SMALL SCALE SMART SURVEY REPORT, GARISSA COUNTY

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ACRONYMS AND ABBREVIATIONS

ACF	– Action Against Hunger
ARI	– Acute Respiratory Infection
CED	– Chronic Energy Deficiency
CI	– Confidence Interval
CSB	– Corn Soya Blend
ENA	– Emergency Nutrition Assessment
FANTA	– Food and Nutrition Technical Assistance
GAM	– Global Acute Malnutrition

GS – Growth Standards
HFA – Height-for-Age
ITN – Insecticide Treated Nets
MoMS – Ministry of Medical Services
MoPHS – Ministry of Public Health and Sanitation
MUAC – Mid-Upper Arm CircumferenceNDMA
NDMA –National Drought Management Authority
NGO – Non-Governmental Organization
PPS – Probability Proportional to Population Size
PRRO – Protracted Relief and Recovery Operation
SAM – Severe Acute Malnutrition
SCM – Severe Chronic Malnutrition
SD – Standard Deviation
SFP – Supplementary Feeding Programme
SMART – Standardized Monitoring and Assessment of Relief and Transitions
SPSS – Statistical Package for Social Scientists
TDH – Terre des Hommes
UNICEF – United Nations Children's Fund
USAID – United States of America International Aid
WFA – Weight-for-Age
WFH – Weight-for-Height
WHO – World Health Organization

SUMMARY OF KEY FINDINGS

Table 1 Summary of Findings

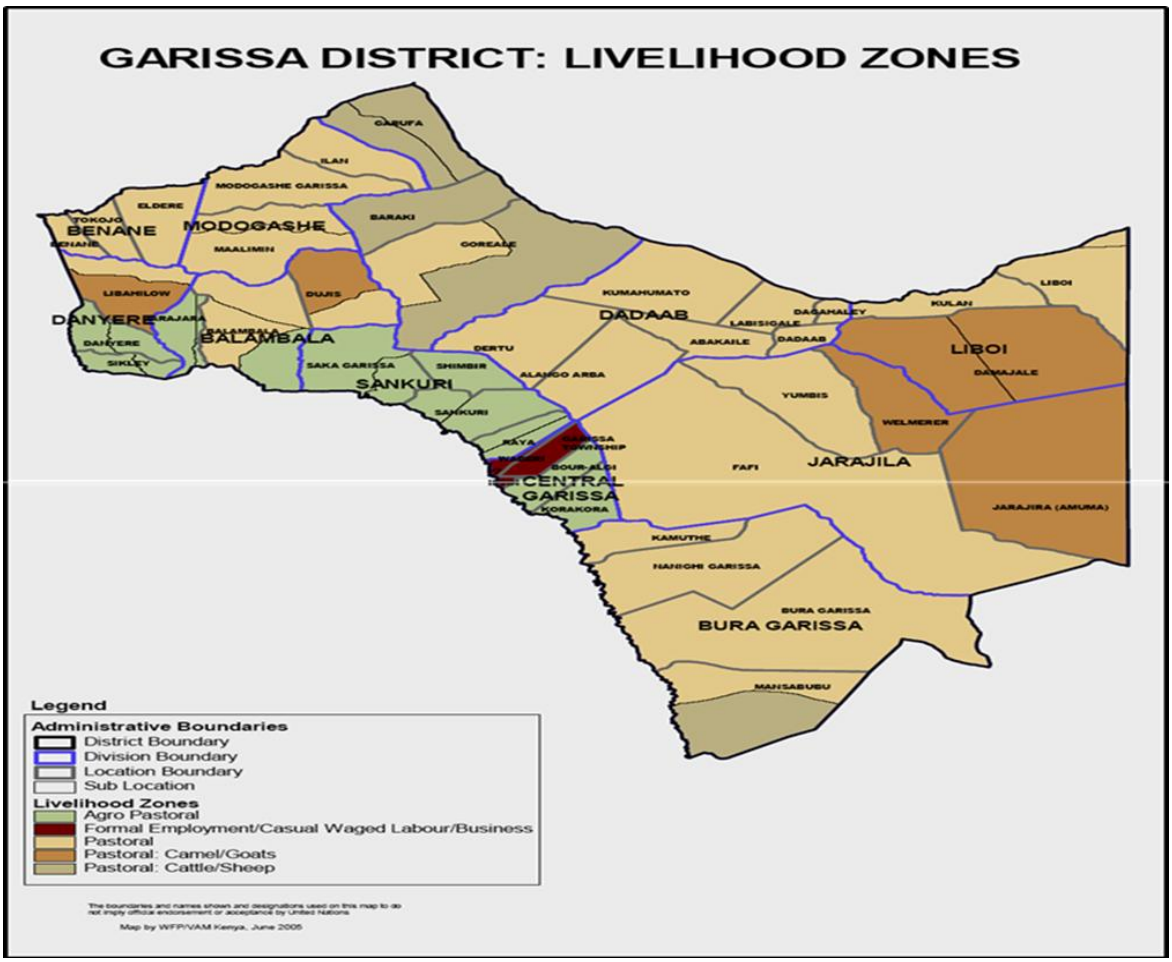
DEMOGRAPHY		Number	
Number of HH surveyed		456	
Number of children 6-59 months surveyed		706	
Average number of children 6-59 per HH		1.5	S.D = 2.3
Characteristic	**N**	**% (95% CI)**	
Overall GAM (WFH <-2 Z score or presence of oedema) - WHO 2006	699	15.2 % (11.9 - 19.1)	
Overall SAM (WFH <-3 Z score or presence of oedema) - WHO 2006	699	2.7 % (1.7 - 4.2.)	
Overall underweight (WFA <-2 Z score or presence of oedema) - WHO	695	14.2 % (11.4 - 17.7)	
Overall Severe underweight (WFA <-3 Z score or presence of oedema) -WHO	695	1.6 % (0.9 - 2.9)	
Overall stunting (HFA <-2 Z score) - WHO	675	14.7 % (12.2 - 17.5)	
Overall Severe stunting (Height for age <-3 Z score) -WHO	675	3.1 % (2.2 - 4.4)	
6-59 months MUAC (<12.5cm)	708	2.8 %	
child morbidity 2 weeks prior to survey	708	40.4%	

1 INTRODUCTION

Background Information

Garissa County is located in North Eastern province and covers an area of 34,389.7km$^{2.}$ It has an estimated population of 632,060 persons[1] and an estimated under-5 target population of 18 %. The County receives a bimodal rainfall with a long term average of 250-300mm and is classified as semi-arid with annual mean temperatures ranging between 33^{0}C and 42^{0}C. The short rains, which are most reliable, fall between mid-October to December while the long rains are experienced between mid-March to June. Over 40 percent of the population are pastoralists.

Figure 1 MAP OF GARISSA COUNTY



The County has been under emergency food operation since the year 2000. Mercy-USA, through UNICEF and OFDA funding, has been implementing Nutrition programmes in Garissa County since April 2011. Mercy-USA partners with MOH in strengthening the health system for nutrition & health interventions through treatment of malnourished children through

[1] KNBS, 2009 Population Projections

supporting implementation of the High Impact Nutrition Interventions (HINI).

The percentage of children above one (1) and below five (5) at risk to malnutrition increased when compared with the previous month. The current rate is at 16.41% which is above the long term rate of 9.8%[2] .The worsening trend was attributed to: poor performance of short rains season, human wildlife conflicts, recurrent resource conflicts, perceived insecurities and prevalence of pests and diseases in crop and livestock such as tomato leaf miner (Tuta absoluta) in tomatoes, Foot and Mouth Disease, Lumpy Skin Disease, Contagious Bovine Pleuropneumonia, Contagious Caprine Pleuropneumonia in cattle, sheep and goats and Hemorrhagic septicemia in camels,[3] low livestock products (milk and meat) increasing incidence of child related illness, and reduced nutritional supplementation in the county[4].

All livelihood zones in the county are in alarm stage of the drought and the trend is worsening, the drought risk is moving towards high and may lead to depletion of all the copying mechanism employed by the pastoralist /agro pastoralist[5]. The above factors lead to the need of conducting a survey to evaluate the extent and severity of malnutrition among children aged 6-59 and recommend appropriate actions to take. The survey area covered three sub counties of Garissa County namely: Balambala, Dadaab and Lagdera. The survey was carried out between 9th Feb, 2015 to 15th feb, 2015 by Mercy-USA in collaboration with MOH, NDMA, ACF and TDH.

Table 2 Timing of the Survey (Including Seasonal Calendar)

Jilal	Guu	Hagaa	Deer
Dry period January to March. Temperatures are high. Activities carried out include: • Migration of livestock for pasture & water search • Herd separation • Livestock marketing • Pressure on boreholes	Long rainy season starts late March through May. Activities carried out include: • Selection/breeding of livestock • Weeding ceremonies • Weaving • Male circumcision • Restocking of livestock • Planting for rain fed crops • Deworming of livestock	Dry and cold period from June, through mid-October. Activities carried out include: • High rate of livestock and household migration • High labour demand • Destocking/culling • Surveillance for pasture /browse • Caravan water trekking	Short rainy season from October to December. Activities carried out include: • Restocking of livestock. • Breed improvement • Planting for rain fed crops • Crafts and weaving • Calving and kidding period

[2] Garissa NDMA monthly bulleting January 2015.
[3] Garissa SRA ,February 2015.
[4] Garissa NDMA monthly bulleting January 2015
[5] Garissa NDMA monthly bulleting January 2015

2 METHODOLOGY

Three different sampling methodologies were applied Emergency Nutrition Assessment (ENA) for Standardised Monitoring of Relief and Transition (SMART) was used to calculate anthropometric data. This was guided both by the National Guidelines for Nutrition and Mortality Assessments in Kenya and the recommended UNICEF nutritional survey key indicators.

In calculating the anthropometric sample size, the following boundaries were used: a GAM prevalence of 14.6%[6], desired precision of 4%, a design effect of 1.32, an estimated household size of 6[7] persons, 18%[8] < 5 years and non-response rate of 3%. These gave a sample size of 430 children (6-59 months) and a household sample size of 456 households.

The second sampling stage comprised of village/clusters and household selection. In order to select survey clusters, the names of the villages, with their respective population sizes and the required number of clusters was entered into the SMART software, which generated the actual list of the villages surveyed (including reserve clusters). At the field level, the names of all the household heads were collected and 18 households were chosen randomly.

Table 3 Anthropometric and Mortality Sample Size Calculation

Data entered on ENA software	Anthropometric sample	Rationale
Estimated prevalence	14.6	point estimate because no significant increase has been noted in MAM and SAM admissions reported from routine HIS data
Desired precision	4	The higher the malnutrition prevalence, the lower the precision
Design effect	1.32	2014 june SMART survey
Average household size	6	Finding from SMART Survey, April 2011
Percent of under five children	18%	2009 Kenya Population and Housing Census
Percent of non-respondent	3	To cater for unseen /anticipated circumstances

[6] GAM 14.6% point estimate of the 2014 June SMART survey

[8] Population Estimates, 2009 Census

Households to be included	456	
Children to be included	430	

Figure 2 SURVEY SCORES

Indicator	Survey value	Acceptable value/range	Interpretations/ Comments
Digit preference score – weight	0	<10	Excellent
Digit preference - height	0	<10	Excellent
WHZ (Standard Deviation)	0	0.8-1.2	excellent
WHZ (Skewness)	0	-1 to +1	Excellent
WHZ (Kurtosis)	0	-1 to +1	Excellent
Percent of flags WFH	0	<3%	Excellent
Poisson	0		Excellent
Overall Age distribution (%)	0		Excellent
Overall Sex Ratio	2	0.8-1.2	Excellent
Overall Survey Score	2		Excellent

2.1 Description of Sampling Methods

Number of households surveyed was 456 was given by ENA software. The number of households to be surveyed divided by the number of household to be reached per day (18) gave a total of 25 clusters to be surveyed. A total of 6 survey teams, each comprising of 1 team leader and 2 enumerators, collected the data for 5 days. Survey teams first reported to the area chief, assistant chief or a village elder who acted as a local guide. A total of 708 children were sampled and measured for anthropometry. However, two sub-counties (Dadaab and lagdera) reported to have more boys than girls in the under 5 years population.

2.2 Data to be Collected, and Data Collection Methods and Tools

To estimate malnutrition prevalence the following information was collected:

- Anthropometry
    - *Weight*: Taken by use of a digital bathroom scale to the nearest 0.1 Kgs. All scales

were calibrated using standard measures.

- *Height*: Either height or length measurements were taken based on the age of the child. Recumbent length was taken for all children less than two years (<24 months) with height taken for all children two years and above using a calibrated height board.
- *Oedema*: Assessed by exerting pressure on both feet for three seconds by the thumb with emphasis on bilateral oedema.
- *MUAC*: Assessed by use of MUAC tape on the left hand of the child and caregiver.
- *Age*: Birth certificate and birth notification was used as the primary source of information for this. In the event that a caretaker lacked this then the calendar of events was used.
- *Sex*: recorded as either male or female.

2.5 Training

The team was trained for 3 days from 9th feb, 2015 to 11th Feb, 2015. This training covered: nutrition survey objectives, anthropometric measurements, interviewing techniques, and completion of questionnaires. To check understanding, a standardization test was also done.

2.6 Data Entry and Analysis

Anthropometric data was entered daily from the field to ensure quality of data using the SMART/ENA software. All the other quantitative data was entered and analyzed in the SPSS (Version 16.0) computer package.

2.7 Survey Limitations

There were inherent difficulties in determining the exact age of some children (even with use of the local calendar of events). Recall bias may be linked to wrong age which then leads to wrong weight for age and height for age indices.

3. RESULTS

Table 1 Distribution of Age and Sex of Sample

	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	91	55.8	72	44.2	163	23.2	1.3
18-29	98	53.8	84	46.2	182	25.9	1.2
30-41	70	50.4	69	49.6	139	19.8	1.0
42-53	72	52.2	66	47.8	138	19.7	1.1
54-59	42	52.5	38	47.5	80	11.4	1.1
Total	373	53.1	329	46.9	702	100.0	1.1

The overall sex ratio was 1.1 which is within the range of 0.8-1.2[9]. The age group 18-29 was the most represented at 25.9%. Boys were more represent than girls at 53.1%.

Figure 3 Population and Sample Distribution Curve

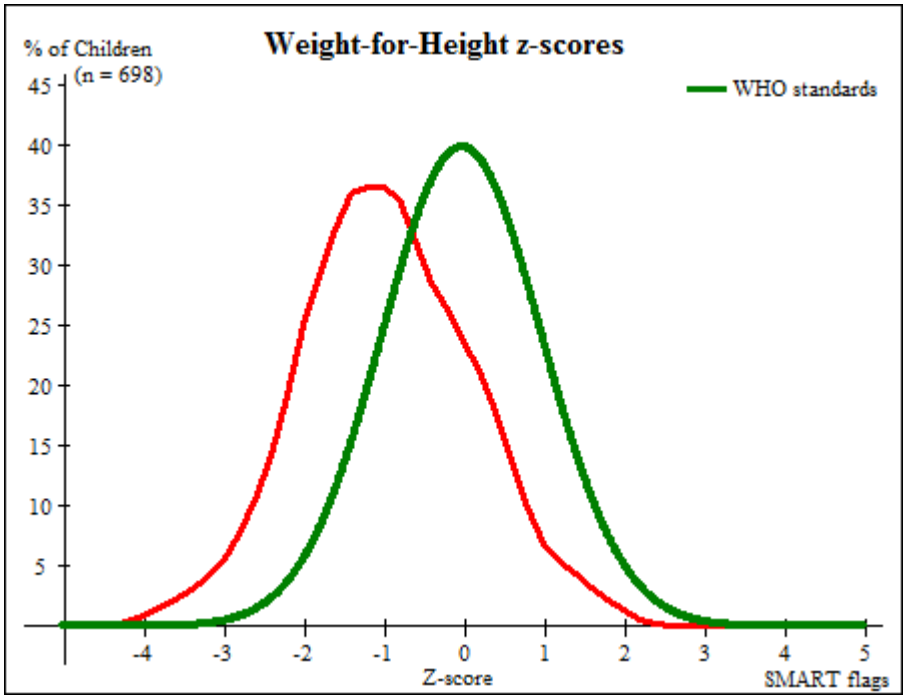


Table 2 Prevalence of Acute Malnutrition based on weight-for-height z-scores (and/or oedema)

[9] Prudhorn, Caludine. Assessment and Treatment of Malnutrition in Emergency Situations. Action Against Hunger, 2002

and by sex

	All n = 699	Boys n = 370	Girls n = 329
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(106) 15.2 % (11.9 - 19.1 95% C.I.)	(67) 18.1 % (13.5 - 23.8 95% C.I.)	(39) 11.9 % (8.6 - 16.1 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(87) 12.4 % (9.3 - 16.4 95% C.I.)	(54) 14.6 % (10.2 - 20.5 95% C.I.)	(33) 10.0 % (6.9 - 14.3 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(19) 2.7 % (1.7 - 4.2 95% C.I.)	(13) 3.5 % (2.1 - 5.8 95% C.I.)	(6) 1.8 % (0.8 - 4.1 95% C.I.)

Table 3 Prevalence of Acute Malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	161	4	2.5	10	6.2	147	91.3	0	0.0
18-29	177	4	2.3	13	7.3	160	90.4	0	0.0
30-41	138	3	2.2	19	13.8	115	83.3	1	0.7
42-53	138	5	3.6	23	16.7	110	79.7	0	0.0
54-59	79	2	2.5	21	26.6	56	70.9	0	0.0
Total	693	18	2.6	86	12.4	588	84.8	1	0.1

For GAM boys were more malnourished than girls but the difference was not statistically significant. A GAM of 15.2% according to WHO is classified as critical with aggravating factors in the community. Moderate cases of malnutrition were recorded highest among children between 54-59 months at 26.2% . While for severe wasting the most affect age group was 42-59 months at 3.6%.

The County is currently classified under 'Stressed' food security phase (IPC Phase 2) across all livelihood zones. However, some parts in the pastoral livelihood zone including Balambala, Banane, Danyare, Modogashe and Shanta-Abak are classified under "Crisis" food security phase

(IPC phase 3). Garissa town and Masalani are classified under "Normal" food security phase. [10]

Table 4 Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 1 (0.1 %)
Oedema absent	Marasmic No. 20 (2.8 %)	Not severely malnourished No. 686 (97.0 %)

The prevalence of oedema was 0.1 %with 2.8% of the children being marasmic and 0.1% children are suffering from kwashiorkor.

Table 4 Prevalence of Acute Malnutrition based on MUAC cut off's (and/or oedema)

	All n = 708	**Boys** n = 373	**Girls** n = 335
Prevalence of global malnutrition (< 125 mm and/or oedema)	(20) 2.8 % (1.8 - 4.5 95% C.I.)	(13) 3.5 % (1.9 - 6.2 95% C.I.)	(7) 2.1 % (1.0 - 4.4 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(16) 2.3 % (1.3 - 4.0 95% C.I.)	(10) 2.7 % (1.3 - 5.4 95% C.I.)	(6) 1.8 % (0.7 - 4.2 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(4) 0.6 % (0.2 - 1.5 95% C.I.)	(3) 0.8 % (0.3 - 2.5 95% C.I.)	(1) 0.3 % (0.0 - 2.2 95% C.I.)

Using the MUAC criteria to assess nutritional status, 4 (0.6%) children were severely malnourished with a MUAC <11.5cm while 16 (2.3%) had moderate malnutrition with total GAM cases of 2.8%.

Table 5 Prevalence of Underweight based on weight-for-age z-scores by sex

	All n = 695	**Boys** n = 370	**Girls** n = 325
Prevalence of underweight (<-2 z-score)	(99) 14.2 % (11.4 - 17.7 95% C.I.)	(67) 18.1 % (13.9 - 23.3 95% C.I.)	(32) 9.8 % (6.9 - 13.9 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(88) 12.7 % (10.0 - 15.9 95% C.I.)	(58) 15.7 % (11.7 - 20.7 95% C.I.)	(30) 9.2 % (6.4 - 13.2 95% C.I.)

[10] Garissa SRA February 2015.

Prevalence of severe underweight (<-3 z-score)	(11) 1.6 % (0.9 - 2.9 95% C.I.)	(9) 2.4 % (1.3 - 4.6 95% C.I.)	(2) 0.6 % (0.1 - 2.6 95% C.I.)

Table 7 Prevalence of Underweight based on weight-for-age z-scores by age

		Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	161	1	0.6	14	8.7	146	90.7	0	0.0
18-29	180	4	2.2	24	13.3	152	84.4	0	0.0
30-41	138	4	2.9	19	13.8	115	83.3	1	0.7
42-53	137	2	1.5	17	12.4	118	86.1	0	0.0
54-59	79	0	0.0	14	17.7	65	82.3	0	0.0
Total	695	11	1.6	88	12.7	596	85.8	1	0.1

Overall, boys were more underweight than girls. Children in the age group 18-29 months were severely underweight and 54-59 months were moderately underweight.

Table 6 Prevalence of Stunting based on height-for-age z-scores and by sex

	All n = 675	Boys n = 359	Girls n = 316
Prevalence of stunting (<-2 z-score)	(99) 14.7 % (12.2 - 17.5 95% C.I.)	(62) 17.3 % (13.5 - 21.8 95% C.I.)	(37) 11.7 % (9.1 - 15.0 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(78) 11.6 % (9.3 - 14.2 95% C.I.)	(47) 13.1 % (9.3 - 18.1 95% C.I.)	(31) 9.8 % (7.2 - 13.2 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(21) 3.1 % (2.2 - 4.4 95% C.I.)	(15) 4.2 % (2.7 - 6.3 95% C.I.)	(6) 1.9 % (0.9 - 4.0 95% C.I.)

Table 8 Prevalence of Stunting based on height-for-age z-scores and by age

		Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
Age (mo)	Total no.	No.	%	No.	%	No.	%
6-17	154	5	3.2	7	4.5	142	92.2
18-29	174	4	2.3	40	23.0	130	74.7
30-41	135	8	5.9	16	11.9	111	82.2
42-53	133	3	2.3	12	9.0	118	88.7
54-59	79	1	1.3	3	3.8	75	94.9
Total	675	21	3.1	78	11.6	576	85.3

Boys were more stunted than girls.children aged 30-41 months were severely stunted while 18-29 months were most affected in regards to moderate stunting.

Table 9: Prevalence of overweight based on weight for height cut off's and by sex (no oedema)

	All n = 699	Boys n = 370	Girls n = 329
Prevalence of overweight (WHZ > 2)	(1) 0.1 % (0.0 - 1.1 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(1) 0.3 % (0.0 - 2.3 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

Prevalence of overweight was at 0.1% with girs overweight.

Table 10: Mean z-scores, Design Effects and excluded subjects

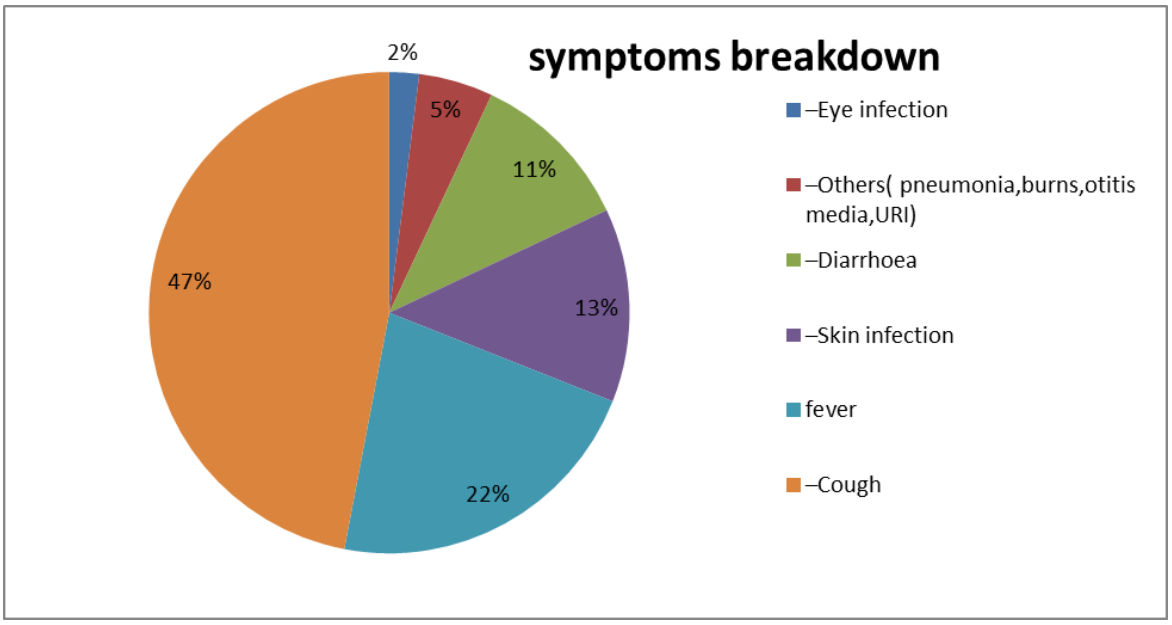
Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	698	-0.95±1.07	1.66	2	8
Weight-for-Age	695	-0.99±0.93	1.31	7	6
Height-for-Age	675	-0.68±1.18	1.00	7	26

Children's Morbidity

The common causes of morbidity in the three sub-Counties included cough, fever, skin infections, diarrhoea, and eye infection.

The top five diseases among under-fives include; acute respiratory infections, diarrhea, pneumonia, ear infections and Urinary Tract infections while in general population leading diseases are: Upper Respiratory Tract Infections (URTIs), Urinary Tract Infections (UTIs), skin diseases, pneumonia and typhoid fever. The under-fives death rate and crude mortality rate was 0.48 deaths per10,000 persons per day and 0.43 deaths per 10,000 persons per day respectively which is below alert thresholds of 2 deaths per 10,000 persons per day and 1 per 10,000 persons per day.[11]

Figure 4 Symptoms Breakdown



[11] Garissa SRA February 2015

4 RECOMMENDATIONS

Issue	Possible Causes	Recommendation	By Who
High GAM of 15.2%	The state of water sources reduced to 3-4 in number depending , the seasonal water sources are drying and permanent water sources reduced discharge and flow levels Household's water availability reduced due to increasing distance, congestions at water points and high cost of water. Water accessibility to livestock continue to decrease with the drying of pans, increase in trekking distances to water sources and reduced discharge/flow in permanent water sources leading to congestion and increasing cost of watering livestock. Milk production continue to decline with an average consumption of 0.5 litres Other food prices are high but stable and pastoralist purchasing powers have reduced leading to low terms of trade. Irrigation farming continued	**Immediate** a) Increased active case finding at community level-Probably by identifying the hotspots (analysis based on routine data acknowledging its limitations) and conduct mass MUAC screening using the existing community structures. b) Re-mapping of outreaches to increase geographical coverage. c) Adaption of the scalability model/Surge model and Increase access based on the situation. d) Supplement water trucking by county government in areas with acute water shortages e) General Food Distribution (GFD) to the most affected communities. **Long Term** f) Sensitize MOH/HRIO?NDMA on analyzing, interpreting and utilization of surveillance data through continuous data monitoring on monthly/quarterly basis. g) Capacity assessment to be done to Community health volunteers so that there training/OJT needs can be met on the nutrition package . h) Livelihood programs at the	MOH, UNICEF, MERCY-USA, TDH,NDMA OTHER PARTNERS DOING NUTRITION.

	during the month but no crops were planted under rain fed farming because of early session and poor performance of the short rains season.	community level to cushion households with children discharged from the nutrition programs. i) Increase the number of CHEWS to support the community units. j) Multi sectoral approach in managing malnutrition.	