 in this survey. A total of 849 children aged 6-59 months were measured and mortality and household questionnaire administered in 749 households.

2.5.5 Data Collected and Data Collection Methods and Tools

Both qualitative and quantitative data collection method were used to collect the following data:

1. Anthropometry (weight, height, oedema, MUAC, age, sex) for children and MUAC for mothers
2. Vaccination information (measles, BCG, and Vitamin A supplementation)
3. Incidences of childhood illnesses in the last 2 weeks prior to the survey
4. Crude and Under 5 mortality rates over the last 3 months
5. Food security, water, hygiene and sanitation data at household level
6. IYCN data

The survey was conducted over a period of 25 days.

Recruiting the Survey Team: The field officer Mercy USA in Kwale together with the nutritionists were responsible for recruitment of enumerators. Enumerators selected were a fair representation of the three districts and took into consideration the culture. At least each enumerator was of form four level of education. Six teams of three were selected to include two measurers and a team leader. Mercy International staffs handled all the logistics on the ground effectively. Four data entry clerks were selected to be trained on data entry.

Training of the Survey Team: The team was given a 4-day training prior to field work from 10th to 13th September 2012, including a standardization test to ensure standardization of measurement and recording practice. Training focused on taking anthropometric measurements, completion of questionnaires and sampling methodology. The data collection forms and questionnaires were pilot tested one cluster which was not selected to be part of the survey.

Supervision of fieldwork

The District Medical Officers of Health were the supervisors with the District Nutrition Officers functioning as team leaders. The Provincial Nutrition Officer Co-ordinated the field worker.

3.0 RESULTS

3.1 Demographics

A total of 749 households and 4356 households members participated in this nutrition survey with a mean household size of 5.8± 2.375 and a male: female ratio of 1:1 (table 4). School attendance of children aged 5-18 years is 94.7% in Kwale County.

Table 4: Demographics of households sampled

No of households	749
Total household sample	4356
Household size	5.8± 2.375 : Range 2 to 17
Males	50.0% (2179)
Females	50.0% (2176)
School Attendance children 5-18 years	94.7% (1087)

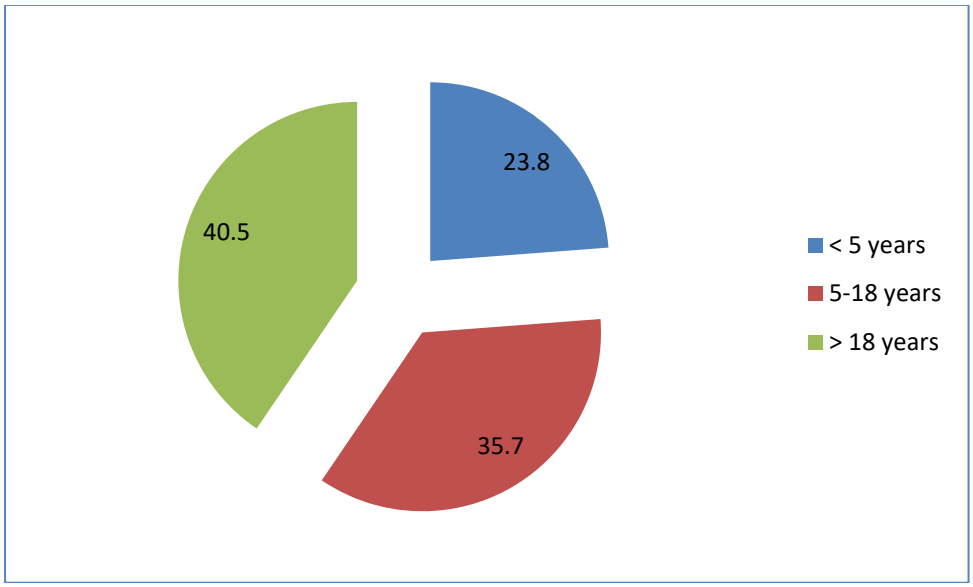

Figure 3: Household Population by Age Category

The under-five year olds within the sampled households constituted 23.8 % of the total population while children aged 6-59 months were 19.5% in those households.

Table 5: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (months)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy:girl**
6-17	103	50.0	103	50.0	206	24.3	1.0
18-29	103	49.0	107	51.0	210	24.7	1.0
30-41	98	47.8	107	52.2	205	24.1	0.9
42-53	96	60.0	64	40.0	160	18.8	1.5
54-59	36	52.9	32	47.1	68	8.0	1.1
Total	436	51.4	413	48.6	849	100.0	1.1

In a normal population distribution, the under-five population is expected to be about one-fifth, 20% of the total population. The age and sex distribution of children 6-59 months was normal n the ratio 1:1 as reflected in table 5 suggesting appropriate sampling was used.

3.2 Anthropometry

The nutrition status of children aged 6-59 months was assessed using both anthropometry and mid-upper arm circumference (MUAC).

3.2.1 Wasting (WHZ)

The prevalence of acute malnutrition (wasting) based on weight – for- height, (WHZ) by sex is given in table 6.

Table 6: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 849	Boys n = 436	Girls n = 413
Prevalence of GAM (<-2 z-score and/or oedema)	(77) 9.1 % (5.5 - 14.5 95% C.I.)	(36) 8.3 % (5.0 - 13.4 95% C.I.)	(41) 9.9 % (5.8 - 16.4 95% C.I.)
Prevalence of MAM (<-2 z-score and >=-3 z-score, no oedema)	(54) 6.4 % (3.8 - 10.4 95% C.I.)	(25) 5.7 % (3.5 - 9.3 95% C.I.)	(29) 7.0 % (3.8 - 12.6 95% C.I.)
Prevalence of SAM (<-3 z-score and/or oedema)	(23) 2.7 % (1.5 - 4.7 95% C.I.)	(11) 2.5 % (1.0 - 6.1 95% C.I.)	(12) 2.9 % (1.6 - 5.1 95% C.I.)

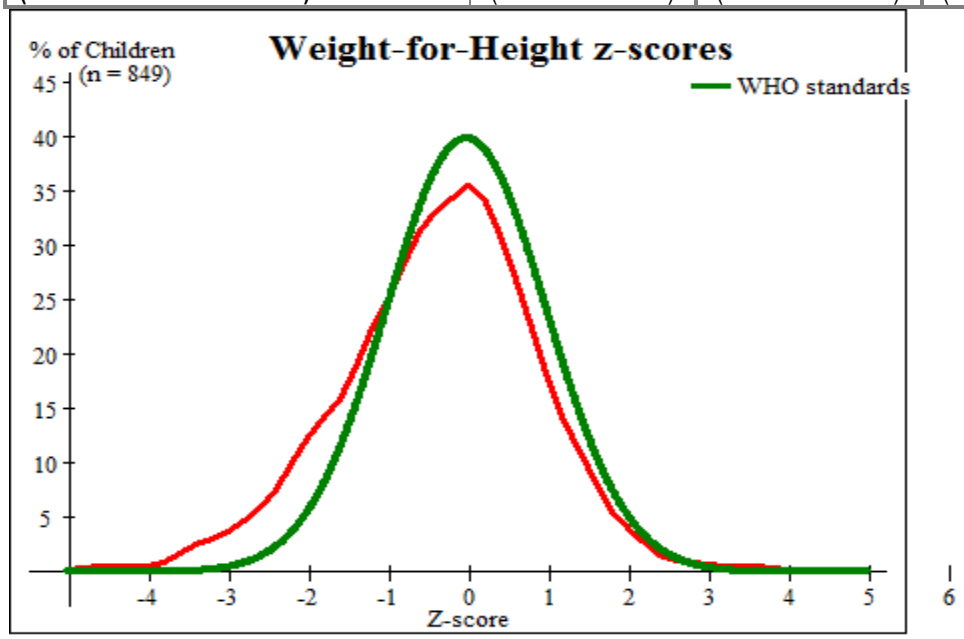

Figure 4: **Wasting (WHZ) in Kwale**

In the Kwale County, children malnourished GAM -2Z scores were 9.1% (5.5 - 14.5 95% C.I.) and severely malnourished -3Z scores were 2.7% (1.5 - 4.7 95% C.I.) with 9.9% of the girls being more malnourished compared to 8.3% of the boys. Although there is a difference between the nutrition status of boys and girls, the difference is not significant at p =< 0.05. Wasting by age shows that of the malnourished, 10.3% were aged 54-59 months followed by 10.1% of the age group 42-53 months (table 7).

Table 7: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

Age (months)	N	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Wasting (<= -2 z score)	
6-17	206	3	1.5%	16	7.8%	19	9.3%
18-29	210	7	3.3%	14	6.7%	21	10.0%
30-41	205	7	3.4%	7	3.4%	14	6.8%
42-53	160	6	3.8%	10	6.3%	16	10.1%
54-59	68	0	0.0	7	10.3%	7	10.3%
Total	849	23	2.7%	54	6.4%	77	9.1%

3.2.2 Trend in Children's Malnutrition using WHZ

The trend of malnutrition using WHZ in June 2009 and September 2012 is shown in figure 3. Although the malnutrition situation in September 2012 is worse than in July 2009, the difference is not significant at p =<0.05.

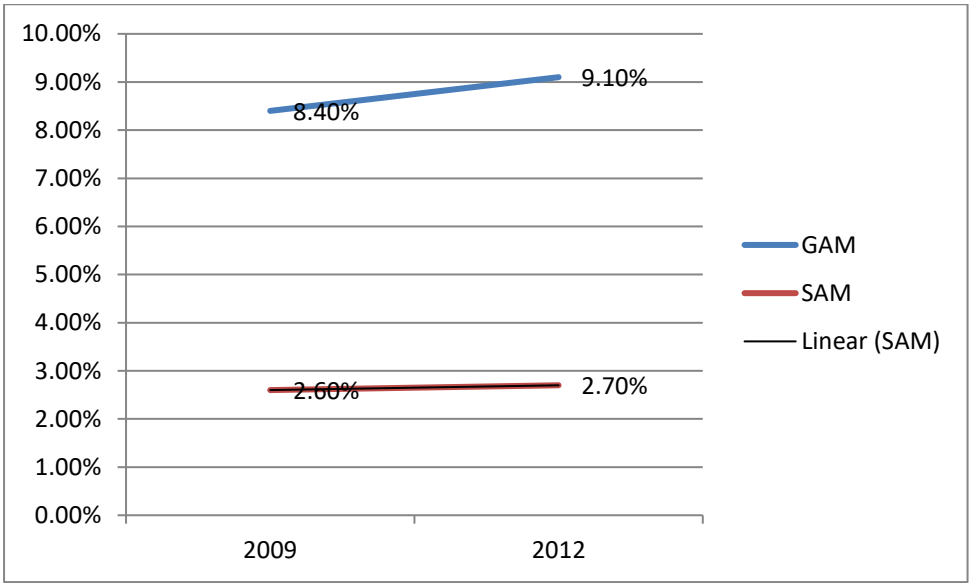

Figure 5: Trend of Malnutrition

The prevalence of malnutrition for children using MUAC is given in tables 8 and 9.

Table 8: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex

	All n = 849	**Boys** n = 436	**Girls** n = 413
Prevalence of GAM (< 125 mm and/or oedema)	(68) 8.0 % (4.8 - 13.0 95% C.I.)	(28) 6.4 % (3.4 - 11.7 95% C.I.)	(40) 9.7 % (5.9 - 15.5 95% C.I.)
Prevalence of MAM (< 125 mm and >= 115 mm, no oedema)	(52) 6.1 % (3.5 - 10.4 95% C.I.)	(21) 4.8 % (2.5 - 8.9 95% C.I.)	(31) 7.5 % (4.3 - 12.8 95% C.I.)
Prevalence of SAM (< 115 mm and/or oedema)	(16) 1.9 % (1.1 - 3.2 95% C.I.)	(7) 1.6 % (0.6 - 4.0 95% C.I.)	(9) 2.2 % (1.2 - 3.9 95% C.I.)
At risk (<135 mm and > 125 mm)	(106) 20.3%		

Prevalence of global malnutrition using MUAC <125mm is 8.0 % (4.8 – 13.0 95% C.I.) and severe malnutrition < 115 mm is 1.9% (1.1- 3.2 95% C.I.) while children at risk of malnutrition >125 - <135 mm are 20.3% (table 9). More of the younger children aged < 30 months are malnourished using MUAC.

Table 9: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema

Age (mo)	**Total no.**	**Severe wasting (< 115 mm)**		**Moderate wasting (>= 115 mm and < 125 mm)**		**Malnourished (< = 125 mm)**	
6-17	206	6	2.9%	17	8.3%	23	11.2%
18-29	210	5	2.4%	19	9.0%	24	11.4%
30-41	205	4	2.0%	4	2.0%	8	4.0%
42-53	160	1	0.6%	9	5.6%	10	6.2%
54-59	68	0	0.0	3	4.4%	3	4.4%
Total	849	16	1.9%	52	6.1%	68	8.0%

These findings are close to the routine nutrition assessment using MUAC in the County. According to the August 2012 Bulletin, The average percentage of children at risk of malnutrition using the MUAC in the county was at 8.7% in August compared to 8.2% reported in July. High malnutrition cases are reported in the livestock livelihood zone compared to mixed farming zone.

3.2.3 Underweight (WAZ)

Underweight which is low weight for age shows that many children were underweight (table 10 and figure 4). The prevalence of underweight – 2 Z scores is 19.3% (14.7 - 25.0 95% C.I.) while severe underweight – 3 Z Scores is 5.7% (3.3 - 9.4 95% C.I.) for children in the three districts.

Table 10: Prevalence of underweight based on weight-for-age z-scores by sex

	All n = 849	**Boys** n = 436	**Girls** n = 413
Prevalence of underweight (<-2 z-score)	(164) 19.3 % (14.7 - 25.0 95% C.I.)	(89) 20.4 % (15.5 - 26.4 95% C.I.)	(75) 18.2 % (12.7 - 25.3 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(116) 13.7 % (10.9 - 17.1 95% C.I.)	(64) 14.7 % (11.0 - 19.2 95% C.I.)	(52) 12.6 % (9.1 - 17.2 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(48) 5.7 % (3.3 - 9.4 95% C.I.)	(25) 5.7 % (3.2 - 10.0 95% C.I.)	(23) 5.6 % (3.0 - 10.0 95% C.I.)

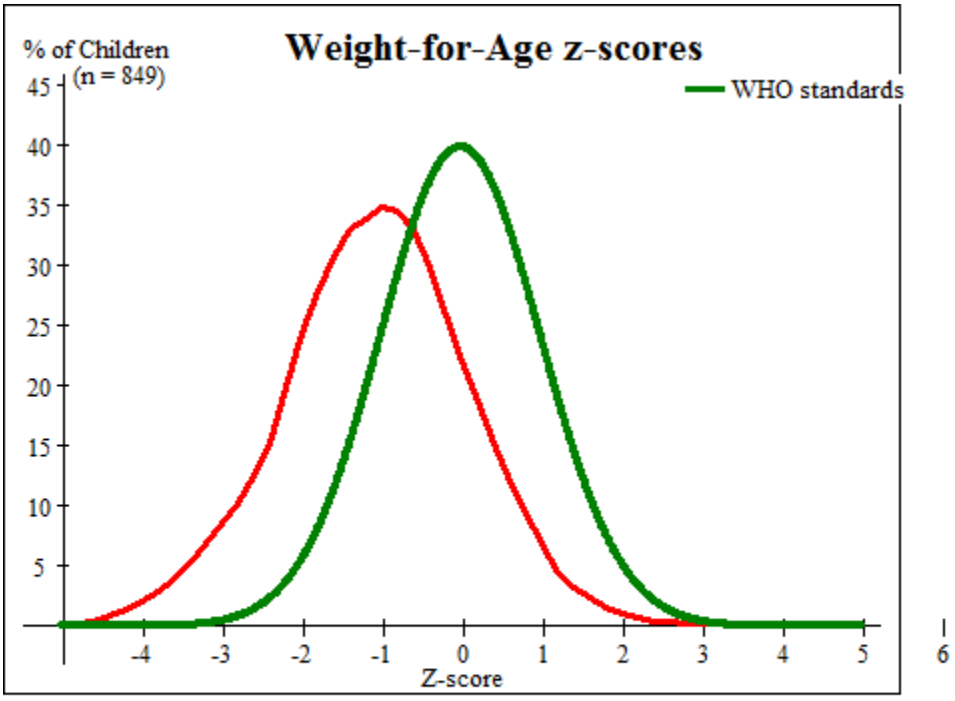

Figure 6: Underweight in Kwale County

3.2.4 Stunting

Stunting which is chronic malnutrition over the years is given in table 11 and figure 5. The prevalence of stunting -2 Z scores in the three districts is 34.2% (29.6 - 39.1 95% C.I.) and severe stunting – 3 Z scores is 11.1% (8.3 - 14.5 95% C.I.).

During the FGDs, the community indicated that there is poor nutrition in the county due to "*many young girls get children and do not know how to feed them. Some do not even understand that one has to work hard to provide for the children. Also there is too much poverty so what can you do when there is no food to give the children?*"

Table 11: Prevalence of stunting based on height-for-age z-scores and by sex

	All N = 849	**Boys N** = 436	**Girls N** = 413
Prevalence of stunting (<-2 z-score)	(290) 34.2 % (29.6 - 39.1 95% C.I.)	(163) 37.4 % (31.6 - 43.6 95% C.I.)	(127) 30.8 % (25.7 - 36.3 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(196) 23.1 % (19.3 - 27.3 95% C.I.)	(105) 24.1 % (19.7 - 29.1 95% C.I.)	(91) 22.0 % (17.5 - 27.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(94) 11.1 % (8.3 - 14.5 95% C.I.)	(58) 13.3 % (9.8 - 17.8 95% C.I.)	(36) 8.7 % (6.0 - 12.4 95% C.I.)

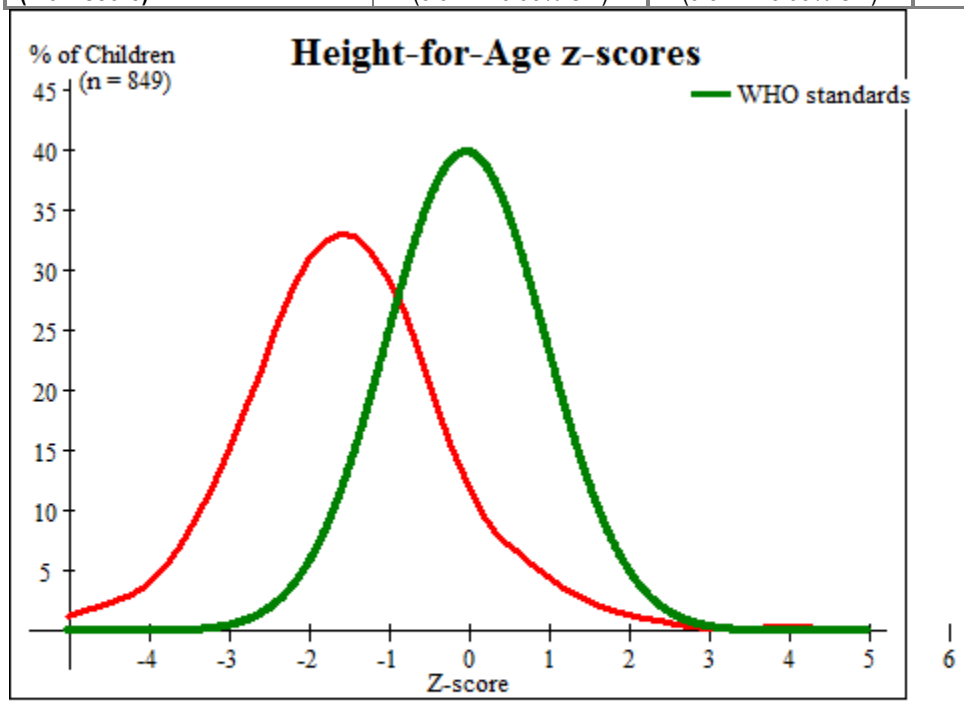

Figure 7: Stunting in Kwale County 2012

3.2.5 Malnutrition using percentage of the median

The percentage of the median is used to identify children for the feeding programmes. In this survey the results are presented in table 12.

Table 12: Prevalence of acute malnutrition based on the percentage of the median and/or oedema

	N = 849
Prevalence of global acute malnutrition (<80% and/or oedema)	(54) 6.4 % (3.6 - 10.9 95% C.I.)
Prevalence of severe acute malnutrition (<70% and/or oedema)	(4) 0.5 % (0.2 - 1.2 95% C.I.)

Percentage of the median is generally used for admitting children into the feeding programmes. Results showed that the prevalence of GAM <80% was for 6.4% (3.6 - 10.9 95% C.I.) while severe malnutrition <70% 0.5% (0.2 - 1.2 95% C.I.).

3.2.6 Plausibility check for Kwale County Nutrition Survey September 2012

Plausibility checks assesses the quality of the survey in terms of various parameters (table 14) while the mean z scores, design effects and excluded subjects are given in table 13.

Table 13: 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	849	-0.35±1.22	4.79	0	0
Weight-for-Age	849	-1.07±1.18	3.53	0	0
Height-for-Age	849	-1.50±1.40	2.08	0	0

The most malnourished children were from Kinango district while kwale district had the lowest cases of malnourished children.

The plausibility checks for this survey are acceptable as presented in table 14.

Table 14: Plausibility Checks

	Acceptable value/range	Survey results		Acceptable value/range	Survey results
Digit preference weight	<10	0 (4)	**Overall Age distribution %**		4 (p=0.014)
Digit preference weight	<10	2 (8)	**6-17 months**	20-25%	24.3%
Standard deviation WHZ	0.8-1.2	2 (1.120	**18-29 months**	20-25%	24.7%
WHZ (Skewness)	-1 to +1	0 (0.23)	**30-41 months**	20-25%	24.1%
WHZ Kurtosis	-1 to +1	0 (0.17)	**42-53 months**	20-25%	18.8%
% Flags WHZ	< 3%	1.9%	**54-59 months**	Approx. 10%	8.0%
% Flags HAZ	<10%	3.9%	**6-29/30-59**	Around 1	1.1
% Flags	< 5%	1.9%	**Sex Ratio**	0.8-1.2	0 (p=0.430)
All within acceptable range			**General Acceptability**		13%

The overall score of this survey is 13%, this is within acceptable range.

3.3 Mortality

Table 15: Mortality rates

CMR (total deaths/10,000 people / day): 0.23 (0.09-0.61) (95% CI) Design effect 2.08
U5MR (deaths in children under five/10,000 children under five / day): 0.45 (0.09-2.17) (95% CI) Design effect 2.43

The estimate for the crude mortality rate (CMR) during this period is 0.23 deaths/per 10,000 persons/day and the under-five mortality rate (U5MR) is 0.45 deaths/10,000 children/day (table 15). These rates were lower than the CMR of 0.60 deaths/per 10,000 persons/day and the under-five mortality rate (U5MR) of 1.99 deaths/10,000 children/day in July 2009. Most of the deaths were in Msambweni followed by Kwale district. Among the deaths were 2 elderly persons. Causes of death for the elderly were fever and vomiting of blood for one and diabetes for the other. Among children's death, one death was a child born premature while for the others it was fever, and general sickness.

3.4 Morbidity

Almost half of the children, 45.7% were sick two weeks prior to the survey (table 16). This is lower than (55.8 %) of the children who were sick in Kwale in July 2009 survey.

Table 16: Morbidity and Health seeking behaviour

Sick N = 848	**373**	**45.7%**	**Health seeking Behaviour**		
Among Sick: N = 373			Traditional healer	4	1.1%
Watery diarrhoea	48	12.9%	Private clinic	16	4.3%
Vomiting	20	5.4%	Shop/kiosk	54	14.4%
Fever with chills	97	26.0%	Public Clinic	228	60.3%
Fever, cough, colds, ARIs	217	58.2%	Mobile Clinic	2	0.5%
Parasites	6	1.6%	No assistance sought	67	17.7%
Eye infection	7	1.9%	Others	9	1.6%
Skin infection	28	7.5%	Diarrhoea Treatment with zinc n=48	4	8.3%

Of the sick children, majority, 84.2% suffered from fever alone and or in combination with other symptoms. For many of the sick children, 60.3%, health care was sought from public health facilities while for a proportion of 17.7% of the sick children the care givers did not seek any health services for them.
Diarrhoea treatment was by only 8.3% of the children, however, this is due to recall bias by caregivers. Diseases compromise the nutrition condition of children. A large number of children were sick in the two weeks before the survey. Lack of paying attention to treatment of children leads
to poor nutrition as the food consumed may not be properly utilized by the body. Only a small proportion of % of the children who suffered from diarrhoea had zinc supplementation based on the knowledge of the mothers. Cross tabulation showed that 47.4% of the children who were sick were malnourished.

3.5 Immunization Vitamin A supplementation and De-worming

3.5.1 Immunization

Immunization coverage was assessed for children aged 6-59 months. Results showed high coverage for all vaccinations (table 17).

Table 17: Immunization Coverage

	Yes by Card	Yes by Recall	Total Immunized	No	Do Not Know
OPV1/DPT1 N = 848	87.0% (738)	12.4% (105)	99.4% (843)	0.2% (2)	0.4% (3)
OPV3/DPT3 N = 848	85.3% (723)	12.1% (103)	97.4% (826)	2.2% (19)	0.4% (3)
Measles (=>9 months) N= 800	79.5% (636)	14.8% (118)	94.3%(754)	5.4% (43)	0.4% (3)

Immunization coverage is high well above the recommended 80% immunization coverage for all the three vaccinations which is commendable. These rates are above the July 2009 figures for measles of 92.8 %, OPV1 of 97.5 and OPV3 of 93.5 %. This is due to the health facility and outreach efforts by the Ministries of Health and partners in the three districts.

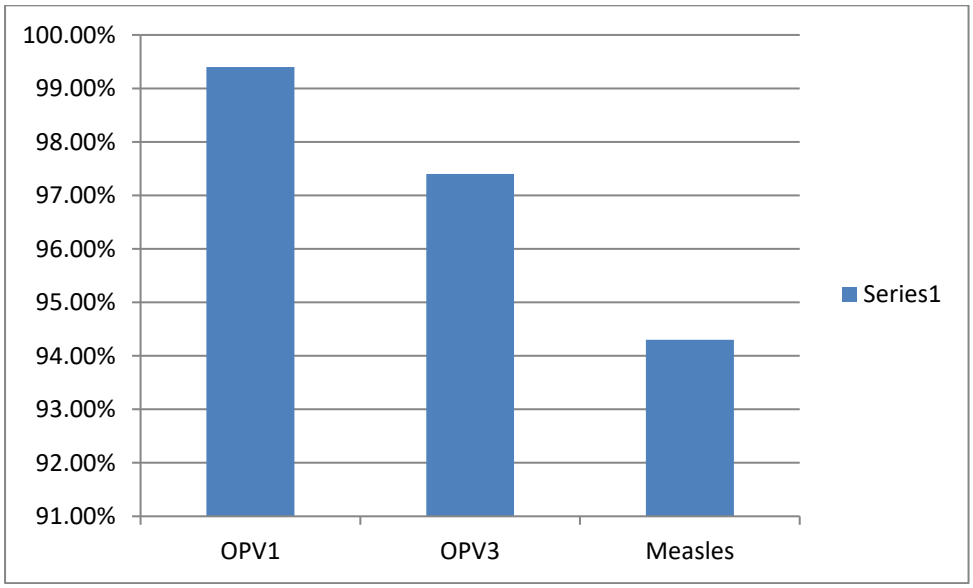

Figure 8: Immunization Coverage

3.5.2 Vitamin A supplementation and De-worming

Vitamin A supplementation was assessed for children aged 6-59 months and de-worming for children aged 12 – 59 months (table 18).

Table 18: Vitamin A Supplementation and De-worming

Age Category	N	%
Vitamin A Supplementation		
6 -11 months	96	77.1% (74)
12-59 months (Received twice)	735	17.6% (129)
6-59 months < 5 years (Received once)	831	73.0% (607)
De-Worming 1-<5 years N = 734		
Yes by Card	61	8.3%
Yes by Recall	235	32.1%
No	412	56.1%
Do Not Know	26	3.5%

Vitamin A supplementation was below the recommended 80% intake for children < 5 years. Vitamin A supplementation received once for children < 5 years is 73.0% while for age group 6-11 months it is 77.1%. Of children age category 12-59 months who are supposed to have vitamin A supplementation twice a year, only 17.6% had received the recommended dosage compared to 45.8% in July 2009.

This means that efforts need to be put in place to ensure these children are accessed for vitamin A supplementation. De-worming coverage for children aged 1-5 years was far below the recommended rate. This was only 40.4% by both recall and card with many of the children 59.6% not having received any de-worming. The challenge of vitamin A and de-worming coverage rates is that most health cards/booklets do not indicate their administration. In order to obtain accurate rates, it is necessary that recording of vitamin A and de-worming be recorded even when administered during campaigns.

3.6 Maternal Nutrition

Physiological state, nutrition status and iron supplementation of women aged 15-49 years and vitamin A supplementation for lactating women was assessed for women in reproductive age (table 19).

Table 19: Maternal Physiology, practices and Nutrition

Status	Proportion
Currently pregnant	5.8% (5)
Breastfeeding children <6 months	25.3% (166)
Breastfeeding >6 months	36.0% (236)
Pregnant/breastfeeding	1.1% (7)
Not pregnant/not breastfeeding	31.9% (209)
Iron supplementation	77.0% (506)
Vitamin A supplementation for lactating women N = 402	54.5% (219)
Women attending ANC during last pregnancy	95.6% (626)
Women de-wormed	49.8% (326)
Nutrition Status	
% of women with MUAC < 21.0cm N =656	1.4% (9)
% of women pregnant and lactating N = 656	68.1% (447)
% of women pregnant and lactating with MUAC < 21.0cm N = 447	1.8% (8)
Place of Delivery of last child	
GoK Facility	47.8% (312)
Private Hospital	3.1% (20)
Home	48.4% (316)
Other	0.8% (5)

Nutrition status of women aged 15-49 years was assessed for 656 women using MUAC. About 1.4% of these women were malnourished while 1.8% of the pregnant and lactating women were malnourished with MUAC < 21.0 cm. Of the women, 77.0% were supplemented with iron during their last pregnancy while 54.5% of the lactating women had vitamin A supplementation. The nutrition status of the women was far better than that of their children. About half of the women 47.8% delivered in government health facilities and a similar proportion 48.4% delivered their children at home. This has negative implications on the infants as they are likely to be infected with diseases if deliveries are in unhygienic environments.

3.7 Food Consumption and Dietary diversity

Frequency of food consumption influences nutrition status. Families consuming three meals the day preceding the survey were 76.5% compared to 94.5% who normally consumed three meals (table 20).

Table 20: Meals eaten the day prior to the survey and meals normally eaten by households

Number of meals normally eaten per day by households	
3 meals	94.5 % (699)
2 meals	5.5% (40)
1 meal	----
Number of meals eaten the day preceding the survey by households	
0 meals	0.1% (1)
1 meals	1.8% (13)
2 meals	21.5% (159)
3 meals	76.5% (586)

Families ate fewer meals than they normally do with ¾ consuming the recommended three meals per day. This was just after the harvest season in August therefore families had food within the households. During food scarce periods, these households are likely to be consuming less food which has negative effects on the nutrition status of family members.

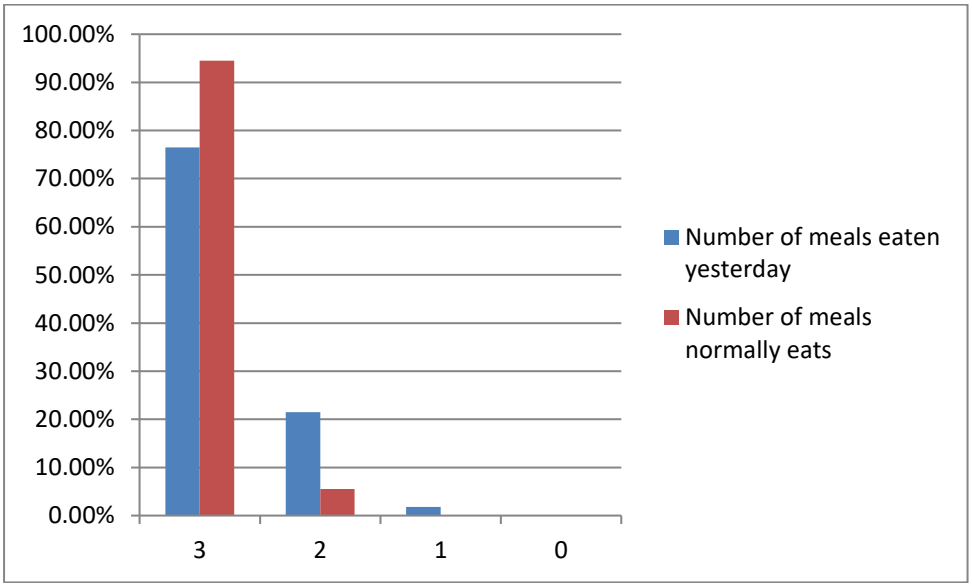

Figure 9: Number of meals households normally eats and eaten yesterday

Dietary diversity assessed indicated that the mean dietary score of households is 6.20± 2.847 based on

Table 21: Food consumption based on 7 days food frequency and 24 hours recall

	7 days	Mean No. of Days	24 Hours
Cereals/maize/rice/wheat	99.2%(742)	6.25 ± 1.544	95.6% (715)
Vitamin A Rich vegetables	14.7% (110)	0.91 ± 1.505	12.6% (94)
Tubers and roots	32.3% (%	1.53 ± 1.786	25.9% (172)
Dark green vegetables	87.2% (652)	4.19 ± 2.292	78.1% (552)
Other Vegetables	68.2% (510)	4.38± 2.521	60.9% (428)
Vitamin A Rich fruits	16.4% (121)	1.22± 2.017	12.1% (80)
Organ meats	5.3% (39)	0.39 ± 0.862	5.3% (39)
Flesh meats	25.0% (185)	1.02± 1.250	20.3% (136)
Eggs	18.7% (138)	1.00± 1.528	15.3% (102)
Fish	67.6% (506)	3.19 ± 2.479	55.1% (412)
Pulses	66.5% (491)	2.54 ± 1.883	51.0% (354)
Milk	40.6% (299)	3.35 ± 2.955	37.6% (253)
Oils and fats	77.3% (573)	5.38 ± 2.212	67.5% (475)
Sweets and sugars	89.7% (665)	6.20 ± 1.778	84.2% (598)
Condiments	37.3% (279)	3.54 ± 2.923	33.8% (214)

24 Hrs recall and 7.34+ 2.887 based on 7 days food frequency. The main source of food is purchase by 91.0% of the households. The most frequently consumed foods based on the 24 hours recall are cereals by 99.2%, dark green vegetables by 78.1%, sugars by 79.5%, oils/fats by 63.2%, other vegetables by 60.9%, fish by 54.8% and organ meats by 52% of the households (table 21).

The most frequently consumed foods by the households in the last seven days was cereals by 99.2%, followed by sweets and sugars by 89.7% and dark green vegetables by 87.2%. The trend was similar with the 24 hours food frequency (Table 21). Vegetables were in high consumption as they were readily available due to the rains while cereals and pulses had just been harvested. The foods that had been consumed for a high number of days are cereals and sugars for 6.25 and 6.20 mean days respectively. Majority of households 91.0% purchased their foods while cereals and vegetables were produced by a high proportion of the families.
Livelihood zones include livestock in parts of Msambweni and Kinango districts while mixed farming is practiced in Kwale and parts of Msambweni and Kinango district. Fishing is minimal along the coast in Msambweni district.

3.7.1 Coping Strategies

Respondents were asked, whether households practiced any coping strategies in dealing with food deficits within the last one month. Key coping strategies households practiced included reducing the number of meals consumed per day, skipping food for an entire day, reducing the size of meals, borrowing food from friends or relatives and purchasing food on credit. During the FGDs, members stated that "*food is scare that is why there if food aid and we also do food for assets to obtain incomes to buy food. Sometimes one can get food on credit but sellers give credit to people who earn salaries or wages. The rest of us who are not employed businessmen just they say they do not know when you will pay for the food. So most of the people who have no work sometime borrow or ask for help from friends and relatives. Others seek for any work to get some money*". This means in times of food scarcity, most families are likely to consume less food that compromises their nutrition security.

3.8 Water, Sanitation and Hygiene

According to the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP), 37% per cent of the developing world's population – 2.5 billion people – lack improved sanitation facilities, and over 780 million people still use unsafe drinking water sources. Inadequate access to safe water and sanitation services, coupled with poor hygiene practices, kills and sickens thousands of children every day, and leads to impoverishment and diminished opportunities for thousands more. Poor sanitation, water and hygiene have many other serious repercussions. Women are forced to spend most of their day fetching water. Poor farmers and wage earners are less productive due to illness, health systems are overwhelmed and national economies suffer. Without adequate WASH (water, sanitation and hygiene), sustainable development is impossible. During this survey, WASH was established and results found as indicated in table 22.

In parts of Msambweni and Kinango districts some families took up to four hours to fetch water and long distances. This in agreement with the Kwale County Bulletin for August 2012 that states that *"The distance to water sources is currently 3.15 km same … for households and increased to 6.55 km for grazing from 6Km reported".* This research was done just after and during the rains in August and September so the water sources were within reach. During dry periods families travel longer distances and take more time to fetch water. Long distances to water sources increases the time taken to get the commodity hence less time to look for casual labour to support food security. A proportion of 55.1% of the households accessed safe water sources. During the dry seasons, more households are likely to access unsafe water sources. Public pans in Kinango district are dug using food for assets program and are rather shallow and they easily dry up.

Table 22: Main Source of Household Water and Drinking water; and Treatment of drinking water

Safe Water Source	Household water	Drinking water
Water tap (includes public tap)	32.8% (243)	2.7% (20)
Protected well	22.3% (185)	11.8% (87)
Total safe water source	**55.1% (428)**	
Unsafe water safe		
Borehole	16.8% (124)	36.6% (270)
Water tanks	3.6% (27)	19.5% (144)
River	3.25 % (24)	2.7% (20)
Public pan	0.9% (7)	8.9% (66)
Dam	0.8% (6)	0.8% (6)
Unprotected	19.5% (144)	15.0% (111)
Total unsafe water source	**44.9% (332)**	
Time to water source		
< 30 minutes	74.7% (542)	
➢ 30 minutes	25.3% (184)	
Range 5 to 240 minutes		
Treatment of Drinking Water		
Boiling	8.4% (62)	
Traditional herbs	1.1% (8)	
Use chemicals	10.7% (79)	
Use Filters/sieves	2.2% (16)	
Decant	0.4% (3)	
Nothing	77.3% (572)	

The purposes of household water treatment is intended to improve and maintain the microbial quality of the water for drinking and other purposes, such as food preparation and essential hygiene in child care and treatment of illness (breast feeding and preparation of infant foods and oral rehydration solutions) and thereby reduce disease transmission. The main benefit of microbiologically safe water for these purposes reduces the risks of diarrheal and other waterborne infectious diseases while unsafe water, is a major source of pathogen exposure and increased risk of waterborne infection, illness and death especially in children under five years of age. In this survey, the majority of the households 77.3% did not treat their drinking water while a small proportion of 8.4% boiled and 10.7% used chemicals (table 23). As noted from the August 2012 Bulletin, Pans and Dams remain the County's main water sources and water treatment is needed to avoid water borne diseases since the available water is not clean for consumption.

Table 23: Access to toilet facilities and Hand-washing

Access of toilet facilities N = 740	56.9% (421)
What those who access toilets use N = 421	
Traditional latrines	70.4% (295)
Ventilated Pit Latrine	27.2% (114)
Flush toilet	2.4% (10)
Others	0.5% (2)
Of those who don't access toilet where they go N= 318	
Open field	87.6% (282)
Near River	8.7% (28)
Behind house	2.8% (9)
Others	0.9% (3)
Disposal of child's faeces N = 685	
Immediately & Hygienically	63.9% (438)
Immediately in nearby bush	29.4% (204)
Not disposed, scattered in compound	2.8% (19)
Others	3.5% (24)
When Wash Hands	
After defecation	64.3% (476)
Before handling food	69.9% (517)
After eating	
Before feeding child	
After cleaning child's bottom	
Others	
What use to wash hands	
Water only	
Water and soap	
Water and ash	
Others	

Access to toilet facilities was also established during this nutrition survey. Less than a third of the households, 56.9% accessed toilet facilities in the three districts. Among those who accessed toilet facilities, 70.4% used

traditional pit latrines and 27.2% used ventilated pit latrines. Disposal of child's faeces is hygienically done by 63.9% of the caregivers. At least about half of the caregivers, 49.2% washed hands before eating, 69.9% before handling food and 64.3% after defecation. It is noted that slightly less than a third, 27.3% of the caregivers washed hands before feeding a child. Around a half, 51.5% of the caregivers used appropriate hand washing using soap and water.

3.9 Mosquito Nets

Mosquito nets ownership and use were assessed to identify protection against malaria as Kwale County is a malaria endemic area (table 24).

Table 24: Mosquito nets ownership and use

Ownership	95.9% (717)
Source of mosquito nets	
Shop	2.5% (18)
Agency	11.3% (81)
MoPHS	85.5% (613)
Others	0.7% (5)
Who slept under mosquito net	
< 5 Years	79.8% (572)
>5 Years	60.7% (435)
Pregnant woman	4.3% (4.3%)
Mother	83.8% (601)
Father	75.6% (542)
Nobody	3.1% (22)

Of the households interviewed a large proportion, 95.9% owned mosquito bed nets. Of these households, a large proportion 96.1% stated that they were using the mosquito bed nets. Majority, 79.8% of the persons who slept under the mosquito bed-nets were children aged less than five years followed by 83.8% of the mothers and by 75.6% of the fathers. During FGDs some participants stated that *"there are a lot of mosquitoes so we use mosquito nets especially for our children"*. These results show that the bed-nets are used in this county.

3.10 Sources of Incomes

Incomes are important to households as it enables families to access their food and non-food needs that are important for well-being. Sources of incomes for the households were determined during this nutrition survey (table 25).

Table 25: Source of Incomes

Source of Incomes	1st source	2nd Source	3rd Source
Sale of livestock	0.7% (5)	0.4% (3)	
Sale of livestock product	1.3% (10)	0.7% (5)	
Sale of food ration	0.4% (3)	0.1% (1)	
Sale of Own crops	12.2% (91)	1.5% (11)	
Wage labour	29.7% (222)	4.8% (36)	0.7% (5)
Remittances	7.4% (55)	3.1% (23)	0.3% (2)
Sale of Charcoal/firewood	6.1% (46)	0.5% (4)	
Basket weaving	1.7% (13)	------	
Petty trade	15.6% (117)	7.1% (53)	1.1% (8)
Fishing	3.9% (29)	0.7% (5)	0.1% (1)
Brewing	0.8% (6)	0.3% (2)	
Salary	11.4% (85)	1.2% (9)	

The main sources of incomes in Kwale County is wages by 29.7% of the households followed by petty trade by 15.6%, sale of own crops by 12.2% and salary by 11.4% of the households. There is a variety of livelihoods in the county and as such different strategies are needed to address the incomes in the county.

3.11 Infant and young child feeding practices

Infant and young child feeding practices (IYCF) establish the well being of an infant and to a great extent contribute to the growth pattern of a child. In this survey, timely initiation of breastfeeding, provision of colostrum, exclusive breastfeeding, dietary diversity, and meals consumed by children aged 0-23 months were among the IYCF practices investigated (table 26).

Majority of the children 89.6% have been breastfed and where put on the breast within the first hour of birth. Although a smaller proportion of children indicated they were fed colostrums. There was no significant difference between boys and girls in putting child on the breast within an hour and ever breast fed at $p < 0.001$.

Table 26: Infant and young child feeding practices

Child Practice	% N
Early breastfeeding practices	
• Ever breastfeed	
○ Male (N = 234)	98.3% (227)
○ Female (N = 222)	98.2% (211)
○ ALL (N = 456)	98.2% (438)
• Put to breast within one hour	
○ Male (N = 234)	89.7%(209)
○ Female (N = 222)	90.0% (198)
○ ALL (N = 456)	89.6% (407)
Given colostrums	
• Male (N = 234)	81.2% (190)
• Female (N = 222)	88.7% (197)
• ALL (N = 456)	84.9% (389)
Pre-lacteals given: N=151	47.7% (72)
• Plain water	40.4% (61)
• Powdered/fresh milk	13.9% (21)
• Tea	4.0% (6)
• Thin porridge	29.8% (45)
• ORS & sweetened water	2.0% (3)
• Coconut juice	0.7% (1)
Exclusive breastfeeding for children<6 months	
• Male N = 89	52.8% (47)
• Female N = 62	51.6% (32)
• Total N = 151	52.3%% (79)
Currently breastfeeding (Children 0-23 months) N = 454	89.2% (405)
Maintenance of breastfeeding:	
• Age 6-11 months N = 97	95.9% (93)
• Age 12-17 months N = 107	91.6% (98)
• Age 18-23 months N = 94	64.9% (61)
• Age 6-23 months N = 298	84.6% (252)
Complementary Feeding Practices	
Dietary diversity Children (% 6-23 months old (N =297)	
• Consuming 3+ food groups (breastfed children) N = 251	53.8% (135)
• Consuming 4+ food groups (non-breastfed children) N = 46	67.3% (31)
• Consuming 3+ or 4+ food groups (breastfed and non-breastfed children)	55.9% (166)
Minimum meal times (% 6-23 month old N =297)	
• At least twice a day for 6-8 months old (breastfed children) N = 52	63.5% (33)
• At least 3+ times a day for 6-23 months old (breastfed children) N = 251	37.0% (110)
• 4+ times a day of children 6-23 months (non-breastfed children) N = 46	21.7% (10)
• 2+ meals for breastfed 6-8 month, 3+ for breastfed 6-23 months and 4 times for non-breastfed children	51.5% (186)

Slightly over half, 52.3% of the children <6 months are exclusively breastfed. There is no significant difference between EBF between boys and girls at P=000. Majority of the children, 89.2% aged 0-23 months are currently breastfeeding. Complementary feeding practices are below the recommended in terms of meals provided to children and dietary diversity. Just over half of the children get the recommended food groups: 53.8% of breastfed children consume 3 or more food groups and 67.3% of the non-breastfed children consume four or more food groups a day. Few children take the

recommended number of meals. This is 63.5% for children 6-8 month's breastfed taking 2+ meals per day. While for age group 9-23 months breastfed only 37.0% obtain the recommended 3 meals or more and for non-breast only 21.7% obtain the recommended 4 meals per day. These findings show that complementary feeding practices of children aged 6-23 months have not been adopted by mothers and hence a look at health education promotion on this needs attention.

4.0 Discussion

Kwale County vegetation cover is good in quantity and quality except for some parts in the livestock livelihood zone in Kinango district. This contributed to satisfactory livestock condition in the county. Water situation is fair in quantity and quality; however some areas of the county are still dry due to poor rains. There is minimal water treatment that predisposes families to water borne diseases that compromise nutrition situation in the county. In addition, food related stress continues to be felt across all livelihoods zone due to crop failure. The livestock condition is rated as good due to good forage and water availability. Water pans and dams are the main sources of water in Kwale County however in Kinango there are challenges due to shallow water pans. Nutritional status indicated a deteriorating trend in both livelihood zones but worst in Kinango district. Some farmers had just harvested crops especially maize in the mixed farming zone throughout the county. This contributed to satisfactory food security situation during the survey in September. Although Food Aid in Kwale and Msambweni and Food for Assets in Kinango is undertaken few of the households with malnourished children accessed them. This calls for strategies together with the community to be strengthened in identifying the most vulnerable for these programmes.

5.0 Conclusion

- The survey was undertaken after the rains in Kwale and Msambweni districts and just after the harvest season therefore some food in storage although in Kinango district there was no or poor harvest in last season.
- Water was available and not a main challenge in Msabweni and Kwale although in Kinango it is still a challenge. There is minimal treatment of drinking water in these districts.
- Malnutrition rates among under fives are highest in Kinango and parts of Msambweni and indicate deteriorating situation. Malnutrition rates of pregnant and lactating women were malnourished while slightly higher than women in reproductive age.
- Morbidity is high in all districts with about half of the children being sick in the two weeks prior to the survey.
- Immunization coverage high all BCG, OPV1 and OPV3 with rates being above 90% in the county which is commendable.
- Vitamin A supplementation and de-worming for the under-fives are very low in the three districts. On the other hand iron supplementation in the last pregnancy was for about three quarters of the women, while half of the lactating women were supplemented with vitamin A and were de-wormed.
- Access to latrines is low by the households and poor hand-washing practices are partly due to inadequate water and lack of adoption of appropriate health education on these aspects in the community.
- IYCF practices in terms of initiation of breastfeeding and continued BF are commendable whereas provision of pre-lacteals are undertaken by about half of the mothers
- Complementary feeding practices are low in terms of meals provided and variety of foods

6.0 Recommendations

- Proper nutrition interventions should be put in place to address the cases of malnutrition that was observed in all the livelihood areas involving concerted efforts together with the community and households in Kwale County
- Screening for nutrition interventions in Kinango needs to be stepped up incorporating the community and partners in order to improve nutrition with community trained to undertake follow-ups
- Complementary feeding practices need to be focused on in terms of number of meals and variety of foods to provide to children 6-23 months in all the three districts by MOPHS and partners incorporating the caregivers at the community level
- There is need to deepen water pans or construct deeper pans to avoid drying up especially in Kinango district. Partners can undertake this with the community supporting in labour
- Latrines construction and use require to be undertaken with the local leaders such as chiefs spearheading this. Current CLTS training and follow-ups to monitor use need to be promoted by partners
- Water access and safety is required for effective practice of appropriate hand-washing. Education on hand-washing and access to be promoted by MoPHS and partners in conjunction with community leaders
- Water treatment initiatives need to be undertaken by partners and MoPHS and in addition policy on water treatment should be put in place and enforced in the area to avoid water related sicknesses
- There is need for a nutrition survey to be undertaken during the dry season to capture the situation especially during water and food scarcity. Besides separate nutrition surveys for each district is recommended due to different climatic and environmental situations in the three districts
- Vitamin A and de-worming of under fives need to be recorded on the health cards and coverage improved through campaigns and during routine contact
- Outreaches especially in Kinango and parts of Msambweni should be comprehensive and regular focusing on health and nutrition education promotion, complementary feeding and WASH by partners -Mercy USA and should incorporate a strong community monitoring component.
- Targeting of Food Aid in Kwale and Msambweni and Food for Assets in Kinango should be monitored to ensure the most vulnerable are reached by these programmes.

REFERENCES

Republic of Kenya: 2009 Census Report

World Vision (2009) Health and Nutrition Survey Kwale and Kilifi Districts

Drought Monitoring Bulletin August 2012 Kwale County

APPENDICES

Annex 1: FOCUS GROUP DISCUSSIONS GUIDE

Cluster Name _____ Cluster Number____ Date_____ Team _____ Leader_____

Theme 1: Food Availability

1. What is the food situation in this village at the moment?
2. What are the main food sources in the households?
3. How much does it cost to buy 1kg of the staple from the market?
4. How does this compare to the same month last year (more, less, how much more?)

Theme 2: Food Access

1. Explain the main income sources of this community.
2. How do you store food in the households?
3. What do you do when you finish the stored food?

Theme 3: Vulnerability and Coping Mechanisms during Food Insecurity

1. Explain what food inadequacy is in the community?
2. Have you faced food inadequacy (lack of access, lack of availability) of food from January 2012 to date?
3. What do families do when they don't have enough food for three meals a day?
4. In your opinion, which types of households face food shortage in this community? WHY?

Theme 4: Perceptions of Child Health and Child care Practices

1. What makes a child healthy (describe aspects showing 'health')
2. What actions do you take to keep the child healthy?
3. What are the main childhood illnesses children (U5) experiences in this community?
4. Why do they have these illnesses?
5. What are the main ways of caring for the child when experiencing each illness
6. Which seasons are children most vulnerable to sickness in this area?
7. Which children are most vulnerable? (Explain)

Theme 5 Infant and Young Child Feeding Practices

1. How long do mothers' breastfeed their children without giving them anything else including water?
2. At what age are infants started to be given other foods in addition to breast-milk?
3. What foods are introduced first to a child?
4. Why are these foods given to children?

District	Division	Sub location	Village	Cluster No.	Team No.	Household No.	Date of Interview (dd/mm/yy)	Name of Interviewer	Name of Team Leader
							___/___/___		

Household data How many people live in this household together and share meals? (Household size) [ ]

1.1 Age group	1.2 Person ID and Name (*Start with the youngest to the oldest member of the household Insert the names of the persons and ensure that numbering is continuous*; *For the head of the household, Indicate M for mother, F for father and C for child headed HH*)		1.3 Approx.* Age Enter months for children under 5 years and years for over 5's		1.4 Childs age verified by (1=Health card 2=Birth certificate/ notification 3=Baptism card 4=Recall)	1.5 Sex (1= Male 2= Female)	1.6 Main Occupation (enter code from list) (*Ask this question to the respondent/ caregiver. The responses can be more than one*) 1=Agricultural labour 2=Livestock herding 3=Own farm labour 4=Employed(salaried) 5=Waged labour (Casual) 6=Petty trade 7=Unemployed 8=Student 9=Merchant/trader 10=Housewife 11=Domestic help 12=Hunting, gathering 13=Firewood/charcoal selling 14= Brewing 15=Weaving/basketry 16= Very old 17=Others (Specify)……..	1.7 If over 5 and under 18 Is child attending school? (1 = Yes 2 = No)	1.8 Reason for not attending School if (1.7 = No) (enter code from list) 1=Not enrolled 2=Early marriage 3=Religious/cultural festivities 4=Sickness/poor health of child 5=Weather (rain, floods, storms) 6=Family labour responsibilities 7=Working outside home 8=Teacher absenteeism 9=Too poor to buy school items e.t.c 10=Other social responsibilities 11=Unruly child/lack of parental control 12=Household doesn't see value of schooling 13=No food in the schools 14=No one to take children to school 15= Migrated/ moved from school area 16=Insecurity 17=others (specify)……..
	ID	NAME	Yrs	Mths					
Under 5									
5 to 18									
>18 Years									

Children aged 6 – 59 months data (anthropometry; immunization & Vitamin A Supplementation) Kwale 2012

	2.1 Child ID	2.2 Sex M/F	2.3 Age In mths	2.4 Date of birth	2.5 Weight to *nearest 100 gm*	2.6 Height to nearest 0.1 cm	2.7 Oedema in both feet? (U5 only) 1=Yes 2=No	2.8 MUAC To the nearest 0.1 cm	2.9 Is the child currently enrolled in a feeding program? (Confirm by a card if the child is currently enrolled) 1=yes(OTP) 2=yes (SFP) 3=No 4=Don't know	2.10 Has the child received measles immunization? (enter code) (U5 only) 1=Yes (by card) 2=Yes (by recall) 3=No 4=Don't know	2.11 Has child received pentavalent 1? (Preferably use the MOH road to health card) 1=Yes (by card) 2=Yes (by recall) 3=No 4=Don't know	2.12 Has child received OPV1? (Preferably use the MOH road to health card) 1=Yes (by card) 2=Yes (by recall) 3=No 4=Don't know	2.13 Has child received pentavalent 3 ? 1=Yes (by card) 2=Yes (by recall) 3=No 4=Don't know	2.14 Has child received OPV3? 1=Yes (by card) 2=Yes (by recall) 3=No 4=Don't know

Children aged 6 – 59 months data (Vitamin A Supplementation, Morbidity and Diarrhea management) Kwale 2012

HH No.	Child ID	2.15 How many times did the child receive Vitamin A the last six months? (U5 only) (Show the mother the capsule so that she recalls or understand) **Indicate the number of times the child has received** 0=Not taken 1= Once 2= Twice 3 = 3 or more	2.16 Has the child taken any drug for intestinal worms in the last six months? **(Enter Code)(Enter Code)** =Yes (by card) 2=Yes (by recall) 3=No 4=Don't know	2.17Sick-ness in the last 2 weeks (Enter code) (More than one response possible) 1=Not applicable, not sick 2= Watery Diarrhea 3= Bloody Diarrheoa 4=Vomiting 5=Fever with chills like malaria 6=Fever, cough, cold, difficulty in breathing 7=Intestinal Parasite 8= Measles 9=Eye infections 10=Skin infections 11=Others (specify)			2.18 When the child was sick did you seek assistance? (enter code) (U5 only) **If YES, where** (More than one response possible) 1=Traditional healer 2=CHWS 3=Private clinic/ pharmacy 4=Shop/kiosk 5=Public clinic 6=Mobile clinic 7=Relative or friend 8=No assistance sought 9= Others (specify)			2.19 If diarrhoea is yes in the morbidity question. Was he/she given any of the following to drink at any time since he/she started having the diarrhoea? 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_____**

Household water consumption Kwale 2012

3.1. **What is your MAIN current water source for HOUSEHOLD use?** 1=River 2=Water tap 3=Borehole 4=Unprotected well 5=Protected well 6=Public pan/mtsara 7=Water tanks 8=Dam 9=Other _____	**3.2** **How long does it take to go to the main source of water and come back (in minutes)**	**3.3** **On average, how many LITRES of water does the household use per day?**	**3.4.** **How much do you pay for a 20lt jerrican (enter zero if water is free)**	**3.5.** **What is your MAIN source of DRINKING water?** 1=River 2=Lake 3=Water tap 4=Borehole 5=Unprotected well 6=Protected well 7=Public pan/mtsara 8=Water tanks 9=Dam 10=Laga 11=Other _____	**3.6.** **What do you do to the water before drinking it?** 1=Boiling 2=Use traditional herbs 3=Use chemicals 4=Filters/Sieves 5=Decant 6=Nothing

4.0Hygiene and Sanitation

4.1. **Does your household have access to a toilet/ latrine facility?** 1=Yes 2=No	**4.2.** **If yes, what type of toilet facility do you have?** 1=Traditional pit latrines 2=Ventilated improved pit latrine 3=Flush toilet 4=Other Specify _____	**4.3.** **If No, where do you go/use? (probe further)** 1= Bush 2=Open field 3.=Near the river 4.=Behind the house 5.=Other (specify)_____	**4.4.** **How is children's faeces disposed (Probe and OBSERVE)** 1= Disposed of immediately and hygienically 2= Disposed of immediately in the nearby bushes 3= Not disposed (scattered in the compound) 4= Others specify	**4.5.** **When do you normally wash your hands? (Indicate all responses)** 1= After defecation 2= Before handling food 3= After eating 4= Before feeding the child 5= After cleaning child's bottom 6= None of above 7= Others specify	**4.6 What do you use to clean (wash) your hands?** (**Indicate all responses**) 1. Water only 2. Water and soap 3. Water and ash **4.** Other (specify)

Food Consumption and diet diversity

Twenty four hour and seven day recall for food consumption in the households. The interviewers should establish whether the previous day and night; seven days and nights were usual or normal for the households. If unusual feasts, funerals or most members absent, then another day should be selected

5.1. Food group consumed	**5.2. Did any member of your household consume any food from the groups in the last 7 days** 1= Yes 0= No	**5.3. If yes how many days was the food consumed in the last 7 days?**	**5.4. Did a member of your household consume food from any of these groups in the last 24 hours (from this time yesterday to now)? Include any snacks consumed** 1= Yes 0= No	**5.5 What is the main source of the dominant food item consumed** ***(Please insert the appropriate code)*** 1=Own production 2= purchases 3=gifts from friends/ family 4= food aid/work/asset 5= traded or bartered 6=borrowed 7= Gathering /wild 8= Others specify
Type of food				
1. Cereals and cereal products (e.g. sorghum, maize, spaghetti, pasta, *anjera*, rice, bulga wheat, bread)				
2. Vitamin A rich vegetables and tubers: Pumpkin, carrots, yellow fleshed sweet potatoes				
3. White tubers and roots: White tubers, white potatoes, white yams , cassava or foods from roots, white sweet potatoes				
4. Dark green leafy vegetables: Dark green leafy vegetables including wild ones + locally available vitamin A rich leaves such as cassava leaves, pumpkin leaves, cowpeas leaves, sukuma wiki, spinach				
5. Other vegetables (e.g. tomatoes, egg plant, onions, cabbages)				
6. Vitamin A rich fruits: Ripe mangoes , papayas + others locally available like watermelon				
7. Organ meat (Iron rich): Liver, kidney, heart or other organ meats or blood based foods , spleen				
8. Flesh meat and offal's: Meat, poultry, offal (goat, beef, poultry)				
9. Eggs				
10. Fish: Fresh or dried fish or shell fish or smoked , salted, fried				
11. Pulses legumes & nuts (e.g. beans , lentils, green grams, cowpeas, dried peas, groundnuts, cashew nuts)				
12. Milk and milk products (e.g. cow, goat , fermented milk , powdered milk)				
13. Oils/ fats (e.g. cooking fat or oil, butter , ghee, margarine, coconut oil)				
14. Sweets: Sugar, honey, sweetened juice, soda/sugary foods like sweets, glucose				
15. Condiments, spices and beverages like royco, garlic, dhania, *tangawizi,*				
In general what is the main source of food in the households? (* Use codes above)				
Total number of food groups consumed (Filled by the enumerator) :				

Please probe and accurately indicate the number of meals consumed per day and the previous day. Information on household members who ate the previous day, those who did not eat as well as reasons for not eating should be probed and recorded appropriately

5.6. **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)	**5.7.** **Including food eaten in the morning, how many meals did your family eat <u>YESTERDAY</u>?** *(Please indicate the number of meals consumed e.g.* 0, 1, 2, 3, 4, 5,6)	**5.8.** **Did all the members of your family eat yesterday?** (*Please record all responses*) 1.Yes 2.No ***(If no, Go to 5.9)***	**5.9.** **If some household members did not eat, Who did not eat yesterday?** *(Please record all the responses)* 1=Child under 5 2= 5-12 years old 3=13-19 years old 4= Mother 5= Father 6= Above 19 years	**5.10.** **Why did the person/s not eat?** *(Please record all the responses for not eating***)** 1= Food not enough 2= Sickness 3= Away from home 4=Other specify

6. Food Aid/ Food for Work/Food for Asset

6.1. Have you received **FOOD AID** in the last **three (3)** months? (Please circle) **1 = Yes 2 = No (If no go to section 7)**
6.2. Type of food aid 1= food for assets/work 2 = GFD General food distribution
6.3. If Yes when? (Please circle) **1= less than 1 month ago 2= 1 and 2 months 3= Over 2 months**
Please indicate the food commodities received in the last distribution, quantity received, duration each food item lasted and how it was utilized.

		6.5 **Of the food aid received what proportion was used for each of these purposes?** **(Please INSERT QUANTITIES IN KGS where appropriate)**					**6.6** **How many days did each food commodity last?**
6.3 **FOOD AID COMMODITY**	**6.4 QUANTITY (KGS)** verify by using distribution cards)	**Resold in the market**	**Bartered for other item**	**Shared with kin**	**Saved for seed**	**Consumed by household members**	
Maize							
Rice							
Beans							
Peas							
Vegetable oil							
CSB							
Wheat							

Coping Strategies

	In the previous month, has the household done any of the following? Tick as appropriate	Relative Frequency						
		Never	Once per week	Twice per week	3-6 times per week	All the time? Every day	Once per month	Twice per month
7.1	Reduction in the number of meals per day							
7.2	Skip food consumption for an entire day							
7.3	Reduction in size of meals							
7.4	Restrict consumption of adults to allow more for children							
7.5	Feed working members at expense of non-working							
7.6	Swapped consumption to less preferred or cheaper foods							
7.7	Borrow food from a friend or relative							
7.8	Purchase food on credit							
7.9	Consume wild foods (normal wild food)							
7.10	Consume immature crop							
7.11	Consume decomposed fish							
7.12	Consume toxic/taboo foods (acacia pod/bitter fruit)							
7.13	Food consumption of seed stock							
7.14	Send household members to eat elsewhere							
7.15	Withdraw or send child(ren) from school							
7.16	Begging or engaging in degrading jobs							
7.17	Individual migration out of the area							
7.18	Household migration out of the area							
7.19	Sale of farm implements							
7.20	Sale of milking livestock							
7.21	Sale of household goods							
7.22	Disintegration of families							
7.23	Abandonment of children or elderly							
7.24	Sell of charcoal and/or fire wood							
7.25	Part of family migrating with animals to look for grazing							
7.26	Early marriage for girl							
7.27	Others							

Mosquito and bed net use/ treatment

8.1. **Does this household have a mosquito net?** 1 = Yes 2 = No **(IF NO, GO TO 9.1)**	**8.2.** **Where did you get it from:** 1 = A Shop 2 = An agency 3 = Ministry of Health 4= Others (*specify)*_____	**8.3.** **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)?** 1 = Yes 2= No 3= N/A	**8.4.** **If YES, When did you last treat it?** *(Enter the appropriate code)* 1. Less than one month ago 2. Between one and six months ago 3. More than six months ago 4. Cannot remember	**8.5.** **Who slept under the mosquito net last night?** **(***Probe and enter all responses mentioned***)** 1. Children less than 5 years 2. Children over 5 years 3. Pregnant woman 4. Mother 5. Father 6. Nobody uses

District	**Division**	**Sub location**	**Village**	**Cluster No.**	**Team No.**	**Date of Interview (dd/mm/yy)**	**Name of Interviewer**	**Name of Team Leader**
						___/____/____		

Maternal nutritional status aged 15-49 years

	QUESTIONS TO BE ANSWERED IF CARE GIVER IS A FEMALE: • Measure MUAC of caregiver only if a child from her household was measured in SECTION 2 Caregiver must be female between 15 and 49 years of age If there are multiple caregivers, interview only the one who is a primary caregiver								
	10.1. How old are you? (In Years)	**10.2. Age verified by** **1 = ID** **2 = Recall**	**10.3. What is the woman's current physiological status?** 1. = Currently pregnant 2. = Breastfeeding (<6months infant) 3. = Breastfeeding (>6 months) 4. = Pregnant and breastfeeding *5.* = Not pregnant/not breastfeeding	**10.4. MUAC (cm), left arm (To the nearest 0.1 cm), do not round up**	**10.5 In your last pregnancy, did you take iron pills, sprinkles with iron, or iron syrup?** 1. Yes 2. No **3.** Don't know	**10.6 Have you received Vitamin A supplementation** 1 =Yes 2 = No 3=Don't know	**10.7 Have you been De-wormed?** **1 = Yes** **2= No**	**10.8 Where did you deliver your child?** **1 = GoK facility** **2= Private hospital** **3= Home** **4 = Other specify**	**10.9Did you attend Ante-Natal Clinic during last pregnancy?** **1 = Yes** **2 = No**
1.				_____.____cm					

Source of income

9.. SOURCE OF INCOME	1	2	3
What were your sources of income in the last three months (**please indicate the three most important in order of priority)** 1=sale of live stock, 2=sale of livestock product, 3= sale of ration food, 4 =sale of own crop, 5 =wage labor, 6 =Remittance 7= charcoal/firewood sale, 8=basket weaving, 9=petty trade, 10=Fishing, 11= Brewing 12= salary 14= Others(specify)			

Annex 4: Kwale September 2012: INFANT AND YOUNG CHILD FEEDING (IYCF)

TARGET GROUP: INFANTS AGED 0<24 MONTHS

Make every effort to speak with the mother. If she is not available, speak with the primary caregiver responsible for feeding of the child.
Take child No from anthropometry QUESTIONNAIRE. **For every question use the child [Name]**

CH No	Background Information				Infant Feeding information					
	F.9.1	F.9.2	F.9.3	F.9.4	F.9.5	F.9.6	F.9.7	F.9.8	F.9.9	F.9.10
	Child's date of Birth: dd/mm/yy	**Source of birth date** (Record the appropriate code) 1 = CARD 2= Mother 3= DNK	**Age of child in months**	**Sex of child** 1= M 2= F	**Did you ever breastfeed [Name]?** 1= Yes 2= No 3= DNK If No, go to **9.6** If yes, go to **9.7**	**If No, why** See code below for the answers Go to G 10.2	**If yes, How soon after birth did you put [Name] on the breast?** See code below for the answers	**During the first 3 days after delivery, did you give [Name] the fluid/liquid that came from your breasts?** 1= Yes, 2= No, 3= DNK	**In the first 3 days after delivery, was [Name] given anything to drink other than breast milk?** See Codes below	**Are you still breastfeeding [Name]?** 1= Yes 2= No

Question 9.6: 1= No milk; **2=** did not want to breast feed;**3=**traditional beliefs (child will die) **4=** other;
Question 9.7: If less than an hour record **00**; if less than 24 hours record **number of Hours**; IF more than 24 hours record **number of Days**; If mother does not know, record: **88**
Question 9.9: **1=** Plain water; **2=** Sugar water or glucose water; **3=** powdered milk or fresh milk; **4=** infant formula (*Mamex, Nan*), **5=** Gripe water; **6=** not given; **7=** Other (specify)

Make every effort to speak with the mother. If she is not available, speak with the primary caregiver responsible for feeding of [Name].
Now, I will ask you about what [Name] ate and drank YESTERDAY during the day and the night. During the day and the night, did [Name] receive any of the following fluids? Refer to the name of the child for each question. Kindly probe the mother for responses and record the codes/responses as the mother names the fluids and liquids in their appropriate category

CH No	G.10.1	G.10.2	G.10.3	G.10.4	G.10.5	G.10.6	G.10.7	G.10.8	G.10.9
	Breast milk Only one answer coded as below: 1. Yes 2. No 3. DNK	**Infant formula** *(Mamex, Nan)* 1. Yes 2. No 3. DNK	**Other milks: animal milk, reconstituted powdered milk, *Kilifi gold, packaged milk*-** Sour milk. 1. Yes 2. No 3. DNK	**Sweetened flavored juices**, *(Altuza, Quenche, vimto, savannah, Soda)* 1. Yes 2. No 3. DNK	**ORS** 1. Yes 2. No 3. DNK	**Tea/Coffee/chocolate** 1. Yes 2. No 3. DNK	**Plain water** 1. Yes 2. No 3. DNK	**Thin porridge** 1. Yes 2. No 3. DNK	**Coconut juice/madafu** 1. Yes 2. No 3. DNK

Complementary Feeding

Make every effort to speak with the mother. If she is not available, speak with the primary caregiver responsible for feeding of the child

Now, I will ask you about what solid/ semi solid foods [Name] ate yesterday during the day and the night. During the day and the night, what food items did [Name] receive? (Ask the mother /caregiver response to mention all foods given to the child and record as mentioned in the appropriate category)											
HH No	**CHNo**	**H.11.1**	**H.11.2**	**H.11.3**	**H.11.4**	**H.11.5**	**H.11.6**	**H.11.7**	**H.11.8**	**H.11.9**	**H.11.10**
		Eggs 1. Yes 2. No 3. DNK	**Porridge made from CSB /Unimix** *(Use the correct code. Only one answer)* 1. Yes 2. No 3. DNK	**Flesh Meats** (Chicken, Beef, Goat, Kidney, Liver, Mutton, Camel, Fish) 1. Yes 2. No 3. DNK	**Legumes and Nuts** (Beans, Groundnuts, Cowpeas, Lentils, Green Grams) 1. Yes 2. No 3. DNK	**Dairy Products (**Milk, cheese, ghee) 1. Yes 2. No 3. DNK	**Grains, Roots &Tubers** (Pasta, rice, bread, potatoes, biscuits, mandazi, chapatti, anjera, ugali) 1. Yes 2. No 3. DNK	**Vitamin A Rich fruits & Vegetables** (Pawpaw, melon, sukuma wiki, carrots, cowpea leaves, spinach, avocado) 1. Yes 2. No 3. DNK	**Other Fruits and Vegetables** (Onions, tomatoes, cabbage, oranges, bananas, Okra) 1. Yes 2. No 3. DNK	**Oil, fats,** (Zeitzun, sim sim, camel fat) 1= Yes 2= No 3= DNK	**Yesterday (During the day and at night). How many times did you feed [Name] solid and semi-solid foods?** No. of times child was given food to make it full.

Annex 2: Kwale Sept.2012 Household Enumeration data collection form for a death rate calculation survey (One sheet per household)

Survey district:_____ **Village:**_____ **Cluster number:**_____

HH number:_____ **Date:**_____ **Team number:**_____ **Supervisor**_____

	1	2	3	4	5	6	7	8	9
ID	**HH member**	**Present now 1 = yes 2 = No**	**Present at beginning of recall (include those not present now and indicate which members were not present at the start of the recall period) Yes = 1 No 2**	**Left during Recall period Yes = 1 No 2**	**Sex** 1=M 2=F	**Date of birth/or age in years** *(Enter months for children under 5 years and years for over 5's)*	**Born during recall period? Yes = 1 No 2**	**Died during the recall period Yes = 1 No 2**	**Cause of death** (*see codes below)*
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									

Tally these data for each household):

Current HH members – total	
Current HH members - < 5	
Current HH members who arrived during recall (exclude births)	
Current HH members who arrived during recall - <5	
Past HH members who left during recall (exclude deaths)	
Past HH members who left during recall - < 5	
Births during recall	
Total deaths	
Deaths < 5	

Causes of death:

1= Diarrhoea (minimum of 3 watery stools/24hrs) 2= Bloody Diarrhoea; 3= Measles (fever with rash);
4= Fever; 5= Lower respiratory tract infection (fever, productive cough, chest pain, difficulty breathing)
6= Malnutrition; 7= injury 8= Unknown 9= others specify: _____

Annex 3:Mortality Rate Calculation Kwale September 2012 NUTRITION SURVEY

Questionnaire for Mortality Rate Calculation: (One Sheet per cluster)

District_____ **Village** _____ **Date** _____ **Cluster Number** _____ **Team Leader** _____

HH No	Total people in HH	Total Under 5's in HH	No of births since RECALL DATE	Total number of those who joined household	Total number of under5's who joined household	Total number of those who left household	Total number of under fives who left household	Total number of deaths since RECALL DATE	Total number of deaths of Under 5's since RECALL DATE	Causes of death
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
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