

# NUTRITION ASSESSMENT REPORT

## GEDO REGION SOMALIA

Food Security Analysis Unit (FSAU/FAO)  
Gedo Health Consortium (GHC)  
United Nation Children Funds (UNICEF)

APRIL 2006



### GEDO HEALTH CONSORTIUM, SOMALIA



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## **ACKNOWLEDGEMENT**

This assessment was undertaken through the collaborative efforts of FSAU, UNICEF, GHC and partners including WFP, FEWS-NET, NCA and CARE. GHC gave the necessary logistics for the assessment, provided training hall, data entry clerks, enumerators and a supervisor for data collection. UNICEF funded assessment vehicles and provided a supervisor. WFP, FEWS-NET, NCA and CARE provided a supervisor each for qualitative data collection during the assessment. FSAU led the training of assessment teams, supervised data collection, paid enumerators and data entry clerks undertook data cleaning and analysis produced assessment report and led the overall coordination of the assessment. All participating organisations were invited to review and comment on the draft assessment report.

We are also grateful to the local authorities, parents/care takers, community guides and the community as a whole for their cooperation, time and provision of information individually and in focus group discussions that helped the assessment team get a better understanding of the nutrition situation in the area.

FSAU, GHC and UNICEF also express their sincere appreciation to the entire assessment team for the high level of commitment, diligence and ingenuity demonstrated during all stages of the assessment.

## **EXECUTIVE SUMMARY**

In March 2006, FSAU, GHC UNICEF and partners conducted an inter-agency nutrition assessment in Gedo Region (with exception of Bardera town) in South Somalia. The assessment was conducted in response to the emerging concern related to the drought in the region and the need to determine the malnutrition levels for the entire region.

Given the constraints in the region related to security, logistics and personnel, a range of assessment coverage options were explored. Existing information suggested that estimated ranges for malnutrition rates were already very high and that the overall context in areas outside Bardera town had many similar characteristics. The assessment was designed to include all areas of the region with the exception of Bardera town for which a separate assessment was planned.

The main objective of the survey was to determine the level of wasting and oedematous malnutrition among children below five years, possible factors that may be contributing to malnutrition, dietary diversity, morbidity and mortality rate in the region.

Using a two-stage cluster sampling methodology, a total of 922 children aged 6-59 months and measuring 65-109.9 cm from 437 households were examined. A total of 115 pregnant and 317 non-pregnant women were also assessed. A security-related disruption of the sampling process was encountered and this is described later in the document. The disruption did not however affect the assessment results.

The global acute malnutrition (GAM) rate (weight for height  $<-2$  Z score or oedema) was 23.8% (CI 21.1 – 26.7) and severe acute malnutrition (weight for height  $<-3$  or oedema) was 3.7% (CI: 0.8-2.5). Fourteen cases of oedema were recorded. The crude mortality rate in the region was found to be 1.04/10,000/day while the under-five mortality rate was 2.46/10,00/day. The two mortality rates indicate an alert situation.

The majority of households 82.9% consumed diets with three or fewer food groups. About 24.5% of the children were reported to have diarrhoea, 21% had ARI and 6.5% had suspected malaria/febrile illness in two weeks prior to the survey while 4.5% had measles in one month prior to the survey. About 1.4% of households reported cases of night blindness (difficult seeing at night) among children aged 2-6 years while 2.3% of the households reported cases of night blindness among people aged above 6 years. A high coverage of various health interventions was reported. Approximately, 76.8% of the children had received vitamin A supplementation during the six months prior to the survey and 60.9% vaccinated against measles. About 95.3% of the children had received polio immunization for at least once. Only 28% of the children are exclusively breastfed for the recommended six months. For the children aged 6-24 months who were still breastfeeding about three-quarters (74.3%) of them were breastfed on demand. The majority of the children 64.4% are fed twice a day. Diseases, limited access to quality water, and poor child-feeding practices seem to be contributing substantially to malnutrition in Gedo region. Based on MUAC $<23.0$  cm, out of the 115 pregnant women assessed, 40% of them were malnourished, 4.3% of them severely (MUAC $<20.7$  cm). None of the non-pregnant women was malnourished.

The on-going humanitarian interventions from UN, international and local organizations are likely to have played a crucial role in mitigating the crisis effects. Currently, CARE provides food aid in Northern Gedo while WFP, ICRC, AMA distribute food in Southern Gedo. Main agencies

providing health services are GHC in northern and SRCS in southern Gedo. Several international NGOs and local organization are doing water trucking in the region. ICRC has deepened shallow wells and provided water pumps in Elade, Elgudud, Dhamase, Khadija haji, and Tulobako villages. AMA Mogadishu Drought Committee's Harda and ICRC are involved with water trucking in the region. AMA and HARDA purchase local sorghum from local markets in Gedo and re-distribute it to the affected families. GHC disposed of livestock carcasses in Gabaharey town. There are also plans by NCA and UNICEF to provide spare parts for boreholes, digging new and rehabilitation of shallows and provision of water drums to the affected areas.

However, the nutrition situation in Gedo region is critical GAM 23.8% while the crude of 1.04/10000/day and under-five death rate of 2.46/10000/day are in the 'alert' category according to WHO categorization. The long term estimates of malnutrition from 1999 to 2005 (Appendix 6) have shown malnutrition rates of >20% in Garbaharey, Luuq, Belet Hawa and Dolo districts with rates estimated to be lower in Elwak and Bardera districts. The regional rate of 23.8% therefore indicates an overall increase in the level of malnutrition. However, a variation existed in distribution of malnutrition with children from the districts in northern Gedo (Luuq, Dolo, Gabaharey and Belet Hawa) being more likely to be malnourished than those from district in southern Gedo (Elwak and Bardera) ( $p < 0.005$ ). Children from rural clusters were more likely to be malnourished than those from urban clusters ( $p = 0.001$ ). Child feeding practices particularly breastfeeding had a significant influence on malnutrition. Children aged 6-24 months who were still breastfeeding were less likely to be malnourished than those were not breastfeeding ( $p = 0.005$ ). Children aged more than 24 months were also more likely to be malnourished than those aged 6-24 months ( $p = 0.002$ ). Limited access to safe water was associated with high incidences of diarrhoea ( $p < 0.05$ ). The somewhat higher level of malnutrition in older age groups suggests that household food security has had a strong influence in the overall high level of malnutrition.

Urgent multi-sectoral approaches need to be implemented to check further deterioration as well as restoration of the nutrition situation in the region. Interventions that include efforts to improve household food security, with particular attention to diversity and quality of diet and improved child feeding practices are recommended. Strategies to improve access to safe water and developing capacity to manage moderate and severe malnutrition are also recommended to reduce morbidity and mortality in the region. Long terms intervention to restore and sustain livelihoods and reduce dependence on short term aids should be considered

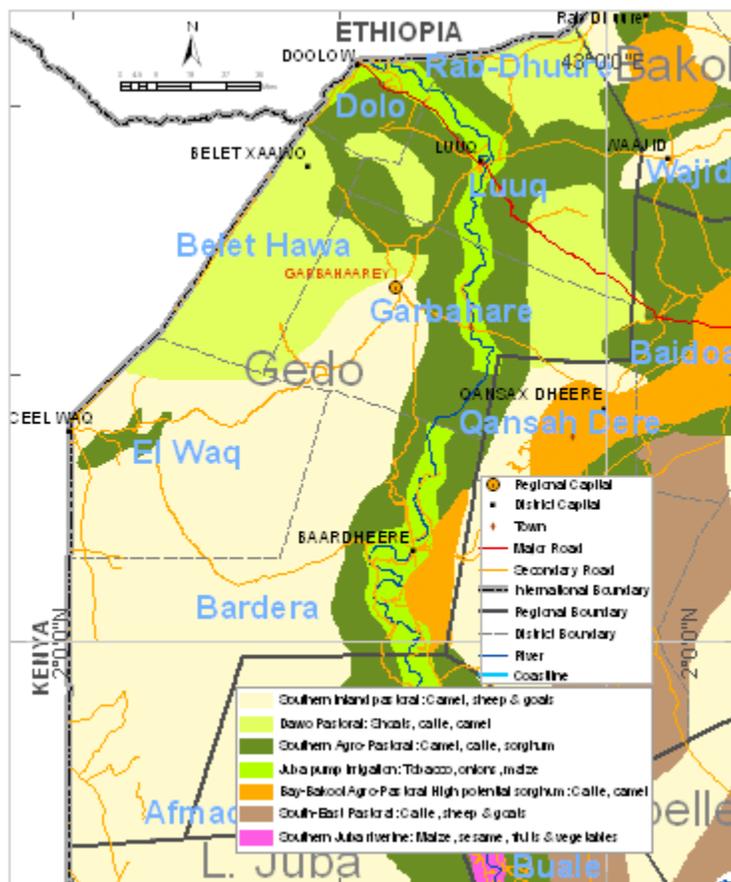
<b>SUMMARY OF THE FINDINGS</b>			
<b>Indicator</b>	<b>No</b>	<b>%</b>	<b>95% CI</b>
Total number of households surveyed	437	100	
Mean household size	6.8 (SD=2.2)		
Total number of children assessed	922	100	
Child Sex:			
Males (boys)	470	51	47.7 – 54.2
Female (girls)	452	49	45.8 – 52.3
Global Acute Malnutrition (WHZ<-2 or oedema)	219	23.8	21.1 – 26.7
Severe Acute Malnutrition (WHZ<-3 or oedema)	34	3.7	2.6 – 5.2
Oedema	14	1.5	0.9 – 2.6
Global Acute Malnutrition (WHM<80% or oedema)	134	14.5	12.4 – 17.0
Severe Acute Malnutrition (WHM<70% or oedema)	20	2.2	1.4 – 3.4
Proportion of malnourished pregnant women (MUAC $\leq$ 23.0; N=115).	47	40.9	31.8 – 50.4
Proportion of severely malnourished pregnant women (MUAC $\leq$ 20.7)	5	4.3	1.4 – 9.9
Proportion of children with diarrhoea in 2 weeks prior to assessment	226	24.5	21.8 – 27.4
Proportion of children with ARI within two weeks prior to assessment	194	21.0	18.5 – 23.8
Children with suspected malaria in 2 weeks prior to assessment	60	6.5	5.0 – 8.3
Suspected measles within one month prior to assessment (N=880)	40	4.5	3.3 – 6.2
Children (9-59 months) immunised against measles (N=880)	536	60.9	57.6 – 64.1
Children who have ever received polio vaccine	879	95.3	93.0 – 96.6
Children who received vitamin A supplementation in last 6 months or before	708	76.8	73.9 – 79.5
Proportion of households who consumed $\leq$ 3 food groups	787	85.4	82.9 – 87.5
Proportion of households who consumed $\geq$ 4 food groups	135	14.6	12.5 – 17.1
Proportion of children 6-24 months who are breastfeeding (N=348)	152	43.9	38.4 – 49.1
Under five Death Rate (U5DR) as deaths/10,000/ day	1.04		0.65 – 1.44
Crude Death Rate (CDR) as deaths/10,000/ day	2.46		1.38 – 3.54

## 1.0 INTRODUCTION

Gedo region is located in southwest Somalia and comprises of six districts namely:- Luuq, Belet Hawa, Dolow, Garbaharey, Elwak and Bardera districts with an estimated population size of about 375,280 (WHO 2005, NID figures which were further verified by the assessment team). The region is located along the border of Kenya to the West, Ethiopia to the Northwest, Bakol to the North East, Middle Juba to the South, Bay to the East. Garbahare is the regional headquarter of Gedo. The region has four distinct livelihood zones: the riverine, southern inland pastoral, agro-pastoral and urban. Gedo region has been experiencing food insecurity over the years due to recurring drought and persistent insecurity since the collapse of Somalia state in 1991. This led to out migration of the population to other regions. The UN agencies, international non-governmental and local organizations have been providing humanitarian assistance to the population, but their efforts are often disrupted by insecurity.

### 1.1 Justification for the nutrition survey

The long term estimates of malnutrition from 1999 to 2005 (Appendix 6) have shown malnutrition rates of >20% in Garbahare, Luuq, Elwak, Belet Hawa; 15- 19.9% in Dolo and 10 – 14.9% in Bardera districts. The situation is aggravated by recurring insecurity and severe weather conditions. The failure of both *Gu* and *Deyr* 2005/06 and the resultant crop failure, water shortage and pasture depletion have caused further deterioration of the already worse population situation in the entire region. Hence a nutrition assessment was important to determine the situation of malnutrition levels in the prevailing drought condition.



### 1.2 Survey objectives

1. To determine the level of malnutrition and nutritional oedema among children aged 6-59 months or with height/length of 65-109.9cm in Gedo region.
2. To determine the level of malnutrition among women aged 15-49 years in Gedo region.
3. To identify some factors influencing nutrition status of the children in the region.

4. To determine the prevalence of some common diseases (measles, diarrhoea, febrile illness, and ARI) in the region.
5. To determine the measles and polio vaccination and Vitamin A supplementation coverage among children in Gedo region
6. To assess general feeding and weaning practices in Gedo region.
7. To determine the crude and under-five mortality rates in Gedo region.

## 2.0 BACKGROUND

### 2.1 Administration:

Gedo region comprises of six districts namely:- Luuq, Belet Hawa, Dolow , Garbaharey, Elwak and Bardera districts. Garbaharey is the regional headquarter of Gedo. North Gedo consists of Belet Hawa, Luuq and Dolow while South Gedo comprises of Garbaharey, Elwak and Bardera.

The administration of each district is governed by district officers who have been elected by the dominant clan in the district with exception of Bardera district which does not have a district authority that extends to the rural areas. The district elders, clan and religious leaders intervene and solve issues of concern in their respective districts.

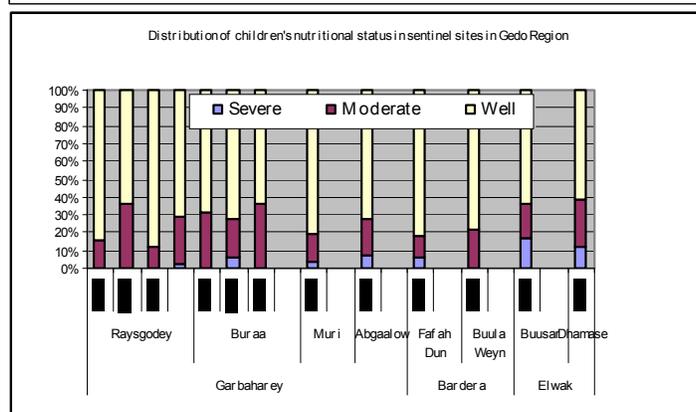
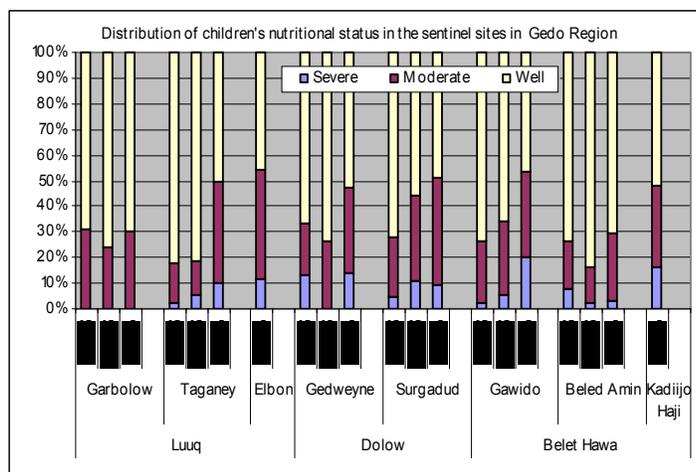
### 2.2 Health context

Gedo Health consortium (GHC) is the main agency providing health services in the Region. GHC mainly operates in Garbaharey, Belet Hawa, Luuq, Burduba and Dolow Districts while SRCS with support from UNICEF provides health services in Bardera and Elwak Districts. The services offered by GHC include an integrated primary health care, EPI and mobile medical outreach, supplementary feeding and support to the hospital. However, recurrent insecurity in Gedo region has often disrupted delivery of health services. Common communicable diseases like suspected malaria, diarrhoea and respiratory infections, are quite prevalent in the region. An increasing trend of diarrhoea cases has been recorded in most districts in the last five months.

### 2.3 Nutrition

The nutrition situation in Gedo region has remained critical (WHO categorization) since 1999

and is considered worse than the rest of Somalia. Northern Gedo including Luuq, Belet Hawa, and parts of Garbaharey districts have persistently shown malnutrition rates of >20% from 1999-2005 while Berdera and Dolow Districts have recorded malnutrition rates of 15-19.9 % and 10-14.9% respectively. A relatively better nutrition situation in southern Gedo is attributed to stable livelihoods system, strong social networks, access to remittances, better irrigated farming opportunities which boost overall economic situation. In Northern Gedo, civil insecurity, recurrent drought and dependency on food aid has lead to disruption of livelihood systems contributing to poor nutrition situation. The high proportion of malnourished children recorded in the nutrition sentinel sites in the region and increasing admission in the SFP give an indication of unstable nutrition situation in Gedo (see figures).



Gedo Health Consortium is the only international organization operating therapeutic feeding programmes in Gedo region particularly in Belet Hawa, Luuq and Garbaharey. The admission in these TFCs varies with Belet Hawa TFC recording a monthly admission of over 100 children from November 2005 to February 2006. The Nutritional Rehabilitation Units in Luuq and Garbaharey have been recording monthly admission of less than 20 children per month.

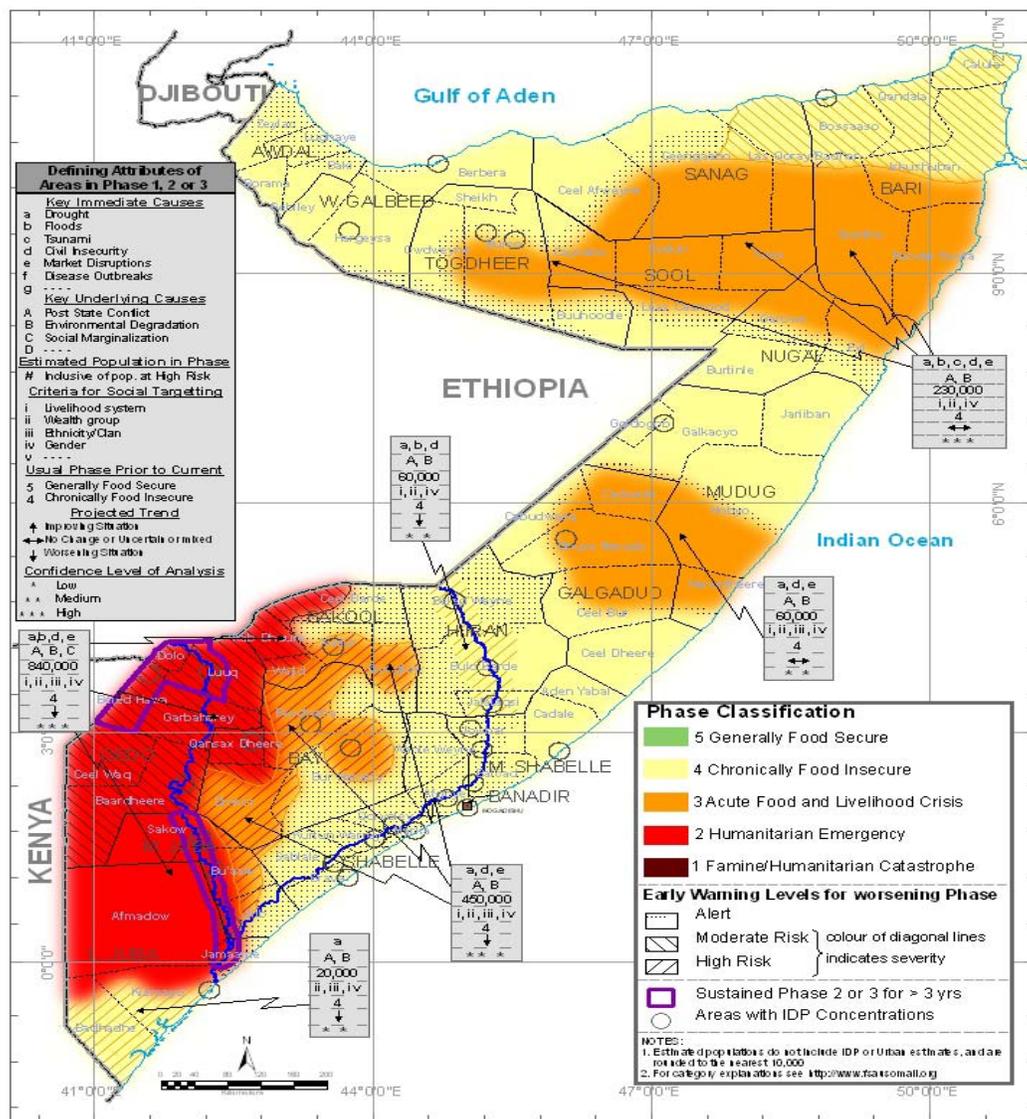
## 2.4 Food security

Gedo region has been experiencing persistent food insecurity attributed to adverse weather conditions and civil strife (Table 2.1). The FSAU technical series on the post *Deyr* '05/06 food security analysis indicates that Gedo region is faced with a humanitarian emergency with moderate risk to deteriorate into famine (map 1). This is attributed to an almost complete crop failure with crop yields of about 14% of the expected, following the failure of both *Gu* and *Deyr* 2005/06 rains.

Livestock including cattle, shoats and camel are in very poor condition. This has impacted negatively on milk production, and hence its consumption among the poor households in Riverine, Pastoral, and Agro pastoral as well Urban groups. Livestock is currently migrating to Bay region and the Riverine areas of Juba Region in search of pastures and water. The crop failure and low milk availability has led to a rise in cereal and milk prices and hence low access among poor households.

**Table 2.1. Summary of some events affecting food security and nutrition in Gedo region**

Factors influencing food security in Gedo region	
<b>February 2006</b>	WFP distributed food ration to the targeted vulnerable areas in Bardera district CARE distributed food aid in Northern Gedo Water trucking by AMA
<b>January 2006</b>	ICRC distributed maize, oil and beans in the most affected areas in Bardera district
<b>Oct-December 2005</b>	Rains started late, were erratic, poorly distributed and significantly below normal. South Gedo received 0-10% of normal rainfall for the season.
<b>June 2005</b>	Recurrent insecurity in Northern Gedo, recent tensions in the districts of Elwak and Belet Hawa have triggered fresh population movements towards Damas Busaar and Garsale areas.
<b>April- June 2005</b>	<i>Gu</i> rains were poor and unevenly distributed (40-60% of normal <i>Gu</i> seasons) resulting in failed crop harvest (7% of <i>Gu</i> PWA) and scarce pasture and water availability for livestock.
<b>March 2005</b>	CARE Somalia distributed relief food about 2004 MT of sorghum, pulses and oil to 36,000 families in Belet Hawa, Elwak, Dolow and Luuq districts.
<b>2004-2005</b>	<i>Deyr</i> season improved the pastoral livelihoods in Gedo, however the situation has not changed significantly in North Gedo (Belet Hawa and Dolow) particularly those that lost assets in the past four to five years.
<b>2003-2004</b>	The region received good rains, clan-based conflicts restricted seasonal grazing patterns, cross-boarder trade, livestock and population movement limiting the overall recovery process.
<b>1999-2002</b>	Gedo region had suffered three successive years of below normal rains



Map 1 .Somalia Food security Situation Analysis: Post Deyr 2005/06 Projection, January 2006 through June 2006.

## 2.5 Water and sanitation

River Juba is the main source of water for the entire Gedo region. Other water sources in the region are boreholes, shallow wells and water catchments. Due to persistent drought in the region most of these water points have dried up and the level of water in River Juba have gone low compelling the pastoralists and agro-pastoralist communities to travel long distances in search of water for domestic use and livestock. Every year particularly, during Jilalal season the level of water in the river, bore holes and shallow wells remain low and of poor quality. The high evaporation rates leads to salinity of water making it unpleasant for human and livestock consumption. The few water points in the region are often overcrowded, hence increasing time taken to get water. Death of animal at water points which pose a health risks to the community has been reported. GHC conducted clean-up activities and burnt 196 carcasses in Garbaharey town and near the water points.

## 2.6 Humanitarian Interventions

Humanitarian agencies currently providing assistance in Gedo Region include:

- CARE international which provides food aid in Northern Gedo whenever a need arises. The food comprises of sorghum, beans, oil and CSB rations of 100 kg, 5kg, 2 litres and 5kg respectively.
- WFP, ICRC, African Muslim Agency (AMA) and HARDA provide food aid and water trucking in Southern Gedo particularly Bardera, Elwak and Garbaharey. ICRC has distributed relief food consisting of maize, beans and oil rations of 72, 36, and 12 Kg per household respectively. WFP distributed 100kg cereals, pulses 10kg, 3.6kg oil, CSB 5kg for a period of 45 days. ICRC has also deepened shallow wells and provided water pumps in Elade, Elgudud, Dhamase, Khadija haji, and Tulobako villages.
- African Muslim Agency (AMA), Mogadishu Drought Committee's established by Mogadishu business people and Harda local NGO, supply relief food and water trucking to the most affected in Gedo region. AMA and Mogadishu Drought committee are funded by Somali diaspora, Mosques and Zakat to the well wishers. AMA and HARDA purchase local sorghum from local markets in Gedo and re-distribute it. Unfortunately this has led to prices increase of more 100% (from 70,000 to 150,000 S.sh) and jeopardised the purchasing power of poor households in livelihood zones.
- ICRC de-stocked about 5000 heads of goats among the drought affected herders, slaughtered them and later on distributed meat to the affected population.
- Harda together with Mogadishu drought committee distributed goat meat to the affected poor households in many parts of Gedo region.
- GHC provides health services delivery in North Gedo region particularly Garbaharey, Burdhubo, luuq, Belet Hawa and Dolow through three hospitals, four integrated MCH/OPD and 52 health posts operated by community health workers and TBAs, with districts outreach teams visiting each health post once in a month. The District Health Boards operate a cost sharing policy where a nominal sum is charged to cover a minimum of the health service operating cost, currently less than 1%. SRCS supported the delivery of health services in Bardera District, this included at an integrated MCH/OPD and an EPI activities in Bardera district. WHO polio immunization is ongoing in the region
- Several other agencies provide water and sanitation services in the region. Africa Muslim Agency is doing water trucking in Garbaharey district while Vet-Aid has water trucking services in Elwak, Bardera Districts and parts of Belet Hawa

A number of villages in Western Gabaharey were reported to be having water scarcity and currently there are no agencies providing water services in these villages. The villages affected include; Bara, Sera, Dabley, Goley, Anamaley, Fanweine, Duba and Daghey.

### **3.0 ASSESSMENT METHODOLOGY**

#### **3.1 Assessment design**

The study was cross-sectional among the population of Gedo region (all the six districts – Belet Hawa, Elwak, Dolo, Garbahare, Luuq and Bardera except Bardera town, which has distinct characteristics. Bardera town is populous and is seen as quite different in terms of vulnerability - better access to remittances, better irrigated farming opportunities and better economic situation.

Both qualitative and quantitative data collection techniques were used. Quantitative data was collected through a standard household questionnaire for nutrition assessment (appendix 1a). Retrospective mortality data for 90 days prior to the assessment was also collected among the study households using the standard mortality questionnaire (appendix 2). 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.

#### **3.2 Sampling procedure**

Using a two-stage cluster sampling methodology, 30 clusters were randomly selected based on population proportion to size. . A list of all settlements/villages/towns within the region (except Bardera town), with their respective populations formed a sampling frame and used to construct cumulative population figures for the assessment area from which 30 clusters were randomly drawn. According to WHO (2005) estimates, the region has a total population of 358,296 persons. Using WHO Polio population figures and the input of key informants from the district, all settlements/villages/towns were listed in the sampling frame and their population estimates further verified for authenticity by the assessment team. Using the Nutrisurvey software a random number, (10125) was chosen to determine the first cluster (appendix 4). The subsequent clusters were then determined systematically by adding the sampling interval, to the first randomly selected number (appendix 4). From the 30 randomly selected clusters, about 30 children aged 6-59 months and height/length of 65-109.9 cm from each cluster were assessed with exception of Yurkut cluster in Luuq where only 17 children were assessed. Insecurity in this cluster disrupted data collection and the remaining children were selected from a neighbouring village with similar characteristics.

On the visit to each cluster, the centre was identified with the help of a community guide together with a few community members. A pen was then spun to determine the direction to follow in moving to the edge of the cluster. On reaching the edge of a cluster, a pen was spun a second round, until the pen pointed inward the cluster/village to determine the direction to follow in the systematic selection of the households with children aged 6 to 59 months. The households in this direction were counted / established as the team crosses to the other edge and given numbers. A random number within the total number of households encountered was drawn to enable random selection of the first household to be visited. From the exit of the first household, the team always moved in the right hand direction to the next household. This procedure was followed until the required 30 children were obtained in a cluster.

All sampled households were visited, the supervisor noting whether it was empty and whether children in the target age group were present or not. In households without children in the target age group, the household and mortality questionnaires were administered. If a cluster was exhausted of children before the required 30 children were obtained, a neighbouring village

with similar characteristics, but which was not part of the sampled clusters was selected to complete the cluster. All eligible children in the households were assessed and if a child or primary caregiver was absent, an appointment was booked for a later visit in the course of the assessment period.

### **3.3 Sample Size**

The 30 by 30 cluster assessment design was used in the assessment to assess 922 children. This sample size gives a relatively high precision when there is a high prevalence of malnutrition and is designed to ensure that most assessments will have sufficient children. With a 30X30 sample achieved a 5% desired precision of results for malnutrition prevalence of between 15 and 25% with a relatively low design effect of 1 to 2. The same sample size was adequate in providing a 1% desired precision for crude mortality rates of between 1 and 2 with design effects of 1 to 1.5

### **3.4 Data collection**

#### ***3.4.1 Anthropometric measurements and variables assessed***

The anthropometric data will be collected using the procedure stipulated by the WHO (1995) for taking anthropometric measurements. Adherence to this procedure was ensured. The protocol used was as follows:

*Weight:* Salter Scale with calibrations of 100g-unit was used. This was adjusted before weighing every child by setting it to zero. The female children were lightly dressed before taking weight while clothes for the male children were removed. Two readings were taken for each child, shouting loudly and the average recorded on the questionnaire.

*Height:* For height, a vertical or horizontal measuring board reading a maximum of 175cm and accurate to 0.1cm was used to take the height or length of a child. The child stood on the measuring board barefooted; have hands hanging loosely with feet parallel to the body, and heels, buttocks, shoulders and back of the head touching the board. The head was held comfortably erect with the lower border of the orbit of the eye being in the same horizontal plane as the external canal of the ear. The headpiece of the measuring board was then pushed gently, crushing the hair and making contact with the top of the head. Height/length is then read to the nearest 0.1cm. Two readings were recorded and the computed average used in the analysis.

*Length:* For children aged 6 to 24 months or between 65cm to 84.5cm length instead of height was taken. The child was made to lie flat on the length board. The sliding piece was placed at the edge of the bare feet as the head (with crushing of the hair) touched the other end of the measuring device. Then two readings taken and the average computed.

*Arm Circumference:* The Mid Upper Arm Circumference was measured using a MUAC tape to the nearest 0.1 cm. Two readings were taken and the average recorded for each child and caregiver.

#### *Child age*

Where useful documents like growth monitoring/clinic attendance cards and birth certificates are available, they were used to determine the child's age. Calendar of events (developed by key

informants and the assessment team) will also used as proxies to age determination (appendix 3).

### **Oedema**

Oedema, defined as bilateral oedema on the lower limbs was assessed by gently pressing the feet to check if a depression was left after at least three seconds of pressing and confirmed by the supervisor and then recorded.

### **Morbidity**

Morbidity pattern was assessed by asking about incidences of common communicable diseases i.e. diarrhoea, acute respiratory infection, serious febrile illness in the two weeks and suspected measles in one month prior to the assessment.

- ◆ *Diarrhoea* was defined as a child having three or more loose or watery stools per day
- ◆ *ARI* asked as oof wareen or wareento. The three signs asked for are cough, rapid breathing and fever
- ◆ *Suspected malaria/acute febrile illness*: - the three signs looked for are periodic chills/shivering, fever, sweating and sometimes a coma
- ◆ *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

### **Dietary Diversity**

Dietary diversity was the number of food groups consumed determined by taking a simple count of various food groups consumed in a given household over the past twenty four hours. A total of 12 FAO recommended food groups were considered which include Cereals & cereal products; Roots & tubers; Vegetables; Fruits; Meat and meat products, Eggs; Fish; Legumes; Milk & its products; Fats & oil; Sugar & honey and Miscellaneous.

### **Mortality**

The mortality assessment was concurrently with nutrition assessment in which a 30 by 30 cluster sampling methodology was used. The assessment methodology used for the nutrition assessment was adopted with the exception that households were selected as the second sampling unit. At least 30 households were randomly selected in each cluster and the mortality questionnaire administered to a responsible member of that household. All households within the selected cluster were eligible for inclusion in the mortality assessment, whether there was a child under the age of five years or not. Households were systematically assessed until the 30<sup>th</sup> household using standard questionnaire (appendix).

The crude and under five mortality rates were generated automatically by the Nutrisurvey software as deaths per 10,000 persons per day using a recall period of say 90 days.

Mortality rates was interpreted according to the following reference

- For under-five years old children
  - Under-five mortality rates  $\geq 2$  deaths/10,000/day indicate a situation of alert
  - Under five mortality rate  $\geq 4$  deaths/10,000 children/day indicate an emergency
- For the total population
  - Mortality rates  $\geq 1$  deaths/10,000 persons/day indicate an alert situation
  - Mortality rates  $\geq 2$  deaths/10,000 persons/day indicate an emergency.

### 3.5 Description of assessment activities

Six teams each consisting of two enumerators; a supervisor conducted the assessment with each team handling one cluster in a day. An elder from each village/cluster assisted the teams in identification of the cluster, its centre and boundaries. Supervisors were seconded from the participating partners namely; GHC, FSAU, FEWSNET, CARE Somalia, NCA, UNICEF and WFP. Overall support, supervision and co-ordination were done by two FSAU senior Nutritionists. Enumerators were identified by partners and recruited based on their experience with previous assessments, participation in nutrition and health related activities and ability to learn nutrition assessment procedures during training.

**Table 3.1: Chronology of activities for the Gedo Nutrition assessment**

Major Activity	2006
Preparation of tools, methodology & review of secondary data (Nairobi)	1 <sup>st</sup> - 17 <sup>th</sup> March
Resource mobilization; Joint planning meetings with partners (Nairobi)	2 <sup>nd</sup> - 17 <sup>th</sup> March
Training of enumerators, pre-testing and cluster identification	18 <sup>th</sup> - 22 <sup>nd</sup> March
Collection of data	23 <sup>rd</sup> - 29 <sup>th</sup> March
Entry of data in Garbaharey	24 <sup>th</sup> - 29 <sup>th</sup> March
Preliminary analysis (Nairobi)	31 <sup>st</sup> March
Further data cleaning and analysis in Nairobi	3 <sup>rd</sup> - 4 <sup>th</sup> April
Report writing	5 <sup>th</sup> - 12 <sup>th</sup> April
Circulation of first draft report to partners	12 <sup>th</sup> April
Receiving inputs from partners	12 <sup>th</sup> - 19 <sup>th</sup> April
Circulation of the final report	26 <sup>th</sup> April

### 3.6 Quality control procedures

A comprehensive training of enumerators and supervisors was conducted covering interview techniques, sampling procedure, inclusion and exclusion criteria, sources and reduction of errors, taking of measurements, 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 a village (Raygode in Garbaharey district) not selected as a cluster for the actual assessment. Pre-testing will involve familiarising assessment teams with entry to a village/cluster/household; administering the questionnaire, sampling procedure, correct taking of measurements and recording. After the field exercise, views were exchanged to address the difficulties identified; appropriateness of the questions reviewed and necessary changes made.

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 upon and after entry made it easy to detect any outliers/ mistakes and to replace or repeat households depending on magnitude of error (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.

### 3.7 Nutritional status indices

Weight for height (W/H)- expressed in Z score - is the most appropriate indicator for quantifying wasting in a population during an emergency. Weight for height percent of median compares the weight of the measured child with the median weight of the children of the same height in reference population. MUAC measures the muscle mass help in determining children at risk of death in emergency. During data collection W/H was calculated on the spot and the severely malnourished children referred for treatment using a referral form (appendix 5). The three modes of expression in the table below were used for presentation of results.

**Table 3.2 Summary of Nutrition status indices cut off points**

<b>Nutritional status</b>	<b>Weight for Height in Z-score</b>	<b>Weight for Height in % of Median</b>	<b>MUAC</b>
Global acute malnutrition	< -2 or oedema	< 80% or oedema	<12.5 cm
Moderate malnutrition	≥-3 Z-score<-2	≥-70% and <80%	<12.5 cm and ≥11 cm
Severe acute malnutrition	< -3 or oedema	< 70% or oedema	<11 cm
<b>Pregnant women Nutrition Status Cut offs</b>			
Moderate malnutrition	MUAC<23.0cm		
Severe malnutrition	MUAC<20.7cm		
<b>Non-pregnant Women nutrition status</b>			
Moderate Malnutrition	MUAC<18.5 cm		
Severe malnutrition	MUAC<16.0 cm		

## 4.0 ASSESSMENT RESULTS

### 4.1 Household Characteristics of Study Population

The nutrition assessment covered a total of 437 households with a mean household size of 6.8 (SD= 2.2) persons. A total of 922 children aged 6-59 months and with height of 65-109.9 cm were assessed. The mean number of the under fives per household was 2.6 (SD=0.8).

**Table 4.1: Household Characteristics**

	N	% (CI)
Total Households	437	
<i>Household size (Mean):</i>	6.8 (SD=2.2)	
<i>Mean No of Underfives</i>	2.6 (SD=0.8)	
Resident	395	92.7 (89.7 - 94.9)
Internally displaced	26	6.1 (4.1 - 8.9)
Internal Immigrants	3	0.7 (0.2 - 2.2)
Returnees	2	0.5 (0.1 - 1.9)
<i>Reason for movement</i>		
Fighting/ civil insecurity	51	77.3
Food and water shortage	13	19.7
Water and pasture shortage	2	3.0

The results showed that 92.7% of the surveyed households were local residents with only 6.1% being recently displaced. Only 10% of the non resident population had come from outside Gedo region. The major reason for migration by most households (77%) was civil insecurity while about 20% of the migrations were due to food and water shortages.

### 4.2 Livelihood, Asset Ownership and Source of Income

**Table 4.2: Distribution of households by livelihoods and income sources**

Livelihoods (N=437)	N	%
Agro-pastoral	180	41.2 (36.6 - 46.0)
Pastoral	177	26.8 (22.7-31.2)
Urban	82	18.8 (15.3 -22.8)
Riverine	58	13.3 (10.0 -18.2)
Income source (N=437)		
Petty trade	134	30.7 (26.4 - 35.3)
Casual labour	118	27.0 (22.9 - 31.5)
Sale of animal and animal products	67	15.3 (12.2 -19.1)
Others	67	15.3 (12.2 -19.1)
Sale of crops	37	8.5 (6.1 -11.6)
Remittances	13	3.0 (1.7 - 5.2)
Salaried employment	1	0.2 (0.0 - 1.5)

Table 4.2 shows the distribution of livelihoods and major source of income. About (41%) of the surveyed households were agro-pastoralists, 27% were pastoral and the rest were either urban or riverine. The major source of income for the assessed household in the region was petty trade. The petty trades practiced by different households included sale of firewood, building

materials, sale of water by donkey carts, hay for livestock.

### 4.3 Water Access and Quality

More than half (57.2%) of the surveyed households drew water from the rivers. Unprotected wells were also used by a significant proportion 34.6% of the surveyed households. The average time taken to and from the nearest water points for the highest proportion 29.1% of assessed households was 30-60 minutes. Only 18.5% of the household could access water in less than 30 minutes. The results also showed that most 68% of the households owned 1-2 water storage containers with capacity of 20 litres. This limits their capacity to store water. On water storage, it was found out that the majority 82.6% of the households stored water in covered containers.

**Table 4.3: Water Access and Quality**

Source of Water (N=437)	N	(%)
Rivers	250	57.2 (52.4- 61.9)
Unprotected wells	151	34.6 (30.1 – 39.2)
Others (shallow wells, stored rain water)	16	3.7 (2.2 – 6.0)
Protected well.	15	3.4 (2.0 – 5.7)
Water catchments	5	1.1 (0.4 – 2.8)
<b>Time taken to get water (N=437):</b>		
30-60 minutes	127	29.1 (24.9 -33.6)
>2 hours	123	28.1 (24.0 – 32.7)
1-2 hours	106	24.3 (20.4 – 28.6)
<30 minutes	81	18.5 (15.1 – 22.5)
<b>Number of clean water storage containers(N=437)</b>		
1 - 2 containers	297	68.0 (63.3 – 72.3)
3 - 4 containers	109	24.7 (21.0 – 29.3)
4 – 5 containers	27	6.2 (4.2 – 9.0)
> 5 containers	4	0.9 (0.3 – 2.50)
<b>Method of Water storage (N=437)</b>		
Covered containers	361	82.6 (78.7 -86.0)
Open containers	62	14.2 (11.1 – 17.9)
Constricted neck-end ( <i>Ashuun</i> )	14	3.2 (1.8 – 5.4)

There was an association between the source of water and incidences of diarrhoea- those who drew their water from unprotected sources were more likely ( $p<0.001$ ) to experience diarrhoea episodes than those who drew their water from protected sources.

### 4.4 Sanitation and Hygiene Practices

The results revealed that the majority 90% of the households in the region had no access to sanitation facilities for human waste disposal and were therefore using bushes. Where available, the commonly 8.7% used sanitary facility was open-pit. The distribution of the sanitary facilities is shown in table 4.4 below. For the household with sanitary facilities (latrines or open pits), most 85.7% of them were located in distance of more than 30 metres from the water sources recommended by Sphere 2004.

**Table 4:4 Sanitation & Hygiene**

<b>Sanitation and hygiene</b>	<b>n</b>	<b>% (CI)</b>
<b>Access to Sanitation facility (N=437):</b>		
Traditional pit latrine	8	1.8 (0.7 – 4.9)
Open pit	38	8.7 (6.3 – 11.8)
No latrine at all (Bush)	391	89.5 (86.1 -92.1)
<b>Use of washing agent</b>		
Soap	257	58.8 (54.0 – 63.4)
None	162	37.1 (32.6 – 41.8)
Ash	11	2.3 (1.3 – 4.6)
Shampoo	7	1.6 (0.7 – 3.4)
<b>Method of food storage:</b>		
Covered container	166	38.0 (33.4 – 42.7)
Don't store	149	34.1 (29.7 – 38.8)
Put in a pot besides fire	101	23.1 (19.3 – 27.4)
Suspended in a rope/hooks	16	3.7 ( 2.2 – 6.0)
Others ( raised place, open place)	5	1.1 ( 0.4 – 2.8)

The results also revealed that more than half of the surveyed households were using soap. Other washing detergents used included shampoo and ash. Approximately, 37% of the households were not using any washing detergent. On food storage, most 38% households stored food in covered containers.

#### 4.5 Health Seeking Behaviour

**Table 4.5: Health seeking behaviour**

Type health service sought <i>Where (N=316):</i>	<i>N</i>	<i>%</i>
Public health facilities	134	42.1
Private pharmacy/clinic	92	29.1
Others (prayer, Koran reading)	56	17.8
Traditional healers	28	8.9
Own medication	6	1.9

For the households that had sick children two weeks prior to the assessment, 42.1% of them sought health services from public health facilities. Other, types of health assistance sought are as shown in table 4.5.

#### 4.6 Formal and informal support

The assessment results revealed that most households in Gedo region had received different types of formal and informal supports in the last three months prior to the assessment. Approximately, 77% of the surveyed households had received informal support in forms of remittances from abroad, gifts, zakat from better off households and loans. The informal assistance reported by the majority (73.7%) of the households was remittances from abroad. On the other hand, the majority 97.5% of the assessed households had received formal support in form of free food, food for work, supplementary food, water subsidy, cash for work and animal vet-care.

#### 4.7 Characteristics of survey children

**Table 4.7: Distribution of children according to age and sex**

Age	Boys		Girls		Total		Ratio
	n	%	n	24.5	n	%	
6-17 months	96	20.4	88	19.5	184	20.0	1:1.09
18-29 months	129	27.4	112	24.8	241	26.1	1:1.15
30-41 months	108	23.0	115	25.4	223	24.2	1:0.94
42-53 months	88	18.7	83	18.4	171	18.5	1:0.52
54-59 months	49	10.4	54	11.9	103	11.2	1: 0.91
Total	470	100	452	100	922	100	1:1.04

A total of 922 children were surveyed from 437 households of whom 51% were boys and 49 % were girls. The ratio of boys to girls was 1:1.04. The

majority of the assessed children were in age group 18 – 29 months (26.1%) while the age group with least number of the assessed children was 54 – 59 months (11.2%). The distribution of the children in different age groups is as shown in Table 4.7.

#### 4.8 Nutritional status of survey children using anthropometry

##### 4.8.1 Malnutrition by Weight/Height z-score

**Table 4.8: Summary of Global Acute malnutrition and Severe Acute Malnutrition**

Malnutrition Rates	No	Proportion
Global Acute Malnutrition (<-2 Z score or oedema)	219	23.8 (21.1 – 26.7)
Severe Acute Malnutrition (<-3 Z score or oedema)	34	3.7 (2.6 – 5.2)
Oedema	14	1.5 (0.9 – 2.6)

As shown in table 4.8 global acute malnutrition (GAM) using WFH Z score (<-2 z-scores or oedema) was 23.8% (CI: 21.1 – 26.7) while severe acute malnutrition (<-3 z-score or oedema) was 3.7% (CI: 2.6 – 5.2). A high number (14) of

oedema cases were identified during the assessment.

**Table 4.9: Distribution of children by nutritional status (weight/ height z-score or oedema) and child sex**

Nutrition status categories	Boys		Girls		Total	
	No	% (CI)	No	% (CI)	No	% (CI)
Global acute malnutrition (WFH<-2 z score/oedema)	116	24.7 (20.9 – 28.9)	103	22.8 (19.1 – 27.0)	219	23.8 (21.1 – 26.7)
Severe acute malnutrition (WFH <-3 z score/oedema)	21	4.5 (2.9 – 6.9)	13	2.9 (1.6 – 5.0)	34	3.7 (2.6 – 5.2)
Oedema	10	2.1 (1.1 – 4.0)	4	0.9 (0.3 – 2.4)	14	1.5 (0.9 – 2.6)

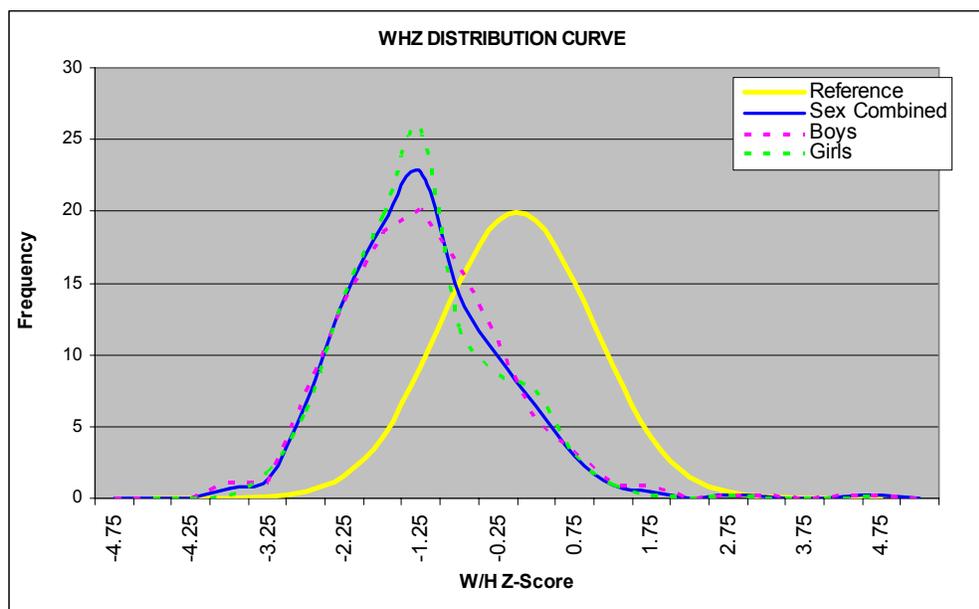
About 24.7% of boys and 22.8% of girls were acutely malnourished in the assessed population in Gedo using weight for height <-2 Z score or presence of oedema. The level of malnutrition was however not significantly different ( $p=0.55$ ) among the two sexes. A higher percentage of the boys 4.5% were severely malnourished as compared to girls 2.9%. There was however a variation in distribution of nutrition status in different age groups as shown in table 4.10.

**Table 4.10: Distribution of Nutrition status by Age**

Age groups	Severe (WH<-3Z)	Moderate (WH>=-3Z<-2Z)	GAM (Total malnourished-WH<-2Z)	Normal (WH>=-2Z)	Total
6-17 months	3 (1.6%)	20 (10.9%)	23 (12.5%)	161 (87.5%)	184
18-29 months	11 (4.6%)	45 (18.7%)	56 (23.2%)	185 (76.8)	241
30-41 months	8 (3.6%)	55 (24.7%)	63 (28.3)	160 (71.8%)	223
42-53 months	6 (3.5)	32 (18.7)	38 (22.2%)	153 (89.5)	171
54-59 months	6 (5.8%)	33 (32%)	39 (37.8%)	64 (62.1)	103
Total	34 (3.7%)	185 (20.1%)	219 (23.8)	703 (76.2)	922

Overall, the age category with highest proportion of malnourished children was 54-59 months while the age group 6-17 months had least

(12.5) proportion of malnourished children. The relationship between malnutrition and age categories was statistically significant ( $\chi^2=26.94$ ,  $df=4$ ,  $p=0.00021$ ) with malnutrition increasing with age. Further, analysis showed that children aged 6-24 months were less likely to be malnourished as compared to those aged 25 months and above ( $p=0.005$ ).



The distribution of the weight-for-height z-scores (mean= -1.24; median=-1.34; SD=1.03) were skewed towards the left depicting a poorer nutrition situation according to international (WHO) standards (figure).

#### 4.8.2 Malnutrition by WFH percentage of median

**Table 4.11: Malnutrition prevalence using WFH percentage of median categories**

Nutrition categories	status	Males		Females		Total	
		No	Proportion (%)	No	Proportion (%)	No	Proportion (%)
Global acute malnutrition (WFH<80% or oedema)		71	15.1 (12.1 – 18.7)	63	13.9 (10.9 – 17.6)	13	14.5 (12.4 – 17.0)
Severe acute malnutrition (WFH<70% or oedema)		15	3.2 (1.9 – 5.3)	5	1.1 (0.4 – 2.7)	20	2.2 (1.4 – 3.4)

The global acute malnutrition among children aged 6 - 59 months using weight for height <80% of median or presence of oedema was 15.1% (CI: 12.1 – 18.7%), while the severe acute malnutrition <70% of median or presence of oedema was 2.2% (CI: 1.4 – 3.4%).

#### 4.8.3 Malnutrition by MUAC

**Table 4.12: Malnutrition prevalence using MUAC categories**

Nutrition categories	status	Males		Females		Total	
		No	Proportion (%)	No	Proportion (%)	No	Proportion (%)
Global acute malnutrition (MUAC<12.5cm or oedema)		82	17.4 (14.2 – 21.3)	93	20.6 (17.0 – 24.7)	17	19.0 (16.5 – 21.7)
Severe acute malnutrition (MUAC<11 cm or oedema)		24	5.1 (3.4 – 7.6)	22	4.9 (3.1 – 7.4)	46	5.0 (3.7 – 6.7)

The global acute malnutrition among children aged 6 - 59 months using MUAC <12.5cm or presence of oedema was 19.0% (CI: 16.5 – 21.7%), while the severe acute malnutrition MUAC<11cm or presence of oedema was 5.0% (CI: 3.7 – 6.7%).

**Morbidity, measles immunisation, polio vaccination and vitamin A supplementation****Table 4.13: Morbidity, measles immunisation, polio vaccination and vitamin A supplementation**

	No.	%(CI)
<i>Incidence of major child illnesses (N=906)</i>		
Diarrhoea within two weeks prior to survey	226	24.5 (21.8 -27.4)
ARI within two weeks prior to survey	194	21.0 (18.5 – 23.8)
Suspected Malaria/febrile illness within two weeks prior to survey	60	6.5 (5.0 – 8.3)
Measles within one month prior to the survey (N=880)	40	4.5 (3.3 -6.2)
<i>Immunization Coverage (N=906)</i>		
Children (9-59 months) immunised against measles (N=880)	536	60.9 (57.6 – 64.1)
Children who have ever received Polio dose (N= 922)	879	95.3 (93.0 – 96.6)
<i>Vitamin A supplementation (N= 906)</i>		
Children who received Vitamin A supplementation in past 6 months or before	708	76.8 (73.9 -79.5)
<i>Micronutrients Deficiencies (N=476)</i>		
Households who reported night blindness (N=437)		
Member with night blindness	6	1.4 (0.6 – 3.1)
< 5 years	10	2.3 (1.2 – 4.3)
≥ 5 years	421	96.3 (94.0 – 97.8)
None		

Approximately, 34% of the assessed children had some form of illness two weeks prior to the assessment. The distribution of the common illnesses reported during the assessment is shown in table 4.13.

The incidences of diarrhoea within two weeks prior to the survey were the highest 24.5% followed by ARI 21%. About

6.5% had suspected malaria/febrile illness while 4.5% reported suspected measles among children aged 9-59 months one month prior to the assessment. However, there was no significant association between morbidity and malnutrition.

The results showed a high coverage of different health programmes. Measles vaccination coverage for eligible children (9-59 months old) was 60.9%. Most (95.3%) of the children aged 6-59 months had received at least a dose of polio vaccine while 76.8% of the assessed children had received Vitamin A supplementation in previous 6 months or before prior to the assessment.

**4.10 Vitamin A Deficiency**

About 3.7% of the households reported cases of night blindness, which is a proxy indicator for vitamin A deficiency. Most (2.3%) of the cases were reported among the people aged more than five years while the rest were among those aged less than five years.

#### 4.11 Feeding practices

More than half 56.3% of the children aged 6-24 months were not breastfeeding at the time of

Children aged 6-24 months (N=348)	N	% (CI)
<b>Is child breastfeeding?</b>		
Yes	152	43.9 (38.4 – 49.1)
No	196	56.3 (50.9 – 61.6)
<b>Feeding frequency (N=348)</b>		
Twice	8	2.0 (0.4 – 5.7)
Once	95	64.2 (55.9 – 71.9)
3-4 times	23	15.5 (10.1 – 22.4)
>5 times	22	14.9 (9.6 – 21.6)
<b>Age stopped breastfeeding (N=310):</b>		
12 – 18 months	55	39.9 (31.6 – 48.5)
6-11 months	54	39.1 (30.9 – 47.8)
More than 18 months	15	10.9 (6.2 – 17.3)
<6 months	13	9.4 (5.1 – 15.6)
Never breastfed	1	0.7 (0.0 – 4.0)
<b>Introduction of Complementary feeding</b>		
0 - 3 months	127	60.2 (53.2 – 66.8)
≥6 months	59	28.0 (22.0 – 34.5)
4 – 5 months	25	11.8 (7.8 – 17.0)
<b>Breastfeeding frequency:</b>		
On demand	113	74.3 (66.6 – 81.1)
<3 times	36	23.7 (17.2 – 31.3)
3-6 times	3	2.0 (0.4 – 5.7)

the assessment. This shows that most children in Gedo are breastfed for less than 24 months. Among the 152 children who were breastfeeding, the majority (74.3%) of them were breastfed on demand. The results also showed that most children (64.2%) were fed twice in a day (besides breastfeeding). Distribution of different feeding practices is shown in table 4.14.

Further, the results showed that most children stopped breastfeeding after one year. On the other hand most 60.2% children are introduced to complementary feeding at age of 0-3 months. Further analysis showed that a higher proportion of children aged 6-24 months who had stopped breastfeeding were more likely to be malnourished

than those who were on breastfeeding ( $p=0.004$ )

#### 4.12 Dietary Diversity

**Table 4.15: Distribution of dietary diversity among children**

No of food groups consumed (N=437)	N	% (CI)
1 food group	34	8.0 (5.7- 11.1)
2 food groups	170	38.9 (34.3 – 43.7)
3 food groups	98	22.4 (18.7 – 26.7)
≥4 food groups	135	30.7 (26.4 – 35.3)
Mean HDDS	2.9	SD=1.6
<b>Main source of food (N=476)</b>		
Food aid	348	79.6 (75.5 – 83.2)
Purchasing	72	16.5 (13.2 – 20.4)
Gifts/donations	9	2.1 (1.0 – 4.0)
Own production	7	1.6 (0.7 – 3.4)
Borrowed	1	0.2 (0.0 – 1.5)

As shown on table 4.15, the majority 38.9% of the households had consumed two food groups within 24 hours prior to the assessment.

Overall, the majority (82.9%) of the household consumed less diversified food (<4 food groups). Only 14.6% of the

households were consuming diversified diet ( $\geq 4$  food groups). Households consumed an average of 2.9 food groups (SD=1.6) with the number of food groups consumed ranging from one to seven. The commonly consumed food groups were cereals, sugar and oil. Others food groups consumed included pulses, milk and meat. The distribution of food groups consumed within 24 hours prior to assessment is shown in table 4.15.

Main food source for the majority 79.6% of the households in Gedo region was food aid while food purchase was a significant food source for 16.5% of the household.

#### 4.13 Adult women Malnutrition by MUAC

**Table 4.16. Adult nutrition status by MUAC**

	n	%	95% CI
<b>Non Pregnant (N=317)</b>			
Severe acute malnutrition (MUAC<16.0 cm)	0	0	
Global acute malnutrition (MUAC $\leq$ 18.5)	0	0	
<b>Pregnant women (N=115)</b>			
Severe malnutrition (MUAC $\leq$ 20.7 cm)	5	4.3	1.4 – 9.9
Global acute malnutrition MUAC<23.0 cm)	47	40.9	31.8 – 50.4

A total of 432 women were assessed of whom 73.4% were non-pregnant and the rest were pregnant. Among the pregnant women, 40.9% were malnourished (MUAC<23.0 cm) with 4.3% of them being severely malnourished

(MUAC<20.7). None of the non-pregnant women was malnourished (MUAC<18.5).

#### 4.14 Relationship between Malnutrition and other factors

Table 17: Risk factors and relation to total malnutrition (WHZ<-2 or oedema)

Exposure variable	N	(%)	Crude RR	95% CI	p-value
<i>Child sex:</i>					
Male	116	24.7	1.05	0.91 – 1.22	0.55
Female	103	22.8			
<i>Age group</i>					
6-24 months	65	18.6	0.73	0.59 – 0.91	0.005*
25-59 months	154	26.9			
<i>Morbidity patterns</i>					
<i>ARI</i>					
Yes	55	28.3	1.27	0.97 – 1.67	0.11
No	164	22.5			
<i>Diarrhoea:</i>					
Yes	58	25.7	1.1	0.86 – 1.44	0.49
No	161	23.1			
<i>Malaria</i>					
Yes	17	28.3	1.27	0.97 – 1.67	0.48
No	202	23.4			
<i>Measles:</i>					
Yes	9	22.5	0.90	0.5 – 1.62	0.86
No	210	25.0			
<i>Health programmes</i>					
<i>Vitamin A Supplement:</i>					
Yes	160	22.6	0.94	0.86 – 1.03	0.16
No	214	27.6			
<i>Measles vaccine (N=880)</i>					
Yes	134	25.0	1.05	0.97 – 1.14	0.31
No	344	24.1			
<i>Dietary &amp; feeding patterns</i>					
<i>Breastfeeding (N= 350)</i>					
Yes	152	13.8	0.55	0.30 – 1.02	0.04*
No	198	22.2			
<i>Dietary diversity (N=437)</i>					
≤ 3 food groups	81	26.7	0.79	0.54 – 1.13	0.22
≥ 4 food groups	44	19.4			

Further analysis showed that age and breastfeeding had a significant association with malnutrition. Children aged between 6-24 months were less likely to be malnourished than those aged 25-59 months (p=0.005). The children aged 6-24 months who were still breastfeeding were less likely to be malnourished than those who were not breastfeeding (p=0.004). This reveals the importance of breastfeeding in influencing the nutrition status of the children. The somewhat higher level malnutrition in the older age group suggests that household food security had a strong influence on the overall level of malnutrition. The older age group depends on the food

served at the family table which is influenced by food security among other factors. The influence of the other risk factors on malnutrition was not statistically significant (p>0.05).

#### 4.15 Mortality rates

A total of 906 households were surveyed for mortality indicator with a recall period of 90 days prior to the survey being used. The results generated by the Nutrisurve software were as presented below:

Death rates;

For children aged 0-59 months (under-five mortality or death rate)

$$0\text{-}5\text{DR} = \frac{\text{Number of deaths of children <5 years}}{\left( \frac{\text{Mid point Population* of children <5}}{10,000} \right) \times \text{Time interval}} = \text{Deaths/10,000/day}$$

\* Mid point population = (Population at present + Population at beginning of recall)/2  
 Population at beginning of recall = (population present + left + deaths) – (joined + births)

Under five population households	=1415
Number of under fives who joined the households	= 9
Number of under fives who left the households	= 0
Number of under five deaths	= 31

Under five death rate (deaths /10,000 children per day) = **2.46** (CI: 1.38 – 3.54)

This under five death rate reflects a situation of alert according to the international standards (WHO classification).

For the total population (Crude mortality/death rate):

$$\text{CDR} = \frac{\text{Number of deaths}}{\left( \frac{\text{Total Mid point Population}}{10,000} \right) \times \text{Time interval}} = \text{Deaths/10,000/day}$$

Total population in surveyed households	= 5458
Total people who joined the households	= 111
Total people who left the households	= 57
Total number of births	= 55
Total number of deaths in the households	= 51

CMR as deaths per 10,000 persons per day = **1.04** (CI: 0.65 – 1.44)

This crude mortality rate also reflects a situation of alert according to the international standards (WHO classification).

The causes of mortality reported during the assessment were disease-related including diarrhoea, ARI and measles and malaria.

#### 4.16 Food security and related factors

In Gedo region, two consecutive seasons of rain failures coupled with persistent insecurity has negatively impacted on the food security situation in the region. Food security information was collected through qualitative approaches. Semi-structured interviews with key informants and community focus groups were used for collecting information. Proportional piling was used to identify livestock mortality rate. The team also stopped randomly at settlements along the road for briefer assessment, and ensured that rural communities and IDPs living outside the main

villages were included in the assessment.

### ***Rainfall and weather condition***

Unexpected patchy and poorly distributed (2-3 days) rainfall was received in all districts Gedo region during the month of March. Usually Gu rains starts mid April in Gedo regions however, light showers known as Todob was received in few areas for the past few days. This has benefited localised areas in few days and now dried up. The rains fall in Dhubaa, Daabley, Yucubley of Garbaharey district, La haley, Tubako, Daar of Bardera district, Hufeey, Ajawe, Weeldheen of Burdubo district, Busaar and Garsaal of Elwak district, Khadiijo Haji, Gaddoon dhawe of Belet Hawa district, Bohol-Garas, Yurkut villages of Luuq district. The impact of these shower rains was generally insignificant and the region is experiencing severe water shortage. The weather condition is general hotter than usual.

### ***Water condition***

Due to tow consecutive rain failures, water shortage is severe with hardest hit being the hinterland areas of the region particularly areas under southern inland and Dawo pastoral Livelihood Zones. Other Livelihood Zones had access to water sources, mainly from Rivers. Most of the pastoral herders moved toward permanent water sources and the Riverine areas of Juba and Dawo rivers.

Water from the shallow wells has become saline due to high rates of evaporation making it unfit for human and livestock consumption. There were reports of human deaths after drinking water from shallow wells in Indhoceel and Garsaal villages of Elwak district. Water trucking is the major source of water available to pastoralists of southern inland and Dawo pastoral Livelihood Zones. Water quality (colour and test) of Juba River, the main source of water for Gedo region has deteriorated and quantity reduced hence the possibility of outbreak of water borne diseases is very high. Overcrowding at existing water points is reported to be increasing the time taken to access water for domestic and livestock consumption.

### ***Pasture and grazing condition***

Dawo and Southern Inland Pastoral Livelihood Zones are good grazing rangeland land in Gedo region, especially, during the dry seasons. However, the pasture/grazing conditions of these rangelands have considerably depleted due to two (Deyr and GU 2005/06 seasons of rain failures.

### ***Livestock condition***

The conditions are significantly below normal. The prices of cattle reduced sharply as the drought progressed. For instance one local quality cattle is 800,000 S.SH down from the usual price of 1,800,000 S.SH in a normal year. Local quality goat prices are very low as compared to the normal year prices. In some rural market, local goat costs about 50-60,000 SSh instead of normal price of 170,000 SSh. However, there are rare cases where the prices of hand fed local quality goat costs higher than normal.

The price of fresh camel's milk has risen sharply where a litre of fresh camels' milk is around 6-12000SSh instead of usual price of 2000-3000 SSh in normal years. The high prices of milk have reduced milk consumption drastically.

### ***Livestock death rate***

High livestock death was evidenced and the worst affected areas are Bardera, Burdubo, Elwak

and Garbaharey districts. The most affected species are cattle, sheep, donkey and camels with mortality rate of around 50-70%, 40-50%, 20-30% and 5-10% respectively. The lower range of the mortality rate stands for the north Gedo, while the upper range stands for southern Gedo. North Gedo has been in humanitarian emergency for a long time; therefore, herders have smaller herd size and better coping strategies compared to the south of the region. Pastoralists with cattle out-migrated in huge number towards Riverine areas along Juba River including Juba valley and to Bay region. The long migration resulted to decimation of cattle population. Carcasses of dead livestock are scattered near water points, along roads and in the towns.

### **Coping strategies:**

The main coping strategies reported during the assessment included;

- Reduction of meal frequency from 3 to 1-2 meals per day
- Reduction quantity consumed per meal
- Household split as strong members out-migrate for labour
- Intensification of collection of bush products (firewood, charcoal burning )
- Increased seeking of relatives support
- Food aid dependency
- Borrowing
- Seeking assistance from relatives and friends food
- Food gift from better off relatives
- Food purchase on credit
-

## 5.0 DISCUSSION OF THE ASSESSMENT RESULTS

### 5.1 Nutrition status in Gedo region

The survey results show a GAM of 23.8% (21.1 – 26.7) shows that critical nutrition situation exists in the whole Gedo region. The long term estimates of malnutrition from 1999 to 2005 (Appendix 6) have shown malnutrition rates of >20% in Garbaharey, Luuq, Elwak, Belet Hawa; 15- 19.9% in Dolo and 10 – 14.9% in Bardera districts. The regional rate of 23.8% indicates therefore indicates a worsening poor nutrition situation. *However a variation existed in distribution of child malnutrition among subregions with children from Districts in northern Gedo (Luuq, Dolo, Gabaharey and Belet Hawa) being more likely to be malnourished (RR=0.68, p=0.011) than those from southern Gedo (Bardera and Elwak).* This is consistent with previous assessments that have shown high malnutrition levels in northern Gedo. Children from rural clusters were also more likely to be malnourished than those from urban clusters (RR=1.38, p=0.001). This may be attributed to the disparity in access to food, health services and other basic requirements within urban and rural areas. Malnutrition also varied with age with the children aged 25-59 months being more likely to be malnourished than those aged 6-24 months and above (p=0.005). The somewhat higher level of malnutrition in older age groups suggests that household food insecurity has had a strong influence in the overall high level of malnutrition in the region. The older children depend entirely on what is served at the family table. The relatively lower level of malnutrition among children aged 6-24 months may partly be attributed to breastfeeding which had a significant association with malnutrition (p=0.005). The deterioration of the population is also evidenced by 'alert' mortality rates (CMR 1.04/10,000/day and U5MR 2.46/10,000/day) evidenced in the assessment.

### 5.2 Nutrition status, social economic factors and food consumption

The relationship between malnutrition and social economic variables was not significant. This may be due to the fact that large proportion of the population is affected by drought which has disrupted the livelihood systems. This has led to high dependence on short term aid. Most households had received some form of informal or formal assistance in the last three months prior to the assessment from both local and international organizations. The main source of food reported by the majority of the households was food aid. In the areas where food distribution had taken place there was similarity in the number and type of food groups consumed among the households of different social and economic groups. The formal and informal assistance received may have had an influence in the overall situation in the region.

The second major source of food is purchase and own production which have both been adversely affected by the prevailing drought. Crop and livestock production for poor and middle group population in the region is largely dependent to availability of rain. The drought has therefore led to crop failure leaving the population highly vulnerable to food insecurity. Reduced crop production in the area has led to rise in cereal prices making it unaffordable to most people. Labour from the large farms has also been affected by the prevailing drought, hence reducing means of income in the region. Depletion of pasture and drying of water points has led to massive livestock movement to other regions mainly to Bay and Juba valley. This has dramatically reduced milk consumption as well as income from animal-based products in the region. Only 18% of the assessed households reported to have consumed milk and milk products in the last 24 hours prior to the assessment. Overall, 69% of the assessed households consumed less diversified food with three or fewer food groups. This fails to meet the nutrition requirements of the population.

The result also showed that most people in the region are resident with few <10% displaced people, internal immigrants and returnees. This may be due to the fact that most

people and livestock are out-migrating from Gedo to other region rather than coming to Gedo region. Civil insecurity and shortages of food and water were the main reasons cited for migration.

### **5.3 Morbidity aspects and the health seeking behaviour**

#### ***Morbidity***

The assessment revealed high level of morbidity in Gedo region where approximately 34.3% of the assessed children had some form of illness in the two weeks prior to the assessment. Morbidity has direct relationship with malnutrition where illness lead to increased nutritional demands to repair worn out tissues and at the same time interfering with the intake, digestion, absorption and utilization of the nutrients in the body. High measles immunisation coverage (60.9%), polio 95.3% and Vitamin A supplementation (76.8%) may have mitigated the adverse effects of morbidity on nutrition situation in the region. The high vaccination and immunisation coverage is attributed to the ongoing health interventions and the regular UNICEF/WHO anti-polio campaigns.

#### ***Health seeking behaviour***

The results showed that most households seek medical assistance from public health facilities. The main health facilities include GHC supported facilities in Gabaharey, Belet Hawa, Luuq, Dolo Districts and SRCS supported facilities in Bardera and Elwak district. However most of these health facilities are located in the major district towns making them less accessible to rural population. The policy of cost-sharing by the District Health Boards of these facilities was also reported to be limiting factors to health services access. The burden of the children's caregivers who are often the mothers was also said to be affecting the health services delivery where the mother would not be willing to be admitted in a hospital with a sick child since she has to take care of the other children at home. It also reported that caregivers sometimes take children for medical attention when the condition has already become extremely serious.

### **5.4 Sanitation and water access**

The assessed population was exposed to inadequate access to safe water and poor human excreta disposal. About 90% of the assessed households had no access to toilet facilities. During the rain season, the risk of human waste contaminating the unprotected water sources including rivers and the water catchments will increase. This poses risks of an outbreak of water-born diseases. The significant relationship between diarrhoea and water sources (protected and unprotected) shows that water contamination from unprotected wells could be contributing to the high incidences of diarrhoea reported in the assessment. However, for the few households with toilet facilities most of them were located at a distance of at least 30 metres as recommended by Sphere (2004). This reduces chances of water contamination. The carcasses of dead livestock near the water points also pose a threat to the health of the population when they are washed into the water sources. Positive practices reported in the assessment included storage of prepared food in covered containers and use of washing detergents.

Water access was also evidenced as major problem with only 3.7% of the households accessing water from protected sources. Limited access to safe water (from protected sources) was associated with high incidences of diarrhoea ( $p < 0.05$ ). The water quality was also found to be lacking given the low level of water in Juba River and change of colour. The drying of water catchments, shallow wells, salinities and drying of water points also points out to the existence of water access problem in the region. Water trucking has minimised the problem of water

shortages in the region. However, there some areas with water problems and there are no agencies providing water services. These areas include villages in western Garbaharey; Bara, Sera, Dabley, Goley, Anamaley, Fanweine, Duba and Daghey

### **5.5 Childcare practices influencing nutrition status of Gedo region**

Exclusive breastfeeding and sound complementary feeding practices are crucial in enhancing the nutritional and health status of infants and young children. The study revealed that the majority 56.3% of the children within the breastfeeding age (6-24) were not breastfeeding. This deprives such children essential nutrients from breast milk. Statistical analysis showed that children (within breastfeeding age) who were not being breastfed were more likely to be malnourished than those who were still breastfeeding ( $p=0.005$ ). This shows the important role played by breast milk in the nutrition well-being of the young children. The results also showed that the majority of the children were fed twice in a day hence may not be meeting the high demand for nutrients at this crucial age which demands for quality and quantity nutrients to support growth. Over 60% of the children were introduced to complementary foods at age 0-3 months which is well below the recommended age of six months and predisposes them to the risk of communicable diseases.

The high malnutrition recorded among the pregnant women may also be a predisposing factor to underweight and malnutrition of the children hence exposing them to the risks of morbidity and mortality latter in life.

## 6.0 CONCLUSION AND RECOMMENDATIONS

### 6.1 Conclusion

The nutrition situation in Gedo region is critical GAM 23.8% while the crude of 1.04/10000/day and under five 2.46/10000/day mortality levels are in the 'alert' category (WHO categorization). The long term estimates of malnutrition from 1999 to 2005 (Appendix 6) have shown malnutrition rates of >20% in Garbaharey, Luuq, Elwak, Belet Hawa; 15- 19.9% in Dolo and 10 – 14.9% in Bardera districts, the regional rate of 23.8% indicates a worsening nutrition situation.

Breastfeeding has a significant influence on the nutrition of the children aged 6-24. Children within this age group who were not breastfeeding were more likely to be malnourished than those on breastfeeding ( $p=0.005$ ). It was also evidenced that children aged 25 months and above were more likely to be malnourished than those aged 6-24 months ( $p=0.00021$ ). The relatively higher malnutrition in older age group suggests that household food insecurity has had strong influence in the overall high level of malnutrition. The consumption of unsafe water (from unprotected sources) was associated with increased incidences of diarrhoea.

### 6.2 Recommendations

Even if the anticipated *Gu* rains is received the harvest may be due in the next cropping season in June/July 2006. Recommendations for immediate and long term interventions are advanced.

#### Immediate Interventions

- Improving household food security to prevent further deterioration of the nutrition situation. This may be achieved by intensifying provision of food and non-food items in short term and support to the recovery of livelihoods. .
- To address the immediate problem of acute water shortage, there is an urgent need for provisions of water to the affected population through such interventions as water trucking.
- Rehabilitation of malnourished children through selective feeding programs until household stable food security becomes feasible and critical public health issues are addressed. All options to address this through effective and non-damaging mean need to be considered. Capacity building of the existing MCH and the community to manage malnourished children could be explored.
- There need to distribute blended food to meet the micronutrients needs of the population and reduce prevalence of micronutrient deficiencies.
- There is need to have intervention to cater for livestock given that food aid meant for human consumption is shared with livestock.
- Re-stocking of livestock and provision of planting seeds is necessary with anticipated *Gu* rains.
- Massive campaign in collection and burning of livestock carcass before the rainy season to avert possible outbreak of water born diseases

#### Long term Interventions

- To address the issues of limited access to quantity and safe water, there is a need for rehabilitation of water systems including the well and water catchments in anticipation of *Gu* rains in April. The community should be trained on involved in maintenance of sanitation of the water systems t

- Provision of large water containers for fetching and storage of water would contribute in easing water problems where people have to cover long distance to get water and yet they are unable to carry large volume of water.
- To initiate income generating activities to improve the socio-economic situation of in Gedo region. Introduction of small-scale credit system for small business.
- There is need for establishment of health facilities in the 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.
- Given that a significant population is not accessing any washing detergent there is need to consider inclusion of washing detergents such as soap in food aid basket to boost hygiene in the region.
- Canal rehabilitations, provision irrigations pumps, fuel for irrigation and spare parts to the Riverine communities in Gedo region.
- Establish mobile Veterinary team to cater for livestock health.

**APPENDICES**

**Appendix 1a:GEDO NUTRITION ASSESSMENT HOUSEHOLD QUESTIONNAIRE, 2006**

Date \_\_\_\_\_ Team Number \_\_\_\_\_ Cluster Number \_\_\_\_\_ Name of enumerator \_\_\_\_\_

Name of Village/Town \_\_\_\_\_ District \_\_\_\_\_ Household Number \_\_\_\_\_ Name of the Respondent \_\_\_\_\_

**Q1-8 Characteristics of Household**

**Q1** How many people live in this household (Household size)<sup>1</sup> ? \_\_\_\_\_

**Q2** How many children are below five years in this household (Number of < 5 years)? \_\_\_\_\_

**Q3** What is your present household residence status? 1= Resident<sup>2</sup> 2=Internally displaced<sup>3</sup> 3=Returnees<sup>4</sup> 4=Internal immigrant<sup>5</sup> 5=Other (specify) \_\_\_\_\_

*If answer to the above is 1, then move to Question 7.*

**Q4** Place of origin (categorize during questionnaire design) \_\_\_\_\_

**Q5** Duration of stay \_\_\_\_\_

**Q6** Reason for movement: 1= Insecurity 2=Lack of jobs 3= Food shortage 4=Water shortage 5=Others; specify \_\_\_\_\_

**Q7** What is the livelihood systems used by this household? 1= Pastoral 2=Agro- pastoral 3=Urban 4= Riverine (irrigated agriculture; fishing)

**Q8** What is the household's main source of income? 1= Animal & animal product sales 2= Crop sales 3= Petty trade 4= Casual labour 5= Salaried employment 6= Remittances 7= Other, specify \_\_\_\_\_

<sup>1</sup> Number of persons who live together and eat from the same pot at the time of assessment

<sup>2</sup> A person who dwells in a particular place permanently or for an extended period

<sup>3</sup> A person or groups of persons who have been forced or obliged to flee o to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights, or natural or human-made disasters, and who have not crossed an internationally recognized State Border" source, guiding principles on internal displacement

<sup>4</sup> Refugees who have returned to their country (Somalia) or community of origin, Somalia, either spontaneously or through organized repatriation [ UNHCR definition]

<sup>5</sup> A person who moves (more or less permanently) to a different administrative territory due to a wide range of reasons (e.g. job related, security)

**Q9-16 Feeding and immunization status of children aged 6 – 59 months (or 65 – 109.9 cm) in the household.**

Sno	First Name	Q9  (If 6-24 months)  Are you breastfeeding <sup>6</sup> the child?  (if no, skip to Q14)  1=Yes 2=No	Q10  If breast feeding, how many times/day?  1=<3 times 2=3-6 3=On demand	Q11  If not breast feeding, how old was the child when you stopped breast-feeding?  1=<6 months 2=6-11 months 3=12 – 18 months 4=≥18 months 5= Never breastfed	Q12  At what age was child given water/ foods other than breast milk  1=0-3 months 2=4-5 months 3=6 months or more.	Q13  How many times do you feed the child in a day (besides breast milk)?  1= Once 2= Twice 3= 3-4 times 4= 5 or more times	Q 14  Has child been provided with Vitamin A in the last 6 months  (show sample)  1=Yes 2=No	Q15  (If ≥9 months old)  Has child been Vaccinated against measles?  1=In past 6 months 2=Before 6 months 3=None	Q16  How many times has the child been given vaccine orally?  1=1-2 times 2=3 and above 3=Never
1									
2									
3									
4									

**Q17-27 Anthropometry and morbidity for children aged 6 – 59 months or (65 – 109.9cm) in the household**

1	2	3	4	5	6	7	8	9	10	11	12	13
Sno	First Name	Q17  Child Sex	Q18  Age in months	Q19  Oedema	Q20  Height (cm)	Q21  Weight (kg)	Q22  MUAC (cm)	Q23  Diarrhoea <sup>7</sup> in last two weeks	Q24  Serious ARI <sup>8</sup> in the last two weeks	Q25  Febrile illness/suspected Malaria <sup>9</sup> in the last two weeks	Q26  (If ≥9 month)  Suspected Measles <sup>10</sup> in last one month	Q27  [Applicable for a child who suffered any of diseases in Q23 – 25]  Where did you seek healthcare assistance when (Name of child) was sick?  1=No assistance sought 2=Own medication 3=Traditional healer 4=Private clinic/ Pharmacy 5= Public health facility
3		As per table on page 1										
4		1=Male 2=Female		1=yes 2=no				1= Yes 2= No	1=Yes 2=No	1=Yes 2=No	1=Yes 2=No	

<sup>6</sup>Child having received breast milk either directly from the mothers or wet nurse breast within the last 12 hours

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

Sno	Name	Age (years)	MUAC	Physiological status 1=Pregnant 2=Non pregnant	Illness in last 14 days? If yes, what illness?
1	Mother:				
2					
3					

**Q29** Does any member of the household have difficulty seeing at night or in the evening when other people do not? 1= 2- <6 years 2= ≥ 6 years 3= None

**Q30-33 Access to water (quality and quantity)**

Q30 Main source of drinking water 1 = piped 2= Unprotected well 3= Water catcments 4= Protected well, boreholes or spring 5 = River 9=other \_\_\_\_\_

Q31 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

Q32 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

Q33 What is the method of water storage in the household? 1=Covered containers 2=Open containers 3=Constricted neck/end (*Ashuun*)

**Q34-40 Sanitation and Hygiene (access and quality)**

Q34 Type of toilet used by most members of the household: 1=Improved pit latrine (VIP) 2=Traditional pit latrine 3=Open pit 4=Designated area 5=Bush

Q35 Distance between toilet and water source 1=0- 30 metres 2=30 metres or more

Q36 what washing agents do you use in your household? 1=Soap 2=Shampoo 3=Ash 4=Plant extracts 5=None

Q37 How do you store prepared food? 1= Suspend in ropes/hooks 2=Put in pots beside the fire 3= Put in covered containers 4= Don't store 5= Other, specify \_\_\_\_\_

**Q 38 Food Consumption 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.

<sup>7</sup> Diarrhoea is defined for a child having three or more loose or watery stools per day

<sup>8</sup> ARI asked as oof wareen or wareento. The three signs asked for are cough, rapid breathing and fever

<sup>9</sup> Suspected malaria/acute febrile illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma

<sup>10</sup> 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



**Appendix 1b:WEYDIIMAHA SAHANKA NAFAQADA GEDO( March’06)**

Tariikh\_\_\_ Lanbarka Kooxda\_\_\_\_\_ Lanbarka goobta\_\_\_\_\_ Magaca Kormeraha \_\_\_\_\_ Magaca xog-qadaha\_\_\_\_\_

Magaca Tulada/magalada\_\_\_\_\_ Magaca xaafadda\_\_\_\_\_ Lanbarka aguriga\_\_\_\_\_ Magaca kormeeraha \_\_\_\_\_

**S1-8 Dabeecadaha/Habdhaqanka Qoyska**

S1-Immisa qof ayaa ku nool Gurrigan (Tirada dadka qoyska) ? \_\_\_\_\_

S2 Immisa carruur shan sano ka yar ayaa joogta (Tirada ilmaha < 5 sano)?\_\_\_\_\_

**S3** Maxay tahay xaaladda deganaanshaha qoysku hadda)? 1=Deegaan 2=Barakac 3= Qaxooti soo noqday 4= Guuritaan ku yimi (internal migrant) 5=Wax kale Caddee: \_\_\_\_\_

(Haddii Jawaabtu tahay 1 u gudub su’aasha 7 aad)

S4 : Degaanke ka timi?\_\_\_\_\_

S5 Muddo Intee le’eg ayaad halkan joogtey?\_\_\_\_\_

S6 Sababta geeddiga?: 1=Amnidarro 2=Shaqo la’aan 3=Cunto yaraan 4 Biyo yaraan 5 Wax kale; Caddee\_\_\_\_\_

S7 Hab Nololeed-kee bay ka tirsan yihiin qoyskani? 1=Xoolo-dhaqato 2=Beer-iyoo-Xoololey 3= Reer magaal 4=Beeraley 5=wax kale caddee\_\_\_\_\_

S.8 Maxay tahay Isha ugu muhiimsan ee dakhliga/dhaqaalaha qoysku ka helo 1=Xoolaha iyo waxyaabaha xoolaha lage helo 2=Dalaga beeraha 3=Ganacsi yar yar 4=Shaqooyin yar yar 5=shaqo mushahaar leh 6=Xawilaad 7=Wax kale caddie:\_\_\_\_\_

**Xaaladda Quudinta iyo Talaalka Carruurta da’doodu u dhexayso 6 – 59 bilood (ama dherer 65- 109.9cm) ee Qoyska**

Tirsi	Magaca koowaad	Q9  (Ilmaha 6 – 24 bilood da’diisu tahay)  Hadda ilmaha ma nuujisa (Hadday maya tahay u gudub S11) 1=Yes 2=No	Q10  Haday tahay haa, intee jeer la nuujisaa maalintii?  1=<3 jeer 2=3-6 jeer 3=Markii u baahdo/to	Q11  Hadduusan hadda nuugin intee jir ayuu ahaa markii laga jaray naaska  1=<6 Bilood 2=6-11 Bilood 3=12 – 18 Bilood 4>=18 Bilood 5= Maba la nuujin	Q12  Immisa jir ayuu ahaa cunugu markii u horaysey ee la siiyey cunto iyo Biyo aan naaska hooyada ahayn?  1=0-3 Bilood 2=4-5 bilood 3=6 bilood ama ka badan.	Q13  Immisa jeer maalintii quudisaa cunuga?  (Marka laga reebo caanaha naaska)?  1= Hal mar 2= laba jeer 3= 3-4 jeer 4= 5 ama ka badan	Q 14  Ma la siiyey Vitamin A ilmaha 6dii bilood ee la soo dhaafay  (Tus namuunad)  1=Haa 2=Maya	Q15  (Hadduu Ilmuhu ka weyn yahay 9 bilood)  Malaga talaalay Jadeecada?  1=6dii bilood ee la soo dhaafay 2=6 bilood ka hor 3=Midna	Q16  Immisa jeer ayaa laga talaalay Cudurka dabaysha  1=1-2 jeer 2=3 iyo ka badan 3=Marna
1									
2									
3									
4									

**S17-27 Jir Cabirka iyo xaaladda Bugtada carruurta da’doodu u dhaxayso 6 – 59 bilood (ama dherer 65 – 109.9cm) ee Qoyska**

Tirsi	Magaca koowaad	Q17 Jinsi  1=Lab 2=Dhedig	Q18 Da’da Bilo ahaan	Q19 Barar  1=Haa 2=Maya	Q20 Dherer (cm)	Q21 Miisaan (kg)	Q22 MUAC (cm)	Q23 Shuban labadii asbuuc ee tagtay  1=Haa 2=Maya	Q24 Oof wareen Khatar ah labadii asbuuc ee tagtay  1=Haa 2=Maya	Q25 Xanuun qandho leh/ malaria 2-dii usbuuc ee tagtay  1=Haa 2=Maya	Q26 (Hadduu ka weyn yahay 9 bilood)  Jadeeco ma looga shakiyey in ay ku dhacday bishii la soo dhaafay  1=Haa 2=Maya	Q27 [Waxay khusaysa oo keliya ilmo ay ku dhaceen cuddurada su’alaha 25 – 27]  Xagee gar-gaar caafimaad ka raadsatey markii (Sheeg magaca ilmaha) xanuunsaday/tay?  1=Wax gar-gaar ah ma helin 2=Iskay u daaweeyey 3=Dawo dhaqameed 4=Rug caafimaad gaar loo leeyahay/Farmasi 5= Xarumaha caafimaadka Dadweynaha
1												
2												
3												
4												

**28: Jir Cabbirka (MUAC) ee dumarka Da’da dhaqmaadda (15-49 sano) ee jooga guriga hadda**

Tirsi	Magac	Da’da(sanad ahaan)	MUAC	Xaalad Uur 1=Uur leh 2=Uur ma leh	Xanuun 14kii casho ee la soo dhaafay? Haddii uu jirey, Muxu ahaa xanuunkaasi?
1	Hooyada:				
2					
3					

S29 : Qof ka mid ah dadka guriga oo araggiisu liito xilliga habeenka ama fiidkii/cilcillowga/gabbal-gaabka marka dadka kale caadi wax u arkayaan ma jiraa? Haddi jawaabtu haa tahay caddee qofka da’adiisa 1= 2- <6 sano 2= ≥ 6 sano 3= Ma jiro

S30 – 33 U sahlanaanta/Helista biyaha ( Tayo iyo Tiro ahaan ) Xaaladda degaanka ayaa ku hagaysa

S30-Halkee dadku intabadan ka helaa biyaha la cabbo? 1= Tuubo/Qasabad 2= Ceel af banaan 3= biyo qabad/Haro/Balli 4=Ceel xafidan sida ceel riig ah 5=webi 9=wax kale: \_\_\_\_\_

S31 Celcelis ahaan wakhti intee le'eg ayey qaadata muddada biyaha laga soo dhaaminayo isha ugu dhaw ee biyaha sii socod iyo soo socod (*marka lagu daro xilliga biyaha la dhaaminayo?*) 1= <30 Daqiiqo 2=30 – 60 Daqiiqo 3= 1-2 Saacadood 4= Ka badan 2 saacadood

S32 Tirada Weelka biyaha lagu soo dhaansado, laguna kaydsado 10- 20 litir ee qoyska? 1=1-2 shay 2=3-4 shay 3=4-5 shay 4=kabandan 5 shay

S33 Waa side Habka kaydsga biyaha qoysku : 1= Weel dabool leh 2=weel af banana 3=Aashuun

**S34-37 Faya dhawrka iyo Nadaafadda (Helitaanka iyo Tayada)**

S34 Nooca Suuliga inta badan Xubnaha qoysku isticmaalaan: 1= *Musqul Saxan leh* 2= *Musqul caadi ah oo god dheer leh* 3= *God furan* 4=*Meel loo cayimay* 5=*Duurka*

S35 Masaafada u dhexaysa suuliga iyo isha biyaha: 1=0-30 mitir 2=30 mitir ama ka badan

S36 Muxuu qoysku ka isticmaalaa waxyaabaha wax lagu nadiifiyo 1= *Saabuun* 2= *Shaambo* 3=*Danbas* 4= *Buruqda Dhirta sida GASANGAS-TA* 5= *Waxba*  
S37 Sidee u kaydisaan cuntada diyaarsan? 1= *Meel kore lagu xiro/laga soo laalaadiyo* 2=*La dhigo dabka coonkiisa isagoo ku jira dheriga* 3= *Weel daboolan* 4=*Maba kaydino* 5= *Wax kale caddee* \_\_\_\_\_

**S 38 Cunto cunista Qoyska**

**Dib u xusuusashada Cuntaddii Qoysku cunay 24-kii saac ee tagtay:** Waraystuhu waa inuu xaqiijiya in 24-kii saac ee tegey reerka caadi u ahaayeen iyo in kale.

Haddii ay jireen Sab, Duug ama inta badan xubnuhu maqnayeen, xulo maalin kale ama qoys kale.

		<i>Fure:</i>	
		1= Iskood ula soo baxeen	5=Wax isku bedelasho
		2=Soo gadasho	6=Soo daymasho
		3=Deeq laga helay Saaxiib/qoysas	7= laga helay duurka (sida ugaar)
		4=Cunto gar gaar ah	8=Wax kale caddee _____
<b>Nooca Cuntada</b>	<b>1=Haa 2=Maya</b>	<b>Maxay ahayd Isha ugu muhiimsan ee laga helay cuntada la cunay Istimaal Furaha sare (codes)</b>	
1. Firileyda iyo wixii laga sameeyo ( e.g Gelley, Basto,Canjero Rooti iwm)?			
2. Hilib, Hilib digaag, Uur-kujir (e.g Ari/Geel/ Lo' /Digaag?			
3.Ukun?			
4. Xididaley/Buruqley ( Baradho,Bataato)?			
5. Qudaar: ( Caleemaha qudaarta, Yaanyo,Dabacaseye, Basal)?			
6. Miro ( Qare, Canbe, Bambeelmo)?			
7. Digiraha/Qolofley/lababogley ( sida:Digir, Misir, Salbuko, Fajoolli)			
8. Caanaha iyo wixii ka soo baxa (e.g Ari,Geel, Lo', Caano boore)?			
9. Saliidda/Duxda ( Dux, Burcad, Subag, Shegeri)?			
10. Sonkor iyo malab?			
11. Kalluun iyo Cunto badeed ( Shiilan,Karsan,Duban,Qasacadaysan,Aargoosto			
12. Waxyaabo kale (sida Geed adari xawaash/hayl)?			





**APPENDIX 3: TRADITIONAL CALENDAR**

Month	Events	2001	2002	2003	2004	2005	2006
Jan.	Beginning of Jiilal		51 Siditaal	39 Siditaal	27 Siditaal Safari park retreat	15 Siditaal	3 Carafu
Feb.	Mid of Jiilaal		50 Arafo/Dul-Xaj	38 Arafo/Dul-Xaj	26 Arafo/Dulxaj	14 Arafo/Dulxaj Sheikh Indhocaadde-Baidoa attack	2 Seko
Mar.	End of Jiilaal	Sako	49 Sako	37 Sako	25 Sako	13 Sako/Safar Sheikh Ibrahim Bardera ceremony	1 Safar
Apr.	Beginning of Gu'	Safar  Sheikh Ibrahim Bardera ceremony	48 Safar  Sheikh Ibrahim Bardera ceremony	36 Safar  Sheikh Ibrahim Bardera ceremony	24 Safar  Sheikh Ibrahim Bardera ceremony	12 Safar/Mawliid	
May	Mid of Gu'	59 Mawlid  Shiekh Said Warsama ceremony Bardera	47 Mawlid  Shiekh Said Warsama ceremony Bardera	35 Mawlid  Shiekh Said Warsama ceremony Bardera	23 Mawlid  Shiekh Said Warsama ceremony Bardera	11 Mawlid/Jamadul-awal.  Fighting in Elwak 2. Sheikh Sayid Warsame Ceremony Bardera	
Jun.	End of Gu'	58 Malmadoone/Milihore	46 Malmadoone/Milihore	34 Malmadoone/Milihore	22 Malmadoone/Milihore	10 Malmadoone/Milihore/Jamadul-awal	
July	Beginning of Xagaa	57 Jamadul-Awal/ Mili dhexe	45 Jamadul-Awal/ Mili dhexe	33 Jamadul-Awal/ Mili dhexe	21 Jamadul-Awal/ Mili dhexe	9 Jamadul-Awal/ Mili dhexe/Jamadul-Akhir	
Aug.	Mid of Xagaa	56 Jamadul-Akhir/ Milidambe	44 Jamadul-Akhir/ Milidambe	32 Jamadul-Akhir/ Milidambe	20 Jamadul-Akhir/ Milidambe	8 Jamadul-Akhir/ Milidambe/Rajab	
Sep.	End of Xagaa	55 Rajab/Shacbaan Hore	43 Rajab/Shacbaan Hore	31 Rajab/Shacbaan Hore	19 Rajab/Shacbaan Hore	7 Rajab/Shacbaan Hore	
Oct.	Beginning of Deyr	54 Shacbaan Dambe	42 Shacbaan Dambe	30 Shacbaan Dambe	18 Shacbaan Dambe Election of president Abdulahi Yusuf in Kenya.	6 Ramadan	
Nov.	Mid of Deyr	53 Soon ( <b>Ramadhan</b> )	41 Soon ( <b>Ramadhan</b> )	29 Soon ( <b>Ramadhan</b> )	17 Soon ( <b>Ramadhan</b> )	5 Soonfur	
Dec.	End of Deyr	52 Soonfur	40 Soonfur	28 Soonfur	16 Soonfur	4 sidatal	

**Appendix 4 : Summary of the clusters selected****GEDO - CLUSTERS**

District	Fixed Settlements	Temporary Settlements	Main village	Estimated popln	Targ popln	Verified Pop	Cluster No
Bardera	*Dobley	Uusley	No	150	30	3000	1
	Burguduud/ Tobacco*		NO	300	60	1200	2
	Macallin dheere		Yes	1000	200		3
	Damballey/Matano*		No	200	40	800	4
Belet Hawa	Bula Hawa	Section 3		2000	400		5
	Warguduud		No	225	45		6
	IDP/Belet- Amin*		No	3000	600		7
	Malmalley1/Hareeri Tur*		No	2250	450	500	8
	Carra-asse*	Dhuxundhurwaa	No	125	25	1000	9
	Gaddoon dhowe		Yes	850	170		10
Dolo		Unsiqqa	No	150	30		11
Burdubo	Suriyo*	Goley	No	100	20	1200	12
	Faanweyn		Yes	480	96	500	13
	Diidoo bullaa		No	340	68		14
Gedweine	Geedweyne Town		Town	750	150		15
	Shiidle		Yes	450	90	800	16
Elwak	Ceelbaande/ Buusar*		No	350	70	1500	17
	Gersal*	Buray calaan	No	160	32	600	18
	Dhamase*	Eres suray	No	180	36	1300	19
	Daresalaam		No	280	56	500	20
Garbaharey	GARBAHAAREY		Town	3000	600	8000	21
	Yucubley*	Dhasheeg Muse	NO	100	20	350	22
	Dabley		Yes	600	120	800	23
	Libaaxlow*	Goosaley	No	180	36	1000	24
Luuq	Luuq town	Sh Maxaad	Town	1500	300		25
		B/Rahma	No	200	40		26
	Maganey*	Ban-hadile	No	200		600	27
	Caracase		Yes	1400	280	900	28
	Yurkut*	Kormaganbi	No	400	80	1300	29
		Aroosow	No	500	100		30
Sampling interval		11943					
Radom number		10125					

**APPENDIX 5: 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):

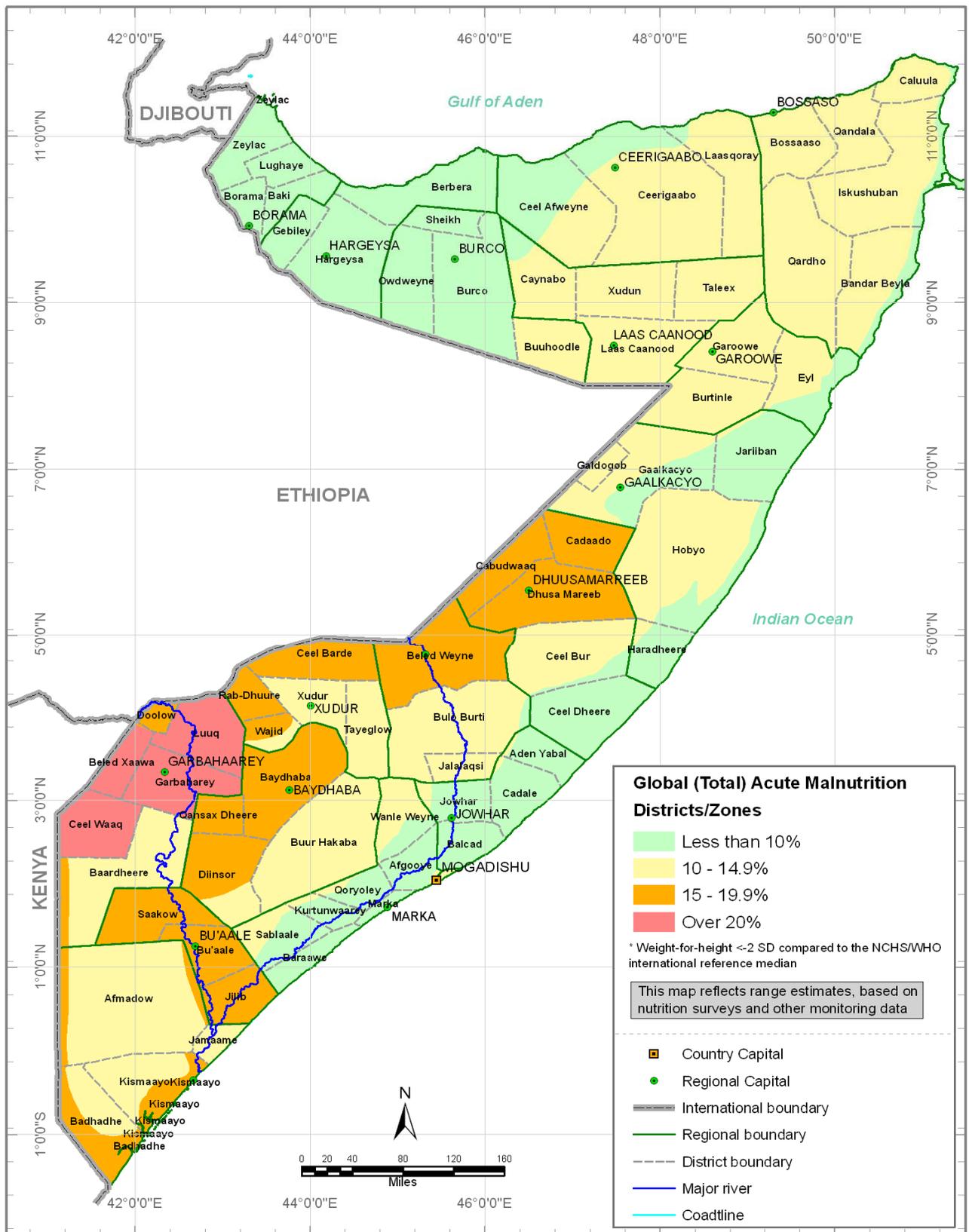
\_\_\_\_\_

Child referred to: \_\_\_\_\_

Child referred by: \_\_\_\_\_

APPENDIX 6

MAP 1: SOMALIA - MALNUTRITION LONG TERM LEVELS (1999 - 2005)



Produced: April, 2006

Datum: WGS84  
Data Source: FSAU, 2006  
admin. layers: UNDP, 1998



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The boundaries and names on these maps do not imply official endorsement or acceptance by the United Nations.  
The regional & District boundaries reflect those endorsed by the Government of the Republic of Somalia in 1986.



### Appendix 7: Prevalence of Chronic malnutrition based on Height for age Z-score

	Males (n=470)		Female (n=452)		Total(N=922)	
	No	%	No	%	No	%
Total chronic malnutrition (HFA<-2 z score)	142	30.2 (CI:26.1 – 34.6)	117	25.9 (CI:22.0 – 30.2)	259	28.1 (CI: 25.2 – 31.1)
Severe chronic malnutrition (HFA<-3z score)	52	11.1 (CI:8.4 – 14.3)	33	7.3 (CI:5.2 – 10.2)	85	9.2 (CI: 7.5 – 11.3)

The prevalence of chronic malnutrition defined as height for age <-2 was 28.1% (25.2 – 31.1) and severe chronic malnutrition, defined as height for age <-3 Z-score, was 9.2% (7.5 – 11.3).

### Appendix 8: Prevalence of underweight based on weight for age Z-score

	Males (n=470)		Female (n=452)		Total(N=922)	
	No	%	No	%	No	%
Total underweight malnutrition (W/A<-2 z score)	172	36.6 (CI:32.3 – 41.2)	181	40.0 (CI:35.5 – 44.7)	353	38.3 (CI: 35.2- 41.5)
Severe underweight malnutrition (W/A<-3 z score)	50	10.6 (CI: 8.1 – 13.9)	38	8.4 (CI:6.1 – 11.5)	88	(CI: 7.8 – 11.7)

The prevalence of underweight malnutrition defined as weight for age <-2 Z-score was 38.3% (CI 35.2 – 41.5) while the prevalence of severe underweight malnutrition, defined as weight for age <-3 Z-score, was 9.5 (CI 7.8 – 11.7).

**Appendix 9: Assessment Team**

Enumerators	Supervisors	Coordinators
		1. Tom Joseph Oguta (FSAU) 2. Joseph Waweru (FSAU) 3. Mohamud Hersi (WFP)

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