GARBATULLA DISTRICT; SEPTEMBER 2012

INTEGRATED NUTRITION SURVEY

GARBATULLA DISTRICT, ISIOLO COUNTY

KENYA

Funded by

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ABBREVIATIONS

ACF-USA	Action Contre la Faim- USA (Action Against Hunger-USA)
ALRMP	Arid Lands Resource Management Project
ASAL	Arid and Semi-Arid Land
BSFP	Blanket Supplementary Feeding Programme
CI	Confidence Interval
CLTS	Community Led Total Sanitation
CMR	Crude Mortality Rate
CDC	Centre for Disease Control
DHIS	District Health Information System
DHMT	District Health Management Team
EBF	Exclusive Breastfeeding
ENA	Emergency Nutrition Assessment
EPI	Expanded Program on Immunization
FGD	Focus Group Discussion
GAM	Global Acute Malnutrition
GFD	General Food Distribution
GOK	Government of Kenya
HINI	High Impact Nutrition Interventions
HDDS	Household Dietary Diversity Score
IGA	Income Generating Activities
HDDS	Household Dietary Diversity Score
IMAM	Integrated Management of Acute Malnutrition
NGO	Non-Governmental Organization
IYCN	Infant and Young Child Nutrition
KEMSA	Kenya Medical Supply Agency
KDHS	Kenya Demographic Health Survey
MAM	Moderate Acute Malnutrition
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation
MTMSGs	Mother to Mother Support Groups
MUAC	Mid Upper Arm Circumference
NCHS	National Centre for Health Statistics
OPV	Oral Polio Vaccine
OTP	Outpatient Therapeutic Program
PPS	Population Proportion to Size
RC	Reserve Cluster
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Program
SMART	Standardized Monitoring and Assessment of Relief and Transitions
SSS	Small Sample Survey
U5MR	Under Five Mortality Rate
UNICEF	United Nations Children's Fund
W/H	Weight for Height
WFP	World Food Program
WHO	World Health Organization

ACKNOWLEDGEMENTS

Action Against Hunger would like to recognize efforts made by the following persons and institutions towards the successful implementation of the Integrated Nutrition survey in Garbatulla district in September 2012.

- The relevant government ministries (Ministry of Health (MOMS & MOPHS), Kenya Bureau of statistics and National Drought Management Authority for their active role during the entire survey process.
- The entire survey team for their effortless commitment and hard work in undertaking quality data collection
- The household respondents in Garbatulla district for their time and dedication in providing information and availing their children for anthropometric measurements.
- ACF Kenya Nairobi and Garbatulla team for their technical, administrative and logistical support throughout the survey process

1. EXECUTIVE SUMMARY

INTRODUCTION

Garbatulla is amongst the three districts in the larger Isiolo County. It is composed of 3 main divisions namely *Kinna, Garbatulla* and *Sericho.* The district is generally hot and dry during most times of the year with two rainy seasons; short rains *(October and November*) and long rains *(March and May).*

OBJECTIVES

The main objective of the third round survey in 2012 was to determine the prevalence of acute malnutrition amongst children aged 6-59 months, with the following specific objectives:

- To determine the coverage of measles, OPV1/3 vaccination supplementation in children aged 6-59 months;
- To determine the nutritional status of caregivers by *MUAC*
- To estimate the coverage of micro-nutrient supplementation of iron-folate and vitamin A amongst women and children aged 6-59 months respectively
- To assess household key food security, maternal/child health care and WASH practices.

METHODOLOGY

SMART methodology was employed during the anthropometric survey in planning, training, data entry and analysis. Other data sets were also gathered concurrently during this survey to include data on infant and young child nutrition as well as health, WASH, food security and livelihood.

RESULTS

A total of 540 households were sampled with 569 children aged 6-59 months assessed for nutritional status through anthropometric measurements. The final analysis however incorporated 563 children in reference to WHO 2006 after exclusion of 6out of range data sets.

Table 1: Summary of Results, Garbatulla District, September 2011 and September 2012

INDEX	INDICATOR		RESULTS SEPTEMBER 2011	RESULTS SEPTEMBER 2012
WHO2006	WHZ- scores	Global Acute Malnutrition W/H< -2 z and/or oedema	18.6% (14.8-22.9 C.I)	9.2 % (6.8-12.4 C.I)
		Severe Acute Malnutrition W/H < -3 z and/or oedema	3.0% (1.8-4.8 95 % C.I)	0.7% (0.3-1.8 C.I)
WHO 2006	Z scores	Prevalence of stunting	17.3% (14.0 – 21.2 C.I)	18.2% (14.6-22.6 C.I)
WHO 2006	Z scores	Prevalence of underweight	24.4% (19.8 – 29.6 C.I)	14.3% (11.1-18.3 C.I)
MUAC	Aged 6 to 59 months	Global Acute Malnutrition (<125mm)	5.5% (3.8 – 8.0 C.I)	5.6% (2.2-13.7 C.I)
		Severe Acute Malnutrition (<115mm)	1.3% (0.5- 3.2 95% C.I)	3.5% (0.8- 13.9 C.I)

Measles immunization coverage	By card	73.1%	70.1%
Vitamin A coverage	6-11 months ; once	55.6%	72.6%
	12-59 months; once	50.7%	51.9%
	12- 59 months; at least twice	34.2%	34.7%

RECOMMENDATIONS

Garbatulla district has progressed from emergency situation; GAM 18.6% (14.8-22.9 95%CI) in 2011 to poor situation; GAM 9.2% (6.8-12.4 95% CI) in 2012. This could be probably be attributed to favourable climatic conditions in 2012 as compared to 2011, improved household food security situation (e.g milk availability, livestock), extensive active case findings,, blanket supplementary feeding program between September 2011 and March 2012, significant decline in diarrheal disease incidences, increased agricultural production and utilization through irrigation and kitchen gardening, as well as an active nutrition technical forum ensuring efficient and effective implementation of nutrition interventions.

The following recommendations are thus put forth based on the poor nutrition status, GAM 9.2% (6.8-12.4 95% CI):

FINDINGS	POSSIBLE LINKS TO MALNUTRITION	RECOMMENDATION
NUTRITION	Vitamin A (38.8%) and deworming (68.2%) below the national target of 80%	• Combined outreach activities to be undertaken which will ensure that all services reach every targeted child
	Zinc supplementation below national target of 50%	• Conduct assessment at all facilities to determine knowledge of health staff regarding the same.
	Low mosquito ownership and utilization	• Community sensitization on importance of mosquito net thus improve maintenance and utilization
WASH	Sharing of the same water point with livestock	• Continued provision of kiosks to provide access to human use with the provision of animal troughs to utilise waste water at appropriate distances
	Observed high breakage of protected shallow wells and piped water systems	• Strengthen Water committees and linkage with relevant GoK ministries • Strengthen capacities of local artisans to make repairs
	Poor water treatment and handling practices	• Continued hygiene promotion • Follow up of pot filters for evaluation of use and acceptance
	Open defecation	• Rigorous latrine promotion to trigger demand. • Promotion of open defecation free zones (piloting of CLTS) and promotion of cat method.

FOOD SECURITY & LIVELIHOODS	Sustainability of crop and animal production	• Build capacity of farmers on production methods and enhance access to agricultural inputs • Improve market access to nutritious foods via voucher systems and support to traders • Improve household utilization and processing of foods • Improve knowledge around food and nutrition • Address seasonal food gaps through enhancing storage, processing and marketing infrastructure • Market linkages for sale of farm & livestock products • Strengthen Dedha (*Local elder who control grazing patterns)* Committees- control grazing zones

2. INTRODUCTION

Garbatulla district is characterized by recurrent droughts, low and erratic rainfall patterns. The district has an estimated population of 43,147 persons[1] with the Borana community being the main inhabitants of the district.

ACF has undertaken six rounds of small scale surveys and three integrated surveys in Garbatulla district since 2010. The small scale survey results below generally indicate a gradual decline in malnutrition trends since the May 2011 emergency that was characterised by poor rainfall performance, high food prices, livestock death, increased diarrhoeal incidences just to mention but a few.

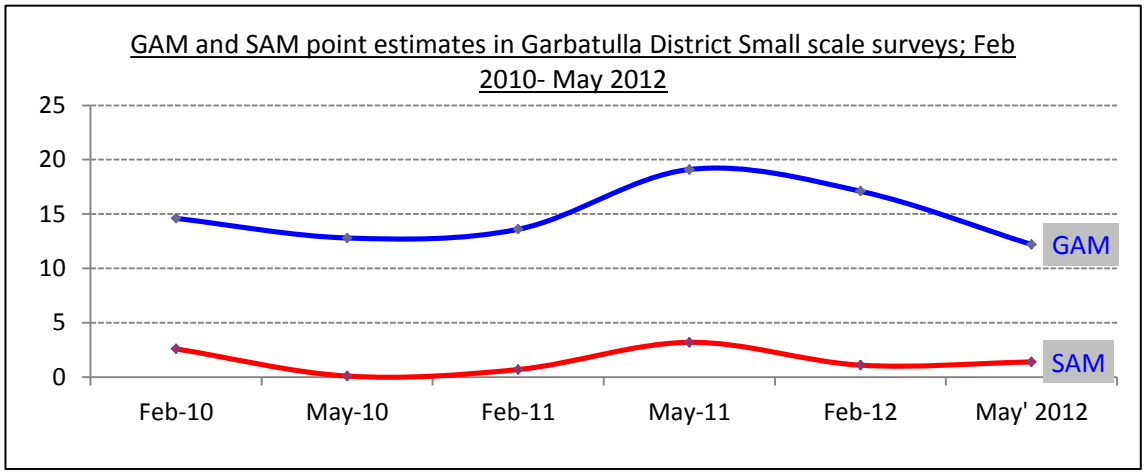


Figure 1: Malnutrition trends in Garbatulla District, February 2010- May 2011.

The above findings coupled with the current nutritional status all point towards an improved nutritional status in the area.

3. METHODOLOGY

3.1 Type of survey

An Integrated nutrition survey was conducted in September 2012 in Garbatulla District. This survey assessed various indicators covering nutrition, health, WASH and FSL. The survey employed the SMART[2] methodology with all the tools tailored as per the MOPHS and MOMS recommendations for an Integrated Nutrition survey. Other data sources were used to triangulate survey findings from the area to include secondary data sources as well as primary data sources from focussed group discussions

3.2 Sampling Methodology

A two stage sampling methodology was applied for the survey using ENA for SMART November 2011 software. The county population was obtained from the 2009 Census report to the smallest sampling unit (village).

[1]Kenya National Bureaus of Statistics; 2009 census data
[2] Standardized Monitoring and Assessment of Relief and Transitions

Sample size was then determined by entering the design effect, prevalence rates, desired precision, average household size, and non-response rate into the ENA for SMART planning phase as shown in the table below.

Table 2: Sampling methodology

Data entered on ENA software	Anthropometric Survey	RATIONALE
Estimated prevalence of GAM	22.9	Highest GAM C.I in September 2011
Desired precision	4.7	The higher the malnutrition prevalence, the lower the precision as well as objectives
Design effect	1.4	Design effect obtained in May 2012 SSS
Average household size	6	May 2012 Small scale survey result
Percent of under five children	18.4	Population estimate from DHIS[3] and Census report 2009
Percent of non-respondent	1	To cater for any unforeseen circumstances
Households to be included	**476**	

IYCN SAMPLING								
Indicator	**Estimated prevalence (SMART 2011)**	**± desired precision**	**Design effect**	**Sample size in number of children**	**Average HH[4] size**	**% children under 5**	**% non-response HH's**	**HH To be included**
Exclusive breastfeeding	69.4	8	1.5	208				
Timely initiation of breastfeeding	57.6	8	1.5	239	6	18.4	1	547
Minimum dietary diversity	34.7	8	1.5	222	6	18.4	1	508
Minimum meal frequency	28.2	8	1.5	198	6	18.4	1	454

36 clusters of 15 households each were sampled for the whole survey. This was based on IYCN indicators with timely initiation of breastfeeding accounting for the highest sample size (511/36).

3.3 Training and organization of survey teams

The training of the survey team was conducted in Alpha Raha children's Centre in Garbatulla from the 11th to the 15th September 2012. The training covered all the components for an Integrated Nutrition survey. 6 teams composed of 1 team leader and 4 enumerators per team were organized with each team covering 1 cluster per day for 6 days. Coordination and supervision of the entire process was done by the District Nutrition Officer and ACF Staff.

[3] District Health Information System

[4] Household

3.4 Data Quality Assurance Processes

Various steps were undertaken to ensure that the data collected was acceptable for both internal and external use(*see annex 1 for plausibility report*). A summary of the quality control steps are listed below.

- Validation of the survey planning and methodology at Nutrition Information Working Group
- Enumerator training Standardization and pilot test
- Daily data entry and primary analysis of all datasets
- Daily supervision and feedback to the teams

Additionally a plausibility check was done on the data entered to verify the quality of the data.

Table 3: Overall data quality from Plausibility check

CRITERIA	*Missing/ flagged data*	*Overall sex ration*	*Overall age distribution*	*Digit preference score Weight*	*Digit preference score Height*	*Standard deviation WHZ*	*Skewness WHZ*	*Kurtosis WHZ*	*Poisson distribution WHZ*	*Overall score WHZ*
SCORE	**0 (1.1%)**	**0*(p=0.834)***	**0 *(p=0.260)***	**0 (4)**	**0 (5)**	**0 (1.04)**	**0 (0.21)**	**0 (0.00)**	**0 (p=0.397)**	**0%**
Interpretation	**Excellent**	**Excellent**	**Excellent**	**Excellent**	**Excellent**	**Excellent**	**Excellent**	**Excellent**	**Excellent**	**Excellent**

3.5 Data Collection

Primary data was gathered from the sampled villages to make inferences with regard to the survey objectives between 16th and 21st September 2012. The following information was gathered:

3.51. Anthropometric Indicators: Anthropometric data was collected from all eligible children. Children aged 6-59 months were targeted with the following information

- **Age**: The child's immunization card, birth certificate or birth notification was the primary source for this information. In the absence of these documents, a local calendar of events developed with community members, enumerators and key informants was used to estimate these ages.
- **Sex:** This was recorded as either 'f' for female or 'm' for male.
- **Weight:** A standing "SECA" scale was used to measure the children's weight. In order to enhance quality of data and accuracy in measurements, all scales were checked daily using a standard weight to confirm measurements and any faulty scales replaced. All scales were calibrated to zero before taking any measurements
- **Height:** Recumbent length was taken for children less than 85 cm or less than 2 years of age while those greater or equal to 85 cm or more than 2 years of age were measured standing up using a height board.
- **MUAC:** Mid Upper Circumference (MUAC) was measured on the left arm, at the middle point between the elbow and the shoulder, while the arm was relaxed and hanging by the body's side. MUAC was measured to the nearest mm. In the event of a disability the right arm was used or for those who are left-handed, MUAC was taken on the right arm.

- **Bilateral Oedema:** This was assessed by the application of moderate thumb pressure for at least 3 seconds to both feet. Only children with bilateral oedema were recorded as having nutritional oedema.
- **Measles vaccination:** The status of this was determined amongst all children aged 6-59 months. The child's vaccination card was used as a source of verification. In circumstances where this was not available, the caretaker was probed to determine whether the child had been immunized against measles or not. All children with confirmed immunization (by date) on the vaccination card, the status was recorded as "1" (Card) otherwise as "0" (Not immunized). Oral confirmation from the mother without proof of card was recorded as "2" (Recall). ***However, only children greater than or equal to 9 months were used to determine coverage of this in the final analysis.***
- **OPV1 and OPV3** status was calculated for all children aged 6-59 months

Other relevant information about the eligible child was also gathered as follows:

- **De-worming:** Determined by whether the child had received drugs for intestinal worms in the last 6 months. This was recorded as "0" for No and "1" when the child had received the drugs.
- **Vitamin A coverage:** This was determined by the number of times the eligible child had received vitamin A in the past year. The response received *(number of times*) was probed and eventually recorded on the anthropometric questionnaire.
- **Morbidity:** This was gathered over a two week recall period by interviewing/probing the mothers/caretakers of the target child and eventually determined based on the respondent's recall. This information was however not verified by a clinician.

Other data sets: The household questionnaire was used to gather data on health related variables, HINI[5] Indicators, water availability and accessibility, sanitation and hygiene practices, livestock production, food sources, dietary diversity, income, and expenditure. An IYCN questionnaire was as well administered in households with infants aged 0-23 months.

3.6 Data Entry and Analysis

Anthropometric data was analysed in ENA for SMART software November 2011 version. Daily data entry was undertaken for all data sets so as to ensure close supervision and quality of data as the survey progressed. These data sets were eventually analysed. Extreme values flagged by the software were excluded from the final analysis. The household and IYCN questionnaire data sets were entered and analysed using SPSS Version 19.0 and Microsoft Excel.

[5]High Impact Nutrition Interventions

4. INDICATORS, GUIDELINES AND FORMULAS USED

4.1 ACUTE MALNUTRITION

4.1.1 WEIGHT FOR HEIGHT INDEX

This was estimated from a combination of the weight for height (WFH) index values combined with the presence of oedema. This index was expressed in WFH indices in Z-scores, according to WHO 2006 reference standards.

Z-Score:

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

4.1.2 MID UPPER ARM CIRCUMFERENCE (MUAC)

MUAC analysis was also undertaken to determine the nutrition status of targeted children. During the survey, all severe and moderately malnourished children as per MUAC cut offs referred to nearby facilities. The following MUAC criteria were applied.

Table 4: MUAC guidelines

MUAC Guideline	Interpretation
MUAC<115mm and/or bilateral oedema	SAM with high risk of malnutrition
MUAC >=115mm and <125mm	MAM with risk of mortality
MUAC >=125mm and <135mm	Risk of malnutrition
MUAC > 135mm	Adequate nutritional status

4.2 INFANT AND YOUNG CHILD NUTRITION

Timely initiation of breast feeding: Proportion of children born in the last two years put to breast within an hour of delivery

Exclusive breastfeeding rates: Proportion of children less than 6 months exclusively fed on breast milk in 24 hour recall period

Minimum Dietary Diversity: proportion of children aged 6 to 23 months fed on minimum number of food groups in 24 hour recall period

Minimum meal frequency: proportion of children aged 6 to 23 months received minimum number of meals in 24 hour recall period

Minimum acceptable diet: proportion of children aged 6 to 23 months received minimum number of food groups and minimum number of meals in 24 hour recall period

5. RESULTS

5.1 Distribution by age and sex

Boys and girls were equally represented in the sample with the survey attaining an overall sex ratio of 1.0. However, the age ratio across two of the age groups (42-53 months and 54-59 months) fell outside the acceptable range of 0.8 -1.2. This deviation could be attributed to use of calendar of events in age verification with 29.6% of the total sample (569) lacking the appropriate documents such as birth certificates, birth notifications or health cards. In some instances, some of the documents were futile either blank or torn which contributed to recall bias.

Table 5: Distribution of age and sex of sample

MONTHS	Boys		Girls		Total		Ratio
	n	%	n	%	n	%	Boy: girl
6-17	61	45.9	72	54.1	133	23.4	0.8
18-29	76	52.8	68	47.2	144	25.3	1.1
30-41	68	51.5	64	48.5	132	23.2	1.1
42-53	63	59.4	43	40.6	106	18.6	1.5
54-59	19	35.2	35	64.8	54	9.5	0.5
Total	287	50.4	282	49.6	569	100.0	1.0

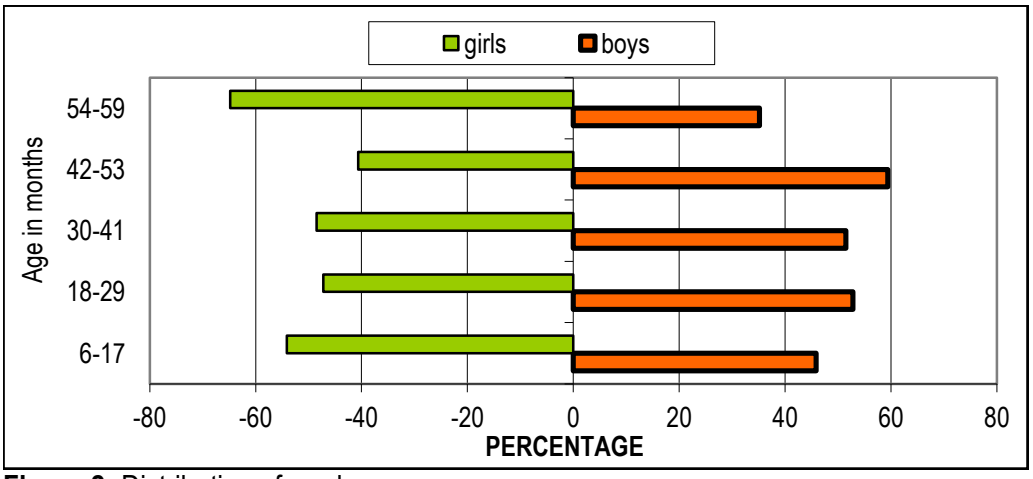


Figure 2: Distribution of sex by age group

5.2 Anthropometry

5.2.1 Distribution of Acute Malnutrition in Z-score, WHO Standards

A total of 569 children were sampled for the anthropometric measurements. Six of these children were however excluded from the final analysis as these were out of range. Majority (90.8%) of children aged between 6 to 59 months in Garbatulla district were normal as illustrated in the table below

No cases of bilateral edema were reported

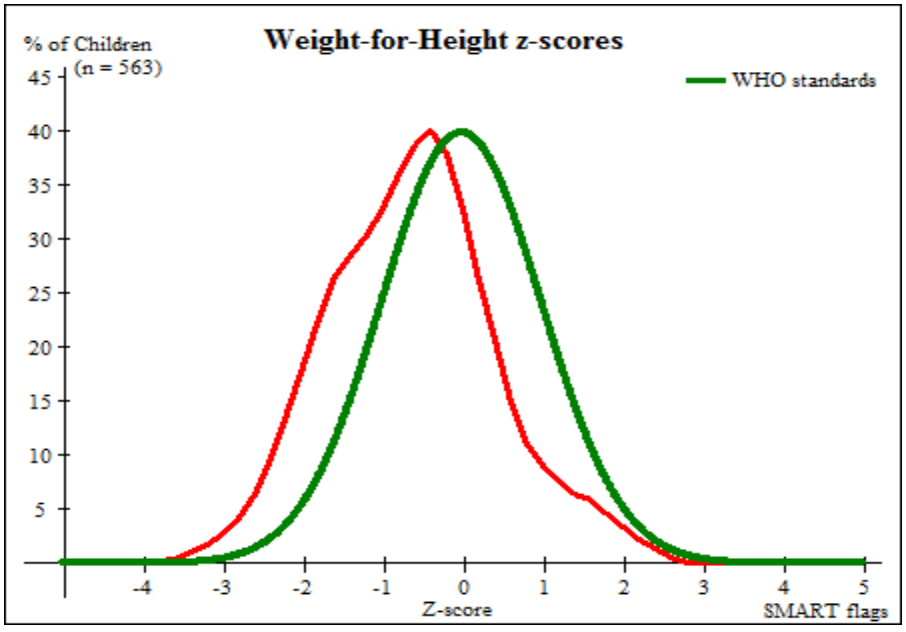
Table 6: Prevalence of acute malnutrition by age based on WHZ[6] scores &/or oedema, WHO references

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (months)	**Total no.**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	130	1	0.8	6	4.6	123	94.6	0	0.0
18-29	142	1	0.7	8	5.6	133	93.7	0	0.0
30-41	131	0	0.0	16	12.2	115	87.8	0	0.0
42-53	106	1	0.9	8	7.5	97	91.5	0	0.0
54-59	54	1	1.9	10	18.5	43	79.6	0	0.0
Total	563	4	0.7	48	8.5	511	90.8	0	0.0

Table 7: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmus- kwashiorkor 0 (0.0 %)	Kwashiorkor 0 (0.0 %)
Oedema absent	Marasmus 4 (0.7 %)	Not severely malnourished 559 (99.3%)

Marasmus accounted for 0.7% of the cases as illustrated above with no cases of kwashiorkor of marasmic-kwashiorkor.



The sampled population curve (*red curve)* shows a slight displacement to the left of the reference curve. This is an indication of poor nutritional status.

The standard deviation of 1.04 *(WHO standards)* falls within the acceptable range of 0.8 – 1.2

Figure 3: Weight for Height distribution in z-score compared to the WHO standards

[6] WHZ: Weight for Height z score

Nutritional status of children less than five years in Garbatulla district has shown the most improvement in September 2012 since February 2010 as illustrated in the figure 4 below. The GAM fell below the emergency and alert thresholds of 15.0% and 10% respectively.

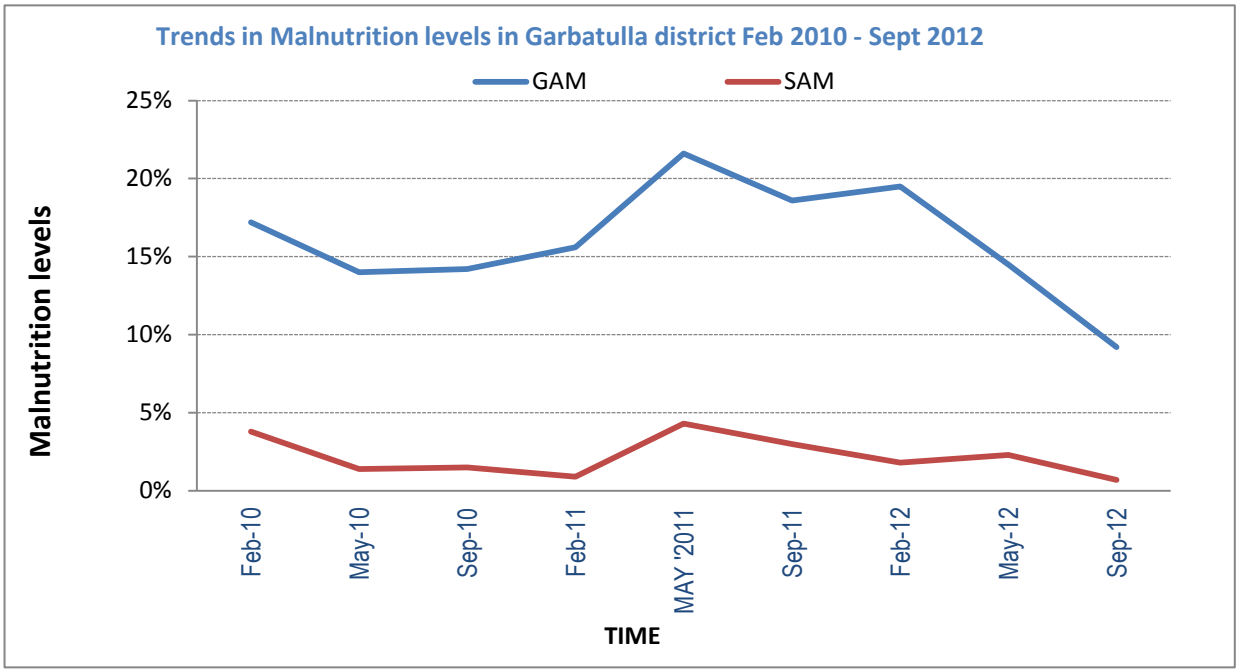


Figure 4: Trends in Malnutrition rates in Garbatulla district

Findings tabulated below are expressed at 95.0% confidence interval.

Table 8: Global and Severe Acute Malnutrition in Z-score

	WHO Reference	NCHS Reference
Prevalence of GAM	9.2% (6.8-12.4 95% CI)	8.9% (6.4-12.2 95% CI)
Prevalence of SAM	0.7% (0.3- 1.8 95% CI)	0.4% (0.1- 1.4 95% CI)

Further analysis based on gender indicates that both boys and girls are equally malnourished with *p value of 0.969*

6.2.1. Distribution of Middle Upper Arm Circumference

Table 9: Distribution of MUAC in Garbatulla District

	>=65 cm to < 75 cm		>=75 cm to < 90 cm		>= 90 cm		TOTAL	
MUAC in mm	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
MUAC < 115	**1**	1.0	**3**	1.4	**0**	0.0	**4**	0.7
115 = MUAC < 125	**7**	7.1	**5**	2.3	**1**	0.4	**13**	2.3
125 >= MUAC < 135	**22**	22.2	**26**	12.0	**16**	6.6	**64**	11.4
MUAC.>= 135	**69**	69.7	**182**	84.3	**227**	93	**478**	85.6
Total	**99**	100.0	**216**	100.0	**244**	100.0	**559**	100.0

5.3 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

In this study, a household was defined as a person or group of persons related or unrelated by blood, residing in the same compound, having one household head and eating from the same cooking pot. Survey findings have shown that male-headed households are dominant in Garbatulla district with September 2012 accounting for 91.7%. An average household size of 7 was found in this survey.

Livestock keeping continues to be the main household occupation when compared to 2011 with slight improvements as illustrated in the figure below.

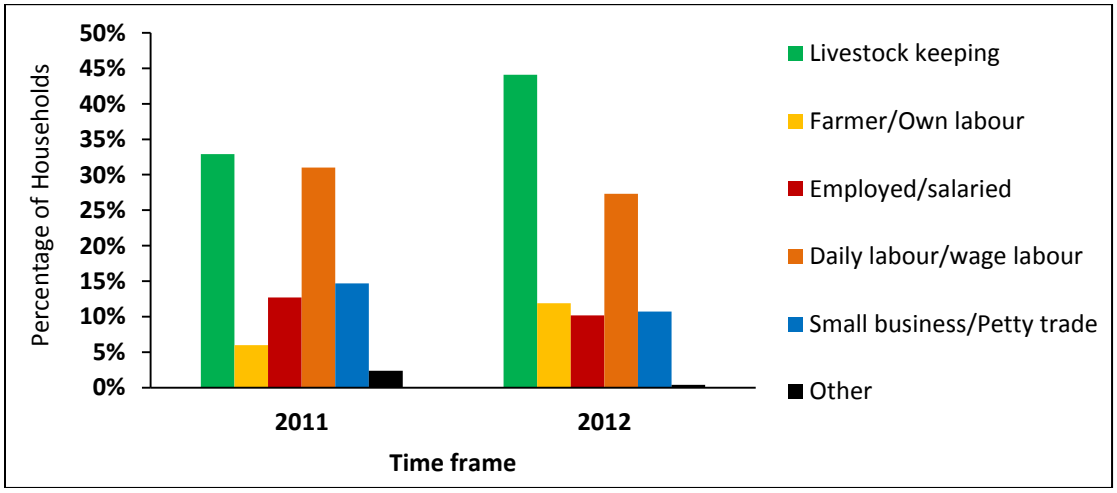


Figure 5: **Household head main occupation**

A noticeable improvement in farming and own labour was noted in Garbatulla district in September 2012. The informal interviews and focus group discussions attributed these to NGO support for activities such as kitchen gardening and farming in irrigation schemes.

5.4 HEALTH AND NUTRITION

Health and nutrition are integral facet of interventions aimed at reduction or alleviation of malnutrition rates in a given population. During the integrated survey conducted in Garbatulla District, this component included morbidity trends, health seeking behaviours, Zinc supplementation, iron-folic supplementation, possession and utilization of mosquito nets, and the nutritional status of the caregivers of the under 5 year old children.

A two week recall period was used to establish morbidity amongst children aged 0-59 months in the area; with findings from these illustrated below

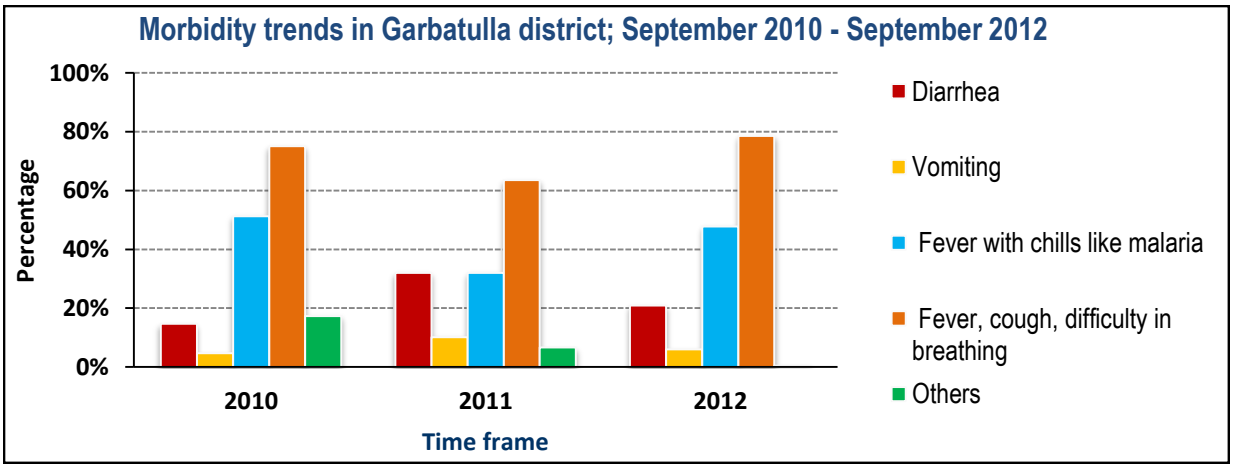


Figure 6: Morbidity trends in Garbatulla district

Diarrheal incidences had moved from 32% in 2011 to 21.4% in 2012.
Difficulties in breathing are partly attributed to the dust storms experienced in Garbatulla during this season.

Table 10: **Mosquito bed net ownership and usage**

	2010 (%)	2011(%)	2012(%)
OWNERSHIP	76.0	79.2	61.7
USAGE			
Children <5 years old		85.0	82.9
Every body		56.3	72.4
Nobody			9.6

There is a noticeable reduction in the proportion of households in possession of mosquito nets and 9.6% of all households in possession of mosquito nets reported not using them. Never the less, use by children stayed about the same and adult usage improved.

Rehydration is vital in the management of acute diarrhoea. Therapeutic zinc supplementation and oral rehydration salts (ORS) are important in the reduction of severity, duration, and thus the impact of diarrhoea. Findings from Garbatulla on management of diarrhoeal incidences are tabulated below

Table 11: Management of diarrhoea cases

Diarrheal Management	2011(%)	2012(%)
ORS	78.1	65.8
Home-made sugar-salt solution	32.9	26.3
Home -made liquid *like porridge, tea, soups*	5.5	50.0
Zinc	4.1	23.7
Others	1.4	2.6

Even though the therapeutic zinc supplementation in diarrhoea management has increased to 23.7% from 4.1% in September 2011, the coverage is still below the national target of 50.0%.
The increase is however attributed to consistent supply of zinc in the KEMSA in 2012 unlike September 2011.

Approximately 74.2% of all cases (182) sought assistance, with public clinics (74.8%) being the primary source of care. Other households got assistance from community health workers (7.4%), traditional healers (6.7%), private clinics (5.9%), shops and kiosks (8.9%), mobile clinics (3.7%), and relatives (1.5%) in that order.

Measles immunization trends are illustrated below:

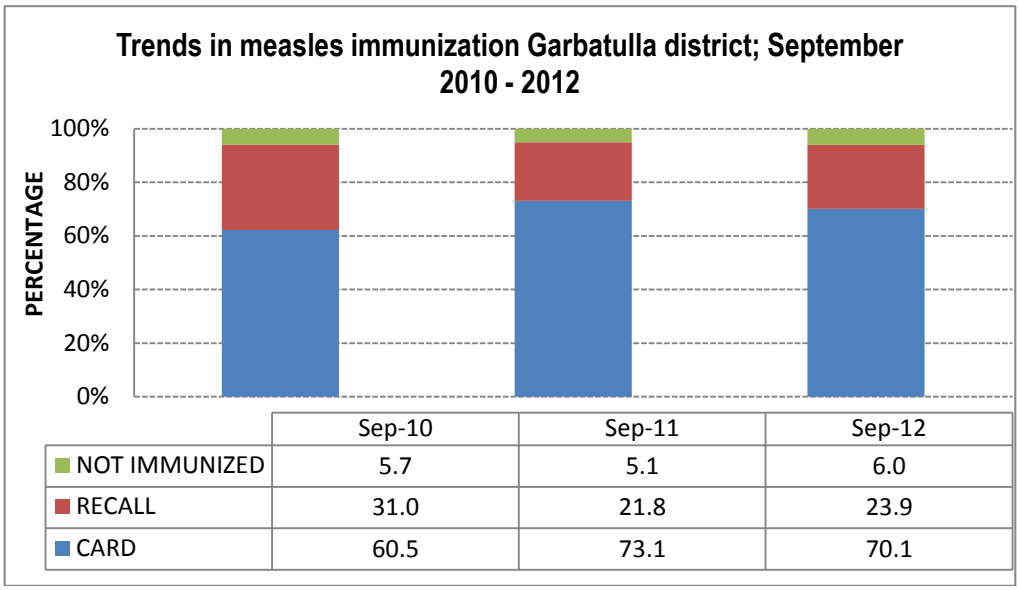


Figure 7: Measles immunization trends

The trends are generally similar across the various years as illustrated above with those immunized by card still falling below the national target of 80.0%.

The current iron supplementation rate amongst pregnant women was approximately 61.5%. This lies above the national target of 50.0%.

The coverage of OPV 1 and 3 by card was 76.3% and 73.1% respectively

The nutritional status of the mothers of the under five year old children was determined using maternal MUAC tapes. Mothers aged 15-45 years were 513 among all the caretakers interviewed during the exercise. Of this age category 4.5% had MUAC less than 21 cm. With regard to their physiological status, 65.3% were pregnant and lactating women. Pregnant and lactating women with MUAC less than 21 cm were 5.7%.

The table below represents the trends in vitamin A supplementation amongst the various age groups over a one year period. On the whole, a significant increase in supplementation amongst the 6-11 months age group was noted.

Table 12: Vitamin A supplementation trends

Age group	Number of times	Sept. 2011 (%)	Sept. 2012 (%)
6-11 months	At least once	55.6	72.6
12-59 months	Once	50.7	51.9
	At least twice	37.3	34 .7

De-worming rates of 68.2% in September 2012in Garbatulla district on the other hand fell below the national target of 80%.

Complementary feeding practices in Garbatulla district indicate a noticeable improvement in 2012 as compared to 2011. The improvement is likely to be associated with the increased crop and livestock production coupled with intensive nutrition education though mother to mother support groups (MTMSG). Exclusive breastfeeding based on 24 hour recall lies above the national target of 50%. However, a decline on mothers initiating breastfeeding within one hour of delivery is noted.

Table 13: IYCN Indicators

Indicator	Sept. 2011	Sept 2012
Timely initiation of breastfeeding (within 1st hr of delivery)	57.6	48.4
Exclusive breastfeeding	69.4	67.7
Dietary Diversity		
Proportion of breastfed children 6-23 months consuming ≥3 food groups	38.9	61.0
Proportion of non-breastfed children 6-23 months consuming ≥4 food groups	7.1	21.7
Proportion of both breastfed and non-breastfed children 6-23 months consuming ≥ 3 or ≥4 food groups respectively	34.7	57.1
Minimum Meal Times		
Proportion of breastfed children 6-8 months and 6- 23 months having at least 2 meals and≥ 3 meals a day respectively	31.3	59.8
Proportion of non-breastfed children 6-23 months having ≥4 meals a day	7.1	8.7
Proportion of breastfed children 6-8 months, 6-23 months and non-breastfed 6-23 months having ≥2, ≥3 and≥4 meals a day respectively	28.2	55.2
Minimum Acceptable diet	34.1	56.1

5.5 FOOD SECURITY AND LIVELIHOODS

Garbatulla, an arid district with pastoralism being the main livelihood zone, experiences a bimodal rainfall pattern, that is, from March to May and October to December. Annual rainfall usually ranges between 450 mm and 650 mm. The main livestock in the district include cattle, goats, sheep, and camels.

According to the Isiolo 2012 Short Rains Assessment Report the district has received support in terms of food and non-food aid interventions. The food aid programmes include general food distribution (GFD), food for assets (FFA), protection rations, OTP and SFP as well as school feeding programmes.

5.5.1 Livestock Ownership

The trends in livestock ownership indicate a steady increase accounting for 61.7%, 70.0%, and 82.8% of the population in September 2010, 2011 and 2012 respectively. The household livestock ownership has generally improved since last year as shown in the table below. This improvement could be attributed to greater availability of grazing resources and an effort to rebuild herds.

Table 14: Mean livestock owned per household

	Cattle	Camel	Goat	Sheep	Donkey	Chicken

	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Mean No. Per HH	5	9	1	6	12	20	9	17	1	2	2	8

5.5.2 Household Dietary Diversity

The 12 food groups were used to assess HDDS over a 24 hour recall period in Garbatulla District. The table below shows the trend over a three-year period. There is no change in HDDS trends in comparison to the previous year despite a slight increase in high HDDS. The findings are presented below.

Table 15: Household Dietary Diversity score classification

MONTH	SEPTEMBER		
YEAR	2010	2011	2012
Low dietary diversity: (<= 3 food groups)	7.7%	1.6%	2.6%
Medium dietary diversity: (4-5 food groups)	13.1%	14.1%	11.8%
High dietary diversity: (>= 6 food groups)	79.2%	84.3%	85.6%

The mean dietary diversity score in September 2012 was 5.9 as compared to 6.8 in September 2011.

. More livestock products such as dairy and meat was also consumed probably due to increase in the mean number of livestock per household illustrated above.

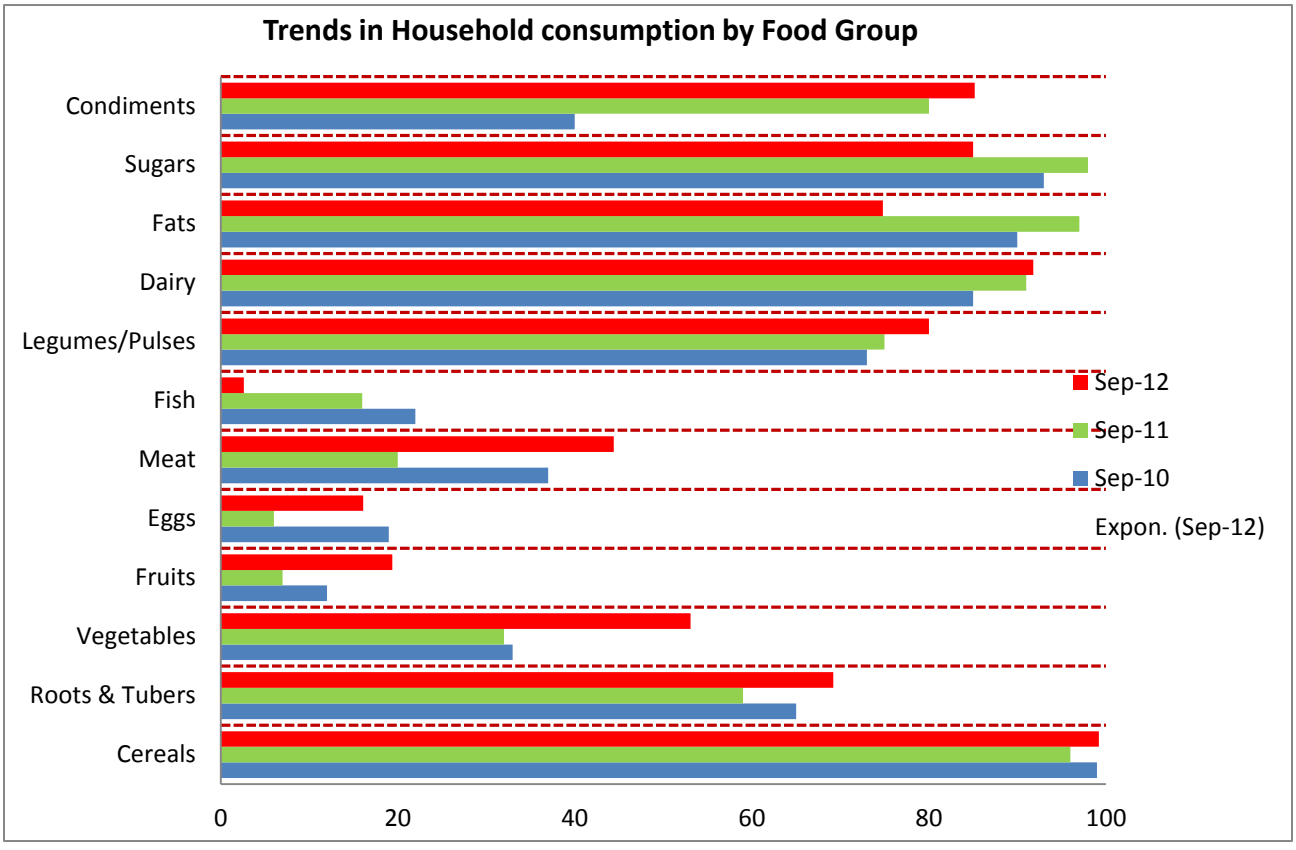


Figure 8: Household Food Diversity

5.5.3 Sources of Food

The sources of food for households were determined using proportionate pilling charts over a 30 days recall with trends of these illustrated below. It is important to note that own livestock production (milk, eggs) is the only one source of food that marked a significant increase from 4.0% in 2011 to 16.6% in 2012 which could be due to pasture and water availability*(i.e. recovery from the drought situation in 2011).*

The sources of food for households were determined using proportional piling charts over a 30 days recall with trends of these illustrated below. Some of the foods continued to be sourced predominantly from purchase and food aid accounting for 28.4% and 23.8% respectively of total food sources.

It is important to note that own livestock production (milk, eggs) is the only one source of food that marked a significant increase. This could be due to pasture and water availability.

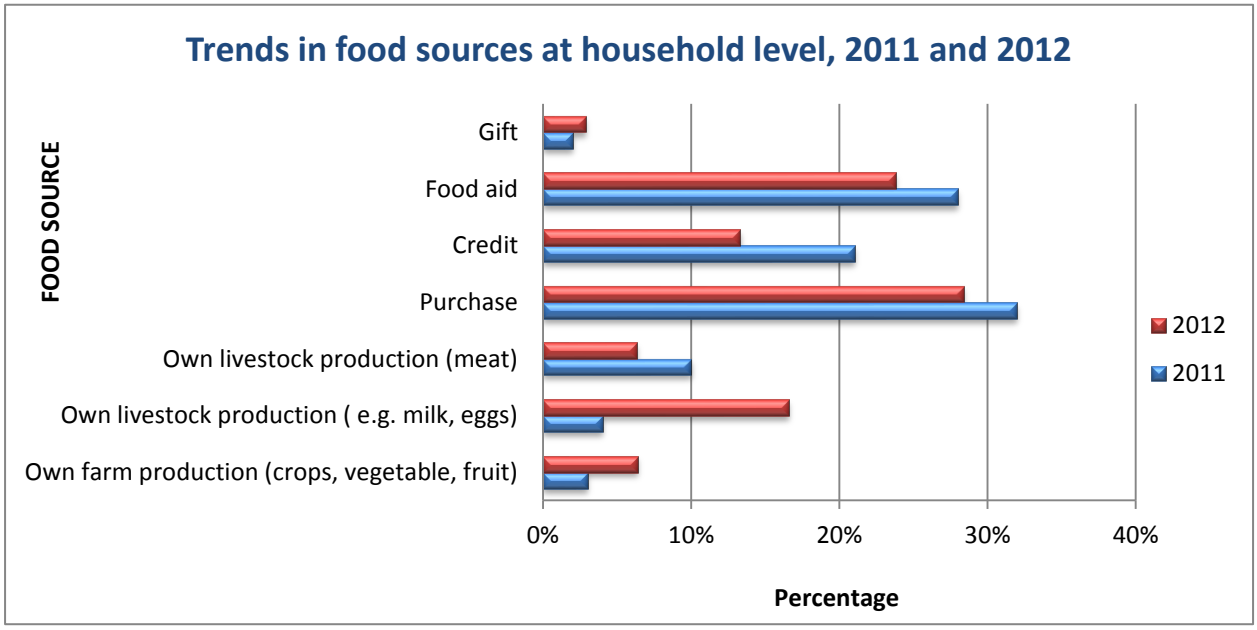


Figure 9: Sources of food at household level in Garbatulla district

5.5.4 Household Income and Expenditure

Proportional piling was also used to determine household's income and expenditure over a 30 day recall period. These two variables were determined separately. The figure below illustrates the various sources of income;

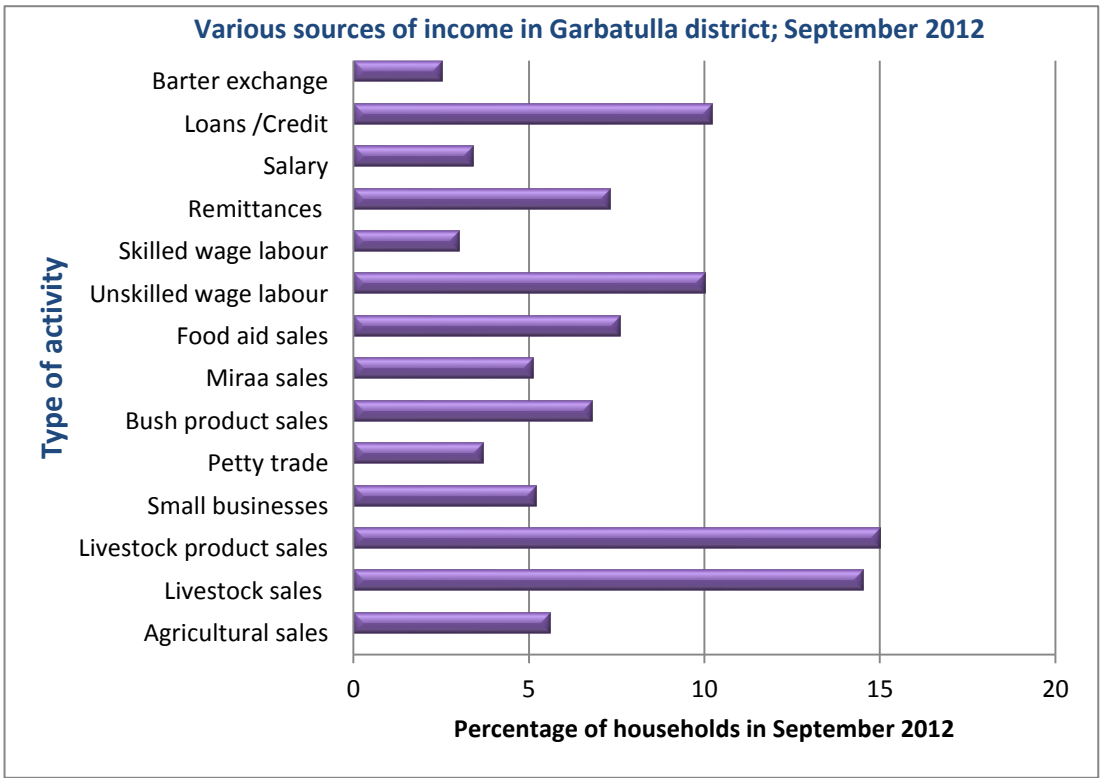


Figure 10: Percentage of households reporting source of income in Garbatulla district

Livestock product sales such as milk[7] and eggs accounted for the largest share followed closely by livestock sales which accounted for 15% and 14.5% respectively. Other sources of income reported to follow closely were loans and credit (10.2%), remittances from family and friends (7.3%), bush and agricultural products accounting for 6.8% and 5.6% respectively.

In terms of household expenditure 30 days prior to the survey, food items (not including vegetables and fruits) contributed as the largest percentage accounting for 52.0%.Other items like medical expenses, water, fuel, clothing and khat*(mirraa)*accounted for 40.9% of the total household expenditure. Most of the food items were purchased in the nearby markets and farms. The graph below displays the percentage of food expenditure per type in comparison with September 2011. A noticeable reduction in purchase of cereals, sugar, milk and milk products was noticed as highlighted in the figure below. The reduction could likely be linked availability of these as indicated by the significant increase in households food sources from own farm production and livestock illustrated in figure 9.

[7] The teams observed sale of milk and eggs

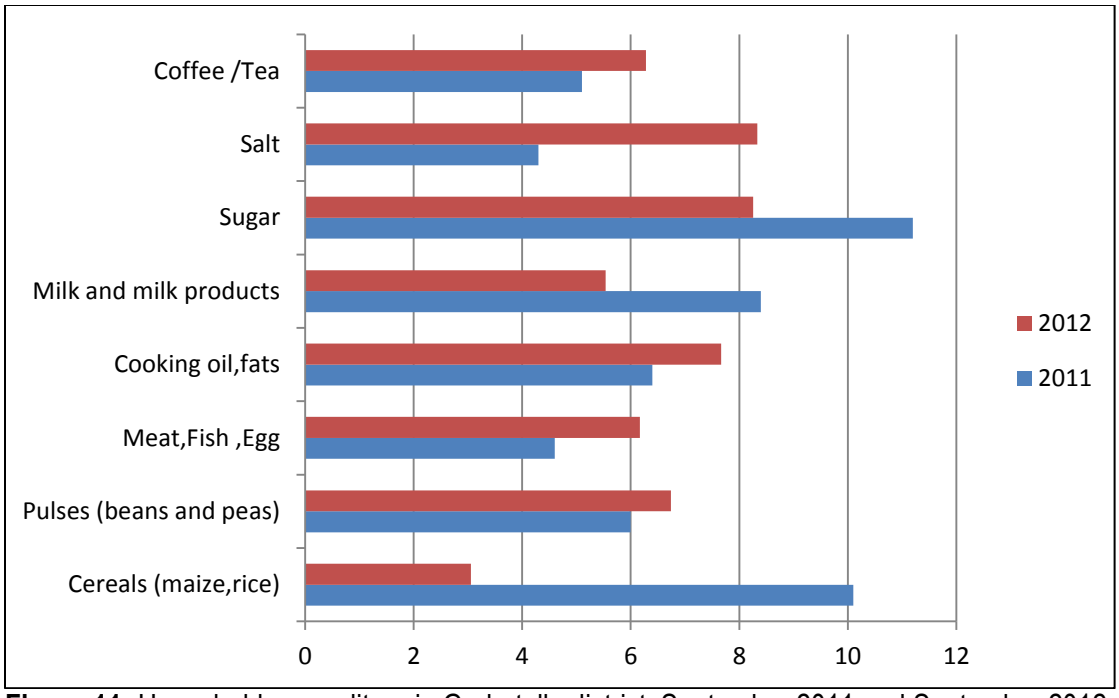


Figure 11: Household expenditure in Garbatulla district; September 2011 and September 2012

5.6 WATER SANITATION AND HYGIENE

ACF International has implemented various WASH interventions which included water supply for domestic , livestock and institutional (health centres and schools) use, specifically the rehabilitation of earth pans, water supply systems, construction of shallow wells, installation of rainwater harvesting systems and storage tanks among others. Household latrine, sanitation and hygiene promotion is also included in all WASH programs. During the December 2011 floods, double door temporary VIP latrines were constructed in prioritized areas within the district.

As September is the end of the dry season, Garbatulla District has been dry without any rain for over five months. The main water sources include boreholes, water pans, shallow wells and River Ewaso Nyiro. At the time of the survey the water levels in the river had significantly gone down due to the normal dry season, which has strained increased animal and domestic use as well as abstraction for crop irrigation. Most of the main water pans sources are still holding water; however, the water table has gone down due to appreciable evaporation and use. This has prompted the resultant competition for scarce commodity between livestock and people. The sources of water for drinking were determined as shown in the table below. More households (64.4%) obtained water from safe sources in comparison to September 2011.

Table 16: Main water source for drinking, September 2012

WATER SOURCE	2011	2012
SAFE		
Piped water system from borehole/spring, protected shallow well	60.7%	64.4%
UNSAFE		
Unprotected Shallow well	15.5%	27.2%
Earth pan/dam	2.4%	2.6%
Water trucking to *bikard* or tank	11.1%	3.0%
Water seller	0.8%	3.5%
Others e.g*EwasoNyiro*	9.5%	

Water treatment is essential for drinking water if obtained from unsafe sources. Most households did nothing (69.6%) to water prior to drinking as shown in the table below, with treatment methods including boiling, chlorination, and others (sitting to settle, passing through cloth, and use of traditional tree). The latter are not considered as full treatment methods because they simply reduce the turbidity level of the water.

Table 17: Trends in Water treatment methods in Garbatulla District, September 2011 and 2012

Treatment	2011	2012
Nothing	70.2%	69.6%
Boiling	9.9%	12.4%
Chlorination	15.2%	12.0%
Others	15.7%	8.9%

In relation to water source and treatment, most households that obtained water from unsafe sources never treated their drinking water before use as shown in the table below.

Table 18: Treatment of water from unsafe sources

Water treatment practices for Unsafe water		
Nothing	147	74.6%
Boiling	32	16.2%
Chlorination	18	9.1%

Water points should be within a distance of 500m (30 min) from the households according to 2011 SPHERE standards. A decline in the number of households close to water source noted a decrease from 76.8% in 2011 to 63.3% in 2012. This decline could be due to reduced water levels in the shallow wells, but it is more likely due to breakdown of the water pumps in water supply systems. The breakdown of water pumps other than being mechanical is also contributed to the community water vendors taking advantage of high demand of water. This further confirmed by an increase in water sellers from 0.8% (2011) to 3.5% in

2012 as illustrated in table 14 above. It also notable that unlike in 2011, an appreciable proportion of households (14.8%), spent more than one hour to the water source.

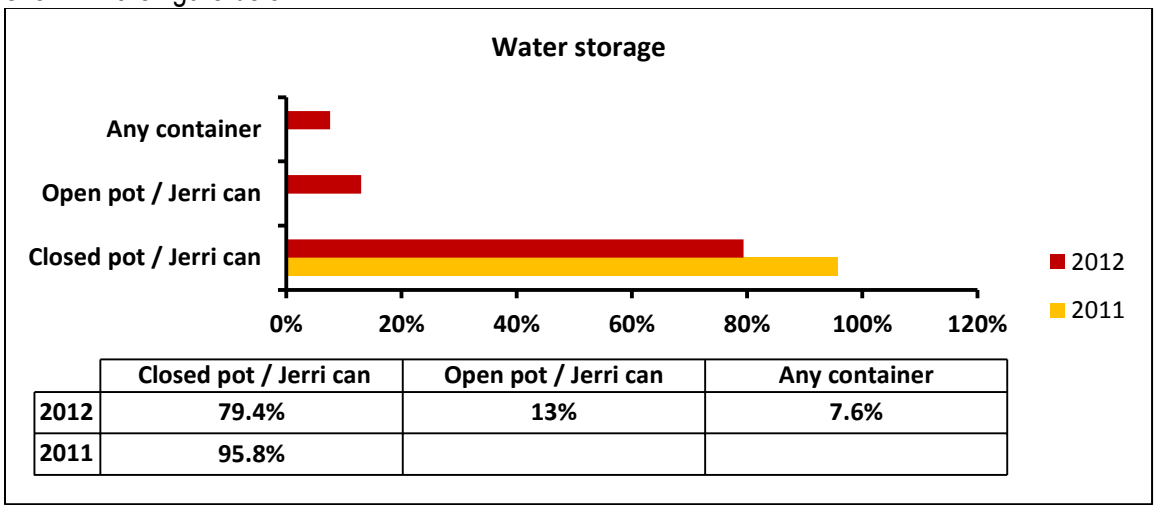
Table 19: Distance to water source

Distance to water source	2011	2012
Less than 30 minutes *(500 m)*	76.8%	63.3%
30-1 hour *(more than 500 meters – 2 km)*	23.2%	21.9%
More than one hour *(more than 2 km)*		14.8%

Once at the water source, more than half (54.1%) of the caretakers reported queuing at the water source. Those who spend less than 30 minutes significantly increased in 2012 (40.8%) compared to 2011 (20.2%). However, more than half 59.8% still queue for more than 30 minutes at the water source.

More households (56.5%) in Garbatulla District pay for their water. Of this proportion, majority (83.9%) spend less than Kshs 3 per 20 litres-jerrican, 7.9% pay Kshs 20. Monthly bills of between Kshs 200-400 were paid for water by 8.2% in Garbatulla and Kinna Towns.

In maintenance of hygiene levels of drinking water, the respondents were probed about the type of containers they used for storage. The use closed containers significantly dropped in relation to 2011 as shown in the figure below.



	Closed pot / Jerri can	Open pot / Jerri can	Any container
2012	79.4%	13%	7.6%
2011	95.8%		

Figure 12: Storage of water

Open defecation in the district stands at 31.1%, with those who share pit latrines being 13.7% and sharing of ventilated improved (VIP) latrines accounted for 28.3%. The number of households in possession latrines is low (26.8%), that is, own pit latrines and own VIP latrines constituting 6.1% and 20.7% respectively.

Appropriate hand washing is imperative in prevention of the spread of diseases, especially when done at the critical times. These include after visiting a toilet, before eating, before preparation of food, and after attending to a defecated child. The trends in these are illustrated in the figure below. There was an improvement in hand washing practices since 2011, however, 2.4% of the respondents did not wash their hands during the four critical times. These are illustrated below

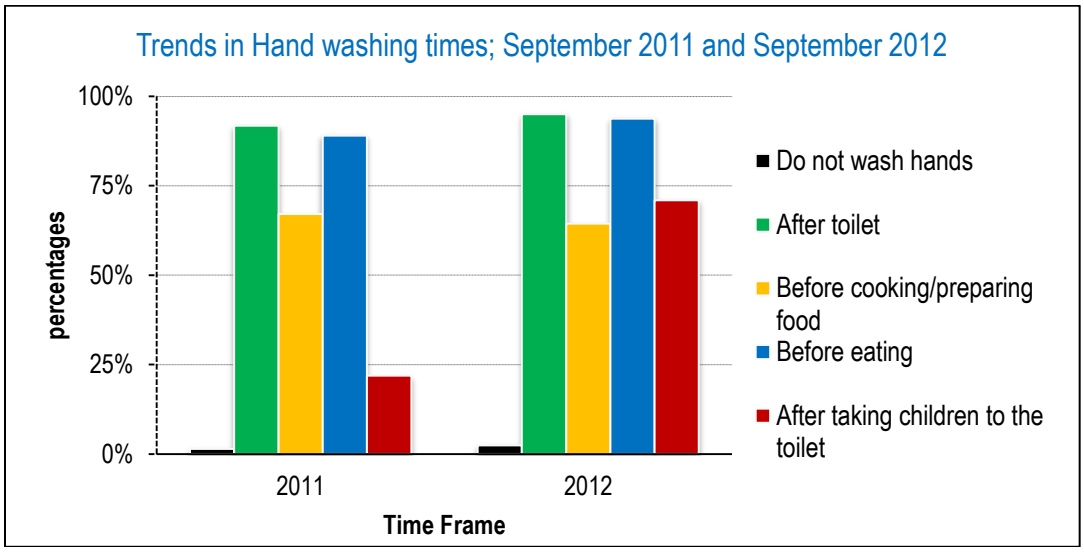


Figure 13:Trends in hand washing at critical times; September 2011 and September 2012

Of all the respondents (527) who reported washing hands, the use of soap improved since 2011. This shows that soap has been prioritized in the household expenditures.

Table 20: Appropriate hand washing practices

Appropriate Hand washing practices	2011	2012
Only water	39.7%	39.1%
Water and soap	21.9%	41.9%
Soap when can afford it	38.4%	18.6%
Water and ashes		0.4%

6. DISCUSSIONS AND CONCLUSION

Seasonal comparability indicates that malnutrition rates have significantly declined as indicated below.

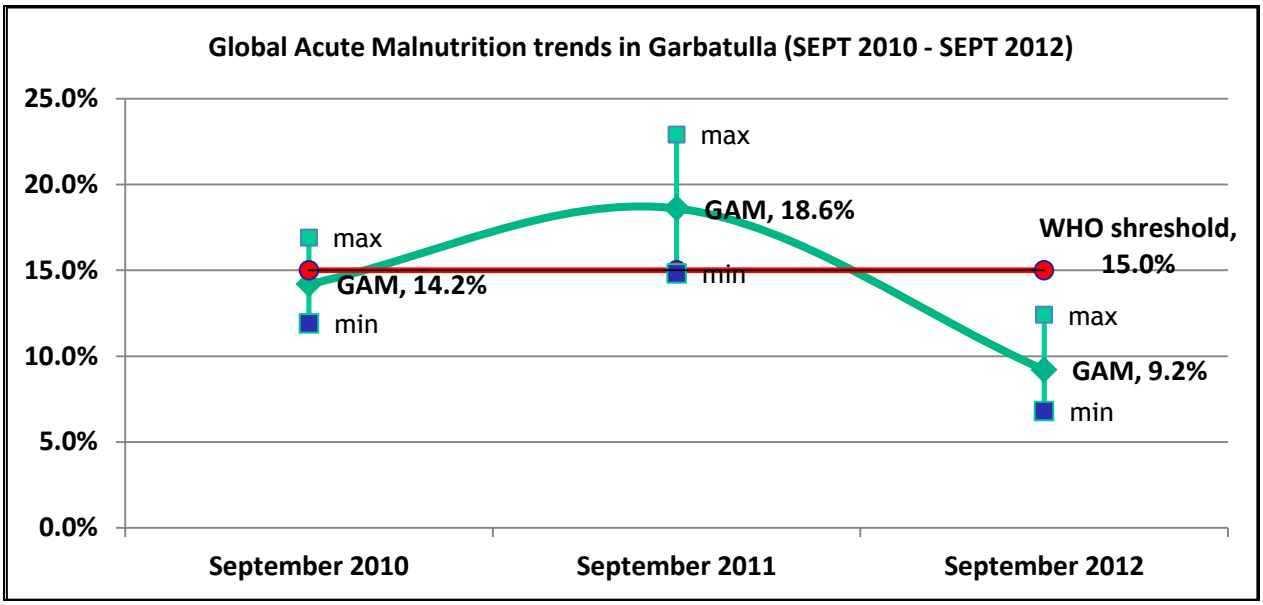


Figure 14: Global Acute Malnutrition trends in Garbatulla District

Garbatulla district has progressed from emergency situation; GAM 18.6% (14.8-22.9 95%CI) in 2011 to poor situation; **GAM 9.2% (6.8-12.4 95% CI) in 2012**. Severe acute malnutrition rates have also significantly improved from **3.0% (1.8 - 4.8 95 % CI)** in September 2011 to **0.7% (0.3- 1.8 95% CI)** in September 2012.

The survey findings on food security, livelihoods and WASH situation triangulated with other available data on the overall context (FSNWG, FEWNET, etc.) suggest that the improved nutrition status could be attributed to a number of factors namely:

- Favorable climatic conditions which have led to improved water and pasture availability. This in turn led to reduced livestock movement thence availability of livestock and livestock products at household level
- Probable impact of various humanitarian assistance, including:
  - Inception of Blanket Supplementary Feeding Program during the emergency phase between September 2011 and March 2012
  - Extensive case finding through outreach activities thus early detection, referral and management of cases
  - Consistent supply of supplementary/therapeutic food, General Food Distribution and Food for Assets. All households with malnourished children get automatic entry to either GFD or FFA which acts as a protection ration. School feeding programs exist in Garbatulla district as well.
  - Mother to mother support groups in the area that probably have played a role in the improved young child feeding practises
  - Active Nutrition Technical Forum in Garbatulla district ensuring efficient and effective implementation of nutrition interventions

- Livelihood interventions such as support in pasture rehabilitation of community rangelands by various stakeholders
- Increased agricultural production through irrigation and kitchen gardening under the support of ACF and other partners
- Other positive aspects include improved hand washing practices at critical points in time and water treatment

Despite the above issues, a number of factors still stand out. Health and nutrition as a major component in prevention of child morbidity and mortality is still not adequately explored for that purpose in Garbatulla District. Therapeutic zinc supplementation in management of diarrhoea is still below the national target despite being available in the facilities. This still warrants for continued community sensitization and more especially for outreach sites.

Access to safe water is still a challenge, even though access improved to 64.4% of the households obtaining water from safe sources. The increase is partly attributed to the construction of protected shallow wells by ACF International and other actors.

Open defecation and sharing of latrines in Garbatulla is still predominant thus compromising the health status of household members and posing a threat to already accomplished interventions. The situation may be aggregated further by rains expected towards the end of the year, usually occasioned by widespread floods.

7. RECOMMENDATIONS

The Global acute Malnutrition rates in Garbatulla district are below the emergency and alert thresholds 15% and 10% respectively with below alert SAM levels of **0.7% (0.3- 1.8 95% CI)**. However, more efforts are needed in maintaining or reducing the rates further. The following are the challenges identified which need to be strengthened and possible recommendations. Food security and WASH programs to address the underlying causes of malnutrition will continue to be important for the foreseeable future.

Table 21: Recommendations

FINDINGS	POSSIBLE LINKS TO MALNUTRITION	RECOMMENDATIONS
NUTRITION	Vitamin A (38.8%) and deworming (68.2%) below the national target of 80%	• Combined outreach activities to be undertaken which will ensure that all services reach every targeted child
	Zinc supplementation below national target of 50%	• Conduct assessment at all facilities to determine knowledge of health staff regarding the same.
	Low mosquito ownership and utilization	• Community sensitization on importance of mosquito net thus improve maintenance and utilization
WASH	Sharing of the same water point with livestock	• Continued provision of kiosks to provide access to human use with the provision of animal troughs to utilise waste water at appropriate distances
	Observed high breakage of protected shallow wells and piped water systems	• Strengthen Water committees and linkage with relevant GoK ministries

		• Strengthen capacities of local artisans to make repairs
	Poor water treatment and handling practices	• Continued hygiene promotion • Follow up of pot filters for evaluation of use and acceptance
	Open defecation	• Rigorous latrine promotion to trigger demand. • Promotion of open defecation free zones (piloting of CLTS) and promotion of cat method.
FSL	Sustainability of crop and animal production	• Build capacity of farmers on production methods and enhance access to agricultural inputs • Improve market access to nutritious foods via voucher systems and support to traders • Improve household utilization and processing of foods • Improve knowledge around food and nutrition • Address seasonal food gaps through enhancing storage, processing and marketing infrastructure • Market linkages for sale of farm & livestock products • Strengthen Dedha (*Local elder who control grazing patterns)* Committees- control grazing zones

8. APPENDICES

Annex 1: Plausibility check for: GBT SEPT 2012 FINAL.as

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

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**	
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10		
(% of in-range subjects)			0	5	10	20	**0**	(1.1 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000		
(Significant chi square)			0	2	4	10	**0**	(p=0.834)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000		
(Significant chi square)			0	2	4	10	**0**	(p=0.260)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20		
			0	2	4	10	**0**	(4)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20		
			0	2	4	10	**0**	(5)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20		
			0	2	6	20	**0**	(1.04)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0		
			0	1	3	5	**0**	(0.21)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0		
			0	1	3	5	**0**	(0.00)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000		
			0	1	3	5	**0**	(p=0.397)
Timing	Excl	Not determined yet						
			0	1	3	5		
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	**0**	%

At the moment the overall score of this survey is 0 %, this is excellent.

There were no duplicate entries detected.

Percentage of children with no exact birthday: 100 %

Annex 2: SMART Survey Anthropometric Form (September 2012) Target group 6-59 months old children

1. IDENTIFICATION: Data Collector:_____ Team Leader:_____						
1.1 DISTRICT	1.2 DIVISION	1.3 LOCATION	1.4. VILLAGE	1.5. CLUSTER NUMBER	1.6 TEAM NUMBER	1.7 SURVEY DATE

Child no.	**HH no.**	**Sex** F/M	**Age in Month**	**WEIGHT** ##.# kg	**HEIGHT** ###.# *(cms)*	**EDEMA** (Y/N)	**MUAC** ##.# *(cms)*	**Age verified by** 1= Card 2= Recall	**MEASLSES** 0= Not immunized 1= Card 2= Recall	**Has the child received OPV1** (Penta 1) 0= No 1= Card 2= Recall	**Has the child received OPV 3** (Penta 3) 0= No 1= Card 2= Recall	**In the last 1 yr, how many times has the child received** Vitamin A *(show samples)*	**In the last ONE YEAR; has the child received DRUG for intestinal WORMS** 0= No 1= Yes	**In the past TWO WEEKS did the child suffer from any sickness?** 0=No 1= Yes	**If yes, which sicknesses**				
															Fever with chills like malaria 0= No 1= Yes	Cough/ ARI 0= No 1= Yes	Watery diarrhea 0= No 1= Yes	Bloody diarrhea 0= No 1= Yes	Others *(Please specify)* 0= No 1= Yes
1																			
2																			
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Annex II: INFANT AND YOUND FEEDING QUESTIONNAIRE (6- 23 MONTHS)

***This page must be filled in for every household with a child aged 6-23 months; every child in this range should be included.**

COUNTY:_____	**CLUSTER NO.** **[ ][ ]**	**NAME OF TEAM LEADER:_____**
DISTRICT:_____	**TEAM NO.** **[ ][ ]**	**DATE OF INTERVIEW:_____**

1	2	3	4	5	6	7	8	9							10
HH No.	Child No.	SEX M/F	Age of the child in months *(this can be taken from the child 6-59 form)*	When did you start breastfeeding this child after the delivery? 0 = NEVER 1 = WITHIN AN HOUR 2 = MORE THAN ONE *(1)* DAY	From this time yesterday until now, was the child given BREAST MILK? 0 = No 1 = Yes	From this time yesterday until now, did the child receive SOLID, SEMI SOLID OR SOFT FOODS? 0 = No 1 = Yes	From this time yesterday until now, how MANY meals or snacks was the child fed yesterday *Please insert the number*	From this time yesterday until now, what did the child eat? 0 = Did not consume 1 = Consumed *Do not leave any blank*							Is there a child <6 months in this HH? 0 = No 1 = Yes **IF YES, PROCEED TO THE NEXT PAGE.** **IF NO, GO TO NEXT CHILD.**
								Grains, roots, and tubers	Legumes and nuts	Dairy products	Flesh foods	Eggs	Vitamin A-rich foods and vegetables	Other fruits and vegetables	

GRAIN, ROOTS AND TUBERS: *Rice, cassava, potatoes, Ugali*	**LEGUMES AND NUTS:** *Groundnuts, cow peas, beans*	**DAIRY PRODUCTS:** *Cow milk, yogurt, cheese, tin milk*	**FLESH FOODS:** *Chicken, bush meat, cow meat, pig, fish*	**EGGS:** Chicken egg, etc	**VITAMIN A RICH FOODS:** *Carrot, dark green leafy vegetables (cassava, sweet potato leaves), pumpkin, mango,*	**OTHER FRUITS AND VEGETABLES:** *Orange, lemon, citrus fruits, pineapple, banana, plantain*
Note: foods above are given for reference purposes only; they need to be reviewed and replaced by local foods						

Annex III: INFANT AND YOUND FEEDING QUESTIONNAIRE (0-5 MONTHS)

***This page must be filled in for every household with an infant 0-5 months; every child in this range should be included.**

COUNTY:_____	**CLUSTER NO. [ ][ ]**	**NAME OF TEAM LEADER:_____**
DISTRICT:_____	**TEAM NO. [ ][ ]**	**DATE OF INTERVIEW:_____**

1	2	3	4	5	6	7	8	9	10	11	12	13
HH No	Child No.	SEX M/F	Age of the child Months	When did you START BREAST FEEDING this child AFTER DELIVERY? 0 = Never 1 = WITHIN AN HOUR 2 = MORE THAN ONE DAY	From this time yesterday until now was the child given **BREAST MILK**? 0 = No 1 = Yes	From this time yesterday until now was the child given **PLAIN WATER**? 0 = No 1 = Yes	From this time yesterday until now was the child given **INFANT FORMULA** (*e.g. Nan, Mamex, S-26, Lactogen*)? 0 = No 1 = Yes	From this time yesterday until now was the child given any **OTHER MILK** (e.g. animal milk, Powdered *milk, (Halwa, Milki, Hayat*)? 0 = No 1 = Yes	From this time yesterday until now was the child given **ORS**? 0 = No 1 = Yes	From this time yesterday until now was the child given **TEA/COFFEE**? 0 = No 1 = Yes	From this time yesterday until now was the child given **JUICE**? 0 = No 1 = Yes	From this time yesterday until now was the child given any other **FOOD/LIQUID?** 0 = No 1 = Yes *(Please specify)*

Annex IV: HOUSEHOLD QUESTIONNAIRE							
1. IDENTIFICATION: Data Collector_____ Team Leader_____							
1.1 DISTRICT	1.2 DIVISION	1.3 LOCATION	1.4 VILLAGE	1.5 CLUSTER NO.	1.6 HH No	1.7 TEAM No.	1.8 DATE

2. HOUSEHOLD STRUCTURE	
2.1	**Sex of HOUSEHOLD HEAD** 1. Male |____| 2. Female
2.2	**What is the MAIN OCCUPATION of the HOUSEHOLD HEAD** 1. Livestock keeping |____| 2. Farmer/own farm labor 3. Employed (salaried) 4. Daily labor/Wage labor 5. Small business/Petty trade 6. Other (Specify _____
2.3	**How MANY household members are currently present** 1. Male |____| 2. Female |____|

3. CHILD HEALTH AND NUTRITION *(Children 0-59 months of age) –(The mother/caretaker should be asked for this section)*	
3.1	**Does the household have children aged 0-59 months old?** 1. Yes |____| 2. No *(if No, skip to Question # 3.7)*
3.2	**Did any of your child *(ren)* 0-59 months old have had sickness during the past 2 weeks?** 1. Yes |____| 2. No *(If No, skip to Question # 3.7)*
3.3	**If YES to question 3.2; what type of sickness *(es)* did the child suffer from during the past 2 weeks?** *(Multiple responses possible; Use 1 if Yes and 2 if No)* |____| 1. Watery Diarrhea |____| 2. Bloody Diarrhea |____| 3. Vomiting |____| 4. Fever with chills like malaria |____| 5. Fever, cough, difficulty in breathing |____| 6. Other (specify)_____
3.4	**When the child was sick, DID YOU SEEK ASSISTANCE?** 1. Yes |____| 2. No *(If No, skip to question # 3.6)*
3.5	**If YES to question # 3.4, WHERE did you seek assistance?** *(More than one response possible- (Use 1 if Yes and 2 if No)* 1. Traditional healer |____| 2. Community health worker |____| 3. Private clinic/ pharmacy |____| 4. Shop/kiosk |____| 5. Public clinic |____| 6. Mobile clinic |____| 7. Relative or friend |____| 8. Local herbs |____| 9. NGO/FBO |____|
3.6	**If child had diarrhea, was he/she given any of the following to drink at any time since he/she started having the diarrhea?** (USE 1 if Yes and 2 if No)

	1. A fluid made from a special packet called Oralite or ORS?	|____|
	2. A home-made sugar-salt solution?	|____|
	3. Home-made liquid (porridge, soup, yoghurt, coconut water, fruit juice, tea, milk, or rice water)	|____|
	4. Zinc	|____|
	5. Others (specify)_____	|____|
3.7	**In your last pregnancy, did you take IRON- FOLIC ACID pills for 90 days?**	
	1. Yes	|____|
	2. No	
	3. Don't know	
3.8	**What is the mother's / caretaker's physiological status**	
	(Please insert appropriate number in the box)	
	1. Pregnant	|____|
	2. Lactating	
	3. None of the above	
3.9	**Mother/caregiver's MUAC reading**	|____|

4. WATER, SANITATION AND HYGIENE (WASH)/- Ask the mother/care taker		
4.1	**What is the MAIN source of drinking water for the household <u>NOW</u>?**	
	1. Piped water system from borehole/ spring	|____|
	2. Protected shallow well	
	3. Unprotected shallow well- OPEN with no working hand pump	
	4. Earth pan/dam	
	5. Earth pan/dam with infiltration well	
	6. Water trucking to birkad or tank	
	7. Water seller, donkey cart or other seller	
	8. Other (specify)__	
4.2	**How long does it take to walk to the MAIN source of water** *(one way in minutes)* **NOW?**	
	1. Less than 30 minutes *(500 m)*	
	2. 30-1 hour *(more than 500 meters – 2 km)*	|____|
	3. More than one hour *(more than 2 km)*	
4.3	**Do you queue for water?**	
	1. Yes	|____|
	2. No *(If No skip to question 4.4)*	
4.3.1	**If yes how long?**	
	1. Less than 30 minutes	|____|
	2. 30-60 minutes	
	3. More than 1 hour	
4.4	**What is done NOW to the water before household members drink it? (MULTIPLE RESPONSES POSSIBLE-** (*USE 1 IF YES AND 2 IF NO)*	
	1. Nothing	|____|
	2. Boiling	|____|
	3. Chlorination	|____|
	4. Abarmog (traditional tree)	|____|
	5. Sitting to settle	|____|
	6. Passing through cloth	|____|
	7. Other (specify_____)	|____|
4.5	**Where do you store water for drinking?**	
	1. Open pot / Jerri can	|____|
	2. Closed pot / Jerri can	
	3. Any container	
4.6	**Do you pay for water?**	
	1. Yes	|____|

	2. No *(If No skip to Question 4.8)*	
4.7	**If yes, how much do you pay for a 20ltr Jerrican***(ksh/20ltrs)*	|____|
4.8	**When do you wash your hands? (MULTIPLE RESPONSE-** (Use 1 if "Yes" and 2 if "No")	
	1. Does not wash hands	|____|
	2. After toilet	|____|
	3. Before cooking	|____|
	4. Before eating/ preparing food	|____|
	5. After taking children to the toilet	|____|
	6. After attending to defecated child	|____|
4.9	**If the mother washes her hands, then probe: What do you use to wash your hands?**	
	1. Only water	
	2. Water and soap	|____|
	3. Soap when I can afford it	
	4. Water and ashes	
4.10	**Does this household have a mosquito net?**	
	1. Yes	|____|
	2. No *(if No, skip to Question 4.11)*	
4.11	**If the household owns mosquito net, WHO slept under the mosquito net LAST NIGHT? (***Probe- enter all responses mentioned (Use 1 if "Yes" and 2 if "No")*	
	1. Children <5 years old	|____|
	2. Children between 5 and 18 years old.	|____|
	3. Adult females.	|____|
	4. Adult males	|____|
	5. Every body	|____|
	6. Nobody uses	|____|
4.12	**Where do members of your household RELIEVE themselves?**	
	1. In the bushes, open defecation	
	2. Neighbours or shared traditional pit latrine	
	3. Own traditional pit latrine	
	4. Neighbours or shared ventilated improved pit latrine	|____|
	5. Own ventilated improved pit latrine	

5. LIVESTOCK OWNERSHIP		
5.1	**Does the household currently own livestock (not including chickens)?** 1. Yes 2. No (if No, skip to question)	|____|
5.2	**How MANY livestock of each type does your HOUSEHOLD OWN?** a. Cattle_____ b. Goats _____ c. Sheep _____ d. Donkey _____ e. Chicken_____ f. Camels_____ g. Any other *specify*_____	[____] |____| |____| |____| |____| |____| |____|

6. DIETARY DIVERSITY, FOOD SOURCES AND COPING STRATEGIES		
6.1	**Did the household eat the following yesterday (in the last 24 hours): *from this time yesterday up to now*?** **(***WRITE 1 beside the food if someone consumed it and 0 if no one did***)**	
	1. Any "*ugali*", pasta, rice, bread, or any food made from maize, sorghum, millet, wheat?	|____|
	2. Any potatoes, yams, beets or other foods from roots or tubers?	|____|
	3. Any vegetables?	|____|
	4. Any fruits?	|____|
	5. Any eggs?	|____|
	6. Any meats (camel, cattle, chicken, poultry/fowl, sheep, lamb, and organ meats (heart, liver, kidney, etc)?	|____|
	7. Any fish or dried fish?	
	8. Any foods made from beans, peas, lentils, or nuts?	|____|
	9. Any milk, yogurt, cheese, or other milk product?	|____|
	10. Any foods made with oil, fat, ghee, or butter?	|____|
	11. Any sugar or honey?	|____|
	12. Any other condiments (coffee, pilipili, tea)?	|____|
		|____|
6.2	**What have been the SOURCES OF FOOD for your household in the LAST 30 DAYS? What percentage of the total came from each source?** *proportional piling to determine the percentages)*	
	1. Own farm production (crops, vegetable, fruit)	|____|
	2. Own livestock production (livestock products – e.g. milk, eggs)	|____|
	3. Own livestock production (meat)	|____|
	4. Purchase	|____|
	5. Credit	|____|
	6. Food aid	|____|
	7. Gift	|____|
	8. Other (specify)	|____|

7. HOUSEHOLDS INCOME AND EXPENDITURE		
7.1	**Please list all of the sources of income for your household in the last 30 days. What percentage of your income came from each source?** *(Use proportional piling to calculate the percentages)*	
	1. Agricultural / Horticulture products sale	|_____|
	2. Livestock sales	|_____|
	3. Livestock products sales (milk, eggs, honey, hide, skin etc)	|_____|
	4. Small business (shop)	|_____|
	5. Petty trade *(on adhoc basis)*	|_____|
	6. Bush products sales (charcoal, firewood, etc.)	|_____|
	7. Miraa sales	|_____|
	8. Food aid sales	|_____|
	9. Unskilled wage labour	|_____|
	10. Skilled wage labour	|_____|
	11. Remittances from family/relatives	|_____|
	12. Salary	|_____|
	13. Loans/credit	|_____|
	14. Barter/exchange	|_____|
	15. Other (Specify)_____	|_____|

7.2 What has the household spent on the following (only if bought with cash or on credit/bartered) IN THE LAST 30 DAYS	**Percentage of expenditure on each item/type (use proportional piling to calculate percentages)**	**7.3 How Item was Purchased (MAIN)** (1=Cash; 2=Credit; 3=Bartered item; 4=Other; 0=not purchased)
Cereals (Maize, rice etc)		
Vegetables & fruit		
Pulses (beans and peas)		
Meat, Fish, Egg		
Cooking oil, fats		
Milk & milk products		
Sugar		
Salt		
Coffee/Tea		
Water		
Medical expenses		
Rent (house or land)		
School fees/expenses		
Transportation		
Fuel		
HH items & clothing		
Miraa		
Agricultural inputs		
Livestock medication		
Debt repayments		
Other (specify)		

Annex V: MARKET PRICE LIST

MARKET PRICE DATA COLLECTION, SMART SURVEY:SUMMARY TABLE					
COMMODITY		**KINNA**	**DUSE**	**GARBATULLA**	
ESSENTIAL FOOD ITEMS	**RETAIL UNIT**	**AVERAGE (VENDOR 1-4)**	**AVERAGE (VENDOR 1-4)**	**AVERAGE (VENDOR 1-4)**	**AVERAGE**
Maize (dry)	1 kg	30	30	30	30
Maize (flour)	1 kg	50	50	50	50
Rice	1 kg	70	70	70	70
Wheat (wheel) flour	1 kg	70	70	70	70
Beans	1 kg	100	100	100	100
Potatoes	5 pieces	10	10	10	10
Sugar	1 kg	100	100	100	100
Cooking Oil	1 glass (250 ml)	35	35	35	35
Cowpeas	1 kg	0	0	0	0
Cow Milk	1 glass (250 ml)	15	15	15	15
Camel Milk	1 glass (250 ml)	15	15	15	15
Goat Milk	1 glass (250 ml)	15	15	15	15
Water	20 litre	25	25	25	25
Salt	1 packet (50 g)	7	7	7	7
Tea	1 packet (100 g)	20	20	20	20
Meat					
Cow	1 kg	220	220	220	220
Goat	1 kg	220	220	220	220
Mutton	1 kg	220	220	220	220
Camel	1 kg	190	190	190	190
Chicken	Per head	225	225	225	225
Livestock					
Cattle – Male (3 Yrs Old)	Per Head	14500	14500	14500	14500
Cattle – Female (3 Yrs Old)	Per Head	12500	12500	12500	12500
Camel – Male (4 Yrs Old)	Per Head	100250	100250	100250	100250
Camel – Female (4 Yrs Old)	Per Head	30000	30000	30000	30000
Goat – Male (Matured)	Per Head	4125	4125	4125	4125
Goat – Female (Matured)	Per Head	3625	3625	3625	3625
Sheep – Male (Matured)	Per Head	2575	2575	2575	2575
Sheep – Female (Matured)	Per Head	2575	2575	2575	2575
Vegetables and Fruits					
Onion	Per Piece	5	5	5	5
Tomato	Per Piece	10	10	10	10
Avocado	Per Piece	15	15	15	15
Green Pepper	Per Piece	10	10	10	10
Sukuma Wiki	Per Bundle	10	10	10	10
Paw Paw	Per Piece	18.75	18.75	18.75	18.75
Banana	Per Piece	5	5	5	5

Mango	Per Piece	3	3	3	3
Cabbage	Per Piece	20	20	20	20
Sugar Cane	Per Piece	1	1	1	1
Spinach	Per Bundle	10	10	10	10
Carrot	Per Piece	10	10	10	10

Annex VI: EVENTS CALENDAR

EVENTS CALENDER SMART GBT SEPT 2012							
MONTH	**Seasons**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
JANUARY	*BIRRA,* **HOT AND DRY SEASON**		**56** POST ELECTION VIOLENCE	**44**	**32**	**20**	**8**
FEBRUARY			**55**	**43**	**31**	**19** ACF ASSESSMENT	**7** ACF ASSESSMENT
MARCH			**54**	**42**	**30**	**18**	**6** BORANA/MERU CONFLICT IN KINNA
APRIL	*GAN,* **LONG RAINS**		**53**	**41** SAMBURU/BORANA CONFLICT	**29**	**17**	**5**
MAY			**52**	**40** CHOLERA OUTBREAK //MEASLES	**28** ELECTRONIC VOTER REGISTRATION	**16** ACF ASSESSMENT	**4** ACF ASSESSMENT; MALEZI BORA
JUNE	*HAGAY, ADOLES,* **COLD SEASON**		**51**	**39**	**27** ELECTRONIC VOTER REGISTRATION	**15**	**3** MEASLES MOP UP CAMAPIGNS/ CAR ATTACK AT GOTU
JULY			**50**	**38**	**26** REFERUNDUM CAMPAIGNS	**14**	**2** HOLY MONTH OF RAMADHAN
AUGUST			**49**	**37** KENYA POPULATION CENSUS	**25** RAMADHAN, REFUNDUM VOTES	**13** HOLY MONTH OF RAMADHAN	POLIO CAMPAIGN 1
SEPTEMBER	*BON ,* **DRY SEASON**		**48** BEGINNING OF RAMADHAN	**36** HOLY MONTH OF RAMADHAN	**24** ID AL FITRI	**12** ID AL FITRI; ACF SURVEY	**0**
OCTOBER	*AGAY,* **SHORT RAINS**	**59** IDDUL -FITR, START OF HEAVY RAINS	**47** END OF RAMADHAN	**35** ID AL FITRI	**23**	**11** HEAVY RAINS AND FLOODING IN GBT	
NOVEMBER		**58** GBT ELEVATED TO A DISTRICT	**46** OBAMA ELECTED	**34**	**22** IDUL ARHA	**10** MALEZI BORA CAMPAIGNS	
DECEMBER		**57** GENERAL ELECTIONS	**45**	**33**	**21**	**9** CANCELLATION OF KCPE RESULTS IN KINA	

Annex VII: CHART FOR CALCULATING AGE IN MONTHS

(Accurate at September 2012:

Please cross- check against data of birth of child and date of survey to establish actual age)

DATE OF BIRTH	AGE IN MONTHS	DATE OF BIRTH	AGE IN MONTHS
October - 2007	59	January 2011	20
November - 2007	58	February 2011	19
December - 2007	57	March 2011	18
January - 2008	56	April 2011	17
February- 2008	55	May 2011	16
March - 2008	54	June 2011	15
April - 2008	53	July 2011	14
May - 2008	52	August 2011	13
June - 2008	51	September -2011	12
July - 2008	50	October- 2011	11
August - 2008	49	November – 2011	10
September -2008	48	December – 2011	9
October- 2008	47	January – 2012	8
November – 2008	46	February – 2012	7
December – 2008	45	March – 2012	6
January – 2009	44	April – 2012	5
February – 2009	43	May-2012	4
March – 2009	42	June 2012	3
April – 2009	41	July 2012	2
May – 2009	40	August 2012	1
June– 2009	39	September 2012	0
July – 2009	38		
August– 2009	37		
September – 2009	36		
October – 2009	35		
November – 2009	34		
December – 2009	33		
January 2010	32		
February 2010	31		
March 2010	30		
April 2010	29		
May 2010	28		
June 2010	27		
July 2010	26		
August 2010	25		
September 2010	24		
October 2010	23		
November 2010	22		
December 2010	21		

Annex VIII: SAMPLED VILLAGES AND ASSIGNED CLUSTER NUMBERS

CLUSTER	VILLAGE	CLUSTER	VILLAGE	CLUSTER	VILLAGE	CLUSTER	VILLAGE
1	Tanna	13	Kombola North	25	Bulla s	RC	HADHA (ELDERA)
2	Boji North	14	BisanDero	26	Hadha (Quri)	RC	DUSE
3	Matagari B	15	Latta	27	Gubatu	RC	TAQWA
4	Koropu/Town Center B	16	Koticha A	28	BiliqiNuru	RC	BULLA SOUTH
5	Kiwanjani	17	Koticha B	29	Sericho North		
6	Town	18	Koticha D	30	Sericho South		
7	KambiSamaki	19	Rapsu C	31	Sericho Central		
8	Darga	20	JilloDima	32	Central B		
9	Madokone	21	Kinna Town	33	Bulla Juu		
10	GafarsaMkt 2	22	KONE KALO	34	Fourty Four		
11	GafarsaMkt 5	23	YAQBASADI	35	Lalafto		
12	GafarsaMkt 7	24	BULLA TOWN	36	Badana		