

NUTRITION ASSESSMENT REPORT

**ELBARDE, HUDDUR AND RABDURE PASTORAL DISTRICTS
BAKOOL REGION, SOMALIA**

**Food Security Analysis Unit (FSAU/FAO)
United Nation Children Funds (UNICEF)
International Medical Corps (IMC)**



April 2008



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ACKNOWLEDGEMENT

The Nutrition Surveillance Project of the Food Security Analysis Unit (FSAU) acknowledges the participation of UNICEF and International Medical Corps (IMC) in the nutrition survey among the pastoralist population in Bakool region, Elbarde, Rabdure and Northern Huddur districts. FSAU provided technical support including two assessment coordinators and six supervisors, FSAU also financed the cost of transport, supervisors, nurses, team leaders, enumerators and data entry clerks. UNICEF provided funding for the transport costs, while IMC provided logistical and financial support for transport of the participants and the training venue, they also assisted in providing staff; supervisors, nurses, team leaders and enumerators during the nutrition assessment.

Special thanks goes to the mothers, caregivers, leaders and the community as a whole in Bakool Region for their cooperation, time and for providing information individually and/or in focus group discussions that helped the survey team to get a better understanding of the nutrition situation in the area.

Comments from partners in Bakool Regions, local community and members of the Nutrition Working Group in Nairobi on the preliminary results are also highly appreciated. FSAU also expresses sincere appreciation to the assessment team for their high level of commitment demonstrated during all stages of this assessment.

EXECUTIVE SUMMARY

Bakool region comprises of five districts that are Huddur, Tieglow, Wajid, Elberde and Rabdure. The region is predominantly agro pastoral with exception of southern inland pastoral livelihood zone located in Elberde district and parts of Rabdure and Northern Huddur. The southern inland pastoralists keep mainly camel, sheep and goats.

A rapid nutrition assessment carried out in December 2007 among 500 children screened from five villages in Elberde district indicated a **Critical** nutrition situation. Data from feeding centres in Elberde town, Qurajome and Elbarde MCH showed an increase in the admission of acutely malnourished children, although more accurate information was lacking due to inaccessibility caused by insecurity in the area. Consequently there was great need to carry out a nutrition survey and determine the malnutrition levels in the area to duly inform on the intervention responses required in the region. From 3rd to 16th April 2008, FSAU in partnership with UNICEF and IMC conducted a nutritional assessment among the southern inland pastoral population in Elbarde and parts of Rabdure and Huddur districts. The main objective of the survey was to determine the level of wasting among children aged 6-59 months, and to analyze the possible factors contributing to acute malnutrition namely; dietary diversity, morbidity, care practices and mortality rates in the southern inland pastoralists of Bakool region. Using two-stage cluster probability proportional to size sampling (PPS) methodology, a total of 502 children, from 255 households aged 6 – 59 months were assessed, while 882 households were assessed for mortality. The mean household size was **5.9 (±2.2)**, while the mean number of children under five was **2.1 (±0.8)**.

The results indicate a global acute malnutrition (GAM -weight for height <-2 Z score or oedema) rate of **24.1%** (18.5 – 29.7) and severe acute malnutrition rate (SAM weight for height <-3 or oedema) of **2.8%** (1.2 – 4.4). This indicates a **Very Critical** nutrition situation based on WHO classification. Although a direct comparison is not possible due to seasonal variations, these findings at the start of the *Gu* season (April 08) indicate a deterioration from the last nutrition survey conducted in the *Deyr 07* season December 2006, which indicated a GAM of **17.7%** and **3.2%**. Based on NCHS, the stunting and underweight rates reported were **14.5%** (10.3 – 18.8) and **34.5%** (30.0 – 38.9) respectively. No oedema cases were reported. The 90 days retrospective crude and under five mortality rates were estimated at **0.59** (0.34 – 0.93) and **1.08** (0.0 – 2.17) deaths/10,000/day respectively, and are both at **alert** levels according to the WHO classification. Majority of the reported deaths for children <5 years were caused mainly by diarrhoea, followed by acute respiratory illness (ARI), and suspected measles. Other reported causes of death among adults were complications arising during birth, accidents and anaemia. The integrated analysis of the nutrition situation in the pastoral areas of Bakool region conducted in January 2008 indicated a **Critical** situation with likelihood to worsen. As predicted, the current findings now show that the nutrition situation in the area has deteriorated to **Very Critical** levels.

High morbidity rates were reported in the study population with **43.2%** of the assessed children reportedly suffering from one or more communicable childhood diseases in the two weeks prior to the assessment. The incidences of reported diarrhoea, ARI, suspected malaria/febrile illness in Elbarde were **28.6%**, **30.6%**, **13.0%** respectively. However, Rapid Diagnostic Tests (RDT) conducted for malaria confirmed only **3.4%** cases of malaria as positive for *Plasmodium falciparum*. The reported suspected measles was low but significant at **1.5%** (0.0 – 3.5). These levels were consistent with seasonal morbidity patterns recorded from the health facilities.

Previous studies have shown strong associations with morbidity, however, in this survey analysis did not show any direct association between morbidity and acute malnutrition, it is valuable to note that the proportion of children that were both acutely malnourished and ill in the two weeks prior to the assessment was significant, given that almost half (**44.6%**) of the children reported to be ill two weeks prior to the assessment were also malnourished (GAM -weight for height <-2 Z score or oedema). In addition, it was noted that **30.5%** of the children reported to have suffered from diarrhoea, and **33.1%** reported to have suffered from acute respiratory illness (ARI) were also malnourished. Adequate and appropriate water, health and sanitation facilities remain lacking, with as little as **12.5%** of the households having access to clean drinking water, a deplorable **4.3%** of the households having toilet facilities, and barely **14.2%** of the children who were reported to be sick visiting a health facility or clinic for treatment. Consumption of water from unsafe sources was a predisposing factor to water borne illness such as diarrhoea and cholera while limited access to health services may have lead to complications of these curable diseases and contributed to acute malnutrition and death. Poor coverage for health programmes is a crucial risk factor to the very critical nutrition situation in the study area. Measles vaccination coverage for eligible children (9-59 months old) in the study population was very low at **32.6%**, as was coverage for

vitamin A supplementation at **32.8%** and polio immunization at **48.2%**, all fell absolutely below the recommended 95% level (Sphere, 2004). The lack of sufficient and effective coverage of health services has deprived children of the associated health and nutritive benefits.

Poor feeding practices persist in Bakool region like in other parts of Somalia and have been associated with high levels of acute malnutrition. Most children are introduced to breastfeeding very late after 2-3 days after birth, vis a vis the recommended 1-2 hours. Additionally they are also introduced to complimentary foods after 2-3 days contrary to recommended international standard of age 6 months, with **86.7%** being given other foods at less than 3 months of age. Persistent, breastfeeding does not continue to the recommended 24 and months above, with **95.2%** of ceasing breastfeeding at age 18 months and below. At the time of the assessment, **61.4%** of the children below the age of 24 months were breastfeeding. Furthermore, only **27.7%** of the children aged 6-24 months were fed the recommended five times in a day. While there was no statistical association between malnutrition and complimentary feeding frequency, it is critical to note that **82.3%** of the malnourished children were fed less than 5 times a day. In spite of this, analysis of distribution of levels of acute malnutrition between the different age groups did not show a significant difference in the likelihood of acute malnutrition between the breastfeeding age groups and older children. Poor breastfeeding practices not only deny the children the multiple nutritive and health benefits associated with breastfeeding but also expose them to malnutrition, morbidity and even death.

The food security and nutrition situation remains precarious owing to major water shortages for human and livestock consumption, poor livestock body conditions, animal diseases and deaths, decline in the production of milk and reduced livestock prices coupled with high inflation and increased food prices.¹ According to the survey, majority (**81.9%**) of the household's main source of income was through the sale of animals and animal products. **74.5%** of the households relied on purchasing as their main source of food. The main source of cereals for the household was through purchases (**80.7%**), while **38.4%** of the households main source of milk was through own production and **22.4%** through purchase. This was consistent with the poor wealth groups in the region². The remaining proportion of the households were not consuming milk, with a very small percentage (**<1%**) obtaining milk through gifts and bartering. Although there was no statistical association between acutely malnourished children and the household's food sources, it is essential to note that **77.6%** of the children who were acutely malnourished were from households, whose main source of food was through purchases, thus highlighting the nutritional vulnerability of this group. The mean number of food groups consumed 24 hours prior to the assessment in the households was **2.8 ±1.1**, with only **23.9%** of the assessed households consuming the recommended diversified diet of four or more food groups in a day. The main food groups consumed were cereals (**98%**), sugar (**82%**), milk (**62.4%**) and oils (**34.9%**) the remaining food groups; meat, pulses, roots, vegetables, fruits and fish were the least (**<10%**) consumed in the households, yet they are the main source of micronutrients. Further to this it is vital to note that although there was no statistical association between malnutrition and the number of food groups consumed by the children, **74.7%** of the malnourished children consumed less than 4 food groups in the 24 hours prior to the assessment. Only **28.2%** of the households were able to consume 3 meals a day, with a high number of the households (**67.1%**) consuming two meals a day and the remaining percentage consuming a meal a day.

In conclusion the nutrition situation in Elbarde district is **Very Critical**; there has been no improvement from the previous rapid assessment conducted in December 2007. Even though the key underlying factors affecting the nutritional status of the children i.e. morbidity, poor child care, lack of safe drinking water and limited sanitation and hygiene facilities remain key risk factors, it is important to note that food security, is also currently a critical factor affecting the nutrition status of the population. Low consumption of milk due to reduced production, increased food prices with majority of the households currently relying on purchase of food as their main source, reduced quantity and quality of food intake are also contributing factors to the current poor nutrition status among the study population. Specific recommendations are outlined below:

Immediate Interventions

- Urgent rehabilitation of acutely malnourished children through the existing selective feeding and outreach programs and active case finding until household food security is restored to prevent further deterioration. Capacity building

¹ FSAU Food Security Elbarde Pastoral Assessment Field Report April 2008

² Livelihood Baseline Profile, Southern Inland Pastoral

of the existing MCH and the community to manage acutely malnourished children through locally available resources.

- Water tankering for human and animal consumption, to assist in alleviating the water shortage. Intervention programmes on improving water, sanitation and hygiene practices including health education to educate the community on domestic treatment of drinking water should also be done to help prevent disease outbreaks. Proper sanitation practices should also be promoted.
- Improving coverage for health programmes, especially for measles, polio vaccination and vitamin A supplementation. Vigorous campaigns are required, to reduce the risk of disease. Care givers should also be trained on the need to let their children receive these services.
- Intensify nutrition and health education targeting children care givers with messages on the importance of exclusive breastfeeding, improved child-feeding practices appropriate health-seeking behaviour and improved hygiene & sanitation practices.

Long term Interventions

- There is need to focus on programmes that improve and sustain dietary diversity and consumption of micronutrient rich foods. Food distribution for pulses and micronutrient enriched oil could help improve dietary diversity especially among poor people. Promoting production and consumption of vegetables and fruits may also enhance dietary diversity especially for vitamin and minerals.
- To address the issues of limited access to safe water, there is a need for rehabilitation/protection of water systems including the well and water catchments. Potential for domestic water harvesting from the roofs and conservation could also be explored. The community should be trained on sanitation of the water systems.
- There is need for establishment or strengthening of health facilities and satellite services especially in rural villages where there are no health facilities. Cross border issues should also be monitored and addressed accordingly.
- Intensifying health and nutrition education activities at the household level to address care concerns, targeting mothers, and other caregivers. The main areas of focus should include promoting exclusive breastfeeding, appropriate young child feeding, diet diversification, and improvements in household hygiene including health care practices. Advocacy campaigns on domestic water treatment such as boiling of drinking water to minimise risks of water born diseases.
- Provision of sanitary facilities including large scale building of latrine at household level or at strategic locations in the region for appropriate disposal of human excretal waste. This should be coupled with awareness on the need to use such facilities.
- Providing appropriate veterinary services and programmes in the area for livestock treatment, care and inoculation to promote animal health, as this is the main source of income among the pastoralists.

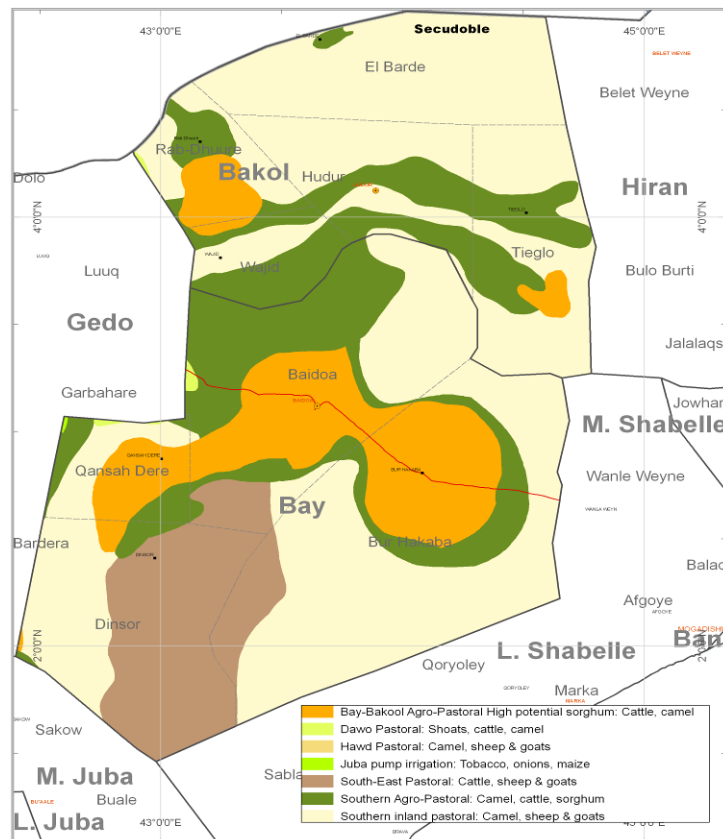
SUMMARY TABLE OF ASSESSMENT RESULTS

Indicator	N	%	95% CI
Total number of households surveyed	255	100	
Mean household size	5.9		±2.2
Total number of children assessed	502	100	
Child Sex:			
Males	254	50.6	46.0 – 55.2
Females	248	49.4	44.8 – 54.0
Global Acute Malnutrition GAM (WHZ<-2 or oedema)	121	24.1	18.5 – 29.7
Severe Acute Malnutrition SAM (WHZ<-3 or oedema)	14	2.8	1.2 – 4.4
Oedema	0	0.0	-
Global Acute Malnutrition (WHO Anthro 2005)	133	26.5	22.5 – 30.5
Severe Acute Malnutrition (WHO Anthro 2005)	29	5.8	3.6 – 7.9
Global Acute Malnutrition (WHM<80% or oedema)	76	15.1	10.3 – 19.9
Severe Acute Malnutrition (WHM<70% or oedema)	6	1.2	0.0 – 2.4
Proportion of stunted children (HAZ<-2)	73	14.5	10.3 – 18.8
Proportion of underweight children (WAZ<-2)	173	34.5	30.0 – 38.9
Total children acutely malnourished (MUAC< 12.5cm or oedema; N=439)	25	5.7	3.0 – 8.4
Total women acutely malnourished (MUAC <18.0 cm) N= 255	14	5.5	2.6-8.4
Total pregnant women acutely malnourished (MUAC <23.0 cm) N=14	14	42.4	22.8-62.1
Children severely malnourished (MUAC< 11.0cm or oedema; N=439)	3	0.7	0.0 – 1.5
Proportion of children with Diarrhoea in 2 weeks prior to assessment	144	28.7	18.1 – 39.3
Proportion of children with ARI within two weeks prior to assessment	154	30.7	18.6 – 42.7
Children with suspected malaria in 2 weeks prior to assessment	65	13.0	6.7 – 19.1
Suspected measles within one month prior to assessment (N=466)	7	1.5	0.0 – 3.5
Children (9-59 months) immunized against measles (N=466)	152	32.6	18.9 – 46.4
Children who have ever received polio vaccine	242	48.2	33.8 – 62.6
Children who received vitamin A supplementation in last 6 months	165	32.9	19.4 – 36.3
Maternal Tetanus Immunization	83	32.5	21.1-43.9
Proportion of households who consumed ≤3 food groups	194	75.8	70.1 – 80.9
Proportion of households who consumed ≥4 food groups	62	24.2	19.1 – 29.9
Proportion of children 6-24 months who are breastfeeding (N=166)	102	61.4	52.0 – 70.9
Under five Death Rate (U5DR) as deaths/10,000/ day		1.08	0.0 – 2.17
Crude Death Rate (CDR) as deaths/10,000/ day (N=882)		0.69	0.01 – 1.39

1 INTRODUCTION

1.1 Historical Context

Figure 1: Livelihood Zone Bakool Region



Bakool region in the southwest of Somalia comprises five districts - Huddur (the regional capital), Wajid, Tieglo, Rabdure and Elbarde. Elbarde district in Bakool region lies to the north of the region and neighbours Afdere and Godey regions of Ethiopia. The predominant livelihood is pastoralism (95%) mainly keeping camels, sheep and goats with the remaining percentage of the population being agro-pastoral, and the urban population in Elbarde town. The livelihood in the district has been adversely affected as a result of repeated rain failures.

South and Central Somalia including the Bakool Region have encountered a series of disasters, both natural (droughts, disease outbreak) and man-made (poor governance, sporadic armed conflict, widespread human rights abuses and displacement). This has limited the population's resilience to recover from shocks, disruption and/or total loss of livelihood systems. In most areas of the region the population relies on humanitarian aid for delivery of basic services, but these services are often disrupted by frequent insecurity, with a devastating impact on food security and nutrition in the region.

1.2 The Food Security Context

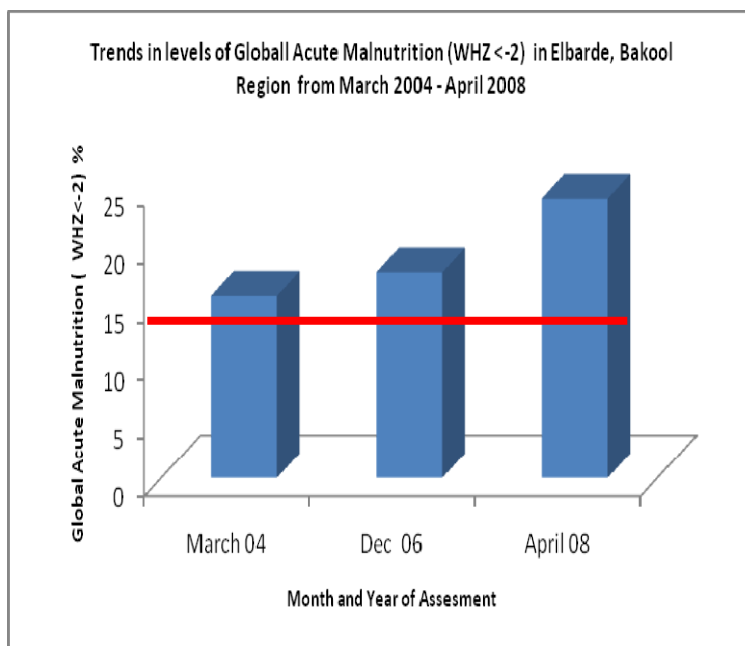
According to the FSAU post Deyr'07/08 integrated analysis, conducted in January 2008, the overall food security situation in Bakool region for the Elbarde southern inland pastoral livelihood zone was classified to be in **Acute Food and Livelihood Crisis (AFLC)**. The livelihood zone is closely related to water availability, the expected short rains in October and November failed leading to shortage of water in the area. Poor rainfall and associated crop failure was recorded in Elbarde, Rabdure, northern Wajid and southern parts of Tieglo and Huddur districts. Water, pasture and browse conditions deteriorated resulting in low milk production and livestock migration towards Bay region and across the border to Ethiopia. The purchasing power of the population has been reduced due to poor cereal production, limited access to job opportunities, low milk production for sale and increasing local cereal and imported prices. As a result poor households coped by selling of more livestock to access other food and non food items, a strategy that has led to reduction in herd sizes. A recent food security assessment conducted in April 2008 indicated further deterioration in the food security situation of the southern inland pastoral population. The main findings indicated that there was lack of adequate water for both human and livestock consumption, livestock body condition was poor, and livestock diseases and deaths were noted in the area. There was also a decline in milk production and market prices for livestock. Food prices increased in the area further affecting the food security of the poor households in the area. Consequently, in April 2008, the area was re-classified to be in **Humanitarian Emergency**.

1.3 Health and Nutrition Context

The nutrition situation in Elbarde district was classified as **Critical** during the Post Deyr 07/08 integrated analysis (January 2008), this was explained by frequent illness, sub optimal child care practices in addition to the failure of the Deyr 07 rains which has led to poor water and pasture availability and hence lowered the production of milk in the area. This is a major

concern given that milk is the most important source of both nutrients and is sold and used to purchase other food and non food items for pastoral communities. High food prices in the area have further compounded the situation making access to food difficult. Insecurity greatly disrupts humanitarian activities in the area and also affects access to the available health and nutrition services in the area, which is a major factor given that morbidity and malnutrition exhibits a synergistic relationship. Common illness reported in Bakool from the MCH and nutrition/health assessments include watery diarrhoea, ARI, malaria/febrile illness, kalazar, intestinal worms and skin diseases. Health services in the area are scarce due to limited health facilities that are not accessible by the bulk of the rural population, and sick people often resort to seeking health services from traditional healers, over counter drugs or reading of the Koran. With the poor health services, the negative impact of morbidity is obvious. In the beginning of 2007, a large area of southern Somalia, Bakool region inclusive experienced an outbreak of Acute Watery Diarrhoea with varying degrees of severity in case load and case fatality rates. Overall, Bakool Region recorded 652 cases of AWD with case fertility rate of 6.53 from January to June 2007 (Source of Data: WHO AWD June 28th Update). The main agencies providing health and nutrition services are IMC, MSF-B, ACF and World Vision.

Figure 2: Trends in levels of Global Acute Malnutrition (WHZ<-2) in Elbarde, Bakool Region



The current nutrition classification for the area is **Very Critical**, indicating deterioration from the previous historical trends. The chart (figure 2) illustrates the trends in levels of acute malnutrition in Elbarde, (WHZ <-2) from March 2004 to April 2008, based on nutrition surveys conducted by FSAU and partners. It should however be noted that the assessments were conducted at different seasons; March 2004 (Jilaal) reported a GAM (WHZ <-2) of 15.7%, December 2006 (Deyr) reported a GAM (WHZ <-2) of 17.7% and April 2008 (Gu) reported a GAM (WHZ <-2) of 24.1%. , therefore a direct comparison may not be feasible. As is illustrated the rates of malnutrition have been critical (15->20%), and are attributed to high rates of morbidity – associated with poor quality water and sanitation services, as well as limited health services, sub optimal child care practices and compounded by food insecurity.

The key nutrition findings³ below in Bakool pastoral Elbarde district, during the post Deyr 07/08 integrated nutrition analysis were:

Rapid MUAC assessments: Results from a rapid MUAC assessment of 500 children screened from five villages in Elbarde district indicated **24.2%** of the sample identified as acutely malnourished (<125.cm or oedema) with **6%** identified as severely malnourished (MUAC <11 cm or oedema).

Selective Feeding Centre: There are two IMC managed supplementary feeding centres (SFP) in Elbarde district one is located in Elbarde town and the other one in Qurajome centre. Data from these facilities has show increasing trends of admissions of acutely malnourished children in the last three months (from January-March 2008).

Health Information System: High levels and increasing numbers of acutely malnourished children are being reported from the screening at the Elbarde MCH. However the proportion of the acutely malnourished children is within the trends previously reported in the area. The increase reported in the SFP and HIS data in the recent months is likely attributed to the resumption of supplementary food distribution in the district is of great concern and needs constant monitoring and appropriate interventions.

³ FSAU Technical Report No V. 14 March 7, 2008 2007/08 Post Deyr Analysis

2 ASSESSMENT OBJECTIVES

The overall objective of the assessment was to establish the extent and severity of malnutrition, determine the causes of malnutrition and to monitor the trends of malnutrition in the pastoral population in Bakool region, Somalia.

Specific Objectives were:

1. To estimate the level of acute malnutrition and nutritional oedema among children aged 6-59 months in Bakool pastoral livelihood zone.
2. To estimate the level of acute malnutrition among women aged 15-49 years in Bakool pastoral livelihood zone.
3. To identify factors influencing the nutritional status of the children in Bakool pastoral livelihood zone.
4. To estimate the prevalence of some common diseases (measles, diarrhoea, febrile illnesses and ARI) in Bakool pastoral livelihood zone.
5. To estimate malaria prevalence in Bakool pastoral livelihood zone, using Rapid Diagnostic Tests (RDT).
6. To estimate the measles and polio vaccination and Vitamin A supplementation coverage among children Bakool pastoral livelihood zone.
7. To assess child feeding and care practices in Bakool pastoral livelihood zone.
8. To estimate the retrospective crude and under-five mortality rates in Bakool pastoral livelihood zone.

3 METHODOLOGY

A cross-sectional assessment was conducted among the southern inland pastoral populations of Elbarde district and parts of Rabdure Hudur and districts in April 2008. Probability proportion to size (PPS) sampling technique was used to identify the households to be sampled for the study. A list of all the villages/settlements and towns in the study population with their respective population was drawn and constituted the sampling frame⁴, and used to construct cumulative population figures (See appendix) for the assessment area. The number of clusters to be visited was determined as 30, which were randomly drawn and identified using the ENA SMART software. The number of children required for the nutrition and mortality survey was calculated using ENA. Nutrition data was collected from children aged 6-59 months from a total of 502 children, while mortality data was collected from 882 households.

Both qualitative and quantitative data collection techniques were used. Quantitative data was collected through a standard household questionnaire for nutrition assessment (appendix 1) and a standard mortality questionnaire (appendix 2). Quantitative data collected included household characteristics; child anthropometry, morbidity; vitamin A supplementation, measles and polio immunization coverage; dietary diversity; and water and sanitation. Qualitative data was collected by an interagency team comprising of assessment supervisors and coordinators through focus group discussions and key informant interviews to provide further understanding of possible factors influencing nutritional status.

A four-day training of enumerators and supervisors was conducted covering interview techniques, sampling procedure, inclusion and exclusion criteria, sources and reduction of errors, taking of measurements (height, weight and MUAC), standardisation of questions in the questionnaire, levels of precision required in measurements, diagnosis of oedema and measles, verification of deaths within households, handling of equipment, and the general courtesy during the assessment.

Standardisation of measurement and pre-testing of the questionnaire and equipment were carried out in three villages in within the vicinity of Elbarde town. Quality of data was also ensured through (i) monitoring of fieldwork by coordination team, (ii) crosschecking of filled questionnaires on daily basis and recording of observations and confirmation of measles, severe malnutrition and death cases by supervisors. All households sampled were visited and recorded including empty ones (iii) daily review was undertaken with the teams to address any difficulties encountered, (iv) progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis, (v) continuous data cleaning and plausibility checks (vi) monitoring accuracy of equipment (weighing scales) by regularly measuring objects of known weights and (vii) continuous reinforcement of good practices. All measurements were loudly shouted by both the enumerators reading and recording them to reduce errors during recording. Household and child data was entered, processed (including cleaning) and analysed using ENA and EPI6 software. Mortality data was entered and crude and under five mortality rates generated in Nutrisurvey software.

⁴ Bakool pastoral has an estimated population size of 52,925 based on UNDP 2005 and further verified by the assessment team

4 ASSESSMENT RESULTS

4.1 Household Characteristics of Study Population

The nutrition assessment covered a total of 255 households. The total number of children assessed was 502. The mean household size was 5.9 ± 2.2 ; while the average number of under fives in the households assessed was $2.1 (\pm 0.8)$. The household characteristics of the study population are presented in Table 4.1.1 below. The results showed that in the study population 60% of the assessed households were male headed, qualitative data collected indicated that this was due to many men being away herding the animals. The results also indicate that majority (>95%) of the households were not hosting internally displaced persons at the time of the survey. The few households that were hosting IDPs, hosted a mean number of $1.8 (\pm 0.7)$ IDPs per household.

Table 4.1.1: Household Characteristics

Characteristics	N %	CI
Total Households	255	100
Total number of children assessed	502	100
Sex of Children Assessed N= 502		
Male	254	50.9
Female	248	49.4
Household size (Mean):	5.9	± 2.2
Mean No of Under fives	2.1	± 0.8
Sex of Household Head: N= 255		
Male	153	60.0
Female	102	40.0
Households Hosting IDPs N = 255		
Yes	8	3.1
No	247	96.9
Mean No. of IDPs hosted per HH	1.8	± 0.7
Household's main source of Income		
Animal and Animal Product Sales	209	81.9
Crop Sales	2	0.78
Trade	3	1.1
Casual Labour	39	15.2
Salaried/Wage Employment	1	0.4
Remittances/ Gifts	1	0.4

The assessment was conducted among the pastoralists populace hence as observed from the results, the household's main source of income was through the sale of animals and animal products (81.9%). The other sources of income among the households was casual labour (15.2%), while trade, crop sales, salaried employment and remittances were other sources of income for the remaining proportion of the households assessed.

According to qualitative data collected from focus group discussions, the sale of animals and animal products such as milk and meat has decreased because of low productivity and poor body condition of the animals, seeing as majority of the households rely on animals and animal products as their main source of income this will have a negative impact on the households. The households also reported reduced job opportunities in the area, casual labour was the second highest (15.2%) source of income among the households in the study population, of concern was also the increased food prices in

the markets.

4.2 Access to Water, Sanitation and Health Facility

Figure 3: Human and animal consuming water from shared surface water



The sanitation, water and health facilities in the study area are inadequate, majority of the households in the study population have no access to clean drinking water, toilet facilities and health facilities. The main source of drinking water among the households in the study was surface water (93.7%), while for the remaining proportion of the households it was from tanker trucks and tube wells. For domestic purposes, surface water was also the main source of water (91.3%). Only 12.5% of the households had access to safe/ protected sources of water, in addition a greater proportion of the households (70%) relied on seasonal supply (rainfall) as their main source of water. The household's main reason for water inaccessibility was water unavailability in the area (74.4%), while the rest of the households mentioned distance as the main reason for lack of adequate water, none of the households mentioned security as a factor hindering their access to water. As indicated in the table a greater proportion of the households (87.7%) take over one hour to reach their water point. A

water shortage for human and animal consumption in the area was reported, water catchments and wells have dried up, it has also been noted that there has been sharing of water points among humans and livestock, making the population vulnerable to water borne diseases such as diarrhoea⁵ (See figure 3).

Table 4.2.1: Tables illustrating access to water and hygiene

Characteristics	N=255	N	%	CI
Source of domestic water				
Tap/Piped		1	0.3	0-1.2
Tanker Truck		2	0.7	0-1.9
Tube Well		16	6.2	1.0-11.48
Spring		1	0.3	0-1.1
Roof Top		2	0.7	0-1.8
Surface Water		233	91.3	85.6-97.0
Source of Drinking Water				
Tap Water		1	0.4	0 – 1.2
Tanker Truck		5	1.9	0 - 5
Tube Well		9	3.5	0.1- 6.9
Spring		0	0	0
Bottled Water		1	0.3	0 - 1.1
Surface Water		239	93.7	88.0 - 99.4
Have access to safe water		32	12.5	1.9 – 23.1
Reliable Water Supply				
Reliable Supply		31	12.1	2.0-22.2
Seasonal Supply		179	70.0	54.7-85.6
Occasional Problem		21	8.2	0.6-15.8
Frequent Problem		24	9.4	0-19.1
Reason for water inaccessibility N=223 available				
Not available		166	74.4	56.8-92.2
Distance too far		57	25.5	7.9-43.1
Mean Time to water point				
<30 minutes		8	31.3	0-6.8
30-60 minutes		23	9.0	2.3-15.6
1-2 hours		65	25.4	12.0-38.9
>2 hours		159	62.3	46.3-78.3
Basic Hygiene N=255				
Yes		178	69.9	56.9-82.6
No		77	30.1	17.3-43.0
Is water treated				
Yes		7	2.7	0.2-5.2
No		248	97.2	94.7-99.7
Method of treatment				
Chlorination		1	14.2	0-57.2
Decanting		5	71.4	23.1-119.6
Other		1	14.2	0-50.1
No. of Storage containers in HH				
1-2 containers		144	56.4	44.2-68.7
3-4 containers		81	31.7	21.8-41.6
4-5 containers		8	3.1	1.09-5.1
>5 containers		22	8.6	3.2-14.0
Water Storage				
Clean containers		62	24.3	12.0-36.5
Closed Plastics		182	71.3	58.7-84.0
Open Buckets		11	4.3	1.0-7.6
Washing Agents used				
Soap		39	15.2	7.1-23.4
Shampoo		6	2.3	0-4.9
Ash		13	5.0	0-10.8
Plant extracts		5	1.9	0.2-3.6
None		192	75.2	64.8-85.7

As indicated in the table 4.2.1 two thirds (69.9%) of the assessed households practised basic hygienic hand washing practices e.g. washing hands before eating, feeding the baby, cooking, after eating, after visiting the toilet, and changing babies. Only 2.7% of the households treated their drinking water, with majority (71.4%) of the households that treated the water doing so by decanting. None of the households boiled their drinking water. Half (56.4%) of the households had only 1-2 containers for storing their water, with majority (71.3%) of the households storing the water in closed plastics.

The remaining proportion of the households used clean containers and open buckets to store water. It was noted that a large proportion (75.2%) of the households did not use any washing agent for cleaning utensils and washing up, only a small proportion (15.2%) used soap.

Majority (95%) of the households did not have access to toilet facilities and used the open bush ground. The main reason for latrine inaccessibility was the frequent movement of the households (78.6%) who are mainly pastoralists; lack of adequate resources (18.5%) to construct the facilities were also mentioned as reason for lack of appropriate toilet facilities. The use of open bush ground for faecal disposal, coupled with consumption of water from opens sources poses a risk of contamination of drinking water, a predisposing factor to diarrhoeal infections and acute malnutrition.

In households whereby more than one household was shared the toilet, 2-9 households were using the same facility, while the rest of the households each used their own latrines. The distance between the latrine and the water source for 63.3% of the households was below thirty meters.

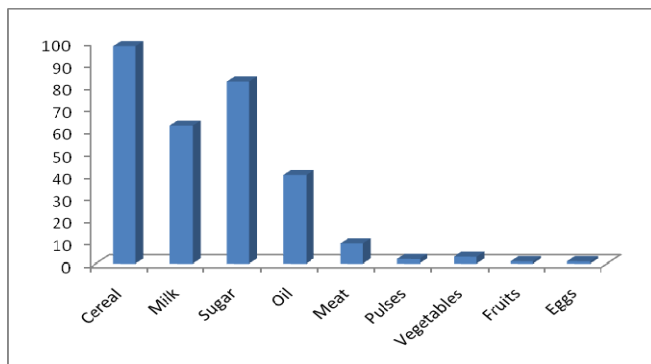
⁵ FSAU Food Security Elbarde Pastoral Assessment Field Report April 2008

4.3 Household Food Security

4.3.1 Food Consumption

As illustrated in figure four cereals provided the bulk of the food in the household diet. Cereal based diets were consumed by all the assessed households in the study. The other foods that were mostly consumed by households in the study was sugar (82%), milk (62.4%), and oil (34.9%), the other food groups namely meat, pulses, roots, vegetables, fruits, eggs were consumed by a relatively lower proportion (<10%) of the households. According to the qualitative data collected, high food prices and inadequate supply of regular food commodities have led households to consume less preferred foods. The preferred cereals consumed in the study population was mainly wheat flour, and rice, but now due to increased prices and availability, maize and sorghum are the main cereals being consumed

Figure 4: Consumption of Food Groups in Study Population in the preceding 24 hours



The consumption of meat was also lower than the usual for pastoral households, with only 9% of the study households reported to have consumed in the preceding 24 hours. This was attributed to reduced livestock herds and poor animal body conditions, lower productivity and inflated market prices. Lack of sufficient nutritional knowledge on the importance of the consumption of food groups such as vegetables, fruits, eggs and pulses due to cultural reasons that shape food selection habits, also attribute to the low consumption of the mentioned food groups. Foods such as fish were not consumed because of their unavailability.

Table 4.3.1.1: Households Main Source of Food

Main source of food N= 255	N	%	CI
Own production	21	8.5	2.5-13.9
Purchasing	190	74.5	62.4-86.5
Gifts from friend	22	8.6	1.5-15.7
Food aid	17	6.6	2.5-10.8
Bartering	4	1.5	0-4.0
Gathering	1	0.3	0-1.1
Main source of cereals N=255			
Own production	22	8.6	2.5-14.7
Purchasing	206	80.4	70.9-90.5
Gifts	5	1.9	0-4.5
Food aid	14	5.4	1.7-9.2
Bartered	3	1.8	0-3.5
N/Applicable	5	1.9	0-4.2
Main source of milk N=255			
Own production	98	38.4	26.5-50.3
Purchasing	57	22.4	11.4-33.2
Gifts	1	0.4	0-1.2
Bartered	2	0.8	0-2.4
N/Applicable	97	38.0	28.5-47.5
Number of meals taken/day			
One	12	4.7	0.9-8.5
Two	171	67.1	54.3-79.7
Three	72	28.2	15.9-40.6

A larger proportion (74.5%) of the household's main source of food was through purchases. The remaining proportion (<10%) was through own production, gifts, food aid, bartering and gathering. The main source of cereals for the study households was mainly through purchasing (80.4%), while the remaining proportion of the households obtained cereals from own production, gifts, food aid and barter trade. The main source of milk for the households was through production (38.4%) and purchasing (22.4%), however it is important to note that about 38% of the households did not consume milk, because they were not able to access it either by purchasing or through their own production. 67.1% of the households in the study were consuming two meals a day, while only 28.2% were consuming three or more meals a day, while 4.7% of the households in the study were consuming only one meal a day. According to the focus group discussions, there has been a reduction in the number of portions and meals consumed because of the high prices of food and the reduced availability of animal products such as meat and milk.

4.3.2 Dietary Diversity

Table 4.3.1.2: Number of food groups consumed in assessed households in the preceding 24 hours

Food Groups Consumed N= 255	n	%	CI
<i>No of food groups consumed</i>			
1 food group	23	9.0	2.9-15.2
2 food groups	88	34.6	22.8-46.4
3 food groups	82	32.2	23.2-41.3
4 food groups	44	17.3	9.9-24.6
5 food groups	9	3.5	1.1-5.9
6 food groups	7	2.7	0-6.1
7 food groups	2	0.3	0-1.2
<i>No. Having Diversified Diet</i>			
1-3 food groups	194	76.1	65.8-86.3
≥ 4 food groups	61	23.9	13.6-34.1
Mean HDDS	2.8 (SD=1.1)		

Further analysis of the food consumed in the preceding 24 hours to the study indicated a very low mean dietary diversity of 2.8±. A higher proportion (76%) of the households consumed less than four food groups a day, while the remaining percentage of the households consumed more than four food groups a day. As illustrated by the table a higher proportion of the households were consuming two (34.6%) or three (32.2%) food groups, indicating that they did not consume a diversified diet⁶ in the 24 hours prior to the assessment, this was lower than the previous assessment conducted in December 2006, whereby the average HDDS was 4.14 ±1.4.

4.4 Child feeding, Morbidity, Immunization and Health Seeking Behaviour

Table 4.4.1.1: Morbidity, measles immunisation, polio vaccination and vitamin A supplementation

Incidence of major child illnesses	N	%	CI	
N=502				
Child fell sick	217	43.2	29.2-57.2	
	Yes	285	56.7	42.7-70.6
	No			
Proportion of children with diarrhoea 2 wks prior to assessment	144	28.6	18.1-39.2	
Proportion of children with ARI within 2 wks prior to assessment	154	30.6	18.6-42.7	
Children with febrile illness in 2 wks prior to assessment	65	12.9	6.7-19.1	
Health Services Sought				
No Assistance Sought	118	54.3	36.8-71.9	
Own Medication	36	16.5	3.9-29.2	
Traditional Healer	32	14.7	1.6-27.8	
Private clinic	17	7.8	1.1-14.5	
Public Health facility	14	6.4	0-16.5	
Suspected measles within one month prior to assessment (N=466)	7	1.5	0-3.4	
<i>Immunization Coverage</i>				
Children (9-59 months) immunised against measles (N=466)	152	32.6	18.8-46.3	
Children who have ever received polio vaccine	242	48.2	33.7-62.6	
Children who received vitamin A supplementation in last 6 months	165	32.8	19.4-46.3	

High morbidity rates (43.2%) were reported in of the children under five years in the two weeks prior to the assessment. About half (54.3%) of the children reported to have fallen ill did not seek medical assistance, while the remaining proportion, were treated through own medication (16.5%), traditional healers (14.7%), private clinic (7.8%) and public health facility (6.4%).

The main diseases reported were diarrhoea, acute respiratory illness (ARI), suspected malaria (febrile/fever) and suspected measles⁷. Diarrhoea and ARI were the most reported illnesses, among the children in the households, with 28.6% and 30.6% affected respectively. Rapid diagnostic tests (RDTs) conducted for malaria reported a total

prevalence of 3.4% for *Plasmodium falciparum*.

The reported suspected measles cases were 1.5%. Although there was no statistical association, between malnutrition and morbidity in the study, it is equally significant to note that 44.6% of the malnourished children were reported to have fallen ill 2 weeks prior to the assessment. There was no statistical association between malnutrition and diarrhoea

⁶ Composed of at least four food groups based on a total of 12 FAO food groups

⁷ Measles (Jadeeco): a child with more than three of these signs – fever and skin rash, runny nose or red eyes and/or mouth infection or chest infection

among the children in the study. Immunization coverage for measles, polio and vitamin A supplementation in the area was well below recommended standards⁸. Only 32.6% of the children were immunized against measles, 48.2% against polio and only 32.8% had received vitamin A supplementation.

4.4.2 Child Feeding Practices

Table 4.4.2.1: Breastfeeding and Complimentary Feeding Practices

Characteristic	N	%	CI
Breastfeeding N=166			
Yes	102	61.4	52.0-70.8
Breastfeeding frequency			
2 times or less	1	0.9	0-2.9
3-6 times	11	10.7	4.5-16.9
On demand	90	88.2	80.9-95.4
Breastfeeding Duration			
Less than 6 months	9	14.1	0.5-27.6
6-11 months	36	56.2	39.9-72.5
12-18 months	16	25.0	14.1-35.8
≥18 months	-	-	-
Never breastfeed	3	4.6	0-9.6
Introduction of Complimentary food			
0-3 months			
4-5 months	144	86.7	80.1-93.2
6 months	20	12.0	5.3-18.7
7 months or more	1	0.6	0-1.8
	1	0.6	0-1.8
Complimentary feeding frequency			
1-4 times			
5 or more times	120	72.3	62.3-82.2
	46	27.7	17.7-37.6

Poor feeding practices persist in Elbarde area, like in other parts of Somalia and are below standard. About 39% of the children aged 6-24 months had stopped breastfeeding at the time of the assessment. Additionally, majority (>95%) of the children were introduced to complimentary food too early before the recommended age of 6 months. Only 27.7% of the children were fed the recommended five times a day. It is important to note that 82.3% of the children that were fed less than five times a day were malnourished, although here was no direct statistical association.

The analysis of distribution of levels of acute malnutrition between the different age groups did not show a significant difference in the likelihood of acute malnutrition between the breastfeeding age groups and older children. Poor breastfeeding practices do not only deny the children the multiple nutritive and health benefits associated with breast milk but also expose them to malnutrition, morbidity and even death.

4.5 Nutrition Status

Table 4.5.1.1: Nutrition Status of Study Children

Characteristic	N	%	CI
Global Acute Malnutrition (WHZ<-2 or oedema)	121	24.1	18.5-26.7
Severe Acute Malnutrition (WHZ<-3 or oedema)	14	2.8	1.2-4.4
GAM estimates by WHO Anthro (2005)	133	26.5	22.5-30.5
SAM estimates by WHO Anthro (2005)	29	5.8	3.6-7.9
Global Acute Malnutrition (WHM<80% or oedema)	76	15.1	10.3-19.9
Severe Acute Malnutrition (WHM<70% or oedema)	6	1.2	0-2.4
Proportion of stunted children (HAZ<-2)	73	14.5	10.3-18.8
Proportion of underweight children (WAZ<-2)	173	34.5	30.0-38.9

A total of 502 children (50.9% boys and 49.4% girls) aged 6-59 months were assessed. The results show serious nutrition levels according to WHO classification. The results show **very critical** nutrition levels according to WHO classification with a GAM rate of **24.1%** (CI:18.5-26.7) and SAM rate of **2.8%** (CI: 1.2-4.4). A summary of the findings for the acute malnutrition rates is given in table 4.5.1. The current results indicate deterioration in the nutrition status of the children in Elbarde district from the previous assessments.

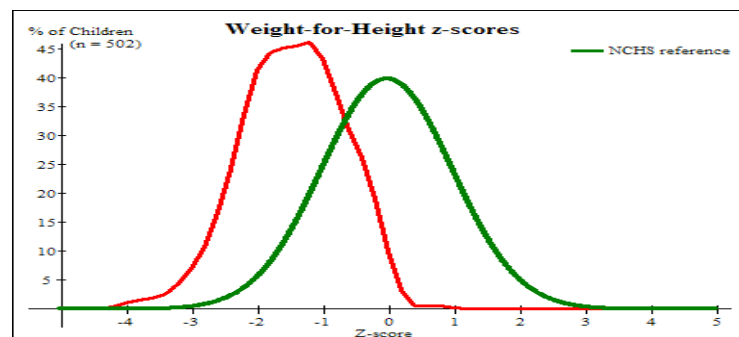
When estimated using WHO Anthro (2005) reference standards, more or less similar GAM rate rates and almost or double relative SAM rates were

reported. Based on WHO Anthro the rates reported were GAM rate **26.5%** (CI: 22.5-30.5) and SAM rate **5.8%** (CI: 3.6-7.9). The table also reports the GAM rate and SAM rates as percent of the median (WHM). The proportion of children stunted in the study was **14.5%** (CI: 10.3-18.8), therefore classifying the chronic malnutrition situation as **alert**. Very high

⁸ Sphere 2004 recommend 95% immunization coverage

prevalence (34.5%) of underweight (WAZ<-2) was noted among the assessed children.

Figure 5: Distribution Curve for weight for height scores (WHZ <-2)



The distribution of the weight-for-height scores in the assessment was skewed towards the left depicting a poorer nutrition situation according to international (WHO) standards (Fig 5). The mean WHZ for the study was -1.45 (SD=0.05; CI: -1.56 – -1.35). A summary of the Nutrisurvey quality checks for the assessment given in appendix 6 indicates that the data collected in the assessments is of good quality.

Table 4.5.1.2: Distribution of children by nutritional status (WHZ-score or oedema) and child sex

Nutrition Status	Males N= 254			Females N=248		
	N	%	CI	N	%	CI
GAM (WHZ<-2 /oedema)	68	56.1	19.8-33.6	53	43.8	13.7 - 28.9
SAM (WHZ<-3 /oedema)	6	42.8	0.2-4.4	2	57.1	0.9- 5.5

Results of acute malnutrition among the surveyed population in the study area using weight for height <-2 Z score or presence of oedema, did not show any statistical difference between the two sexes. However a higher proportion of malnourished children compromised of boys rather than the girls. 26.8% of the total boys in the sample size were acutely malnourished, compared to the 21.4% of the

total girls in the sample size were identified as malnourished. The reasons as to why boys were more likely to be acutely malnourished need further investigations as in this study there were no direct issues noted.

Table 4.5.1.3: Distribution of Acute Malnutrition (WHZ Scores) by Age

Age	GAM			SAM		
	N	%	CI	N	%	CI
6-17 (N=108)	24	19.8	13.7-30.6	2	14.2	0- 4.4
18-29 (N=119)	21	17.3	10.1-25.1	3	21.4	-1.1 - 6.2
30-41 (N=123)	29	23.9	15.3-31.8	4	28.5	-0.2 - 6.5
42-53 (N=83)	24	19.8	17.2-40.5	3	21.4	-0.3- 7.6
54-59 (N=69)	23	19	18.8-47.8	2	14.2	-1.1 – 6.9

Analysis of distribution of acute malnutrition between the different age groups did not show any major differences. Children aged 18-29 months recorded the lowest proportion (17.3%), of acutely malnourished children, while children aged 30-41 months recorded the highest proportion (23.9%). Further analysis did not show any significance statistical difference in risks of acute malnutrition between the children in

the breastfeeding age bracket of 6-24 months and those aged 25-29 months, indicating that the two age groups had equal risks to malnutrition. Similarly, there was no significant difference in the distribution of acute malnutrition between younger children aged 6-30 months and the older ones aged 30-59 months.

4.5.1 Acute Malnutrition using MUAC

Table 4.5.1.4: Child and Adult Nutrition Status by MUAC

Child MUAC N= 439	N	%	CI
GAM (MUAC< 12.5 cm or oedema)	25	5.6	3.0-8.3
SAM (MUAC< 11.0 cm or oedema)	3	0.6	-0.0 – 1.4
Pregnant Women MUAC	N	%	CI
Total acutely malnourished (MUAC< 23.0 cm)	14	42.4	22.8-62.1
Total malnourished (MUAC≤ 18.5 cm)	14	5.5	2.6-8.4

Based on MUAC measurements, acute malnutrition rates were lower than the rates recorded by WHZ and consistent with past assessments which have indicated lower rates of acute malnutrition when using MUAC. (MUAC< 12.5 cm or oedema) of 5.6% (CI: 3.0-8.3)

with 0.6% severely malnourished was reported in the assessment. Among the assessed women; high malnutrition rates were recorded among the pregnant women (MUAC< 23.0 cm) at 42.4%. Pregnancy raises physiological and nutritional demands of women making them vulnerable to malnutrition. High rates of acute malnutrition were recorded among the non pregnant women.

4.6 RDT Malaria Tests

Table 4.5.1.5: RDT Malaria Assessment Results

Characteristics	N	%	CI
Households that had a net	44	17.3	9.05-25.45
GFSOM	13	29.5	7.8-51.2
Other type	26	59	36.8-81.3
Not Seen	5	11.7	-22.9
Proportion of persons positive	44	3.4	1.5-5.4
Proportion of persons negative	1215	96.5	94.5-98.4
Invalid Test Results	-	-	-
Reported Cases of Fever	310	24.6	19.4-29.8
Proportion of persons slept under net	33	2.6	0.5-4.6
Proportion of persons treated for Malaria	10	0.7	0.1-1.4

17.3% of the households assessed had mosquito nets, 29.5% of the nets were the GFSOM⁹. From the rapid malaria tests that were conducted in the households by qualified nurses that accompanied the enumerators, 3.4% of the respondents were positive for malaria, there were no invalid test reported. 24.6% of the respondents had however reported fever in the two days prior to the assessment. Despite the 17.3% of the households visited reporting to have mosquito nets, only 2.6% of the respondents tested slept under a net the night prior to the assessment. 0.7% was the proportion of the respondents that were treated r malaria during the

assessment.

Figure 6: RDT testing being conducted



⁹ Global Malaria Fund for Somalia

4.7 Mortality

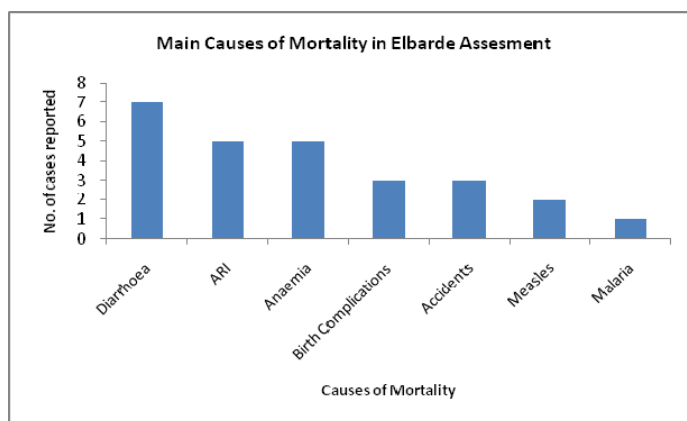
A total of 26 deaths were reported in the assessed households, within a 90 day recall period prior to the assessment. Out of the 26 deaths reported, 9 were for children aged below 5 years. Table 4.7.1 summarises the results of the mortality assessment.

The crude and U5 mortality rates were **0.69** (-0.01 -1.3) and **1.08** (0.0 -2.1) respectively. CMR and U5MR rates in the study population were at alert levels according to WHO classification.

Table 4.7.1: Summary of mortality results

Characteristics	U5	Total
Total HHs surveyed		882
Total Population assessed in HHs	943	4130
Number who joined the HHs	6	1
Number who left the HHs	134	8
Number of births	-	52
Number of deaths	9	26
Mortality rate	1.08 (0.0-2.1)	0.69 (-0.01 -1.3)

Figure 7: Main Reported Causes of Mortality in Bakool Pastoral



As shown on figure 7 diarrhoeal diseases, ARI, unconfirmed anaemia, birth related complications (poor birth outcome), accidents, suspected measles and malaria were the reported causes of mortality in the assessment. ARI and diarrhoea were the main reported causes of mortality for children below 5 years, while in adults; the main causes of death reported were due to diarrhoea, unconfirmed anaemia, birth complications and accidents according respondents' recall.

4.8 Qualitative Information

Additional Information on food security, water & sanitation and childcare practices, dietary patterns, and morbidity was collected through qualitative approaches. Semi-structured interviews with key informants and community focus groups were used for collecting the information.

Water scarcity was the main problem, in the area. The *Deyr 07/08* rains were poor in the area, and the current *Gu* rains in the area are below average and have only appeared in a few localized areas. The failure of the rains which are responsible for the regeneration of pasture and storage of water in the area have led to major water scarcity in the area for both human and animal consumption. Water quality is a major concern as water is obtained from unprotected sources. Sharing of water points between human and livestock has made the community vulnerable to waterborne illnesses such as diarrhoea and worms, according to the key informants, the problem is more pronounced in children and women. Lack of adequate water for human consumption is a major concern, with majority of the residents accessing an average of 2-3 litres of water compared to the minimum recommended amount of 7.5litres/per person/per day¹⁰. The drinking water is not treated by most of the residents at the point of collection or before use and it has been noted that more households than usual are sharing water points, and are going further distances to collect water. It was reported that water tankering has been provided in some parts of the district by SRCS relief agency. Livestock physical condition and production depend on the quality of the *Deyr* rainfall, as the rain was not adequate to grow pasture and browse the condition of the animals was poor, with animal deaths being observed and reported especially of sheep and goats in the area. They were no disease outbreaks reported in the area. The poor body condition of the animals has resulted in reduced milk production and market prices of the animals are below average.

Figure 8: Water Source in Elbarde District



Common diseases like diarrhoea, ARI, malaria and whooping cough, intestinal worm and skin diseases are prevalent in the area. Limited health facilities are available in the area, IMC were operating in the area offering health assistance and selective feeding programmes i.e. supplementary feeding programmes and out patient therapeutic programmes. According to the FGDs the main causes of poor health were poor dietary diversity currently caused mainly by high food prices and low purchasing power, consumption of unsafe drinking water, poor sanitation and inadequate health facilities to treat the affected.

Child feeding and child care practices remain largely suboptimal. Breastfeeding duration for children is usually 12 -18 months from birth. Water is often given to the newborn at birth. A sugary solution is given to the baby within the first week of birth while most children are given complementary food (animal milk – mostly goat milk) before they are one month old. For most children, semi solid foods are introduced as early as 2-3 months of age and solid foods like rice or *canjero* and tea are introduced at the age of 8-12 months. Main foods given to infants (1 – 12 years) are goat milk 3 to 4 times a day in most cases and sometimes *canjero* or rice mixed with sugar and oil/butter and porridge (flour + sugar + oil). Food insecurity/hunger, close pregnancy intervals, labour burden and sometimes ill health are the major constraints to breastfeeding of young children below two years. Lack of clean water, cooking & storage facilities and too much domestic work for women were mentioned as the main hindrances to food preparation and storage. Women have to travel long distances at times (during dry spells) or spend a lot of time working away from home and do not have enough time to prepare food. In such cases women served their families with what is easy to prepare and cook. There has also been a change in the frequency of food consumption, with majority of the households consuming less meals a day, the main reason for this is reduced milk and animal products available for consumption, reduced livestock herd sizes and high inflation and food prices in the local markets.

¹⁰ Sphere Handbook

5 DISCUSSION

In the assessment, a total of 502 children aged 6-59 months and measuring 65-109.9 cm in height/length from 255 households were assessed; and mortality data collected from 886 households. Results indicated a GAM rate of **24.1%** (CI: 18.5-29.7) and a SAM rate of **2.8%** (CI: 1.2-4.4), the results indicate a **Very Critical** nutrition situation according to WHO classification and indicate a deterioration and the worst situation in the district from previous assessments conducted in the area. The retrospective crude and under five mortality rates were estimated at **0.69** (-0.01– 1.3) and **1.08** (0.0-2.1) deaths/10,000/day respectively, and are both at **Alert** levels according to the WHO classification. Most of the reported deaths of children aged below five years and those aged above five years were reportedly caused by diarrhoea, Acute Respiratory Infection (ARI), measles, unconfirmed anaemia and malaria, in that order. Other reported causes of death included complications arising during birth and accidents.

High morbidity rates (**43.2%**) were reported in the region, in the two weeks prior to the study. The incidence of reported diarrhoea, ARI, suspected malaria/febrile illness was **28.6%**, **30.6%** and **13.0%** respectively. However, Rapid Diagnostic Tests (RDT) conducted for malaria confirmed only **3.4%** as positive for *Plasmodium falciparum*. The suspected measles cases were low (**1.5%**) but significant. Although there was no statistical association in this study with morbidity, it was noted that 24.9% of the malnourished children were ill two weeks prior to the study. Poor feeding practices persist in Bakool like in other parts of Somalia and have been associated with high levels of malnutrition. Most children are not only initiated to breastfeeding late after 2-3 days after birth, but are also introduced to complimentary foods early in life and breastfeeding does not continue to the recommended 24 months. 38.5% of the children aged 6-24 months had stopped breastfeeding at the time of the assessment, in addition majority of the children (86.7%) had been introduced to complimentary food too early, i.e. before the recommended age of six months, and this predisposes the children to malnutrition. Moreover, only 27.7% of the children aged 6-24 months were fed for the recommended five times in a day. However, analysis of distribution of acute malnutrition between the different age groups did not show a significant difference in the likelihood of acute malnutrition between the breastfeeding age groups and older children. Poor breastfeeding and complimentary feeding habits expose children to morbidity, malnutrition and even death. The reduced food intake among the children and the household in general was blamed on high food prices in the market and the reduced production of milk and animal products in the area.

Poor coverage of health programmes are an important risk factor to the poor nutrition situation in Bakool region. Measles vaccination was low (32.6%), vitamin A supplementation was also below standard (32.8%) and polio immunization was also low (48.2%) falling way below the recommended 95% level (Sphere, 2004), poor health programme and immunization coverage are high risk factors that predispose children to malnutrition and high morbidity in an area. Access to basic services of water, health and sanitation is a major problem in the region. A mere 12.5% of the households had access to clean drinking water, while only 4.3% used proper toilet facilities and only 14.2% of the children who fell ill visited a public or private health facility. These indicators give an indication of the poor water, sanitation and health situation in the area, all of which are major risk factors affecting malnutrition and morbidity. The poor rains in the region have aggravated the situation, leading households to consume unsafe water and using less water than they require for their daily needs.

The pastoralists rely on their animals (81.9%) for milk and also sell them to be able to purchase other food and non food items, with poor animal conditions, and low production of milk due to the weakened animal body conditions because of lack of adequate pasture and water, their food intake becomes compromised. This is made worse by the fact that majority of the households will then rely on purchasing food (74.5%), and the current food prices in the market are very high. Milk is relied on for both consumption at the household level and for sale to purchase other food and non food requirements. It was noted that a larger proportion of the households (76%) consumed less than four food groups in a day. A slightly lower proportion (67.1%) consumed two meals a day, low consumption of food groups such as fruits, vegetables and pulses is also a chief concern because these food groups are important sources of micronutrients. This exposes the population to the risk of micronutrient deficiencies. Given that there is only one main source of income (sale of animals and animal products), when this one income source becomes affected, the food and nutrition security of the population is put under threat, a situation that is being compounded by the soaring food prices in the region.

In conclusion the nutrition situation in Elbarde district, Bakool pastorals, is **Very Critical** and perilous. The nutrition situation in the area has deteriorated from previous assessments done in the area, and is currently at the worst recorded levels so far. Overall the key underlying factors are child care and morbidity, diarrhoea in particular; poor sanitation and lack of adequate and safe water, integrated approaches should be undertaken to reduce risk factors such as poor child care, unsafe drinking water, limited sanitation and hygiene services. Measures to increase access to health facilities and improved coverage of health programmes would play a critical role in both preventing and treating morbidity. In spite of this, the current situation among the pastoral population Bakool region, it is very crucial to note the role of increased food prices and inadequate water and pasture which have affected the animal sales and production (hence directly affecting the income of the households) in the area cannot be ignored and are probably currently the direct cause of inadequate food intake in the households.

6 RECOMMENDATIONS

The poor nutrition and health situation in the study area is attributed to multiple and interrelated factors that calls for integrated intervention efforts to address both immediate life saving needs in addition to developing longer term strategies to enhance access to basic services and support and sustain livelihood systems and social protection mechanisms. Specific recommendations include:

Immediate Interventions

- Rehabilitation of acutely malnourished children through the existing selective feeding and outreach programs and active case finding until household food security is restored and critical public health issues are addressed. Capacity building of the existing MCH and the community to manage acutely malnourished children through locally available resources could be explored.
- Intervention programmes on improving water, sanitation and hygiene practices including health education to educate the community on domestic treatment of drinking water.
- Improving coverage for health programmes, especially for measles vaccination and vitamin A supplementation. Vigorous campaigns targeting the bulk of rural population are required in Bakool region. Care givers should also be trained on the need to let their children receive these services.
- Intensify nutrition and health education targeting children care givers with messages on the importance of exclusive breastfeeding, improved child-feeding practices appropriate health-seeking behaviour and improved hygiene & sanitation practices
- Education on proper disposal of human faecal waste to avoid contamination of water sources.

Long term Interventions

- There is need to focus on programmes that improve and sustain dietary diversity and consumption of micronutrient rich foods. Food distribution for pulses and micronutrient enriched oil could help improve dietary diversity especially among poor people. Introduction of kitchen gardens to promote production and consumption of vegetables and fruits may also enhance dietary diversity especially for vitamin and minerals.
- To address the issues of limited access to safe water, there is a need for rehabilitation/protection of water systems including the well and water catchments. Potential for domestic water harvesting from the roofs and conservation could also be explored. The community should be trained on sanitation of the water systems
- To initiate income generating activities to improve the socio-economic situation in Bakool. Introduction of small-scale credit system for small business would help improve livelihoods especially among the Bakool community.
- There is need for establishment or strengthening of health facilities and satellite services especially in rural villages where there are no health facilities
- Intensifying health and nutrition education activities at the household level to address care concerns, targeting mothers, and other caregivers. The main areas of focus should include promoting exclusive breastfeeding, appropriate young child feeding, diet diversification, and improvements in household hygiene including health care practices.
- Advocacy campaigns on domestic water treatment such as boiling of drinking water to minimise risks of water born diseases.

- Provision of sanitary facilities including large scale building of latrine at household level or at strategic locations in the region for appropriate disposal of human excretal waste. This should be coupled with awareness on the need to use such facilities.

QNO:

APPENDIX

Appendix 1. NUTRITION ASSESSMENT HOUSEHOLD QUESTIONNAIRE APRIL 2008

NUTRITION ASSESSMENT HOUSEHOLD QUESTIONNAIRE, 2008

Household Number _____ Date _____ Team Number _____ Cluster Number _____ Cluster Name _____

District: _____

Q1-8 Characteristics of Household

Q1. Household size¹¹ ? _____

Q2. Number of children less than 5 years (0-59 months)? _____

Q3. Sex of household head¹²? 1=Male 2=Female

Q4a Are you hosting any recently (in the last 6 months) internally displaced persons? 1= Yes 2= No **Q4b** If yes, Number of persons _____

Q5a Does household have mosquito net? _____ 1= Yes 0= No **Q5b.** If yes, ask to see the net: _____ 1= GFSOM label 2=Other type 3= Not seen

Q6. What is the household's main source of income? 1= Animal & animal product sales 2= Crop sales 3= Trade 4= Casual labour 5= Salaried/wage employment 6= Remittances/gifts/zakat 7= Others, specify _____

Q7-15 Feeding and immunization status of children aged 6 – 59 months (or 65 – 109.9 cm) in the household.

First Name	Q7 Age (months) <i>(if child is more than 24 months old, skip to Q13)</i>	Q8 (If 6-24 months) Are you breastfeeding ¹³ the child? <i>(if no, skip to Q10)</i> 1=Yes 2= No	Q9 (If 6-24 months) If breast feeding, how many times/day? 1=2 times or less 2=3-6 3=On demand	Q10 (If 6-24 months) If not breast feeding, how old was the child when you stopped breast-feeding? 1= less than 6 months 2=6-11 months 3=12 – 18 months 4=≥18 months	Q11 (If 6-24 months) At what age was child given water/ foods other than breast milk? 1=0-3 months 2=4-5 months 3=6 months	Q12 (If 6-24 months) How many times do you feed the child in a day (<i>besides breast milk</i>)? 1= 1-4 times 2= 5 or more times	Q 13 Has child been provided with Vitamin A in the last 6 months? <i>(show sample)</i> 1=Yes 2= No	Q14 (If ≥9 months old) Has child been Vaccinated against measles in the last 6 months? 1=Yes 2= No	Q15 Has the child ever been given polio vaccine orally? 1=Yes 2= No

¹¹ Number of persons who live together and eat from the same pot at the time of assessment

¹² One who controls and makes key decisions on household resources (livestock, assets, income, and food), health and social matters for and on behalf of the household members.

¹³ Child having received breast milk either directly from the mothers or wet nurse breast within the last 12 hours

					5= Never breastfed	4=7 months or more.					
1											
2											
3											
4											

Q16-27 Anthropometry and morbidity for children aged 6 – 59 months or (65 – 109.9cm) in the household

First Name <i>Follow same order as per table on page 1</i>	Q16 Sex 1=Male 2=Female	Q17 Oedema 1=yes 0= No	Q18 Height (cm)	Q19 Weight (kg)	Q20 MUAC (cm)	Q21 Diarrhoea ¹⁴ in last two weeks 1= Yes 0= No	Q22 Serious ARI ¹⁵ in the last two weeks 1=Yes 0= No	Q23 Febrile illness/suspected Malaria ¹⁶ in the last two weeks 1=Yes 0= No	Q24 (If ≥9 month) Suspected Measles ¹⁷ in last one month 1=Yes 0= No	Q25 Did child sleep under a mosquito net last night? 1=Yes 0= No	Q26 Where did you seek healthcare assistance when child was sick? (If yes in Q21 – 24) 1=No assistance sought 2=Own medication 3=Traditional healer 4=Private clinic/Pharmacy 5= Public health facility	Q27 Which of the following programs has the child benefited from? 1= SFP 2= TFC 3= OTP 4= None
1												

¹⁴ Diarrhoea is defined for a child having three or more loose or watery stools per day

¹⁵ ARI asked as oof wareen or wareento. The three signs asked for are cough, rapid breathing and fever

¹⁶ Suspected malaria/acute febrile illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma

¹⁷ Measles (Jadeeco): a child with more than three of these signs– fever and, skin rash, runny nose or red eyes, and/or mouth infection, or chest infection

2												
3												
4												

28: Anthropometry (MUAC) for adult women of childbearing age (15-49 years) present at the household

Sno	Name	Age (years)	Received Tetanus vaccine? 1= Yes 2= No	MUAC (cm)	Physiological status 1=Pregnant 2= Non pregnant	Illness in last 14 days? If yes, what illness?	Codes for adult illnesses
1	Mother:						0= None 2=Diarrhoeal 4=Joint 6=Organ 8= Reproductive
							1= ARI 3=Malaria/febrile 5=Urinal 7=Anaemia 9=Other, specify

Q 29 Food Consumption & Dietary Diversity

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

Food group consumed: What foods groups did members of the household consume in the past 24 hours (from this time yesterday to now)? Include any snacks consumed.	Did a member of your household consume food from any these food groups in the last 24 hours? 1=Yes 0= No	*Codes: 1= Own production 2=Purchases 3=Gifts from friends/ relativeses 4=Food aid 5=Bartered 6=Borrowed 7=Gathering/wild 8=Others, specify____ 9=N/A
Type of food		What is the main source of the dominant food item consumed? (Use codes above)?
1. Cereals and cereal products (e.g. maize, spaghetti, rice, caanjera, bread)?		
2. Milk and milk products (e.g. goat/camel/ fermented milk, milk powder)?		
3. Sugar and honey?		
4. Oils/fats (e.g. cooking fat or oil, butter, ghee, margarine)?		
5. Meat, poultry, offal (e.g. goat/camel meat, beef; chicken or their products)?		
6. Pulses/legumes, nuts (e.g. beans, lentils, green grams, cowpeas; peanut)?		

7. Roots and tubers (e.g. potatoes, arrowroot)?		
8. Vegetables (e.g. green or leafy vegetables, tomatoes, carrots, onions)?		
9. Fruits (e.g. water melons, mangoes, grapes, bananas, lemon)?		
10. Eggs?		
11. Fish and sea foods (e.g. fried/boiled/roasted fish, lobsters)?		
12. Miscellaneous (e.g. spices, chocolates, sweets, beverages, etc)?		
Q30 In general what is the <u>main</u> source of staple food in the household? (*Use codes in 29 above) _____		
Q31 Total number of food groups consumed in the household: _____		

32 How many meals¹⁸ has the household had in the last 24 hours (from this time yesterday to now)? 1= One 2=Two 3= Three

Q33-38 Access to water (quality and quantity)

- Q33a What is the household's main source of drinking water? 1 = Tap/ piped water 2= Tanker truck 3= Tube well/ borehole 4= Spring 5= Bottled water
6= rooftop rainwater 7= Surface water (river, stream, dam, pond, open well; water catchments; berkad, etc)
- Q33b Is drinking water drawn from a protected/safe source? 1= Yes 2= No
- Q33c If household has no access to safe protected water what is the main reason? 1= Not Available 2= Distance too far 3= Security Concerns 4= Cannot afford
- Q33d Do you get a reliable supply of drinking water from this source? 1= Reliable supply 2=Seasonal supply 3= Occasional problems 4= Frequent problems
- Q34a Is water treated at the source or storage level? 1= Yes 2= No
- Q34b If treated, what is the method of treatment? 1= Boiling 2= Chlorination 3= straining/filtering 4= Decanting/ letting it stand and settle 5= Other, specify
- Q35 What is the household's main source of water for other domestic uses? 1 = Tap/ piped water 2= Tanker truck 3= Tube well/ borehole 4= Spring
5= Rooftop rainwater 7= Surface water (river, stream, dam, pond, open well; water catchments; berkad, etc)
- Q36 Average time taken to and from the nearest water point (including waiting and collecting time) 1= <30 min 2=30 – 60 min 3= 1-2 hrs 4= more than 2 hrs
- Q37 Number of water collecting and storage containers of 10-20 litres in the household: 1=1-2 containers 2= 3-4 containers 3=4-5 containers 4= more than 5
- Q38 How is water stored in the household? 1= Clean containers with cover 2= Closed plastic containers 3= open buckets/ pans 4= *Ashuun* (with constricted neck/end)

Q39-43 Sanitation and Hygiene (access and quality)

¹⁸ A meal refers to food served and eaten at one time (excluding snacks) and includes one of the three commonly known: - breakfast, lunch and supper/dinner

- Q39a Type of toilet used by most members of the household 1= Flush toilets 2= Ventilated Improved pit latrine (VIP) 3= Traditional pit latrine/ Open pit 4= Bush/open ground
- Q39b If household has no access to sanitation facility, what is the main reason? 1= Pastoral/ frequent movements 2= Lack resources to construct 3= Doesn't see the need
- Q40 Distance between latrine and water source (if underground or surface source) 1=1- 30 metres 2=30 metres or more
- Q41 How many households share/use the same facility? 1= One 2= 2- 9 3= 10 or more
- Q42 Maintain basic hygienic hand washing practices (e.g. before eating, feeding the baby, cooking; after eating, defecation, cleaning the baby's bottom; etc)? 1= Yes 2= No
- Q43 What washing agents do you use in your household? 1=Soap 2=Shampoo 3=Ash 4=Plant extracts 5=None

Checked by supervisor (*signed*):

3= Employment
4=Divorce
5=Visiting

8= Grazing/herding
9= Other, specify

3= Measles
4= Malaria
5= STD/ HIV/AIDS

8= Accident/ killed/ physical injuries
9= Hunger/starvation
10= Other, specify

Summary*

	Total	U5
Current HH Members		
Arrivals during the Recall period		
Number who have left during Recall period		
Births during recall		
Deaths during recall period		

* For Supervisor Only

APPENDIX 3: CALENDER OF EVENTS BAKOOL PASTORAL APRIL 2008

	SEASONS	2003	2004	2005	2006	2007	2008
January	Beginning of Jiilal/qoraxeed		52 Carafo	40 Carafo	28 Carafo	16 Carafo	4 Carafo
February	Mid of Jiilal/qoraxeed		51 Sako Market burnt	39 Sako	27 Sako	15 Sako	3 Sako
March	End of Jiilal/qoraxeed		50 Safar	38 Safar dagaalkii Waaqsheel	26 Safar Dilkii Malaq Huriye	14 Safar (Dhi mashadii Ugaas Baaruud)	2 Safar
April	Beginning of Gu'		49 Mawlid Rabicol Awal Roobkii Barafkii Ceelbarde	37 Riverine floods - Mawlid Rabicol Awal	25 Mawlid Rabicol Awal Caleemasaarkii Wabar Geedi	13 Mawlid Rabicol Awal Shuban Ka dhacay Moragabey	1 Mawlid Rabicol Awal
May	Mid of Gu'		48 Malmo=done Rabicol Akhir	36 Rabicol Awal Malmowane	24 Rabicol Awal Malmowane Dagaalkii bohola Awas	12 Rabicol Awal Malmowane	
June	End of Gu'	59 Jamadol Awal	47 Jamadol Awal	35 Jamadol Awal Dagaalkii Aato	23 Jamadol Awal	11 Jamaatul Awal, dilkii Maxamed Muse (IMC staff)	
July	Beginning of Xagaa	58 Jamadol Akhir	46 Jamadol Akhir	34 Jamadol Akhir	22 Jamadol Akhir	10 Jamaatul Akhir	
August	Mid of Xagaa	57 Rajab	45 Rajab Isku Dhicii Kobog/Tobog	33 Rajab	21 Rajaba	9 Rajab	
September	End of Xagaa	56 Shacban	44 Shacban -World Vision moved from Buale reconciliation	32 Shacban	20 Shacban Jiradii Geela (Yuusan kugu dhicin)	8 Shacbaan	
October	Beginning of Deyr	55 Soon Death of former Buale DC	43 Election of Somali President Abdulahi Yusuf	31 1 st food distribution by WV, Heshiiskii Rabdhuure (Ogaden & Hadamo)	19 Soon	7 Soon	
November	Mid of Deyr	54 Soonfur	42 Good deyr rain Soonfur	30 Soonfur	18 Soonfur	6 Sonfur	
December	End of Deyr	53 Sidataal	41 Sidataal Dilkii 9ka nin (Habow)	29 Sidataal	17 Sidataal Dagaalkii Maxkamadaha Iyo Itoobiyanka	5 Sidataal Dagaalkii xudur	

APPENDIX 4: SAMPLING FRAME AND CLUSTERS SAMPLED AND SELECTED IN BAKOOL PASTORAL ASSESSMENT APRIL 2008

District	Villages	U5 Pop	Cum U5 Pop	Estimated Pop	Cum Pop	Clusters	LQAS Clusters
Elberde	Elberde	250	250	1250	1250		1
Elberde	Elberde	200	450	1000	2250	1	2
Elberde	Elberde	200	650	1000	3250	2	
Elberde	Elberde	300	950	1500	4750		3
Elberde	Elberde	200	1150	1000	5750	3	4
Elberde	Elberde	150	1300	750	6500		5
Elberde	Ballicadde	60	1360	300	6800	4	
Elberde	Maroodiile	160	1520	800	7600		
Elberde	Fraqfoodley	120	1640	600	8200		6
Elberde	Nuhley	120	1760	600	8800	5	
Elberde	Lihle	40	1800	200	9000		
Elberde	Habeen	140	1940	700	9700		7
Elberde	Adaale	160	2100	800	10500	6	
Elberde	Boodhle	80	2180	400	10900		
Elberde	Elbaiid	200	2380	1000	11900		8
Elberde	farguray	20	2400	100	12000		
Elberde	Abarhorwiin	20	2420	100	12100	7	
Elberde	Dabariib	60	2480	300	12400		
Elberde	Eidheere2	120	2600	600	13000		9
Elberde	Boholjid	80	2680	400	13400		
Elberde	Quruuruhle	40	2720	200	13600		
Elberde	Eltagabey	140	2860	700	14300	8	
Elberde	Ato	200	3060	1000	15300		10
Elberde	faraq	20	3080	100	15400		
Elberde	waqsheen	60	3140	300	15700	9	
Elberde	Sankerow	40	3180	200	15900		
Elberde	Rahle	82	3262	410	16310		11

Elberde	Cel Cabuq	160	3422	800	17110		
Elberde	Celdheere	120	3542	600	17710	10	12
Elberde	Irbad	140	3682	700	18410		
Elberde	Libahle	100	3782	500	18910		
Elberde	Ganaweyn	60	3842	300	19210	11	13
Elberde	Buur aliyow	80	3922	400	19610		
Elberde	Waraday	60	3982	300	19910		
Elberde	Dhehkabod	20	4002	100	20010		
Elberde	Celdheere1	120	4122	600	20610		
Elberde	Dhabac	20	4142	100	20710		
Elberde	Qurajoome	250	4392	1250	21960	12	14
Elberde	Qurajoome	240	4632	1200	23160	13	15
Elberde	Qurajoome	160	4792	800	23960		
Elberde	Burmaow	40	4832	200	24160		16
Elberde	Finjow	20	4852	100	24260		
Elberde	Elbar	60	4912	300	24560	14	
Elberde	Elqoran	110	5022	550	25110		
Elberde	Bardahabo	60	5082	300	25410		
Elberde	Maroodicadde	80	5162	400	25810		17
Elberde	Elriib	20	5182	100	25910		
Elberde	Baarmayow	40	5222	200	26110	15	
Elberde	Ildhowren	60	5282	300	26410		
Elberde	Celmegeed	200	5482	1000	27410		18
Elberde	Garasawoowe	100	5582	500	27910	16	
Elberde	Ceelduur	80	5662	400	28310		
Elberde	Abeesaale	200	5862	1000	29310		19
Elberde	Dudumehar	55	5917	275	29585	17	
Elberde	Dudumehar	25	5942	125	29710		
Elberde	Celcadale	60	6002	300	30010		
Elberde	Ceeljuusow	60	6062	300	30310		
Elberde	Figta	40	6102	200	30510		20

Elberde	Hiirey	140	6242	700	31210		
Elberde	Bambar	100	6342	500	31710	18	
Elberde	Habashoshubag	40	6382	200	31910		
Elberde	El-Ali	133	6515	665	32575		21
Elberde	Qabsaay	120	6635	600	33175	19	
Elberde	Ayeeyo	120	6755	600	33775		22
Elberde	Haluul	100	6855	500	34275		
Elberde	Goddheere	120	6975	600	34875	20	
Elberde	Gaharley	80	7055	400	35275		23
Elberde	Warhanweyne	100	7155	500	35775		
Elberde	Qandhar	80	7235	400	36175		
Elberde	Dhacaamo	40	7275	200	36375		
Elberde	Hawaaltiri	80	7355	400	36775	21	24
Elberde	Jilibile	40	7395	200	36975		
Elberde	Habasha Areys	60	7455	300	37275		
Elberde	Wargarweyne	100	7555	500	37775		
Elberde	Balli Addale	131	7686	655	38430	22	25
Elberde	Moorabus	40	7726	200	38630		
Elberde	Bisiglemagooye	40	7766	200	38830		
Elberde	Dharkeenkuus	80	7846	400	39230		
Elberde	Baneedi	60	7906	300	39530		
Elberde	Maraay	65	7971	325	39855		
Elberde	Jooge	80	8051	400	40255	23	26
Elberde	Qalaanqal	60	8111	300	40555		
Elberde	Habaladurbi	98	8209	490	41045		
Elberde	Lawareeg	200	8409	1000	42045	24	27
Elberde	Salkudooble	240	8649	1200	43245		28
Elberde	Buqda	120	8769	600	43845	25	
Elberde	Godcadde	260	9029	1300	45145		29
Huddur	Teed	90	9119	450	45595	26	
Huddur	Baabwine	60	9179	300	45895		

Huddur	Qaydargaboobe	30	9209	150	46045		
Huddur	laagbisiqle	40	9249	200	46245		
Huddur	laagbooneed	150	9399	300	46545		30
Huddur	Tisqoboy	20	9419	100	46645		
Huddur	Dhursheen Shabele	15	9434	75	46720		
Huddur	Hudiye	120	9554	600	47320	27	
Huddur	Abore	60	9614	300	47620		
Huddur	Kunyaada	85	9699	425	48045		31
Rabdure	Habow	120	9819	600	48645		
Rabdure	Bidada	110	9929	550	49195	28	
Rabdure	Fooldiir	30	9959	150	49345		
Rabdure	Haradigle	50	10009	250	49595		32
Rabdure	Ceeldheere	60	10069	300	49895		
Rabdure	Ceelxaway	40	10109	200	50095		
Rabdure	Dhaberduleel	110	10219	550	50645	29	
Rabdure	kulumey yer	120	10339	600	51245		33
Rabdure	Balicate	40	10379	200	51445		
Rabdure	Ceel Mareer	40	10419	200	51645		
Rabdure	Janogaaban	90	10509	450	52095		
Rabdure	Dhabarduleel	100	10609	500	52595	30	

Nutrition Assessment		LQAS
Number of Clusters	30	33
Sampling Interval	1753	1594
Random Number/Start	1490	70
U5 Population	10609	10609
Estimated GAM Prevalence (%)	18	18
Desired Precision ($\pm\%$)	5	5
Design Effect	2	2
Calculated Sample	444	198

Attrition of 5%	22	0
Sample size required*	466	198

Mortality Assessment

Total Population	52595
Estimated CMR	1
Desired Precision ($\pm\%$)	1
Design Effect	2
Recall Period (days)	90
Calculated Sample	839
Attrition of 5%	42
Sample size required**	881

* A sample of 466 children (i.e. 16 children in each of the 30 clusters) will be assessed for anthropometry

** A sample of 881 households (i.e. 29 households in each of the 30 clusters) will be assessed for Mortality

APPENDIX 5: BAKOOL PASTORAL NUTRITION ASSESSMENT TEAM APRIL 2008

Team		Names	Station	Role	Area Surveyed
1	1	Mohamed Mohamud Hassan	FSAU, Galkayo	Supervisor	Rabdure and Elberde
	2	Adan Hassan Hussein	DPO, Rabdure	Team leader	Rabdure and Elberde
	3	Fatuma Ahmed Omar	IMC, Hudur	RDT Nurse	Rabdure and Elberde
	4	Mohamed Osman Lohos	JCC, Hudur*	Enumerator	Rabdure and Elberde
	5	Warsame Sheikh Hassan	Community, Rabdure	Enumerator	Rabdure and Elberde
2	1	Khalif Abdulahi Nuuh	FSAU, Bossasso	Supervisor	Elberde
	2	Fadumo Mohamed Ahmed	Community, Hudur	Team leader	Elberde
	3	Aasho Haji Baasey	Community, Hudur	RDT Nurse	Elberde
	4	Ismacil Mahamed Mohamud	Community, Elberde	Enumerator	Elberde
	5	Adan Abdulqadir Cadow	Community; Elberde	Enumerator	Elberde
3	1	Mohamed Haji Nur	FSAU, Hudur	Supervisor	Elberde
	2	Abdi Mohamed Korane	DPO, Elberde	Team leader	Elberde
	3	Luul Isack Ahmed	MSF-B, Hudur	RDT Nurse	Elberde
	4	Hassan Haydar Hassan	IMC, Hudur	Enumerator	Elberde
	5	Cismaan Guhaad Dhaqane	Health Post, Elberde	Enumerator	Elberde
4	1	Fuad Hassan Mohammed	FSAU, Burao	Supervisor	Elberde
	2	Hussein Mahad Farah	IMC, Elberde	Team Leader	Elberde
	3	Adan Said Abdi	MSF-B, Hudur	RDT Nurse	Elberde
	4	Hussein Omar Mohamed	JCC, Elberde	Enumerator	Elberde
	5	Abdi Hussein Hassan	Health Post, Elberde	Enumerator	Elberde
5	1	Mohamed Moalim Hussein	FSAU, Mogadishu	Supervisor	Elberde, Qurajoome
	2	Adan Salaah Abdalle	IMC, Hudur	Team leader	Elberde, Qurajoome
	3	Abdishakur Abdi Mohamed	Community, Hudur	RDT Nurse	Elberde, Qurajoome
	4	Mohamed Daahiye Mohamed	DFAC, Elberde	Enumerator	Elberde, Qurajoome
	5	Luul Ali Nur	Community, Hudur	Enumerator	Elberde, Qurajoome
6	1	Abdikarim Hussein Duale	FSAU, Garowe	Supervisor	Hudur and Elberde
	2	Mohamed Keer Ugaas	IMC, Rabdure	Team leader	Hudur and Elberde
	3	Abshiro Abdulaah Mohamed	Community, Hudur	RDT Nurse	Hudur and Elberde
	4	Hassan Ahmed Mohamed	IMC, Elberde	Enumerator	Hudur and Elberde
	5	Mohamud Mohamed Shuriye	Community, Hudur	Enumerator	Hudur and Elberde

	Ruqiyo Abdi Mohamed	Community, Hudur	Team leder	Elberde
	Mohamed Moalim Idow	Community, Hudur	Enumerator	Elberde
	Ali Abdi Aden	Community, Elberde	Enumerator	Elberde
	Abdulkadir Haji Nur	Community, Hudur	Team leder	Hudur, Elbarde and Rabdure
	Abdulkadir Mohamed Bulle	MSF-B, Hudur	Enumerator	Hudur, Elbarde and Rabdure
	Fadumo Hassan Mohamed	CPHR, Hudur	Enumerator	Hudur, Elbarde and Rabdure

APPENDIX 6: REFERRAL FORM FOR MALNOURISHED CHILDREN

Name of the village: _____ Date: _____

Name of the child: _____ Sex of child: _____

Age of child: _____ Name of caretaker: _____

Child diagnosed (suspected) with (state the condition): _____

Child referred to: _____

Child referred by: _____

REFERRAL FORM FOR MALNOURISHED CHILDREN

Name of the village: _____ Date: _____

Name of the child: _____ Sex of child: _____

Age of child: _____ Name of caretaker: _____

Child diagnosed (suspected) with (state the condition): _____

Child referred to: _____

Child referred by: _____

APPENDIX 7: ASSESSMENT QUALITY CHECKS

Quality checks	Nutrition assessment	
Digit preference-weight	None	
Digit preference-height	None	
Age preference	31,38,49,59	
SD of WHZ	0.77	
Skewness of WHZ	-0.26	
Kurtosis of WHZ	-0.04	
Percent of flags (WHZ)	None	None
Age group (6-29)	No bias	No bias
Age group (30-59)	No bias	No bias
Sex ratio (M/F)	1.0	1.1

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