

NUTRITION ASSESSMENT

HAWD OF TOGDHEER TOGDHEER REGION SOMALILAND.

**Food Security Analysis Unit (FSAU/FAO)
United Nations Children's Fund (UNICEF)
Ministry of Health & Labour (MOHL)
Somali Red Crescent Society (SRCS)**

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Abbreviations and acronyms

ARI	Acute Respiratory Infections
CSI	Coping Strategy Index
FAO	Food and Agriculture Organisation
FSAU	Food Security Analysis Unit
GAM	Global Acute Malnutrition
GIT	Gastrointestinal Tract
HAZ	Height- for- Age Z scores
HDDS	Household Dietary Diversity Score
HFA	Height for Age
IDA	Iron Deficiency Anaemia
IDP	Internally Displaced Person
KM	Kilo Metres
MCH	Maternal and Child Health
MT	Metric Tonnes
MUAC	Mid Upper Arm Circumference
NCHS	National Centre for Health Statistics
NGOs	Non-Governmental Organisations
NRC	Norwegian Refugee Council
PWA	Post War Average
LEZ	Livelihood Economic Zones
LNGO	Local Non-Governmental Organisation
INGO	International Non-Governmental Organisation
NIDs	National Immunisation Days
OR	Odds Ratio
RR	Relative Risk
SACB	Somalia Aid Coordination Body
SMART	Standardised Monitoring & Assessment of Relief and Transitions
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations High Commission of Refugees
VAD	Vitamin A Deficiency
UNICEF	United Nations Children's Fund
WAZ	Weight for Age Z Scores
WFP	World Food Programme
WHO	World Health Organisation
WHZ	Weight for Height Z scores

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EXECUTIVE SUMMARY

The Hawd of Togdheer region is located in the republic of Somaliland, North West of Somalia. The region has an estimated population size of about 38250 (WHO & UNICEF NIDs figures verified by the survey). Pastoralism is the main livelihood system.

Between 9th to 19th June 2006 an interagency nutrition and mortality assessment was conducted by FSAU/FAO, UNICEF, MOHL Somaliland, SRCS, Havoyoco and Candle Light in the Togdheer region. Using a two-stage (30x30) cluster sampling methodology, a total of 916 children, aged 6-59 months and/or measuring 65-109.9 cm in height/length were surveyed. A total of 905 households were surveyed for mortality and child data collected from 508 of these.

The global acute malnutrition (GAM) rate (weight for height <-2 Z score or oedema) was 9.9% (CI: 8.1– 12.1) while the severe acute malnutrition (weight for height <-3 Z score or oedema) was 0.7% (CI: 0.3 – 1.5) indicating an alert nutrition situation according to WHO classification. There were no cases of oedema recorded. Malnutrition showed significant associations with morbidity and was higher among those who had been sick ($p=0.002$) especially with diarrhoea ($p=0.002$). More over malnutrition was significantly associated with child age and children over 24 months of age were more likely to be malnourished (0.003, RR=0.92).

The crude and under five mortality rates were 0.42 (CI: 0.26 – 0.58) and 0.76 (CI: 0.21 – 1.32) deaths/10,000/day respectively. These rates indicate acceptable levels according to WHO classification. Diarrhoeal diseases and ARI were the main reported causes of under-five deaths.

Overall, about 31% of the assessed children had suffered from one or more communicable childhood diseases during the two weeks prior the assessment. About 94% of the households had consumed 4 or more food groups reflecting a good dietary diversity. Very few children (5.2%) are introduced to complementary foods at the age of six or more months. Immunization coverage in the district was generally high following recent campaigns by humanitarian agencies. About 72.5% and 79.1% of the assessed children had been immunized against measles and polio respectively. The onset of the *Gu* rains led to an increase in milk consumption which may also have mitigated the nutrition situation.

Compared to the long term levels of malnutrition for the area, the results indicate constantly poor nutrition situation. The nutrition and food security in relation to children under five years is not improving and requires continued intervention and close monitoring. There is need to immediately initiate nutrition education for mothers with children under five years especially with regard to the duration of breastfeeding and local choices for complementary feeding. Moreover, those households who lost all the livestock during the last drought require an immediate intervention.

Following discussions held after sharing the results with partners and detailed data analysis, both short- and long-term recommendations were made:

Short term recommendations:

1. Continuation and intensification of health, water and sanitation interventions especially rehabilitation and protection of water points and provision of sanitary facilities
2. Targeted food distribution to families severely affected by previous drought.
3. Assistance in asset recovery and stock redistribution to pastoral drop outs and poor households.

Long-term Recommendations

1. A multi-stakeholder forum including the local authorities and all NGOs in the region to address and coordinate priority interventions.
2. An integrated livestock programme that incorporates research and development so that the role of livestock in human nutrition is mapped and strategies laid down to enhance the contribution of livestock to food security.

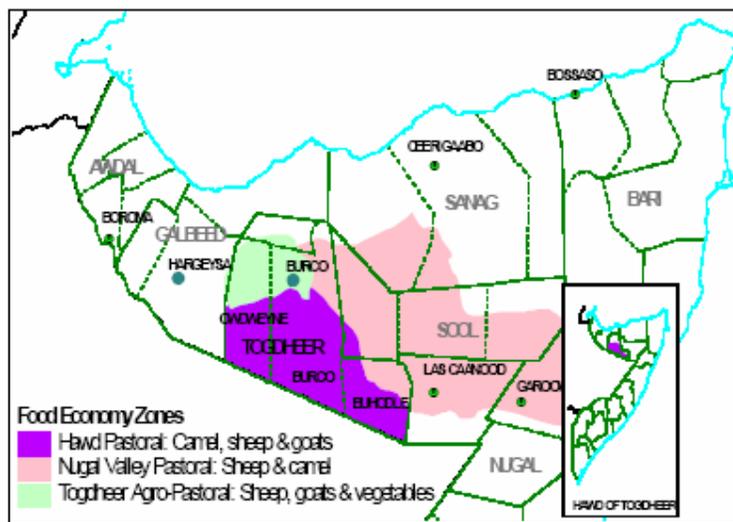
Table 1: Summary of findings

Indicator	No	%	95% CI
Total number of households surveyed	508	100	
Mean household size	6.2 (SD=2.4)		
Mean number of children less than five years per household	1.9 (SD=0.8)		
Total number of children assessed	916	100	
Child Sex:			
Males (boys)	439	47.9	44.7 – 51.2
Female (girls)	477	52.1	48.8 – 55.3
Global Acute Malnutrition (WHZ<-2 or oedema)	91	9.9	8.1 – 12.1
Severe Acute Malnutrition (WHZ<-3 or oedema)	6	0.7	0.3 – 1.5
Oedema	0	0	0
Global Acute Malnutrition (WHM<80% or oedema)	53	5.8	4.4 – 7.6
Severe Acute Malnutrition (WHM<70% or oedema)	2	0.2	0.0 – 0.9
Proportion of malnourished women (MUAC \leq 18.5; N=450)	5	1.1	0.4- 2.7
Proportion of severely malnourished women (MUAC \leq 16.0; N=450)	1	0.2	0.0 – 1.4
Proportion of malnourished pregnant women (MUAC \leq 23.0; N=89)	19	21.3	CI
Proportion of severely malnourished pregnant women (MUAC \leq 20.7)	4	4.5	CI
Proportion of children with diarrhoea in 2 weeks prior to assessment	133	14.5	12.3 – 17.0
Proportion of children with ARI within two weeks prior to assessment	146	15.9	13.7 – 18.5
Children with suspected malaria in 2 weeks prior to assessment	47	5.1	3.8 – 6.8
Suspected measles within one month prior to assessment (N=854)	19	2.2	1.4 – 3.5
Children (9-59 months) immunised against measles (N=854)	619	72.5	69.3 – 75.4
Children who have ever received polio vaccine (N=916)	725	79.1	76.3 – 81.7
Children who received vitamin A supplementation in last 6 months or before (N=916)	356	38.9	35.7 – 42.9
Proportion of households who consumed \leq 3 food groups	31	6.1	4.2 – 8.6
Proportion of households who consumed \geq 4 food groups	477	93.9	94.1 – 95.8
Proportion of children 6-24 months who are breastfeeding (N=356)	133	37.4	32.4 – 42.6
Proportion of children introduced to other foods before 4 months	278	78.1	73.4 – 82.2
Under five Death Rate (U5DR) as deaths/10,000/ day		0.76	0.21 - 1.32
Crude Death Rate (CDR) as deaths/10,000/ day		0.42	0.26 - 0.58

1.0 INTRODUCTION

The nutrition assessment was undertaken in the Hawd of Togdheer, an eco-zone in the Togdheer region. From West to East, the Hawd of Togdheer eco-zone starts from Geed- Ballar village, which falls administratively in Gebiley District. It borders the Zone four of Ethiopia while in the south it borders Hargeisa and the foothills of Golis Guban and Togdheer region extending to Sool region and to Puntland.

Administratively, the Hawd covers three main districts of the Togdheer region namely Burao, Odweine, and and Bohodle and includes Duruqsi and Ballidhig districts. The area is predominantly a pastoralist eco-zone whose inhabitants keep mainly goats with the exception of the plains of Tunyo, Arori and Qool- Adey where sheep dominates. The population is estimated at 105,945 (WHO & UNICEF NIDs, Jan 2006 figures further verified by the assessment team).



The last decade has witnessed a high rural urban migration from the Hawd to neighbouring Burao town, Berbera and even Hargeisa especially the youth who leave to look for job opportunities. This out-migration of youths has been caused by high poverty levels that resulted from the recurrent livestock trade ban, the influx of returnees from refugee camps and persistent droughts in the area.

1.2 Survey Justification

The Hawd pastoralists have been most vulnerable to droughts compared to the other pastoral livelihood zones in Togdheer and Somaliland. A baseline nutrition and mortality assessment undertaken in the hawd showed a global acute malnutrition (GAM; WHZ <-2 or oedema) of 10 % (CI 8.1- 12.1) and severe acute malnutrition (WHZ<-3 or oedema) of 1.3 %.(0.7-2.4). Since the assessment the hawd has experienced droughts and serious water shortages, the latest reported in March 2006. Thus between 9th and 19th June 2006 a follow-up nutrition and mortality assessment was undertaken in the area by FSAU in collaboration with the Ministry of Health and Labour (MOHL) and Somali Red Crescent Society (SRCS). This assessment served to follow-up and evaluate the health and nutrition situation among the hawd population. The aim of the survey was to determine the nutrition status of children between 6-59 months or 65-110 cm using weight for height index. The survey also sought to establish factors influencing the nutrition status and to provide recommendations for interventions based on the findings

1.3 Objectives of the study

1. To estimate the level of acute malnutrition and nutritional oedema among children aged 6-59 months or with height/length of 65-109.5 cm.
2. To estimate the level of malnutrition among adult women aged 15-49 years in the hawd of Togdheer.
3. To identify factors likely to have influenced malnutrition in young children in the hawd

4. To estimate the prevalence of some common diseases (measles, diarrhoea, malaria, and ARI) in the hawd.
5. To estimate the dietary diversity status of the hawd of Togdheer population
6. To estimate measles and polio vaccination and Vitamin A supplementation coverage among children in the hawd
7. To estimate the crude and under-five mortality rates in the hawd.

2.0 BACKGROUND INFORMATION:

2.1 General overview

In the past, the Hawd of Togdheer was considered a high potential grazing land. Over the years, the area has been greatly degraded and almost all the palatable grass species have been depleted. This has occurred as a result of increased deforestation for charcoal burning and building materials, recurrent droughts and trampling of animals in an unplanned manner resulting to significant gully erosion during the rainy season. The *Gu* is the main rainy season while the Deyr season also contributes significantly to pasture availability in the area prior to the *Jilaal* season. The area receives a yearly annual rainfall of 200 to 300 mm. The hawd is usually categorised as "bush land" range type. Because of recurrent shocks in the Hawd, the gap between population growth and economic growth has been widening year after year.

2.2 Humanitarian Interventions

Humanitarian organisations working in the area include OXFAM, SC-UK, WFP and UNHCR. OXFAM has provided significant support in water and sanitation and has run a pastoral programme whose overall objective was to facilitate development of pastoral associations and empower them to influence decisions affecting their lives at village, district and regional levels. Within the Hawd area, ten villages have been supported to construct a total of seventy nine berkads and twenty one latrines. As a way of promoting sustainability of the activities, communities have been trained on sanitation and hygiene, and masons trained on construction of slabs. In addition OXFAM supported initiation of a revolving fund for support of new activities at the village level. It is currently administered by the village development committees. Currently OXFAM is working in collaboration with UNHCR and WFP to support development and rehabilitation of water resources through food for work. SC-UK is working in collaboration with the Ministry of Education to support basic education in the all the four districts.

2.3 Nutrition

The last nutrition assessment in the Hawd of Togdheer conducted in August 2003 showed a global acute malnutrition (GAM; WHZ <-2 or oedema) of 10 % (CI 8.1- 12.1) and severe acute malnutrition (WHZ<-3 or oedema) of 1.3 %.(0.7-2.4). Concurrent mortality survey revealed under five mortality rate of 2 deaths/10,000 children/day and a crude mortality rate of 0.83 deaths /10,000 people per day both depicting an alert situation. Earlier, a nutrition assessment using Mid Upper Arm Circumference (MUAC) of less than 12.5 cm for defining malnutrition conducted in Boohodle district in 2001 revealed that 14.6% of the children were moderately malnourished (MUAC<12.5 cm >_11cm) while 2.3% were severely malnourished(MUAC<11 CM) with no cases of oedema observed.

2.4 Water and Environmental Sanitation

Water shortage is a major problem for both the humans and the livestock, becoming more acute during the *jilaal* season (January-April) during a bad year. In the normal year the wealthier population provide water to the poor free of charge except during the *Jilaal* when water prices are very high..This year around march, there existed a general water crisis in the hawd and water trucking became a significant source. There exist no permanent water sources in the Hawd area and prospects for deep ground water development are poor. Water is obtained mainly from Berkads, ballis, and some shallow wells in some villages around EL-Hume and Berato that are highly dependent on the rainfall received in a given season.

2.5 Health issues

The Ministry of Health with the support from UNICEF-Hargeisa supports a system of healthcare provision through four MCHs and nine health posts. The MCHs are located in each of the four

districts that form the Hawd mainly in the densely populated permanent settlements/centres. Odweyne has three health posts, Buhodle three, Balidhig one, and Duruqsi two. There have also been plans to have additional seven other health posts in the area. They are estimated to serve about 68% of the population. The MCHs are managed by auxiliary nurses who have been trained on the job while the health posts are managed by trained Community Health Workers (CHWs). Several CHWs have been trained and more are in the process of being trained.

Suspected malaria, diarrhoea and respiratory infections are the main reported causes of morbidity and mortality among infants and young children. The Ministry of Health and Labour estimates that Acute Respiratory Infections (ARI) accounts for about 40% of the morbidities, diarrhoeal diseases 30% while malaria accounts for about 19 %

2.6 Food security

In the Hawd of Togdheer the major source of the income and food is livestock except in a few pockets (such as Qalocato and Bicile) that depend on both crops and livestock. The pastoralists have significant trade links with the bigger urban centres like Burao, Hargeisa, and Berbera. Apart from food items being sourced from, and livestock trade carried out through these main centres, the youth from the Hawd normally go to these towns to seek job opportunities from which they remit income to members of their families residing in the Hawd. During difficult times those left in the rural areas get considerable social support from their urban relatives. During normal year the Hawd pastoralists migrate within the surrounding areas for better grazing and only during a bad year do those living along the border cross the border to zone four of Ethiopia. Wealth breakdown of the inhabitants of the Hawd is as follows: the poor 20-35 %, middle 45-55%, better off 10- 25% and the rich 2-5%. For the last decade droughts were more frequent compared to previous decades. Since 1998, the year 2005 was the best year whereby above normal *Deyr* (2004) and *Gu* (2005) rains were received. Despite the livestock trade ban the terms of trade were favourable and livestock prices were close to normal.

3.0 METHODOLOGY

3.1 Assessment design

This was a cross-sectional study among the Hawd of Togdheer population in which both qualitative and quantitative techniques were used. Quantitative data was collected through a standard household questionnaire for nutrition (see appendix 2). Retrospective mortality data for 90 days prior to the assessment was also collected among the study households (see appendix 3). Qualitative data was collected from key informants by assessment supervisors through focus group discussions and key interviews to provide further understanding of possible factors influencing malnutrition.

3.2 Sampling procedure

Using a two-stage cluster sampling methodology, 30 clusters were randomly selected based on population proportion to size. Initially a sampling frame was constructed from which a representative sample could be drawn. A list of all villages within the Hawd of Togdheer, with their respective populations was used to construct cumulative population figures for the assessment area. Using WHO Polio population figures, generated during National Immunization Days (WHO, Jan 2006) and the input of key informants from the region, all settlements/villages were listed in the sampling frame and their population estimates further verified for authenticity by the assessment team. An estimated population of 105,945 from all settlements/villages was obtained from which 30 clusters were selected. Using the Nutrisurvey software a random number, 1361 was chosen to determine the first cluster. The subsequent clusters were determined systematically by adding the cluster interval (3532) to the first randomly selected number (see appendix 1). From the 30 randomly selected clusters, a total of 916 children (921 less 5 flags) aged 6-59 months and/or height/length of 65-109.9 cm from 508 households were surveyed.

In each of the clusters, mortality questionnaires were administered to 30 randomly selected households. The same sampling frame used for nutrition assessment was employed in cluster selection for the mortality assessment. In total, mortality data was collected from 905 households irrespective of whether or not the household had a child under-five.

Study population and sampling criteria

The study population consisted of people living in the Hawd of Togdheer region and comprised all the children aged 6-59 months or measuring 65-109.9 cm in height/length. The sampling procedure as outlined in the SACB and incorporating SMART Guidelines was followed in this assessment. On the visit to each cluster, the centre was identified and a pen was 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 crossed 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 first household, the team always moved to the right 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 only the mortality questionnaires were administered. If a cluster was exhausted of children before the required 30 children had been reached, a neighbouring area with similar characteristics was selected to complete the cluster. All eligible children in the households were

measured and if a child or primary caregiver was absent, an appointment was booked for a later visit in the course of the assessment.

3.3 Data collection.

3.3.1 Anthropometric measurements.

The anthropometric data were collected using the procedure stipulated by the WHO (1995) for taking anthropometric measurements. It was ensured that this procedure was adhered to. 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 would be lightly dressed before having the weight taken while clothes for the male children were removed. Two readings were taken for each child, shouted loudly and the average recorded on the questionnaire.

Height: For height, a vertical or horizontal measuring board reading a maximum of 120 cm and accurate to 0.1cm was used to take the height or length of a child. The child would stand 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 would be 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, pressing the hair and making contact with the top of the head. Height/length was 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 were 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.

3.3.2 Child age determination

Where useful documents like growth monitoring/clinic attendance cards and birth certificates were available, they were used to determine the child's age. A calendar of events (appendix 4) was also used to estimate the age of the child. Though not entirely accurate, ages were still regarded as important indicators and were approximate/average pointers for identification. The nutrition indicator employed as preference was *weight for height* as the best nutrition status (acute malnutrition) for emergency and transitory populations.

3.3.3 Oedema

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

3.3.4 Morbidity

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

Diarrhoea: Diarrhoea was defined as 'three or more loose or watery stools per day'.

Measles: Defined as 'more than three signs of the following: fever, and skin rash, runny nose or red eyes, and/or mouth infection, or chest infection.

Acute Respiratory Infection (ARI): Asked as *oof wareen or wareento*. Defined as 'cough, rapid breathing and fever'.

Suspected malaria/acute febrile illness: Defined as 'periodic chills, fever, sweating or coma.

3.3.5 Mortality

The mortality assessment was done 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 final sampling unit. At least 30 households were randomly selected in each cluster and the mortality questionnaire (appendix 3) 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 or not. Households were systematically surveyed until the 30th household. Each household surveyed was asked the composition of their members in two parts- those members less than 5 years and the total number of household members. The household was then asked how many if any of the household members had died, left or arrived in the last three months. A total of 905 households were included in the assessment.

The crude and unadjusted mortality rates were generated automatically by the Nutrisurvey software as deaths per 10,000 persons per day using a recall period of 90 days. If a member had died, the respondent was asked to describe the signs and symptoms of the illness likely to have caused the death and these were recorded.

Mortality rates can be interpreted according to the following reference

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

3.3.6 Dietary Diversity

Dietary diversity (when households consume four or more food groups) was 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 included Cereals & cereal products; Roots & tubers; Vegetables; Fruits; Meat and meat products, Eggs; Fish; Legumes; Milk & its products; Fats & oil; Sugar & honey and Miscellaneous.

3.3.7 Vitamin A Deficiency

During the assessment, Vitamin A deficiency (VAD) prevalence was estimated by assessing if any member(s) of the households experienced night blindness.

3.4 Description of assessment activities

Table 2: Chronology of activities for the Hawd of Togdheer Nutrition Assessment

Major Activity	Dates. 2006
Preparation of tools, methodology & review of secondary data (Nairobi) Resource mobilization; Joint planning meetings with partners	20 th – 30 th May
Training of enumerators, pre-testing questionnaire and cluster Identification	9 th - 12 th June
Collection of data	13 th – 17 th June
Entry of data	14 th – 19 th June
Data cleaning and analysis	20 th – 24 th June
Presentation of preliminary results to partners	25 th June
Circulation of draft report	16 th July
Circulation of final report	12 th August

Six teams each consisting of two enumerators and one supervisor conducted the assessment with each team handling one cluster in a day. An elder from each village/cluster assisted the teams in ground identification of the cluster and introduction to the community, its centre and boundaries. Supervisors were seconded from the participating partners namely; FSAU, Ministry of Health and Labour in Somaliland, SRCS, Candlelight and Havoyoco. Overall support, supervision and co-ordination were done by two FSAU Senior Nutritionists who also assisted in the identification of the qualified enumerators. The enumerators were selected on the basis of their experience with previous assessments, need for participation in future nutrition activities and ability to learn nutrition assessment procedures during training.

3.5 Quality Control Procedures.

A comprehensive training of enumerators and supervisors was conducted covering interviewing 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 was carried out in one of the IDP camps – Koosar village in the outskirts of Burao town, which was not a selected cluster for the actual assessment. Pre-testing involved familiarising assessment teams with village/cluster entry; 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) 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 (ii) daily review undertaken with the teams to address any difficulties encountered, (iii) progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis, (iv) continuous data cleaning upon and after entry which made it easy to detect any outliers/ mistakes and to replace or repeat households depending on magnitude of error (v) monitoring accuracy of equipment (weighing scales) by regularly measuring objects of known weights and (vi) continuous reinforcement of good practices. Moreover, the CHECK program of EPI 6 computer package was used to control and eliminate errors during data entry by setting conditions such that any data outside the range was automatically rejected eg. a child's age was set to have values from 6 to 59 and values outside this range were automatically rejected. All measurements were loudly shouted by both the enumerators reading and recording them to reduce errors during recording.

3.6 Data Processing & Analysis

3.6.1 Data entry, cleaning, processing and analysis

Data was entered and analysed using Nutrisurvey, SPSS and EPI6 computer based packages. Running and tabulating all variable frequencies was carried out as part of data cleaning. The Nutrisurvey Anthropometry and EPINUT programmes were used to convert the measurements (weight and height) into nutritional indicators and comparison made with the National Centre for Health Statistics (NCHS) references as designed by WHO (1983). Cleaning and analysis of certain variables was undertaken in Microsoft Excel.

3.6.2 Characteristics of assessment population and other variables

Frequencies and cross-tabulations were used to give percentages, confidence intervals, means, standard deviations and associations in the descriptive and statistical analysis and presentation of general household and child characteristics.

3.6.3 Creation of nutritional status indices

The anthropometric measurement of weight and height were used to compute the WFH nutritional status indicators of the studied children. Weight for Height (WFH) expressed the weight of the child as a percentage of the expected weight for the standard child of that height as given by NCHS. WFH measures acute malnutrition or wasting. Using EPINUT, Z-scores were generated and the anthropometric indicator, WFH, was used to classify children into categories of nutritional status as follows:

< -3 Z-Scores or oedema	= Severe acute malnutrition
-3 Z-Scores \leq WFH < -2 Z-Scores	= Moderate acute malnutrition
< -2 Z-score or oedema	= Global/total acute malnutrition
\geq -2Z-Scores	= Normal

Similarly, MUAC measurements were also used to classify children into categories of nutritional status and mortality risks as follows according SACB Nutrition assessment guidelines:

< 11.0 cm	= Severe malnutrition
\geq 11.0 < 12.5	= Moderate malnutrition
\geq 12.5 -- < 13.5	= At risk of Malnutrition
\geq 13.5 cm	= Normal

For adults, the following categories were used:

a) For non pregnant women:

< 16.0 cm	= Severe Acute malnutrition
< 18.5 cm (with oedema)	= Severe acute Malnutrition
\leq 18.5 cm	= Global (Total) Acute Malnutrition
> 18.5 cm	= Normal

b) For pregnant women:

\leq 20.7 cm	= Severely at risk
\leq 23.0 cm	= Total at risk
> 23.0 cm	= Normal

4 ASSESSMENT RESULTS

4.1 Household Characteristics of Study Population

The nutrition assessment covered a total of 508 households with a mean household size of 6.2 (SD= 2.4) persons. The mean number of the under fives per household was 1.9 (SD=0.8).

Table 3: Household Characteristics

Characteristics	n	%	95% CI
Total number of HHs assessed	508	100	
Household Size	Mean= 6.2		SD= 2.4
Number of Underfives	Mean= 1.9		SD= 0.8
<i>Residential status: (N=508)</i>			
Residents	496	97.6	95.8 – 98.7
Internal Immigrants	12	2.4	1.3 – 4.2
<i>Origin (N=12)</i>			
Within the same district	9	75.0	
Within Togdheer region	1	8.3	
Within Somalia	1	8.3	
Outside Somalia	1	8.3	
<i>Duration of Stay (N=12)</i>			
1 month	4	33.3	
2 months	3	25.0	
3 -18 months	5	41.7	
	Mean = 4.6		SD = 5.4
<i>Reason for Migration (N=12)</i>			
Civil insecurity	1	8.3	
Lack of job	3	25.0	
Food shortage	7	58.3	
Water shortage	1	8.3	

Most (97.6%) of the assessed households were residents¹ and the rest 2.4% of the households were internal immigrants. The non residents were mainly (75%) from within the same district in the Togdheer region.

Overall the non residents had stayed in their current locations for an average of about 4.6 months with most of them having arrived into the locations 3-18 months prior to the assessment. The main reasons for movement were food shortage/hunger (58.3%) and search of employment (25%). Others moved due to civil insecurity (8.3%) and water shortage (8.3%).

Table 4: Distribution of households by means of livelihood and Source of Income

<i>Livelihoods (N=508)</i>		
Pastoral	284	55.9 (51.5 – 60.3)
Agro-pastoral	41	8.1 (5.9 – 10.9)
Urban	183	36.0 (31.9 – 40.4)
<i>Main Source of Income (N=508)</i>		
Sale of animals (& products)	220	43.3 (39.0 – 47.7)
Petty trade	103	20.3 (16.9 – 24.1)
Casual labour	88	17.3 (14.2 – 21.0)
Remittances/ gifts	48	9.4 (7.1 – 12.4)
Salaried employment	34	6.7 (4.7 – 9.3)
Crops sales	14	2.8 (1.6 – 4.7)
Others (hunting/gathering; sheikh,)	1	0.2 (0.0 – 1.3)

Majority of the surveyed households were pastoral (55.9%). Slightly more than one third (36%) were in urban livelihood while the rest were agro-pastoral (8.1%). Sale of animals and their products (43.3%) and petty trade (20.3%) were the two main sources of income to most households. Some 17.3% of the households depended on casual/farm labour as their

source of income. Remittances (9.4%), salaried employment (6.7%) and crop sales (2.8%) were other sources of household income. Very few (0.2%) depended on sheik-ship.

4.2 Water Access and Quality

All of the surveyed households drew water from unprotected water sources. They mainly drew

¹ Residents were taken as those who dwelt in the places of their residences for an extended period or permanently

water from unprotected wells/berkads (91.7%) or open well/ponds (8.3%).

Table 5: Water Access and Quality

Water access and Quality	N	(%)
Main source of drinking water (N=508):		
Unprotected wells/ berkads	466	91.7 (88.9 - 93.9)
Open wells/ponds	42	8.3 (6.1 - 11.1)
Distance to nearest water point (N=508):		
≤ 500 meters	329	64.8 (60.4 - 68.9)
501m - < 1 km	158	31.1 (27.1 - 35.4)
1 - 3 km	21	4.1 (2.6 - 6.4)
Number of clean water containers:		
1 - 2 containers	401	78.9 (75.1 - 82.4)
3 - 4 containers	105	20.7 (17.3 - 24.5)
5 containers	1	0.2 (0.0 - 1.3)
> 5 containers	1	0.2 (0.0 - 1.3)
Method of water storage:		
Covered containers	383	75.4 (71.4 - 79.0)
Open containers	118	23.2 (19.7 - 27.2)
Constricted neck (<i>Ashun</i>)	7	1.4 (0.6 - 2.9)

Although the water sources did not provide good quality water, most households (64.8%) were within reasonable distance (≤500 metres) to the sources as recommended by Sphere guidelines (2004). Households also had insufficient clean water storage and collecting containers implying that they require frequent trips to fetch water. About 79% of the households have only 1-2 containers for fetching or storing water. Sphere (2004)

guidelines recommend a minimum of 2 clean containers of 10-20 litres for water collection alone, in addition to enough storage containers to ensure there is always water in the household.

4.3 Sanitation and Hygiene Practices

Most (72 %) of surveyed households had no access to sanitation facilities and used the bush. Traditional pit latrines (23.4%), improved ventilated pit latrines (4.5%) were reported as the commonly used for those households who had access to sanitation facilities. In most (66.9%) of these cases, the distance between latrine and water source was less than 30 meters against the international recommendation (Sphere, 2004).

Table 6: Distribution of households by sanitation & Hygiene

Sanitation and hygiene	n	% (CI)
Access to Sanitation facility (N=508)		
VIP latrines	23	4.5 (3.0 - 6.8)
Traditional pit latrine	119	23.4 (19.9 - 27.4)
No latrine at all (Bush)	366	72.0 (67.9 - 75.9)
Distance from latrine to water source (N=142)		
< 30meters	95	66.9
≥ 30 meters	47	33.1
Method of Food Storage (N=508)		
Suspended in hooks/ropes	6	1.2 (0.5 - 2.7)
Put in pots beside fire	98	19.3 (16.0 - 23.1)
Put in covered containers	328	64.6 (60.2 - 68.7)
Don't store	76	15.0 (12.0 - 18.4)

All the households had soap for washing. This is a positive indication of improving hygiene standards. About 15% of the households assessed did not store any food. However 64.6% stored food in covered containers. This is risky as it increases the rate of deterioration especially for high protein foods, while 19.3% stored food in pots besides fire.

Some 1.2% of the households suspend their food in ropes/hooks.

4.4 Health Seeking Behaviour

At least a third (31.2%) of all the children fell sick during two weeks prior to the assessment. Majority of them (54.5) sought health care assistance from private clinics/pharmacy. Some 21% of the children sought assistance from public health facilities while the rest were administered self-prescription/medication by their caregivers (5.9%) or were attended to by traditional healers (4.2%). About 14.3% were not given any medical intervention at all when they fell ill

Table 7: Health seeking behaviour (N=916)

	n	% (CI)
<i>Child fell sick?</i>		
Yes	286	31.2 (28.3 – 34.4)
No	630	68.8 (65.6 – 71.7)
<i>Where assistance was sought (N=286)</i>		
Private clinic/ pharmacy	156	54.5
Public health facility	60	21.0
Own medication	17	5.9
Traditional healer	12	4.2
No assistance sought	41	14.3

4.5 Formal and informal support

About 20.7% of the households reported having received some informal support during three months prior to assessment. Most of the social support was mainly in the form of small loans (8.5%) or remittances from abroad (7.7%). Others received gifts (6.1%) or *zakat* (1.4%) from better off households

Formal support was received by a very small percentage of the assessed households and was only in form of water subsidy.

This suggests there are few humanitarian organisations in the areas

Table 8: Formal and informal support

	N	% (CI)
<i>Informal support (N = 508)</i>		
Received:		
Yes	105	20.7 (17.3 – 24.5)
No:	403	79.3 (75.5 – 82.7)
Type of support (N=508)		
<i>Zakat</i> from better off households	7	1.4
Remittances within Somalia	24	4.7
Remittances from abroad	39	7.7
Gifts	31	6.1
Loans	43	8.5
<i>Formal support (N = 508)</i>		
Received:		
Yes	4	0.8 (0.3 – 2.1)
No	504	99.2 (97.9 – 99.7)

4.6 Characteristics of assessment children

Table 9: Distribution of children according to age and sex

Age	Boys		Girls		Total		Ratio
	n	%	n	%	n	%	
6-17 months	111	25.3	111	23.3	222	24.2	1: 1
18-29 months	91	20.7	111	23.3	202	22.1	1: 1.2
30-41 months	112	25.5	116	24.3	228	24.9	1: 1.04
42-53 months	81	18.5	87	18.2	168	18.3	1: 1.07
54-59 months	44	10.0	52	10.9	96	10.5	1: 1.18
Total	439	47.9	477	52.1	916	100	1: 1.09

A total of 916 children were surveyed from 508 households of whom 47.9% were boys and 52.1% were girls. The ratio of boys to girls was 1:1.09. Each age group as shown in table 9

represented between 18% and 24% but for those over 54 months (10.9%).

4.7 Nutritional status of assessment children using anthropometry

Table 10: Summary of Global Acute malnutrition and Severe Acute Malnutrition

Malnutrition Rates	No	Proportion
Global Acute Malnutrition (<-2 Z score or oedema)	91	9.9 (8.1 – 12.1)
Severe Acute Malnutrition (<-3 Z score or oedema)	6	0.7 (0.3 – 1.5)
Oedema	0	0

The global acute malnutrition using WFH Z score (<-2 z-scores or oedema) was 9.9% (CI: 8.1 – 12.1) while severe acute malnutrition (<-3 z-score or oedema) was 0.7 % (CI: 0.3 – 1.5). No cases of oedema were detected during the assessment.

Distribution of the weight-for-height scores (mean=-0.85; median=-0.91; SD=1.04) were skewed towards the left depicting a poorer nutrition situation according to international (WHO) standards (Fig 3).

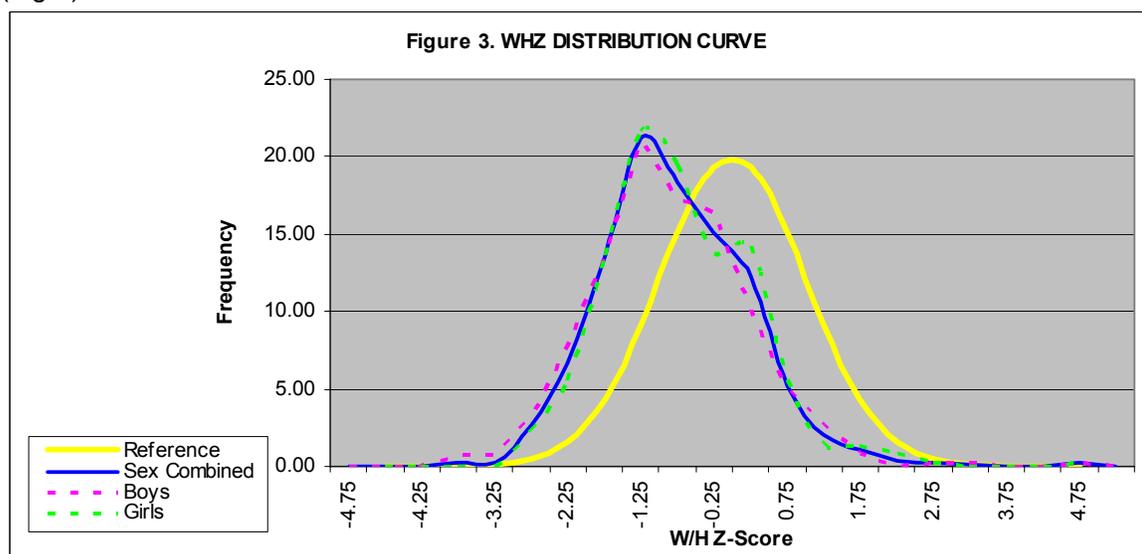


Table 11: Distribution of children by nutritional status (WHZ-score or oedema) and child sex

Nutrition status categories	Males		Females		Total	
	No	% (CI)	No	% (CI)	No	% (CI)
Global acute malnutrition (WFH<-2 z score/oedema)	54	12.3 (9.5 – 15.8)	37	7.8 (5.6 – 10.6)	91	9.9 (8.1 – 12.1)
Severe acute malnutrition (WFH <-3 z score/oedema)	6	1.4 (0.6 – 3.1)	0	0	6	0.7 (0.3 – 1.5)
Oedema	0	0	0	0	0	0

About 12.3% of boys and 7.8% of girls were acutely malnourished in the surveyed Hawd of Togdheer population using weight for height <-2 Z score or presence of oedema. Boys were more likely to be malnourished (p=0.03 than girls).

Table 12: Distribution of Acute Malnutrition by Age

Age groups	Severe (WH<-3Z)	Moderate (WH>=-3Z<-2Z)	GAM (Total malnourished-WH<-2Z)	Normal (WH>=-2Z)	Total
6-17 months	2 (0.9%)	8 (3.6%)	10 (4.5%)	212 (95.5%)	222 (24.2%)
18-29 months	2 (1.0%)	16 (7.9%)	18 (8.9%)	184 (91.1%)	202 (22.1%)
30-41 months	0 (0.0%)	25 (11.0%)	25 (11.0%)	203 (89.0%)	228 (24.9%)
42-53 months	2 (1.2%)	22 (13.1%)	24 (14.3%)	144 (85.7%)	168 (18.3%)
54-59 months	0 (0.0%)	14 (14.6%)	14 (14.6%)	82 (85.4%)	96 (10.5%)
Total	6 (0.7%)	85 (9.3%)	91 (9.9%)	825 (90.1%)	916(100%)

P=0.008

Table 13: Malnutrition prevalence using WFH percentage of median categories

Nutrition status categories	Males		Females		Total	
	No	Proportion (%)	No	Proportion (%)	No	Proportion (%)
Global acute malnutrition (WFH<80% or oedema)	30	6.8 (4.7 – 9.7)	23	4.8 (3.1 – 7.3)	53	5.8 (4.4 – 7.6)
Severe acute malnutrition (WFH<70% or oedema)	2	0.5 (0.1 – 1.8)	0	0	2	0.2 (0.0 – 0.9)

The global acute malnutrition among children aged 6 – 59 months using weight for height <80% of median or presence of oedema was 5.8% (CI: 4.4 – 7.6), while severe acute malnutrition <70% of median or presence of oedema was 0.2% (CI: 0.0 – 0.9%).

Using mid upper arm circumference (MUAC) measurements for children aged 12-59 months, a total of 2.1% (CI: 1.3 – 3.5) of the children were malnourished (MUAC<12.5 cm or oedema). About 0.5% (CI: 0.2 – 1.4) were severely malnourished (MUAC<11.0 cm or oedema) while 11.4% (CI: 9.3 – 13.8%) were at risk (MUAC 12.5-<13.5 cm).

Table 14: Nutrition status of Children (12-59 months) by MUAC

Malnutrition	Males		Females		Total (N=799)	
	N	%	N	%	N	% (95% CI)
Severe (MUAC <11 cm) or oedema	3	0.8 (0.2-2.5)	1	0.2 (0.0-1.5)	4	0.5 (0.2-1.4)
Moderate (11≤MUAC<12.5 cm)	5	1.3 (0.5-3.2)	8	1.9 (0.9-3.9)	13	1.6 (0.9-2.8)
Total (MUAC <12.5 cm) or oedema	8	2.1 (1.0-4.3)	9	2.2 (1.1-4.2)	17	2.1 (1.3-3.5)
At risk (MUAC 12.5- <13.5 cm)	43	11.3 (8.4-15.0)	48	11.5 (8.7-15.0)	91	11.4 (9.3-13.8)
Normal (MUAC >=13.5 cm)	330	86.6 (82.7-89.8)	361	86.4 (82.6-89.4)	691	86.5 (83.9-88.7)
Total	381	47.7 (44.2-51.2)	418	52.3 (48.4-55.8)	799	100

4.8 Morbidity, measles immunisation, polio vaccination and vitamin A supplementation

The incidence of ARI (15.9%), diarrhoea (14.5%) and febrile illness (5.1%) within two weeks prior to the assessment was on the decline compared to previous survey in 2003 (ARI 17.1%; diarrhoea, 16.3% and malaria 17.1%) Furthermore, no outbreak was reported during the

period. The incidence of measles among children aged 9-59 months one month prior to the assessment was 2.2%.

Table 15: Morbidity, measles immunisation, polio vaccination and vitamin A supplementation

	No.	%(CI)
<i>Incidence of major child illnesses (N=916)</i>		
ARI within two weeks prior to assessment	146	15.9 (13.7 – 18.5)
Diarrhoea within two weeks prior to assessment	133	14.5 (12.3 – 17.0)
Febrile illness (suspected malaria) within 2 weeks prior to assessment	47	5.1 (3.8 – 6.8)
Measles within one month prior to the assessment (N=854)	19	2.2 (1.4 – 3.5)
<i>Immunization Coverage (N=916)</i>		
Children (9-59 months) immunised against measles (N=854)	619	72.5 (69.3 – 75.4)
Children who have ever received Polio dose (N= 916)	725	79.1 (76.3 – 81.7)
<i>Vitamin A supplementation (N= 903)</i>		
Children who received Vitamin A supplementation in past 6 months or before	356	38.9 (35.7 – 42.9)
<i>Micronutrients Deficiencies (N=455)</i>		
Households who reported night blindness (N=508)	8	2.2 (2.4 – 6.3)
Member with night blindness (n=10):		
< 5 years	3	38.5
≥ 5 years	5	61.5

Measles vaccination coverage for eligible children (9-59 months old) was 72.5%. Most (79.1%) of the children aged 6-59 months had received at least a dose of polio vaccine. Over one-third (38.9%) of the surveyed children had received Vitamin A supplementation in the 6 months prior to the assessment. Except for vitamin A supplementation, coverage was high for the immunization programmes as a result of the recent campaigns by UNICEF, WHO and local partners.

4.9 Vitamin A Deficiency

About 2.2% of the households reported cases of night blindness, which is a proxy indicator of vitamin A deficiency. Over a third (38.5%) of these night blindness cases were reported among children less than five years.

4.10 Feeding practices

None of the children, in the breastfeeding age group of 6-24 months, were exclusively breastfed for the recommended first six months and only 37.4% of the children aged 6-24 months were breastfeeding at the time of the assessment. Over half (58.6%) of the children who were breastfeeding breastfed on demand as recommended. Of those who had stopped breastfeeding, about 22.4% had stopped breastfeeding before six months of age, 43.5% before their first birthday and over a third within their second year of life. About 2% of the children aged 6-24 months were not breastfed at all.

Table 16: Children feeding practices

Children aged 6-24 months (N=356)	N	% (CI)
<i>Is child breastfeeding?</i>		
Yes	133	37.4 (32.4 – 42.6)
No	223	62.6 (57.4 – 67.6)
<i>Breastfeeding frequency (N=133)</i>		
1-2 times	3	2.3
3-6 times	52	39.1
On demand	78	58.6
<i>Age stopped breastfeeding (N=223):</i>		
0 - 5 months	50	22.4
6 - 11 months	97	43.5
12 – 18 months	65	29.1
More than 18 months	6	2.7
Never breastfed	5	2.2
<i>Introduction of Complementary feeding (N=356)</i>		
0 - 3 months	278	78.1 (73.4 – 82.2)
4 – 5 months	37	10.4 (7.5 – 14.2)
6 Months	30	8.4 (5.8 – 11.9)
7 or more months	11	3.1 (1.6 – 5.6)
<i>Feeding frequency:</i>		
Once	13	3.7 (2.0 – 6.3)
2 times	80	22.5 (18.3 – 27.2)
3 – 4 times	235	66.0 (50.8 – 70.9)
5 or mores times	28	7.9 (5.4 – 11.3)

Most (78.1%) of the children aged 6-24 were introduced to foods other than breast milk early in life between the time of birth and the third month of life. About 10.4% were introduced to complementary feeding at 4-5 months and only 8.4% were rightly introduced to complementary feeding at 6 months of age. The rest (3.1%) were initiated to complementary feeding late at 7 months or more.

About a quarter of the children were fed at least twice a day with mainly cereal-based diets. Most were fed 3-4 times (66%). Only 7.9% were fed 5 or more times, which suggests suboptimal feeding practices for children, while 3.7% of

the children were fed only once.

4.11 Dietary Diversity

Table 17: Distribution of dietary diversity among households

No of food groups consumed (N=508)	N	% (CI)
2 food groups	6	1.2 (0.5 – 2.7)
3 food groups	25	4.9 (3.3 – 7.3)
4 food groups	198	39.0 (34.7 – 43.4)
5 food groups	64	12.8 (10.1 – 15.5)
6 food groups	106	20.9 (17.5 – 24.7)
7 food groups	71	14.0 (11.1 – 17.4)
8 food groups	34	6.7 (4.7 – 9.3)
9 food groups	2	0.4 (0.1 – 1.6)
10 food groups	1	0.2 (0.0 – 1.3)
1-3 food groups	31	6.1(4.2 – 8.6)
≥ 4 food groups	477	93.9 (91.4 – 95.8)
Mean HDDS	5.2	SD=1.5
<i>Main source of food (N=508)</i>		
Purchasing	453	89.2(1– 91.7)
Own production	30	5.9 (4.1 – 8.4)
Gifts/donations	9	1.8 (0.9 – 3.5)
Borrowing	15	3.0 (1.7 – 4.9)
Gathering	1	0.2

About 1.2% of the households had consumed only two food group while majority had consumed 4-6 food groups within the same period. Households consumed an average (HDDS) of 5.2 food groups (SD=1.5) with the number of food groups consumed ranging from two to ten.

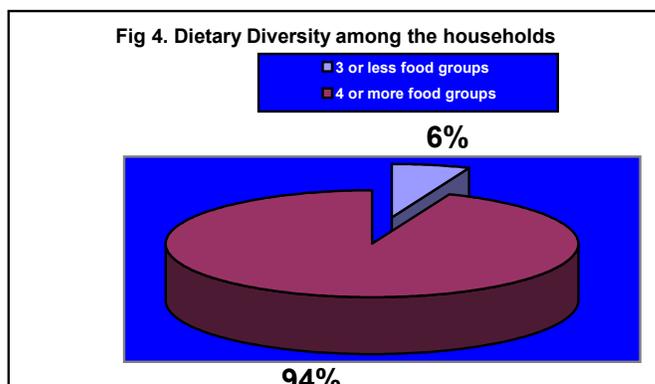
Most (89.2%) of the households surveyed mainly obtained their food through purchasing, 5.9% through own production and 3% relied on borrowing. Other households obtained their food as gifts (1.8%) or through

hunting/gathering (0.2%).

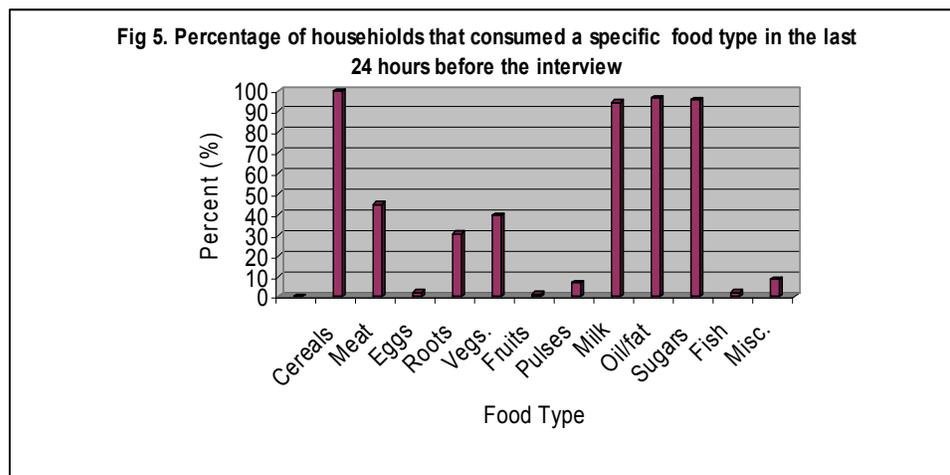
As shown on figure 4, only about 6% of the households had consumed three or fewer food

groups within 24 hours prior to the assessment. Most households (94%) consumed a diversified diet of four or more food groups.

Cereals provide the bulk of the food in the household diet. Figure 5 shows that cereal-based diets were consumed by 99.8% of the assessed households.



Other food items commonly consumed were milk oil (96.5%), sugar as tea (95.7, (94.3%), %) and meat (44.9%). About a third of the households consumed roots (30.9%) and 39.4% of the households consumed vegetables. Eggs (2.2%), Fish (2%) and Fruits (1.2%) were consumed by a small percentage of the households.



4.12 Adult Malnutrition by MUAC

Table 18: Adult nutrition status by MUAC

About 1.1% of non-pregnant women (aged 15-49 years) were malnourished (MUAC<18.5cm) while 0.2% were at severe risk of malnutrition (MUAC<16.0 cm) (N=445).

	n	%	95% CI
Total mothers assessed	495		
Total non mothers assessed	44		
Total women assessed	539		
<i>Non Pregnant (N=450)</i>			
Severe acute malnutrition (MUAC<16.0 cm)	1	0.2	0.0 – 1.4
Global acute malnutrition (MUAC≤18.5)	5	1.1	0.4 – 2.7
Normal	445	98.9	97.3 – 99.6
<i>Pregnant women (N=89)</i>			
Severe Risk (MUAC≤20.7 cm)	4	4.5	
Total at risk (MUAC≤23.0 cm)	19	21.3	
Normal	70	78.7	

About one fifth (21.3%) of pregnant women (N=89) were malnourished (MUAC<23.0cm) while 4.5% were at severe risk of malnutrition (MUAC<20.7cm).

4.13 Relationship between malnutrition and other factors

Table 19: Risk factors and relation to total malnutrition (WHZ<-2)

Exposure variable	N	(%)	Crude RR	95% CI	p-value
<i>Child sex:</i>					
Male	54	12.3	1.27	1.06 – 1.53	0.03*
Female	37	7.8			
<i>Age group</i>					
6-24 months	25	7.0	0.92	0.49 – 0.97	0.03
25-59 months	66	11.8			
<i>Type of settlement</i>					
Urban	33	10.1	1.01	0.76 – 1.35	0.99
Rural	58	9.9			
<i>Morbidity patterns</i>					
<i>Illness</i>					
Yes	42	14.7	0.76	0.63 – 0.93	0.002*
No	49	7.8			
<i>ARI</i>					
Yes	19	13.0	1.36	0.88 – 2.09	0.23
No	72	9.4			
<i>Diarrhoea:</i>					
Yes	21	15.8	1.70	1.13 – 2.57	0.02*
No	70	8.9			
<i>Health programmes</i>					
<i>Vitamin A Supplement:</i>					
Yes	39	11.0	1.12	0.87 – 1.44	0.48
No	52	9.3			
<i>Measles vaccine (N=854)</i>					
Yes	35	22.8	1.07	1.02 – 1.13	0.03*
No	14	13.0			
<i>Dietary & feeding patterns</i>					
<i>Breastfeeding (N=356)</i>					
Yes	8	6.0	0.85	0.47 – 1.53	0.72
No	17	7.6			
<i>Dietary diversity</i>					
≤ 3 food groups	3	4.9	0.47	0.15 – 1.47	0.26
≥ 4 food groups	8	10.3			

Both sex and age of children showed significant associations with malnutrition. Boys were more likely to be malnourished than girls (p=0.03). The data show that a boy was 1.27 times more likely to be malnourished than a girl. In addition, children over 24 months were more malnourished than those aged above 24 months (p=0.03). Illness was significantly (p=0.002, RR=0.76) associated with malnutrition. In particular, diarrhoea (p=0.02) and measles (p=0.03) showed a significant association with malnutrition.

Surprisingly, malnutrition rate was higher (22.8%) among children who had received measles vaccine than those who had not (13%).

Further analysis revealed no significant

association between malnutrition and other factors.

4.14 Death rates

A total of 905 households were surveyed for mortality indicator with a recall period of 90 days prior to the assessment being used. The results generated by the Nutrisurvey software were as presented below:

Death rates;

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

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

* 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 (mid point) in surveyed households	= 1,178
Number of under fives who joined the households	= 8
Number of under fives who left the households	= 10
Number of births	= 39
Number of under five deaths	= 8
Under five death rate (deaths /10,000 children per day)	= 0.76 (CI: 0.21 - 1.32)

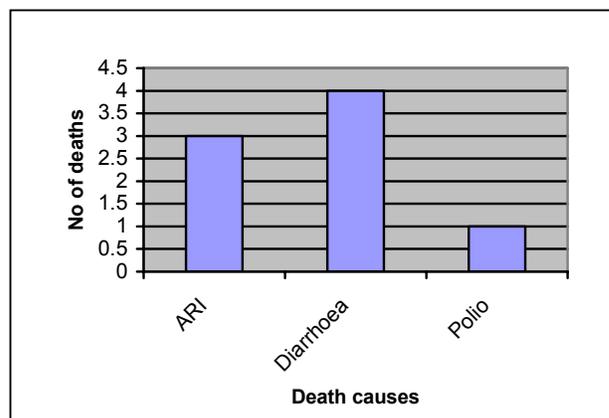
For the total population (Crude mortality/death rate):

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

Total population in surveyed households	= 4,974
Total people who joined the households	= 64
Total people who left the households	= 243
Total number of births	= 39
Total number of deaths in the households	= 19

CMR as deaths per 10,000 persons per day = **0.42** (CI: 0.26 - 0.58)

Both under five and crude death rates reflect a normal situation according to the international standards (WHO classification).

Figure 5: Causes of under five mortality

As shown on graph 5, diarrhoeal diseases and ARI were the main factors associated with under-five mortality. Polio also contributed to child mortality.

ARI and malaria were the main causes of death among children under five years of age. Anaemia and cardiovascular diseases were described as possible factors associated with death among adults.

4.15 Qualitative information

Qualitative information was collected from observations, focus group discussions and key informants. A total of 6 focus group discussions were held, with mothers and with men (elders). The discussions were centred on feeding and care practices, health care, food security, and water and sanitation issues.

4.15.1 Care and feeding practices

Breastfeeding duration for children is usually 12 months from birth. Water is given mostly at birth. Moreover, most children are given complementary food (animal milk – mostly camel or goat milk) before they are one month old. For most children, solid foods like rice or canjera are introduced at the age of 6-12 months. Main foods given to infants (0 – 12 years) is goat milk 3 to 4 times a day in most cases, canjero or rice mixed with sugar and oil/butter and porridge (flour +sugar+oil)

4.15.2 Change in dietary consumption 3 months before the survey.

Availability and access of meat, goat milk, camel milk, rice, sugar, and oil increased within the previous 3 months before the survey. Households reported that milk consumption has improved after the rains due to an increase in livestock productivity. The poor households felt that nothing has changed or indeed their situation has worsened due to lack of income to purchase food.

4.15.3 Constraints faced by women in providing adequate food to their households.

Food insecurity/hunger and sometimes ill health are the major constraint to breastfeeding of young children below two years. However cultural beliefs sometimes also negatively affect breastfeeding. Lack of water and too much work for women are the main hindrances to food preparation. Women have to travel long distances at times (during dry spells) or spend a lot of time away from home and do not have enough time to prepare food.

4.15.4. Water and sanitation

The main source of water is the Berkads which is usually untreated, the few cases of treatment involve use of diesel/old engine oil to control mosquitoes and kill other water micro-organisms. The distance to the water source is at least 500 meters and each household member uses on average 2 litres of water per day. Most households use the bush for human waste disposal including that of the children. For the majority of have latrines only for few is the distance to the water source according to international standards is (at least 30 metres). Each of these latrines is usually used by between 5 and 30 people.

4.15.5. Changes in prices of major commodities in the region in the last 3 months.

The prices for the major commodities consumed by the community increased in the last 3 months. The price of wheat flour (used for making *canjera*), rice and sugar increased by at least one dollar per bag since March 2006. Moreover, the price of fuel went up by about 3 dollars per

litre. However, the prices of water and milk declined over the same period which is attributed to the onset of Gu rains such that milk supply increased. In addition most households did not need to buy water as rains filled most of the berkads- the main sources of water.

4.15.6. Main income sources.

Sale of livestock and their products was by far the most important income source. Furthermore petty trade provided a second significant source of income supplementing livestock income. There remittances from relatives were important to a few poor households but not critical as a source of income for the population.

4.15.7. Common illnesses

Among the adults in the region the most common illnesses include Malaria, bronchitis, Tuberculosis, anaemia and diarrhoea. For children diarrhoea is the most common although measles, Acute Respiratory Infection (ARI) and malaria were seen as fairly common. The ubiquitous berkads are the breeding sites for mosquitoes especially during the rainy season and therefore contribute to malaria prevalence. Moreover poor sanitation leads to increased morbidity.

4.15.11 Food security situation

Climate

Generally the rainfall situation in Togdheer region at the time of the assessment could be described as below normal with exception of some areas of Hawd livelihood zone and the Golis-Guban pastoral zone that received normal rains. The rains started in time in mid April and were widespread in Golis-Guban pastoral and along the borderline (northeast) of Hawd livelihood zone. However, the rains were sporadic and patchy in most of agro-pastoral areas of Odweine, Sheikh and Burao districts.

Livestock

Some animal movement was observed in particular moving from Saarman, Dandanto and Coodanle areas to Buhoodle, Ethiopia boarder, Qorilugud and Horufadhi areas. Few areas reported cases of livestock mortality and these were mainly during the height of the drought just before the Gu rains. The current rainfall received over the region will enable a low and medium recovery of the pasture. In effect the seasonal forbs species and perennial indigofera have regenerated to some extent. In Golis-Guban pastoral zone good effect on pasture recovery is manifested, due to the reception of Heis rains in the months of January – March 2006 and the subsequent Gu rains. In Hawd livelihood zone limited annual and perennial grass species have regenerated to a lesser extent. These include *Aristida adescensionis*, *Aristida paposa*, *Cynodon dactylon* and *Aristida somalensis*. These species are of low nutrition quality and have remained biomass standing during the last *Jilaal* season.

Currently there is no water stress in the region, as most of the sources contain water. The berkads are either full or partially filled and few are empty in areas which received little rains. There is a normal migration of pastorals within the region. The pastoralists in the Golis-Guban have moved to Hawd livelihood Zone towards central north east of the zone, escaping from the heat of Guban. Similarly the pastoralists who settled in west and north of Odweine district have moved to the borderline of Hawd LZ to the west that received rains recently. Movement of livestock mainly is handled on-hoof walking with few weak sheep and goats by trucking.

Pastoralists have reported that high re-productivity from all animal species is expected in this Gu season, estimated at the following range by species: Camel (25-30%), Sheep (40-45%) and Goats (30-35%). Low calving of camel is attributed to the significant parturition at the last Deyr 2005 season, while lambing of sheep is normal as they come once a year in Gu season due to control of mating period. Goats normally make kidding at both Gu and Deyr wet seasons, however they kid more during the Deyr season.

Generally milk production is expected to increase due to the fact that all animal species are

breeding at this season (Sheep, Goats and Camels). Camel milk supply is significantly expected to increase, because milk production will be available from both camels that calved last Deyr 2005 season and those calving this Gu 2006 season. Conventionally in this region sheep- and goat milk are consumed more at household level and produce ghee, while camel milk is sold at both village and urban market levels. Since more camel milk is available at this season, the price has dropped down by 37.5% (from 8,000 SoSh to 5,000 So.sh) at rural villages. However at Burao market the price of camel milk is yet to drop (11,000 So.sh) because there is still high demand for consumption by the large population in the town.

Normally at the wet seasons livestock sales are in decreasing trend as people consume milk and reduce dry food purchases, also more heads are sold at the dry seasons to cover food and water costs and less marketable heads are available in the animal pen. It's worth noting that during the last *Jilaal* in March, acute water stress occurred across the region that forced pastoralists to sell more animal heads to cover water trucking costs.

Overall, the livestock situation is normal and an increased herd size is expected, as all animal species are calving, kidding and lambing. The livestock body condition is improving with the effect of green pasture available at medium and low recovery. Camel milk production is expected to increase and the price has already dropped down in some pastoral settlements. There were insignificant livestock death (Goats in particular) during the stress of *Jilaal* season

Crop Production:

In the agro-pastoral zone mostly farmers cultivate sorghum, maize and cowpea. Production outputs and harvest is expected to be lower compared to the previous Gu 2005, due to the fact that rainfall is sporadic and limited in coverage (600 ha) compared to last Gu 2005 (1,460 ha). The area under-cultivation is also limited compared to last year due high cost of tractor hiring. The farmers have low capacity to hire tractors for tillage operations, as cost of tractor hour have increased due fuel cost increment by 20% from the normal (8,000 So.Sh). Most of the farmers planted their farming fields on time, but both sorghum and maize are poorly established due to little rains received in most of the agro-pastoral livelihood zone. Despite the expectation of a lower crop establishment, some limited labour opportunities are likely in the agro-pastoral areas during the harvest period. The poor and middle households will have the chance to benefit from labour opportunities.

The production outputs from the agro-pastoral livelihood zone is expected to be lower than the last year 2005, due to the fact that rains were less. In effect area under-cultivation is also limited comparative to year 2005 due to high prices of tractor hiring. There will be limited farm labor opportunity available. There are limited stocks available at farm level, as nearly all the stocks were consumed during the dry season. In agro-pastoral settlements limited supply of sorghum and maize are available. The price of sorghum ranges from 6,000 to 7,000 So.Sh, while maize costs 4500-5000 So.Sh. These prices are 15% higher than the average cost during post deyr 2005. There was no food aid support to the agro-pastoral areas of the region that might have provided some food. Farmers are selling their livestock to meet the cereal food purchases.

Markets

Livestock prices in the main Burao market have been increasing over the last three months for the mere fact that more marketable animal heads were consumed at the dry *Jilaal* season (in April and May 2006) during which low supply of both local and export qualities were noted.. An average price of goat and sheep export qualities reached 31.5 USD, while an average price of goat local quality reached 27 USD. These prices are higher compared to normal prices at this time of the year. Livestock prices are expected to decline after June 2006, because pastoralists will supply more heads to repay debts on water trucking and food incurred costs at the *Jilaal* season stress period.

Supply of cereals such as sorghum, white maize is normal with slight increase in prices that range 5-6% from the normal price (4000 SO.SH). But yellow maize and wheat grain is not

available for the last three months. This is mainly attributed to the lack of supply from other regions of Somalia and Ethiopia.

Availability of imported food commodities is normal and their prices were fairly stable over the last 5 months with the exception of sugar that reached 27.5USD per bag. The terms of trade had been on increasing trend over the last three months, which is favourable for the pastoral communities. A head of goat export quality can cost an equivalent 1.5 bags of rice, while a head of goat local quality can cost 1.2 bags of rice. The exchange rate of 1 USD against SO.SH and SL.SH was fairly stable over the last 5 months of year 2006, with average of 15,400 SO.SH and 6,300 SL.SH.

Livelihood Security

In Togdheer, livestock is currently concentrated in Hawd LZ and south east of Sool plateau in Ainabo district that brought grazing pressure. In all districts of the region increased trend in charcoal production is noted resulting from *Jilaal* stress. Increased trend of enclosures is also observed in Odweine and Ainabo districts for the purpose of grass fodder production to generate income. Traditionally household support is common as a social input in the form of loan, zakat/sadqa. Social supports continue to be important capita through which local communities share resources to lessen the consequences of variable shocks that occur in the region. One example is giving a stock of sheep or goats and or milking heads to the poor. Food on loan and credit facilities are other kinds of social support in the region.

Main food source for pastoral Livelihood zones is food purchases of imported commodities that are available in the local markets with fairly stable price (rice 17.6 USD/bag, wheat flour 15.5 USD/bag, sugar 27.5USD/bag and Oil 1.25 USD/litre) over the last five months and sales may decline to some extent, as milk consumption increases in the wet season. In the agro-pastoral livelihood zone there is limited local production stocks due to the fact that the output production of the last year 2005 was lower by 42% from year 2004 and is expected to be lower further this season if additional rains do not fall in the following month. Thus agro-pastoralists will have limited access to food sources.

Income for pastoralists' remains balanced between the need to increase livestock holdings through stock retention for breeding purpose and the need for livestock sales to purchase food commodities. The income from livestock sales is expected to improve for June 2006. Prices of both local and export qualities (Goat) reached 31.5USD and 27 USD respectively. However, by July 06 the prices of livestock will be expected to decline as a normal trend. Income from camel milk is expected to decrease due to more supply at village levels. In some villages' camel milk prices have already dropped by 37.5%, but will increase at the *Hagaa* season.

Expenditure on food purchases by pastoralists is expected to decline before the *Hagaa* season, due to supplement consumption of milk from the herds. However, the proportion in reduction is to be explored. After July 2006 household expenses will increase due to the fact livestock prices are expected to decline thus affecting the purchasing power of the poor and lowering strata of middle households during the following *Hagaa* season. During *Jilaal* pastoral communities faced acute water shortage and stress in the whole region. This has resulted in an increase in cumulative debts on water trucking for a long period, as reported by the pastoralists.

Coping strategies:

Most of the households used the following coping mechanisms, i.e.

- Shift to less preferred/less expensive cereal foods ,
- Borrow food on credit from another household (*Aamah*),
- Reduce the number of meals per day.
- Limit the portion/quantity consumed in a meal (*Beelehamis*)
- Reduction in home milk consumption and sell more of milk produced or beg for food (*Tuugsi/dawarsi*)
- Migrations with the regions' jurisdiction in search of green pasture and water.

- In some localities Poor household especially in Ainabo district receive collective support in animal heads from better-off households.
- Decrease in food purchases is also kind of strategy adopted at the beginning of May 2006.
- Increased charcoal production by the poor wealth group to generate income.

5.0 DISCUSSION

5.1 Nutrition Situation

The assessment results indicate a Global Acute Malnutrition (Weight-for-Height <-2 Z score or oedema) of 9.9% (CI: 8.1 -12.1) and a Severe Acute Malnutrition of 0.7% (CI: 0.3- 1.5). This indicates an alert nutrition situation according to WHO classification. The assessment result is consistent with the long term estimates of global acute malnutrition (less than 10%). The last assessment of August 2003 found a GAM of 10% and the current findings confirm a persistently poor nutrition situation for the region.

This situation could be explained by the severe drought that ravaged the entire horn of Africa leading to, especially for the Togdheer region, an increase in prices of major food items (rice sugar and wheat flour) so that they were beyond the reach of the poor segment of the community. The respective crude and under five mortality rates of 0.76 (CI: 0.21-1.32) and 0.42 (CI: 0.26 – 0.58) deaths/10,000/day indicate acceptable levels according to WHO classification. This level of mortality could be attributed to the presence of health care providers in the region where people seek help when they are sick. For example the results indicate that over half of all those children who got ill had access to a private clinic and a fifth (21%) were able to access a public health facility.

There was a significant relationship between malnutrition and morbidity and it was higher among those who had been ill ($p=0.002$). In particular, diarrhoea had a significant association with malnutrition ($p=0.002$). Moreover, age was strongly associated to nutritional status with those children over 24 months significantly ($p=0.03$) malnourished than those below 24 months. This suggests poor feeding practices and or food insecurity for children after weaning. Surprisingly, malnutrition rate was higher among children who had received measles vaccine ($p=0.03$) than those who had not. This could possibly mean many of the children who received the measles vaccine already had measles or suffered other illnesses that superimpose malnutrition.

5.2 Child Feeding, Food Consumption and Food Security

Child feeding practices especially breastfeeding and complementary feeding are suboptimal. The children are either not exclusively breastfed long enough or complementary feeding is introduced so early. Moreover, in the absence of milk (mostly available in the rainy season), the mainly cereal-based diets given to children are inadequate to save them from Protein Energy Malnutrition. Residents are just coming from experiencing the impact of a prolonged drought and with a significant number (89.2%) relying on purchasing, and prices of major food commodities having gone up, the poor households faced serious food shortages. This could have contributed to the poor nutrition status observed. However the situation could have been worse but for the onset of the *Gu* rains which, though below normal in most parts, led to improved access to food/milk as a result of increased livestock production from replenished pasture and water availability. The onset of rains may also have led to a decline in the price of milk so that even cash strapped households could afford it. In addition, the dietary diversity was high with 94% of the households consuming 4 or more food groups. These were the key factors in mitigating the nutritional situation. Cereal prices are high and the decline in terms of trade (TOT) further reduces the purchasing power of the locals further affecting food security.

5.3. Water, Sanitation and Health issues

Most of the population draw water from unprotected water catchments or wells. Most of these catchments that had dried up during the drought are now replenished with water. Water is therefore available and accessible to both human and livestock and this is expected to remain so for the next month. The rains have reduced the need for households to spend income buying water such that this income can now be used to buy other important items like food. However the

quality of water, especially for human consumption, is poor. Moreover, the use of old engine oil/diesel for control of mosquitoes, poses a serious risks to the health of the people and livestock, Used motor oil can contain such contaminants as arsenic, cadmium, benzene, lead, magnesium, zinc, and chlorinated compounds. These hazardous substances can negatively impact the environment by polluting the soil and water. The heavy metals found in waste oil can bio accumulate in human body posing serious health risks by poisoning (HCES, 2004). Moreover households had insufficient water holding containers implying that they require frequent trips to fetch water. About 78.9% of the households have only 1-2 containers for fetching or storing water yet Sphere (2004) guidelines recommend a minimum of 2 clean containers of 10-20 litres for water collection alone, in addition to enough storage containers to ensure there is always water in the household.

The general sanitation of the population's residential areas is poor. Access to sanitation facilities is very low with majority (72%) using bush. Household's hygiene is suboptimal and appropriate food and water storage methods are not used. This, together with poor drinking water quality has contributed to incidences of diarrhoea.

6.0 RECOMMENDATIONS

Following discussions held after sharing the results with partners and detailed data analysis, both short- and long-term recommendations were made:

6.1 Short term recommendations:

1. Continuation and intensification of health, water and sanitation interventions especially rehabilitation and protection of water points and provision of sanitary facilities. In particular households will need to be provided with alternative methods of treating water at the source in place of the hazardous old engine oil
2. Targeted food distribution to families severely affected by previous drought.
3. Assistance in asset recovery e.g. livestock redistribution to pastoral drop outs.

6.2 Long-term Recommendations

1. A multi-stakeholder forum including the local authorities and all NGOs in the region to address and coordinate priority interventions.
2. An integrated livestock programme that incorporates research and development so that the role of livestock in human nutrition is mapped and strategies laid down to enhance the contribution of livestock to food security.

7.0 APPENDICES

Appendix 1: Sampling Frame for the Hawd of Togdheer Nutrition Assessment, June 2006

Village	Type of Village	U5 Pop	Tot Pop	Cum Pop	Cluster No	
Coodanle	vill	361	1804	1804	1	1361
Qabri Huluul	vill	149	743	2547		
War-Imran *	vill	233	1167	3714		
Dandan	vill	85	424	4138		
Shaaxid	vill	64	318	4456		
Shanshade *	vill	233	1167	5623	2	4893
Taalobuur	vill	267	1337	6960		
Dabaqabad	vill	130	652	7612		
Heeere	vill	230	1148	8761	3	8425
Mohamed Ugaas	vill	124	618	9379		
Ballidhig *	vill	574	2869	12247	4	11957
Dheryoley	vill	212	1061	13308		
Dhagaxdheer	vill	233	1167	14475		
Andhadhehe	vill	79	393	14868		
Sibidhley	vill	162	812	15679	5	15489
Dhoqoshay *	vill	444	2220	17899		
Qaloocon	vill	47	233	18132		
JamaQabar	vill	181	907	19040	6	19021
Ago-araraan	vill	142	711	19750		
Libaaxle	vill	126	631	20382		
Nasiye	vill	382	1910	22291		
Balanbaal	vill	121	605	22896	7	22553
Beelieeday	vill	262	1308	24204		
Jamaliiban	vill	123	615	24819		
Bali Abokor	vill	46	228	25047		
Gunbur libaaax	vill	99	494	25542		
Geedihaan	vill	142	711	26253	8	26085
Naqdhbijjo	vill	97	483	26735		
Qudhacsafar	vill	55	276	27011		
Suuryoqansah	vill	21	106	27117		
Iskudhoon	vill	83	414	27531		
Ballihiile	vill	219	1097	28628		
Lebiguun	vill	99	494	29122		
Sanyare	vill	127	637	29759	9	29617
Bilcilweyso	vill	68	339	30098		
Waraabeeye *	vill	222	1112	31211		
Hussein Hamar	vill	38	191	31402		
Haradagubato *	vill	338	1689	33091		
Bisiqa	vill	195	976	34067	10	33149
Gorayo Xun I	vill	212	1061	35128		
Gorayo Xun II	vill	56	281	35409		
Duruqsi *	vill	218	1092	36501		
Cali Ciise	vill	85	424	36925	11	36681
Yucubyabooh *	vill	244	1220	38145		
Candhadhere	vill	74	371	38516		
Riyoxidho	vill	59	297	38813		
Habeedley	vill	265	1326	40140		

Bilcile	vill	132	659	40799	12	40213
Cadow yuurura	vill	127	637	41435		
Cali Saahid	vill	100	499	41934		
Aroori	Sett	128	639	42573		
Beerato	vill	214	1072	43644		
Galooley/Gatiiltalay	vill	212	1061	44705	13	43745
Qaloocato	vill	132	658	45363		
Gawaama	vill	85	424	45787		
Xaaxi *	vill	594	2971	48758	14	47277
Murec	vill	53	265	49023		
Harosheikh	vill	414	2069	51092	15	50809
Cabdidhere	vill	117	583	51675		
Qolqol	vill	117	583	52259		
Gudubi *	vill	318	1591	53850		
Cabdalla Faarax	vill	85	424	54274		
Qudhackadle	vill	159	796	55070	16	54341
Baar cad	vill	85	424	55494	16	NB cluster 16 was empty and was replaced with this one
Jeenyolaaye	vill	159	796	56290		
Obsiye	vill	64	318	56608		
Haji Saalah	vill	318	1591	58200	17	57873
Laan Mulaaxo *	vill	501	2504	60703		
Dabagorayaale	vill	244	1220	61923	18	61405
Gucundhale	vill	159	796	62719		
Khaatumo *	vill	244	1220	63939		
Cali faarax	vill	85	424	64363		
Boodhley	vill	95	477	64841		
Ceeg	vill	115	573	65414	19	64937
Geeldidis	vill	65	324	65737		
Gorayood	vill	74	371	66109		
Habaasweine	vill	53	265	66374		
Ceelsame	vill	212	1061	67435		
Ceelbilaal	vill	106	530	67965		
Buhodle Town *	Tw	2275	11373	79338	20; 21; 22; 23	68469; 72001; 75533; 79065
Qararo	vill	153	764	80102		
Dandan	vill	214	1072	81173		
Hamarlaguxidh *	vill	424	2122	83295	24	82597
Balicad	vill	106	530	83826		
Hadhadhanka *	vill	467	2334	86160	25	86129
Codanle *	vill	361	1804	87963		
Qaloagowshe	vill	25	127	88090		
Jaalle	vill	21	106	88197		
Jirde	vill	149	743	88939		
Balidocle	vill	85	424	89364		
Sarmaanyo	vill	233	1167	90531	26	89661
Goonle	vill	91	456	90987		
Banyaale	vill	149	743	91729		
Dhalaamacune	vill	136	679	92408		
Widh widh	vill	509	2546	94955	27	93193
Booc	vill	127	637	95591		
Hori Fadhi	vill	212	1061	96652		

Shangale	vill	34	170	96822	28	96725
Sooljoogto	vill	127	637	97458		
Maygagle	vill	106	530	97989		
Galgal	vill	106	530	98519		
Qabri huluul	vill	149	743	99262		
Hagoogane	vill	64	318	99580		
Balliius	vill	64	318	99898		
Balicalanle	vill	446	2228	102126	29	100257
Qorilugud *	vill	637	3183	105309	30	103789
Muraayada	vill	127	637	105945		
			105945			
Cluster Interval:		3532				
Random No:		1361				

Ref: WHO NID Figures, Jan 2006

Appendix 2: Hawd of Togdheer Nutrition Assessment Questionnaire

Date _____ Team Number _____ Cluster Number _____ Name of enumerator _____ Name of Village _____

District _____ Household Number _____ Name of the Respondent _____

Q1-8 Characteristics of Household

Q1 How many people live in this household (Household size)² ? _____

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

Q3 What is your present household residence status? 1= Resident³ 2=Internally displaced⁴ 3=Returnees⁵4=Internal immigrant⁶ 5= (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 (in months) _____

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

Q8 What is the household's main source of income? 1= Animal & animal product sales 2= Crop sales 3= Petty trade4= Casual labour
5= Salaried employment 6= Remittances/gifts 7= Others, specify _____

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

Sno	First Name <small>(if child is aged >24, skip to Q14)</small>	Q9 <small>(If 6-24 months)</small> Are you breastfeeding the child? <small>(if no, skip to Q11)</small> 1=Yes 2=No	Q10 <small>(If 6-24 months)</small> If breast feeding, how many times/day? 1=<3 times 2=3-6 3=On demand	Q11 <small>(If 6-24 months)</small> 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 <small>(If 6-24 months)</small> At what age was child given water/ foods other than breast milk? 1=0-3 months 2=4-5 months 3=6 months 4=7 months or more.	Q13 <small>(If 6-24 months)</small> How many times do you feed the child in a day <i>(besides breast milk)</i> ? 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? <i>(show sample)</i> 1=Yes 2=No	Q15 <small>(If ≥9 months old)</small> Has child been Vaccinated against measles? 1=In past 6 months 2=Before 6 months 3=None	Q16 How many times has the child ever been given polio vaccine orally? 1=1-2 times 2=3 and above 3=Never
1									
2									
3									
4									

² Number of persons who live together and eat from the same pot at the time of assessment

³ A person who dwells in a particular place permanently or for an extended period

⁴ 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

⁵ Refugees who have returned to their country (Somalia) or community of origin, Somalia, either spontaneously or through organized repatriation [UNHCR definition]

⁶ 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)

⁷ Child having received breast milk either directly from the mothers or wet nurse breast within the last 12 hours

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

Sno <i>As per table on page 1</i>	First Name	Q17 Child Sex 1=Male 2=Female	Q18 Age in months	Q19 Oedema 1=yes 2=no	Q20 Height (cm)	Q21 Weight (kg)	Q22 MUAC (cm)	Q23 Diarrhoea ⁸ in last two weeks 1= Yes 2= No	Q24 Serious ARI ⁹ in the last two weeks 1=Yes 2=No	Q25 Febrile illness/suspected Malaria ¹⁰ in the last two weeks 1=Yes 2=No	Q26 (If ≥9 month) Suspected Measles ¹¹ in last one month 1=Yes 2=No	Q27 [Applicable for a child who suffered any of the 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
1												
2												
3												
4												

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 = Unprotected well or berkads 2= Protected wells, boreholes or spring 3=openwells, ponds 4=others, specify _____

Q31 Average distance to the nearest water point 1= ≤500 meters 2=501m – 1 km 3= 1-3 km 4= more than 3 km

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=Bush (*If Bush skip to Q36*)

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

⁸ Diarrhoea is defined for a child having three or more loose or watery stools per day

⁹ ARI asked as *oof wareen* or *wareento*. The three signs asked for are cough, rapid breathing and fever

¹⁰ Suspected malaria/acute febrile illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma

¹¹ 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

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 & Dietary Diversity

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

<p>Food group consumed: What foods groups did members of the household consume in the past 24 hours (from this time yesterday to now)? Include any snacks consumed.</p>	<p>Did a member of your household consume food from any these food groups in the last 24 hours?</p> <p>1=Yes 0=No</p>	<p><i>*Codes:</i></p> <p>1= Own production 6=Borrowed 2=Purchases 7=Gathering/wild 3=Gifts from friends/families 8=Others, specify____ 4=Food aid 9=N/A 5=Bartered</p>
<p>Type of food</p>		<p>What is the main source of the dominant food item consumed? (Use codes above)?</p>
<p>1. Cereals and cereal products (e.g. maize, spaghetti, pasta, caanjera, bread)?</p>		
<p>2. Meat, poultry, offal (e.g. goat/camel meat, beef, chicken/poultry)?</p>		
<p>3. Eggs?</p>		
<p>4. Roots and tubers (e.g. potatoes, arrowroot)?</p>		
<p>5. Vegetables (e.g. leafy vegetables, tomatoes, carrots, onions)?</p>		
<p>6. Fruits (e.g. water melons, mangoes, grapes)?</p>		
<p>7. Pulses/legumes, nuts (e.g. beans, lentils, green grams, cowpeas)?</p>		
<p>8. Milk and milk products (e.g. goat/camel/ fermented milk, milk powder)?</p>		
<p>9. Oils/fats (e.g. fat, butter, ghee, margarine)?</p>		
<p>10. Sugar and honey?</p>		
<p>11. Fish and sea foods (e.g. fired/boiled/roasted fish, lobsters)?</p>		
<p>12. Miscellaneous (e.g. spices)?</p>		
<p>Q39 In general what is the main source of food in household? (*Use codes above)</p>		<p>_____</p>
<p>Q40 Total number of food groups consumed (filled by enumerator): _____</p>		

Q41 - 42 Informal and formal Support or Assistance in last three months (circle all options that apply)

Q41 Which of these informal supports did you receive in last three months if any?
 1=Zakat from better-off households 2=Remittances from Abroad 3=Remittances from within Somalia 4=Gifts 5=Loans
 6=None 7=Other (specify) _____

Q42 Which of this formal international or national aid support did you receive in last three months if any?
 1= Free cash 2=Free food 3=Cash for work 4=Food for work 5=Supplementary food 6=Water subsidy 7 Transportation of animals subsidy
 8=Veterinary care 9=None 10=Other (specify) _____

Appendix 4. Traditional Calendar for Nutrition Survey in Hawd of Togdheer June 2006

Month	2001	2002	2003	2004	2005	2006
Jan.		53 Ramadan	41	29	17 Dul-Xaj	5
Feb.		52 Sako	40 Sako	28 SAKO	16 Sako	4 Sako
Mar.		51 Safar	39 Safar	27 Safar	15 Safar	3 Safar
Apr.		50	38	26	14 Roobabkii Waynaa- Guga	2
May		49 P.Egal Death	37 Rajal Hore	25 Codayntii.Dastuur	13 Rajar Hore	1
Jun.		48 Rajal Dhexe	36 Rajal Dhexe	24 Rajal Dhexe	12 Rajal Dhexe	
Jul.	59	47	35	23	11	
Aug.	58	46	34	22	10	
Sep.	57	45 Rajal Dhexe	33 Rajal dhexe	21 doorashadii barlamanka	9	
Oct.	56	44 Rajal Dambe	32 rajal danbe	20 Ramadan 24 th	8 Ramadan 24 th	
Nov.	55	43	31 Shabcan	19 Ramadan	7 Ramadaan	
Dec.	54 Ramadan	42 doorashadii madax weynaha	30 Abaartii SIMA	18 Dul-Xaj	6	

Jiilaal
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Appendix 5: Team formation for the Hawd of Togdheer Nutrition Assessment.

Team No	Team Members	Cluster No	Cluster Name	District
1	<ul style="list-style-type: none"> Ibrahim Harir Rahma Suleiman Naasir Mohamed Nur 	13 14 15 16 18	Galooley Xaaxi * Harosheikh Qudhackadle Dabagorayaale	
2	<ul style="list-style-type: none"> Ahemed Jama Farah Jama Elmi Warsame Ali abdulahi Jama 	5 6 7 8 12	Sibidhley Jama Qabar Balanbaal Geedihaan Bilcile	
3	<ul style="list-style-type: none"> Osman Abdi Warsame Shugri Mohammed Abdirzak Bashir Ibrahim Haji deria 	9 10 11 17 19	Sanyare Bisiqa Cali Ciise Haji Saaah Ceeg	
4	<ul style="list-style-type: none"> Hawa Ismail Ahamed Mohdi Jama Noor Abdalla Adan Ismail Yasmin Jama 	1 24 25 26 28	Coodanle Hamarlaguxidh * Hadhadhanka * Sarmaanyo Shangale	
5	<ul style="list-style-type: none"> Fuad Yusuf Ismail Mohammed Harun Mohammed Ali Handulle 	20 21 22 23 24	Buhodle Town Buhodle Town Buhodle Town Buhodle Town Hamarlaguxidh *	Buhodle
6	<ul style="list-style-type: none"> Fuad Hassan Adam Ibrahim Ali Said Fara Hersi 	2 3 4 29 30	Shansshade * Heeere Ballidhig * Balicalanle Qorilugud *	Ballidhig
Coordination of the Assessment: 1. Tom Joseph Oguta – FSAU Nutrition Project Officer 2. Peter King'ori – FSAU Nutrition Project Officer				
Technical and Managerial Support Ahono Busili – FSAU Deputy Nutrition Project Manager				

Appendix 7: Child Referral Form

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 with (state the condition): _____

Child referred to: _____

Child referred by: _____

.....

REFERRAL FORM FOR MALNOURISHED CHILDREN

Name of the village: _____ Date: _____

Name of the child: _____ Sex of child: _____

Age of child: _____ Name of caretaker: _____

Child diagnosed with (state the condition): _____

Child referred to: _____

Child referred by: _____

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