

# **BURAO SETTLEMENT AREAS**

## **NUTRITION SURVEY**

**OCTOBER, 2003**

**FSAU/MOHL/SRCS**



## TABLE OF CONTENTS

<b><u>TABLE OF CONTENTS.....</u></b>	<b><u>2</u></b>
ABBREVIATIONS AND ACRONYMS .....	4
ACKNOWLEDGEMENT .....	5
EXECUTIVE SUMMARY .....	6
<b><u>TABLE 1. SUMMARY OF FINDINGS.....</u></b>	<b><u>8</u></b>
<b><u>1 INTRODUCTION.....</u></b>	<b><u>9</u></b>
<b><u>2 BACKGROUND INFORMATION.....</u></b>	<b><u>10</u></b>
2.1 GENERAL BACKGROUND .....	10
<b><u>SIIBAKHTI SETTLEMENT AREA.....</u></b>	<b><u>10</u></b>
2.3. HUMANITARIAN OPERATIONS IN THE SETTLEMENT AREAS .....	11
2.4. HEALTH .....	11
2.5 MORBIDITY .....	11
2.6. WATER AND ENVIRONMENTAL SANITATION .....	11
2.7. PREVIOUS NUTRITION SURVEYS IN BURAO SETTLEMENT AREAS.....	12
<b><u>3 METHODOLOGY.....</u></b>	<b><u>12</u></b>
3.1. SURVEY DESIGN AND METHODOLOGY.....	12
3.2 DATA COLLECTION.....	12
ANTHROPOMETRIC MEASUREMENTS .....	12
CHILD AGE DETERMINATION .....	12
OEDEMA .....	13
MORBIDITY .....	13
MORTALITY.....	13
3.5. DESCRIPTION OF SURVEY ACTIVITIES.....	14
3.6. QUALITY CONTROL PROCEDURES .....	14
3.7. DATA ANALYSIS .....	14
ENTRY, CLEANING, PROCESSING AND ANALYSIS .....	14
GENERAL CHARACTERISTICS OF STUDY POPULATION.....	14
CREATION OF NUTRITIONAL STATUS INDICES.....	15
<b>4.0 SURVEY RESULTS .....</b>	<b>16</b>
4.1 HOUSEHOLD CHARACTERISTICS OF STUDY POPULATION .....	16
4.2 FOOD SOURCES, INCOME SOURCES AND COPING STRATEGIES .....	17
4.3 WATER AND SANITATION AND HEALTH SEEKING BEHAVIOUR.....	17
4.4 CHARACTERISTICS OF STUDY CHILDREN .....	18
4.5 NUTRITIONAL STATUS OF SURVEY CHILDREN USING ANTHROPOMETRY .....	18
4.6 MORTALITY RATES .....	19
4.7 HEALTH, FEEDING PRACTICES AND IMMUNISATION COVERAGE FOR SURVEY CHILDREN.....	20
MORBIDITY, MEASLES IMMUNISATION AND VITAMIN A SUPPLEMENTATION .....	20

FEEDING PRACTICES .....	21
4.8 RISK FACTORS IN RELATION TO MALNUTRITION.....	21
4.9 QUALITATIVE INFORMATION.....	22
<b><u>5.0 DISCUSSION .....</u></b>	<b><u>23</u></b>
FOOD SECURITY SITUATION: FOOD SOURCES, INCOME AND COPING MECHANISMS.....	23
CHILDCARE AND ITS EFFECT ON NUTRITIONAL STATUS .....	23
NUTRITIONAL STATUS .....	24
<b><u>6. CONCLUSION AND RECOMMENDATIONS .....</u></b>	<b><u>25</u></b>
<b><u>4 APPENDICES .....</u></b>	<b><u>26</u></b>
<b><u>APPENDIX 1. BURAO SETTLEMENT AREAS:NUTRITION QUESTIONNAIRE .....</u></b>	<b><u>26</u></b>
APPENDIX 5: LIST OF PARTICIPANTS .....	31
<b><u>5 REFERENCES .....</u></b>	<b><u>33</u></b>

## **ABBREVIATIONS AND ACRONYMS**

ARI	Acute Respiratory Infections
FAO	Food and Agriculture Organisation
FEG	Food Economy Group
FSAU	Food Security Assessment Unit
GAM	Global Acute Malnutrition
Ha	Hectares
H/A	Height for Age
IDP	Internally Displaced People
KM	Kilo Metres
MCH	Maternal and Child Health
MT	Metric Tonnes
NCHS	National Centre for Health Statistics
NGOs	Non-Governmental Organisations
NIDs	National Immunisation Days
OR	Odds Ratio
SACB	Somalia Aid Coordination Body
UN	United Nations
UNICEF	United Nations Children's Fund
WFP	World Food Programme
W/H	Weight for Height
WHO	World Health Organisation

### ***Definitions***

#### ***Deyr Season:***

Short rains normally expected from October to December in southern Somalia. Deyr rains are less widespread and less reliable than the GU rains. They are usually patchy and localised. Its harvest is normally expected between December and January and provides key food requirement to take households through the Jilaal season. The harvest is normally not significant when compared to the primary/main harvest of the year.

#### ***Gu Season***

The main rainy season in Somalia normally expected between April and June. About 70% of the annual crop and livestock production depend on the Gu rains. This is the heaviest and most reliable rainfall in Somalia. Its harvest is normally expected between July and August.

#### ***Jilaal Season***

This is the dry season of the year in Somalia normally between January and March. There is normally no crop production during this season and the river levels normally drop. Consequently, most livestock migrate in search of water and pasture during this period.

## **ACKNOWLEDGEMENT**

The Nutrition Surveillance Project of the Food Security Assessment Unit (FSAU) acknowledges the participation of Ministry of Health and Labour (MOHL) Somaliland, Somali Red Crescent Society (SRCS) in the Burao settlement areas nutrition survey.

The overall contribution of MOHL in the coordination and supervision, community mobilisation, provision of a training venue and facilitation in the training of the supervisors and enumerators is highly appreciated. The provision of enumerators and supervisors by MOHL and SRCS and anthropometric equipment by UNICEF is gratefully acknowledged.

Many thanks too to the mothers, caregivers, leaders and the community as a whole in the settlement areas for their cooperation, time and for providing information individually and in focus group discussions that helped the survey team get a better understanding of the nutrition situation in the area.

Acknowledgement also goes to agencies on the ground (UNDP, DRC) for providing background information on the area.

FSAU also expresses its sincere appreciation to the survey team for the high level of commitment and sincerity demonstrated during all stages of this survey.

## **EXECUTIVE SUMMARY**

The nutrition survey was undertaken in the four settlements areas of Burao town namely, Kosaar, Ali Hussein, Siibakhti and 15 May.

The settlement population in Burao who are mainly returnees from refugee camps and displaced people from South Somalia have limited means of livelihood with barely any assets and hence highly vulnerable to any kind of shock. However, no recent systematic study on the nutrition situation in these settlement areas has been conducted. . Thus between 22<sup>nd</sup> and 27<sup>th</sup> October 2003 a nutrition and mortality survey was undertaken in the area by FSAU in collaboration with the Ministry of Health and Labour (MOHL) and the Somali Red Crescent Society (SRCS). The survey aimed at determining the nutritional status of children aged between 6 - 59 months or 65 - 110 cm in height/length using weight for height index. The survey also sought to establish factors influencing the nutritional status and consequently provide recommendations for interventions based on the findings.

Due to the limited residential areas observed and the absence of accurate population figures in the settlement areas, a population study was undertaken. It was both descriptive and analytical in nature designed to use a standard nutrition questionnaire (see appendix) to collect quantitative data. Additional qualitative data were collected through focus group sessions, key informant interviews and secondary data review. The mortality assessment was done concurrently with the nutrition survey. The same methodology used for the nutrition survey was adopted. .The mortality questionnaire was administered to all households in the four settlement areas regardless of having under five children or not.

A high proportion, about 85% of the households reported purchasing as their main food source. The other main food sources reported were crop 3.9% (mainly from small plots within the town), social support 2.8%, remittances 1.9%, animal and animal products 1.7%. Casual work in the form of porters, cleaners in restaurants, construction related activities and house helps formed the main source of income (61%) for this population (All these activities are not sustainable and pay a relatively low wage rate) followed by small business (20%) with low proportion of the households depending on sale of crops, remittance/gifts and salaried employment. At the time of the survey, the main coping mechanism for food stress was through social support (borrowing, begging, and food aid) about 70%. Collectively, the rest of the households about 29% were coping through sale of livestock normally kept with relatives, splitting of families, remittances and hunting. The majority of the people (about 62%) relied on water trucking for their domestic water source, while about 21% depended on boreholes. Collectively, 16.4% depended on berkads, taps, streams and wells.

About 40% of the households owned latrines while more than half of them used bush/open grounds for a sanitation facility.

Among those who owned and used latrines, about 62% kept them clean. A high proportion (95%) of the households sought medical assistance when the child was sick. Of those who sought medical assistance, over 50% consulted public health facilities about 40% private clinic/pharmacy, with only 3.8% consulting traditional practitioners.

The incidences of ARI and diarrhoea within two weeks prior to the survey was 30% and about 24% respectively while malaria was 7.5 % within the same period. The incidence of measles among the under-five population within one month prior to the survey was about 6.1%. Measles vaccination coverage was fairly good and stood at 80% among children aged 9 - 59 months. . Among children aged 9 - 11 months and 12 - 23 months the coverage was 70% and 73% respectively. . About 75% of the children had received between 1 - 2 doses of polio vaccine with about 25% having received three doses.

At the time of the survey, around a third of the children aged between 6 - 24 months were still breastfeeding. Of those who had stopped breastfeeding, more than half (56%) had stopped breastfeeding below the age of one year. About 50% of the children were fed three times in a day while only about 14% of the children were fed more than four times in a day.

The global/total acute malnutrition rate was **15.3 % ( CI: 11.8% - 19.6%)** with a severe acute malnutrition rate of about 1.9 % ( CI: 0.9% - 4.2%). The observed malnutrition rate is within critical levels according to WHO classifications. A past nutrition survey in Burao town in January 2002 indicated a nearly similar rate, a GAM of **13.6 % (CI: 11.5% - 16.1%)** though the two surveys are not directly comparable due to the different methodologies used and the difference in study populations. Malnutrition according to age group revealed that children aged 48 – 59 months reported the highest proportion (4.7%) of malnourished children though this was not statistically significant compared to other age groups.

## **CONCLUSION AND RECOMMENDATIONS**

The Burao Settlement areas can be termed as highly vulnerable, with barely any assets, and with inadequate basic services like shelter, food, education and sanitary facilities. The survey results show that the current malnutrition levels are within critical levels. Although no statistical significance was established with most of the risk factors except diarrhoea, attributed to poor sanitation environment, the relationship between diseases and nutrition is well documented. Thus the current high incidences of diseases among children could put children under five at increased nutritional risk due to the strong synergetic relationship between protein energy malnutrition and infections such as ARI and diarrhoea and hence aggravate the current levels of malnutrition.

Similarly the current food intake can be termed inadequate in terms of quantity and quality. The food lacks diversity and this could also contribute to further deterioration of the nutrition status.

Thus the situation in Burao settlement areas requires a concerted effort that will address in an integrated manner the factors negatively influencing the nutrition situation, as nutrition is a cross cutting issue.

### **Short term interventions**

- Targeted supplementary feeding programme for all the malnourished children
- Continued close monitoring the nutrition status in the areas in order to detect any further deterioration early.

### **Long term interventions**

1. Intensify health and nutrition education activities at household level targeting mothers, fathers and other caregivers to address

- Care concerns especially for the young children
- Promotion of exclusive breastfeeding, appropriate young child feeding, diet diversification, and improvement in household hygiene and personal hygiene practices.

2. Support sanitation interventions e.g. construction of toilets and health education

3. Explore ways of supporting income generating activities focusing on women with an aim of increasing the purchasing power of the households.

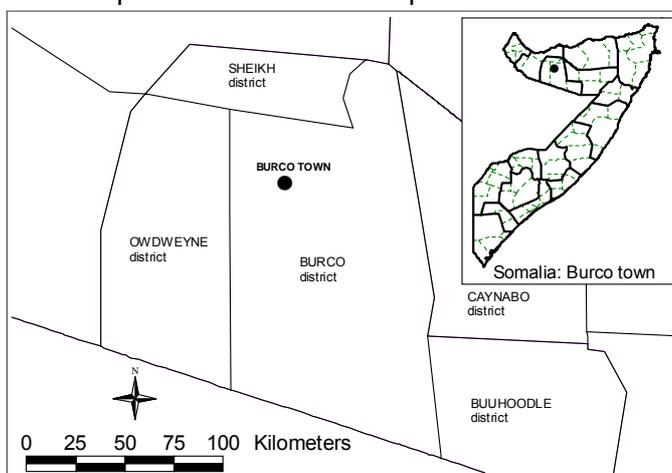
**Table 1. SUMMARY OF FINDINGS.**

Indicators	No.	%
Under five children screened during the survey	359	100
Global Acute malnutrition - weight for height <-2 z score or presence of oedema	55	15.3 (C.I.:11.8 - 19.6%)
Severe Acute Malnutrition - weight for height <-3 z score or presence of oedema	7	1.9 (C.I.: 0.9 - 4.2%)
Oedema	1	0.3
Proportion of children with diarrhoea in last two weeks prior to the survey.	87	24.2
Proportion of children with ARI in last two weeks prior to the survey.	108	30.1
Proportion of children with Malaria in last two weeks prior to the survey.	27	7.5
Proportion of children with Measles in the one month prior to the survey.	22	6.1
Proportion of children supplemented with Vitamin A in last six months prior to the survey.	205	57.1
Proportion of children immunised against Measles	275	80.2
Under five mortality rate	2	0.60/10,000/day
Crude mortality rate	7	0.37/10,000/day

## 1 INTRODUCTION

Burao town in Burao District, Togdheer region hosts four main settlement camps namely, Kosaar, Ali Hussein, Siibakhti and 15 May. The majority of the population of over two thousand are returnees and displaced people from south Somalia and Ethiopia and although some have been in the area for around ten years, new arrivals from Ethiopia continue to take up residence within the informal settlements.

The problem of refugees and displacement started in 1988 when Somali National Movement (SNM) waged war against the former Somalia government, which led to massive displacement of the people to Ethiopia. In January 1991 a civil war erupted between power struggle groups within the sub clans of Burao, which once again paved the way to further displacement of the people of Burao to the neighbouring areas including Ethiopia. After reconciliation between the various groups, Somaliland formed a government structure and elected a president in 1993. Another civil war started in March 1993 up to December 1996. A peace agreement was reached between the government and the opposition whose stronghold was Burao town. The peace encouraged the people to return home mainly from Ethiopia. Additionally, the implementation of the voluntary repatriation programme by UNHCR since February 1997 and the continued unrest in South and central Somalia has resulted to the emergence of the resettlement camps in Burao.



Although the return home was welcomed, it has put additional stress on the limited infrastructure and amenities in the town. Likewise, the local authority lacks the institutional capacity and financial resources needed to meet the basic needs of its residents including those in the resettlement camps.

### 1.1 Survey Justification

The settlement population in Burao have limited means of livelihood with barely any assets and hence highly vulnerable to any kind of shock. Limited information is available on the nutrition status of this population with no recent systematic study having been undertaken in these settlement areas. Thus between 22<sup>nd</sup> and 27<sup>th</sup> October 2003 a nutrition and mortality survey was undertaken in the area by FSAU in collaboration with the Ministry of Health and Labour (MOHL) and the Somali Red Crescent Society (SRCS). The aim of the survey was to determine the nutrition status of children aged between 6 - 59 months or 65 - 110 cm tall 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.

### 1.2. Survey Objectives

- To determine the level of malnutrition through anthropometric measurements using weight for height for children aged between 6 - 59 months or 65 - 110 cm tall.
- To determine the coverage of measles vaccination, polio vaccination and vitamin A supplementation among the study population
- To establish factors influencing children nutrition in the settlement areas of Burao town.
- To estimate under 5 mortality and crude mortality rates in the last 3 months prior to the survey
- To provide recommendations for future interventions based on the findings.

## **2 BACKGROUND INFORMATION**

### **2.1 General background**

The relative peace in Somaliland in the last six years has encouraged the return of thousands of Somalis who had sought asylum in foreign countries as refugees following the wars in the country since 1988. Since February 1997 to date, the United Nations High Commission for Refugees (UNHCR) has assisted the voluntary repatriation of an estimated 223,834 refugees back to Somaliland, mainly from Ethiopia.<sup>1</sup> In addition to these returnees, there are persons displaced from South and Central Somalia majority of who have settled in and around major towns like Hargeisa, Burao and Boroma. In Burao town, these populations are mainly settled in the four areas described below.

#### **Koosar Settlement area**

In January 2002, an estimated 6700 people from Ethiopia settled in Koosar area which is about 10 km from Burao town. They received basic assistance from UN agencies and other INGOs e.g. UNDP, UNHCR/MRR, UNICEF, WFP, DRC, etc in the form education, construction of low cost houses, digging boreholes and establishment of a health facility. Gradually these people started integrating with communities of bigger towns like Burao.

Currently the remaining people in this settlement are estimated to be around 25% - 30% of the number settled originally who are predominantly adults safeguarding the plots they secured in this settlement. The reasons for the decline include the lack of a means of livelihood within the camps and people have to walk for long distances to Burao town in search of casual labour opportunities. Good quality water also lacks in the camp. A borehole in the camp is not functional and reportedly yields salty water hence the residents result to trucking water from Burao town for their domestic use.

#### **Siibakhti settlement area**

It was established for the returnees of 1991 civil war who were estimated as 10,000 people at the time. This settlement has received little support from the international community. An assessment conducted by the UNDP in this settlement indicated that the community lacked basics (education, health services etc) and living standards were poor compared to the other settlements. According to the assessment people lived on income below 1\$ per household per day. However, the availability of water is good. For a livelihood, the community mainly depends on casual work or small business in Burao town mainly tea shops operated by the mothers.

#### **15 May settlement area**

This is a small settlement mainly occupied by IDPs from South and central Somalia. The source of livelihood is mainly begging and other casual work like packaging of groundnuts by men and washing clothes by women. It has an estimated population of 360 people.

#### **Ali Hussein**

This is the most recent of the four settlements established in less than a month prior to the survey. The people living in the area were relocated from Sheikh Bashiir secondary school. They do not have basic requirements like water which is normally trucked from the town to the location. It has an estimated population of 1800 people.

### **2.2. Food security overview**

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<sup>1</sup> UNHCR Somalia, October 2003

The poor urban populations in Burao town including those settled in the resettlement camps has limited sources of livelihood and rely mainly on purchases as a source of food. In terms of wealth breakdown, it is estimated that about 30% of Burao's population are in the poor wealth group, 15% better off and 55% middle level. This breakdown indicates a significant proportion of the poor population. The town has played a key market for livestock trade for parts of Somalia and Zone 5 in Ethiopia. Previously, the thriving livestock trade provided a key source for casual employment for majority of the populations especially the poor. However, the livestock ban of 1998 drastically reduced the employment opportunities and hence the income opportunities. The other sources of income for the poor include petty trade, social support and the construction sector. However, construction activities have declined due to land ownership conflicts and general economic decline. Currently, these poor populations mainly depend on begging, petty trade, washing clothes, shoe shining and some limited construction work e.g. digging latrines as source of livelihood.

With purchases being the main source of food, income availability becomes important in defining the food security situation of these populations. Factors like the increased circulation of two currencies, both Somaliland and Somali Shillings contribute to the devaluation of the two currencies used in Burao, resulting in reduced purchasing power for many households particularly the poor. With the unsustainable sources of income and reduced income, the food security situation of the poor population in Burao remains in a vulnerable position.

### **2.3. Humanitarian operations in the settlement areas**

World Food Programme (WFP) distributed general household ration in Ali Hussein IDP camp in September 2003. Other activities have been, construction of a school, a police post and tree planting in Koosar supported by UNHCR, curative services supported by MOHL and UNICEF, mass immunisation and Vitamin A supplementation supported by UNICEF and WHO. Danish Rehabilitation Council has also supported construction of latrines in Ali Hussein settlement area and is currently supporting construction of an MCH in the same area.

### **2.4. Health**

There are three maternal and child health (MCHs) in Burao town that provide primary health care services like antenatal care, immunisation, out patient services, growth monitoring and promotion as well as health education. A hospital (Burao) hospital is also located within the town and serves as the referral centre for Togdheer region. Apart from the health services provided within the public facilities framework, UNICEF and WHO support mass immunisation programmes and vitamin A distribution, usually delivered from house to house. There are also about 50 private pharmacies and clinics, which contribute to health care delivery and dispensing of essential drugs in the town.

### **2.5 Morbidity**

Diarrhoea, respiratory infections and suspected malaria are the main reported causes of morbidity and mortality among infants and young children.

### **2.6. Water and environmental sanitation**

The residents of all the settlement areas except Kosaar live in makeshift shelters mainly made of plastic sheets, old clothes and construction poles.

In 15 May settlement, IDPs from south rent 2 square metres per family to erect their huts. On monthly basis they pay 0.5 \$ as rent to the landlord. The sanitary conditions are very poor especially in 15 May, Ali Hussein and Siibakhti with no toilets.

Lack of clean water within the settlement areas affects all the areas and this essential commodity has to be trucked from Burao town and sold to the residents. The handling of the water in the shallow wells by the vendors and storage in the household is unhygienic.

## 2.7. Previous nutrition surveys in Burao Settlement areas

No recent nutrition survey has been conducted in the Burao settlement areas. However, a rapid nutrition assessment using Mid Upper Arm Circumference (MUAC) was conducted in Koosar returnees by FSAU in collaboration with MOHL and SRCS in February 2002. The assessment revealed that 7% of the children were moderately malnourished (MUAC  $\geq$  11cm - <12.5 cm) while 2% were severely malnourished (MUAC <11 cm) with no cases of oedema observed. The proportion of children at risk of malnutrition was 11 %. A nutrition survey conducted in Burao town ( UNICEF, January 2002) using W/H Z score revealed a global acute malnutrition rate of 13.6% and a severe malnutrition rate of 3.1% while a survey conducted in the Hawd of Togdheer (August,2003) revealed a Global acute malnutrition rate of 10% and severe acute malnutrition rate of 1.3%.

## 3 METHODOLOGY

### 3.1. Survey Design and Methodology

In the absence of reliable data on the population sizes in the resettlement areas and the limited number of residences a population study for the four settlements was undertaken. It was both descriptive and analytical in nature designed to use the standard nutrition survey questionnaire (see appendix 1) to collect quantitative data. Additional qualitative data were collected through focus group sessions, key informant interviews and secondary data review. Mortality assessment was concurrently conducted using a questionnaire attached in the appendix 2.

The study population consisted of people living in the four settlement areas and comprised of all the children aged 6 - 59 months or measuring 65 - 110 cm for height/length. All eligible children in the household were measured and if a child or primary caregiver was absent, an appointment was booked for a later visit in the course of the survey. If a child was in a relatives or neighbour's house, the child was called and assessed.

### 3.2 Data collection

#### *Anthropometric measurements*

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

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

*Height.* For height, a vertical or horizontal measuring board reading a maximum of 175cm and capable of measuring 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, crushing 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.

#### *Child age determination*

Difficulties were encountered in determining the exact ages of children. Useful documents like growth monitoring/clinic attendance cards, or any other viable formal card were used when available. Calendars of events (see appendix 6) were also used as proxies to accurate age determination. Though not entirely accurate, ages were still regarded as important indicators though not used for anthropometric analysis and were approximate/average pointers. The nutrition indicator employed was *weight for height* as interest was in the wasting status (acute malnutrition).

#### *Oedema*

Defined as bilateral oedema on the lower limbs detected by gently pressing the feet to check if a depression is left after at least three seconds of pressing.

#### *Morbidity*

*Diarrhoea*: Diarrhoea was defined for a child having three or more loose or watery stools per day.

*Measles*: A child with more than three signs of the following was considered having measles: 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*. The signs asked included cough, rapid breathing and fever.

*Suspected malaria/acute febrile illness*: The signs to be looked for are periodic chills, fever, sweating and sometimes a coma.

### **Mortality**

The mortality assessment was done concurrently with the nutrition survey. The same methodology used for the nutrition survey was adopted. The mortality questionnaire was administered to all households in the four settlement areas. All households in each of the settlement area were eligible for inclusion in the mortality survey, whether a child under five years was present or not. 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 in the last three months. The mortality questionnaire is appended in the report. A total of 390 households with or without under-five child/children at the time of the survey were included in the survey.

The overall mortality was calculated by taking the total number of deaths multiplied by a factor (10,000). This was divided by the population of the surveyed households using the formulae below:

$$MR = n / \{[(n+N) + N] / 2\}$$

Where n = total number of persons reported dead in the households surveyed

N = total number of people living in those households at the time of survey

The mortality was calculated retrospectively for the past 3 **months**, the recall period. Mortality rates per 10,000 persons per day were obtained by dividing the figure above by 93 days that was used as the recall period. Calculation of under-five mortality rates was done using the same formulae but with a denominator of under-five children in the surveyed households.

In case a member had died, the household was asked to explain the signs and symptoms of the person before he/she died.

Mortality rates can be interpreted according to the following reference

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

### 3.5. Description of survey activities

Table 3: Chronology of activities for the nutrition survey

Major Activity	Dates. 2003
Preparation of tools, methodology, review of secondary data, & contacting partners on the ground ( Hargeisa & Burao)	Sept 24– Oct 13
Training of enumerators and pre-testing (Burao ,)	October 22 – 23
Cluster Identification	October 23
Collection of data	October 24 – 27
Entry of data and preliminary analysis	October 24 - 27

Six teams consisting of two enumerators and one supervisor collected the data. An elder from each of the areas surveyed accompanied the teams for guidance and to ensure cooperation from the people. Supervisors were seconded from the participating partners namely; MOHL, SRCS, and FSAU. Overall support, supervision and co-ordination was done by FSAU nutritionists and one MOHL staff from Hargeisa. The Regional Medical Officer and the PHC coordinator from Togdheer region assisted in the identification of the qualified enumerators.

### 3.6. Quality control procedures

A comprehensive training of enumerators and supervisors was conducted covering survey objectives and design, interview techniques, sampling procedure, inclusion and exclusion criteria, sources of errors taking of measurements, standardising the questions in the questionnaire, levels of precision required in measurements, diagnosis of oedema, verification of deaths and oedema within households, handling of equipment and the general courtesy during the survey.

Rigorous standardisation of measurement and pre-testing of the questionnaire and equipment was carried out in one of the villages in Burao town. Standardisation involved taking repeated measurement of 10 children from a MCH by all the teams and comparing with some reference. Pre-testing also involved familiarising survey teams with village/cluster entry; administering the questionnaire, sampling procedure, correct taking of measurements and documentation. After the field exercise, views were exchanged to address the difficulties identified; appropriateness of the questions reviewed and necessary changes were made.

The quality of data was also ensured through (i) close monitoring of fieldwork by FSAU team,, MOHL staff one from Hargeisa and the PHC coordinator of the area, (ii) crosschecking of filled questionnaires on daily basis and (iii) daily review undertaken with the enumerators to address any difficulties encountered, (iv) progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis, (v) continuous data cleaning after entry in the field that made it easy to detect any outliers/ mistakes and to replace or repeat households depending on magnitude of error and (vi) monitoring accuracy of equipment (weighing scales) by regularly measuring objects of known weights.

### 3.7. Data analysis

#### Entry, cleaning, processing and analysis

Data was entered and analysed using EPIINFO computer based package. Running and tabulating all variable frequencies was carried out as part of data cleaning. The EPINUT programme was 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).

#### General characteristics of study population

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

## Creation of nutritional status indices

The anthropometric measurement of weight and weight were used to compute the W/H nutritional status indicators of the studied children. Weight for Height (W/H) 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 and Percentage of the median were generated and the anthropometric indicator, WFH, was used to classify children into categories of nutritional status as follows:

### **WFH: Z score**

- < -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

### **WFH: Percentage of the median**

- $\geq$  80% = Normal
- < 80% and > 70% = Moderate Acute Malnutrition
- <70% = Severe Acute Malnutrition

## 4.0 SURVEY RESULTS

### 4.1 Household characteristics of study population

The nutrition survey covered a total of 219 households with a mean household size of 6.7 persons. While the mean number of the under fives per household was 2.0 per household. Male headed households comprised 58.5% while female-headed households formed 41.5%. About 55% of the surveyed households were considered residents having resided in the area for over three years. About 9.3% reported that they were either returnees from Ethiopia while 90.7% reported that they were internally displaced from within Somalia.

<b>Characteristic</b>	<b>No</b>	<b>%</b>
<i>Sex of household head (N = 219):</i>		
Male	128	41.5
Female	91	58.5
<i>Household size</i>		
		6.7
<i>Household residence status:</i>		
Resident	197	54.9
Resident returnee	57	27.6
Internally displaced	99	15.9
Refugee	6	1.7
<i>Place of origin (n=162):</i>		
Ethiopia	15	9.3
Within Somalia	147	90.7
<i>Duration of stay (n =162)</i>		
Less than 3 years	138	85.1
More than 3 years	30	18.5
<i>Reason for movement (n = 162):</i>		
Insecurity	31	19.1
Lack of jobs	5	3.5
Food shortage	11	6.8
Returning home (returnees)	115	71

## 4.2 Food sources, income sources and coping strategies

Majority (85%) of the households reported purchasing as their main food source. Only a minority reported crops, animal products, social support or remittances as main food sources. Casual work accounted for higher proportion of the household's income (61%) while small business accounted for about 20%. A low proportion of the households depended on either sale of crops, remittances/gifts or salaried employment for a main income source. The main coping strategy reported was social support by about 70% of the study population. Collectively, the rest of the households about 29% were coping through sale of livestock normally kept with relatives, splitting of families, remittances and hunting.

*Table 4: Food sources, income sources and coping strategies*

Variable	N	%
<i>Food source</i>		
Market based source of food/Purchases	306	85.2
Crops	14	3.9
Animal products	6	1.7
Social support	10	2.8
Remittances	7	1.9
Others ( hunting, ***	16	4.5
<i>Income source</i>		
Small business	74	20.6
Sale of animal & animal products	4	1.1
Casual work	219	61
Sale of crops	3	0.8
Remittances/Gifts	16	4.5
Salaried employment	19	5.3
Others	24	6.7
<i>Coping Strategy</i>		
Social support (Borrowing, Food aid, and Begging)	254	70.7
Remittance	27	7.5
Purchase	16	4.5
Sale of more livestock	18	5.0
Splitting of families	16	4.5
Hunting	10	2.8
Others	18	5.0

## 4.3 Water and sanitation and health seeking behaviour

As shown on table 5, majority (about 63%) of the people rely on water trucking for their domestic source, while about 21% depend on boreholes. Collectively 16.4% depend on berkads, taps, streams and wells.

About 40% of the households own latrines while more than half of them use bush/open grounds. For those who own and use latrines about 62% kept them clean compared to about 28% who used the latrines but they were dirty. A high proportion (95%) of the households sought medical assistance when the child was sick. Of those who sought medical assistance, over 50% consulted public health facilities, about 40% private clinics/pharmacies with only 3.8% consulting traditional practitioners.

Table 5: Water, sanitation and health seeking behaviour

	N	(%)
<i>Main source of drinking water (n=359):</i>		
Water trucking		
Borehole	225	62.7
Berkads	75	20.9
Taps	36	10
Others ( wells, streams)	17	4.7
	6	1.7
<i>Sanitation facility (n=359):</i>		
Latrine ownership & use	147	40.9
Bush/open grounds	212	59.1
<i>Observe (n=147):</i>		
Used and clean	91	62.8
Unused	13	9.0
Used and dirty	41	28.3
<i>Health seeking behaviour</i>		
<i>Seek healthcare assistance when child is sick (359):</i>		
Yes	341	95
No	18	5
<i>Where (n=341):</i>		
Public health facility	188	55
Private clinic/ pharmacy	140	40.9
Traditional healer	13	3.8

#### 4.4 Characteristics of study children

Table 6: Distribution according to age and sex

Age category in months	Boys		Girls		Total	
	N	%	N	%	N	%
6-11	14	42.4	19	57.6	33	9.2
12-23	29	48.3	31	51.7	60	16.7
24-35	44	54.3	37	45.7	81	22.6
36-47	35	50	35	50	70	19.5
48-59	49	42.6	66	57.4	115	32
Total	171	47.6	188	52.4	359	100

A total of 359 children were surveyed of whom 47.6% were boys and 52.4 % were girls. Most (32%) of the surveyed children were in the 48 – 59 months age group.

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

Table 7: Distribution of nutritional status (using weight for height z-score) by sex

	Severe <-3 Z score or oedema	Moderate <-2 - ≥3 Z score or oedema	Total malnutrition	Normal (>-2 Z score)
Males	1 (0.5%)	26(7.2%)	27(7.5%)	144(40.1%)
Females	6 (1.4%)	22(6.1%)	28(7.8%)	160(44.6%)
Total	7(1.9%)	48(13.4%)	55(15.3%)	304(85%)

Tables 7 and 8 present the nutritional status of the surveyed children by sex and age group respectively. The total malnutrition for boys was similar

to that of the girls while the severe malnutrition was higher among the girls than among the boys. However, there was no statistical difference in the malnutrition rates and child sex.

The nutritional status of the surveyed children by age groups shown below indicates that

malnutrition rate was highest among children aged 48 - 59 months and lowest among children below one year. Further analysis however showed that malnutrition had no statistical significance between the age groups.

*Table 8: Nutrition status using W/H z-scores or oedema according to age groups*

Age groups	Severe (<-3 Z score or oedema)	Moderate (<-2 - ≥-3 Z score)	Total malnourished (<-2 Z score or oedema)	Normal (≥-2 Z score )
6-11 months	2(0.5%)	5(1.4%)	7(1.9%)	26(7.2%)
12-23 months	1(0.3%)	9(2.5%)	10(2.9%)	50(13.9%)
24-35 months	2(0.5%)	11(3.0%)	13(3.6%)	68(18.9%)
36-47 months	0(0%)	8(2.2%)	8(2.2%)	62(17.2%)
48-59 months	2(0.5%)	15(4.1%)	17(4.7%)	98(27.2%)
Total	7(1.9%)	48(13.4%)	55(15.3%)	304(85%)

Table 9 below indicates that total/global acute malnutrition using W/H Z score (<-2 z-scores or oedema) was 15.3% while severe acute malnutrition (<-3 z-score or oedema) was 1.9%, Oedema cases alone accounted for 0.3%.

*Table 9: Summary of Global Acute malnutrition and Severe Acute Malnutrition using Weight for Height Z score*

Malnutrition Rates	No	Proportion.
Global Acute Malnutrition (<-2 Z score or oedema)	55( CI 11.8-19.6)	15.3%
Severe Acute Malnutrition +(<-3 Z score or oedema)	7( CI 0.9-4.2)	1.9%
Oedema	1	0.3%

Table 10 below indicates that malnutrition prevalence using percentage of the median <80% or oedema was 8.3% thus showing about 7% difference in malnutrition prevalence compared to the Z score indicator which has a more strict cut off

*Table 10: Malnutrition prevalence using W/H percentage of median categories*

PERCENTAGE OF THE MEDIAN							
Nutrition categories	status	Males		Females		Total	
		Proportion	No.	Proportion	No.	Proportion	No.
Total malnutrition (W/H<80% and/or oedema)		4.1%	15	4.1%	15	8.3%	30
Severe malnutrition (W/H<70% of the median and or oedema)		0.3%	1	0.3%	1	0.3%	2
Oedema		0.3%	1	0	0	0.3%	1

#### 4.6 Mortality Rates

A total of 390 households were surveyed for mortality indicator with a follow-up period of 93 days prior to the assessment. The results are presented below:

Mortality rates;

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

Under five population in surveyed households = 365

Number of under five deaths = 2

Under five mortality rate = 0.6 deaths per 10,000 Children per day

For the total population

Total population in surveyed households = 2030

Total number of deaths in the households = 7

Crude Mortality Rate = 0.37 deaths per 10,000 persons per day

#### 4.7 Health, feeding practices and immunisation coverage for survey children

##### Morbidity, measles immunisation and vitamin A supplementation

Tables 11: Morbidity, measles immunisation and vitamin A supplementation

	Number	%
<i>Incidence of major child illnesses (n=359)</i>		
Diarrhoea in the last two weeks	87	24.2
Malaria in the last two weeks	27	7.5
ARI in the last two weeks	108	30.1
Measles in the last one month	22	6.1
<i>Measles immunisation</i>		
Children receiving measles vaccination (9 - 11 months) (N=17)	12	70
Children receiving measles vaccination (12-23 months N=60)	44	73
Children receiving measles vaccination 9- 59 months N=343)	275	80.2
Verification of those vaccinated by card	101	25.3
Verification by recall	174	50.7
<i>Vitamin A supplementation N=359</i>		
Children receiving Vitamin A supplementation in past 6 months	205	57.1
Children who have ever received Polio dose ( N= 359 )		
Once	78	21.7
Two times	190	52.9
Three times	80	22.3
None	11	3.1

As indicated in table 11 the incidences of ARI and diarrhoea within two weeks prior to the survey was high 30% and about 24% respectively while malaria was 7.5 % within the same period. The incidence of measles among the under-five population within one month prior to the survey was about 6.1%. Measles vaccination coverage was fairly good (80%). Among children aged 9 - 11 months it was 70% and 73% for 12 - 23 months age group. About 75% of the children had received between 1 - 2 doses of polio while about 25% had received three doses.

## Feeding practices

Table 12: Feeding practices

	<b>N</b>	<b>(%)</b>
<i>Are you breastfeeding child ( age 6-24months) (n):</i>		
Yes	45	32.4
No	94	67.4
<i>Age when child stopped breastfeeding (n=94):</i>		
0 - 5 months	12	12.8
6 - 11 months	41	43.6
12 months or more	41	43.6
<i>Feeding frequency (n=359):</i>		
Once	25	7.0
2 times	101	28.
3 times	180	50
4 or mores times	53	15

At the time of the survey, about a third 32% of the children aged between 6-24 months were breastfeeding. Of those who had been stopped from breastfeeding, about 13% had stopped breastfeeding before six months, about 44% before the first year and about 43% after the first year. About 50% of the children are fed three times in a day while only about 14% of the children were fed more than four times in a day.

## 4.8 Risk factors in relation to malnutrition

Table 13: Relationship between malnutrition and other factors

<b>Exposure variable</b>	<b>N</b>	<b>p-value</b>
<i>Child sex:</i>		
Male	171	0.8
Female	188	
<i>Diarrhoea</i>		
Yes	87	0.002
No	272	
<i>ARI</i>		
Yes	108	0.25
No	251	
<i>Malaria:</i>		
Yes	27	0.9
No	332	
<i>Measles:</i>		
Yes	22	0.32
No	337	
<i>Few frequency of feeding &lt; 3 times per day</i>		
< 3 times	126	0.6
> 3 times	233	

Further analysis revealed no statistical significant association between malnutrition rate and child sex, ARI, Malaria, measles, lack of vaccination against measles, lack of supplementation of vitamin A and inadequate frequency of feeding < than 3 times per day.

The only risk factor that had a significant association with malnutrition was diarrhoea. Children with diarrhoea were one time more likely to be malnourished compared to those not suffering from diarrhoea in the last two weeks prior to the survey.

#### 4.9 Qualitative information

Qualitative information was generated from focus group discussions mainly with women and key informants interviews. The discussions were centred on practices on breast feeding, complementary feeding and care of children, health care, food security, water and sanitation issues

The feeding practices for infants and young children were found to be sub-optimal in all the settlement areas. The majority of the mothers gave warm water and sugar (*Fax*) immediately after delivery and started breastfeeding within 24 - 48 hours. The mothers continued to give *Fax* and introduce goats, cows or camel milk and sometimes porridge within the first three months. The mothers indicated that breast feeding was stopped if the mother got pregnant.

At the time of the survey adults were feeding twice per day, breakfast and lunch while children were averagely being fed three times per day. The meals for both the adults and the children consisted of mainly Anjera (Somali pancake) and tea. Milk was inadequate and was given only to children below two years. It was also established that consumption of protein foods of plant and animal nature, fruits and vegetables was limited due to the low purchasing power of the households.

The focus group discussions further revealed that care practices were poor. This was attributed to the high proportion of the female headed households who are the sole bread winners for their families which is uncommon to the Somali culture. Subsequently, children are left for long hours under the care of the bigger children as mothers are engaged in either petty trade or casual work

In all the areas water is usually trucked from Burao town and some well-wishers (mainly traders) provide the people with water at a low price of 500 Somali shillings per 20 litres Jeri can compared to the usual price of 20,000 Somali shillings for the same amount. Although a borehole was constructed in Kosaar settlement area, the water is not being consumed as it is too salty.

The sanitation situation is generally poor except in Koosar. People here use pit latrines and normally burn the garbage and the environment is generally clean. In Ali Hussein, Siibakhti and 15 May the sanitation remains poor. The people have only a few toilet facilities and human waste is disposed in the open and flies are all over the place. In the past Siibakhti area has been overcrowded but the situation has now improved while 15 May is overcrowded and the housing is also poor.

The focus group discussions further revealed that in all the four settlement areas, the majority do not have reliable income sources. They depend mainly on casual work, petty trade and begging known as "Shaxaad" from the relatives and friends in and outside Burao. Generally the household incomes are low with a considerable number surviving with less than a dollar per day.

Among the settlements the most vulnerable are Siibakhti and 15 May, where mainly the IDPs from South and Central Somalia are residing. Only about 30% of the population is integrated with the local population. It was also reported that children has been exploited in using them as a tool of begging. Because of their status and poverty level the parents cannot send their children to school and subsequently the youth from this group resorted to drug use and addicted to it.

## **5.0 DISCUSSION**

### **Food security situation: Food sources, income and coping mechanisms**

Casual employment as porters, cleaners in restaurants, construction related activities and househelps formed the main source of income for this population. All these activities are unsustainable and pay a relatively low wage rate. In view of the fact that a high proportion of the households depended on purchases as their main food source (85%), the limited and unsustainable income places these populations in a vulnerable food security situation. At the time of the survey the majority of the households were consuming mainly Anjera with tea. This suggests poor diet diversity particularly among the older children (> 2years) who were also receiving the same diet as the adults and could be attributed to the low purchasing power of the households.

The level of coping strategies remains social support (mainly borrowing, begging and food aid) from relatives leaving in Burao town or outside. Given the limited income opportunities, the increased borrowing may lead to debt burden that could be difficult to repay as most of the households have hardly any assets of value.

### **Health issues influencing nutritional status**

The incidences of common infections among children within two weeks prior to the survey were high with diarrhoea at 24.1%, ARI 30.1% and malaria 6.1%. Although the majority of the families (95%) sought medication from private health services and pharmacies when the child was sick, it was also established from the focus group discussions that the mothers sought medical assistance late after the home remedies have failed. Further analysis noted a significant association between diarrhoea and malnutrition, an observation that could be closely linked to the poor sanitation standards. Sanitation facilities were available to less than half the study population.

### **Water and Sanitation**

Over half of the households use open grounds for disposal of human waste, particularly in Sii-bakhti, Ali Hussein and 15 May settlement areas and in case of children it is done within the compound. The main water source for most of the households is water trucking and the population has to pay a small fee to access the vital commodity. This not only strains the limited income available but also limits the amount of water available for domestic use. Similarly, the food hygiene during preparation as well as water storage is sub-optimal. The limited water availability and the poor sanitary conditions in part account for the sanitation related diseases like the diarrhoea.

### **Childcare and its effect on nutritional status**

Exclusive breastfeeding and sound complementary feeding practices are vital for enhancing the nutritional and health status of infants and young children. WHO and UNICEF recommends that infants should be exclusively breastfed at least for the first six months of life. Feeding children with foods and fluids other than breast milk during this period significantly reduces breast milk supply, and increases the risks of deaths from diseases like diarrhoea.

Overall, breast feeding and complementary feeding was found to be sub-optimal. Results of the survey show that a high proportion, around 79% of the children aged between 6 and 24 months were introduced to foods other than breast milk early enough in life between the time of birth and the fifth month of life. Furthermore, qualitative data indicated that majority of the mothers gave water and sugar (*Fax*) to their children immediately after delivery and started breastfeeding within 24 - 48 hours. Feeding frequency among children was also poor with about 35% being fed twice or once per day. Anjera (a Somali pancake) and plain rice were the main dishes being fed to the children which are lacking in vital nutrients like proteins and vitamins.

An interesting observation is that in 41% of the households surveyed, females were the primary bread-winners. This was observed to be having particularly negative effects on the time available for women to look after children, particularly in an environment of reduced social support

### **Nutritional status**

The global/total acute malnutrition rate was 15.3 % (CI 11.8 - 19.6) with a severe acute malnutrition rate of 1.9 % (CI 0.9 - 4.2). This is within critical levels according to WHO classifications. Malnutrition according to age revealed that children aged 48 – 59 months age group had a higher proportion (4.7%) of malnourished children. However there was no significant association between agegroup and nutritional status. Further analysis showed no relationship between risk factors and malnutrition except for diarrhoea mainly attributed to poor sanitation in the area.

## **6. CONCLUSION AND RECOMMENDATIONS**

The Burao Settlement areas can be termed as highly vulnerable, with barely any assets and with inadequate basic services like shelter, food, education and sanitary facilities. The survey results show that the current malnutrition levels are within critical levels. Although no statistical significance was established with most of the risk factors except diarrhoea, the relationship between higher disease prevalence and nutrition status is well documented. Thus the current high incidences of diseases among children could put children under five at increased nutritional risk due to the strong synergetic relationship between protein energy malnutrition and infections such as ARI and diarrhoea.

Similarly the current food intake can be termed inadequate in terms of quantity, quality and lacks diversity and this could also contribute to further deterioration of the nutrition status. The food security situation of this population remains vulnerable, a factor that predisposes this population to a further deterioration of their current nutritional status. Thus the situation in Burao settlement areas requires a concerted effort that will address the factors influencing the nutrition situation in an integrated manner, as nutrition is a cross cutting issue.

### **Short term interventions**

- Targeted supplementary feeding programme for the malnourished children of under five
- Continued close monitoring of the nutrition status in the areas in order to detect any further deterioration early.

### **Long term interventions**

1. Intensify health and nutrition education activities at household level targeting mothers, fathers and other caregivers to address:
  - care concerns especially for the young children
  - promotion of exclusive breastfeeding, appropriate young child feeding, diet diversification, and improvement in household hygiene and personal hygiene practices.
2. Support sanitation interventions e.g. construction of toilets and health education
3. Explore ways of supporting income generating activities focusing on women with an aim of increasing the purchasing power of the households.

**4 APPENDICES**

**Appendix 1. BURAO SETTLEMENT AREAS:NUTRITION QUESTIONNAIRE**

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

Name of Village/Town \_\_\_\_\_ Name of section \_\_\_\_\_

Household Number \_\_\_\_\_ Name of the household head \_\_\_\_\_

**Q1.** Sex of the household head 1=Male 2=Female

**Q2.** Household size \_\_\_\_\_

**Q3.** Number of <5 years in the household \_\_\_\_\_

**Q4.** Household residence status: 1=Residents 2= Internally displaced 3=Returnees 4= Others (specify) \_\_\_\_\_

If answer to the above is 1, then move to Questionnaire 8.

**Q5.** Place of origin \_\_\_\_\_

**Q6.** Duration of stay (in months) \_\_\_\_\_

**Q7.** Reason for movement: 1= Insecurity 2= Lack of jobs 3= Food shortage 4= Water shortage 5= Others (specify) \_\_\_\_\_ Q8-Q13 Household background information

<p><b>Q8.</b> Households main food source</p> <p>1=Animal products from own production 2=Household crop production 3=Purchases 4=Remittances/Gifts 5= Begging 6= Wild foods collection 7= Others (specify) _____</p>	<p><b>Q9.</b> Households main income source</p> <p>1=Small business 2=Casual work 3=Salaried employment 4=Sale of crops 5=Sales of animals and animal products 6=Remittances/Gifts 7=Others (specify) _____</p>	<p><b>Q10.</b> How does this household survive during food shortage (coping strategies)?</p> <p>1=Remittances/gifts 2=Sale of more livestock 3=Splitting of family 4=Begging 5=Borrowing 6=Food aid 7=Purchases 8=Wild food collection 9=Others (specify)___</p>	<p><b>Q11.</b> Source of drinking water</p> <p>1=Borehole 2=Open wells 3=Protected wells 4=Catchments/pond 5=Berkads 6=Streams/river 7=Muscid 8=Tap/piped water 9=Tanker/truck vendor 10=Others (specify)_____</p>	<p><b>Q12.</b> Sanitation facility</p> <p>1=Pit latrines 2=Flash toilet 3=Bush/open ground</p> <p><b>Observation Q12b.</b> Condition of the facility if 1 or 2 above (Q12).</p> <p>1=Used and clean 2=Unused 3=Used and dirty 4=Others_____</p>	<p><b>Q13.</b> When your child is sick, do you seek assistance?</p> <p>1=yes 2=No</p> <p><b>If yes, where?</b></p> <p>1=Traditional healer 2=Private clinic/pharmacy 3=Public health facility 4=Others (specify) _____</p>
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**Q14-18.** Anthropometry for children aged 6 – 59 months (or 65 – 110cm) in the household.

Sno	Name	Q14. Sex 1=male 2=Female	Q15. Age in months	Q16. Oedema 1=Yes 2=No	Q17. Height (cm)	Q18. Weight (kg)
1						
2						
3						
4						

**Q19-28** Morbidity, feeding and immunization status of children aged 6 – 59 months (or 65-110 cm) in the household.

Sn o	Name	Q19. Diarrhoea in the last two weeks  1=Yes 2=No	Q20. ARI in the last two weeks  1=Yes 2=No	Q21. Malaria in the last two weeks  1= Yes 2= No	Q22. Measles in the last one month  1=Yes 2=No	Q23. Vaccinate d against measles  1=In past six months (by card) 2=In past six months (by recall) 3=Before six months (by card) 4=Before six months (by recall) 5= None	Q24. Vitamin A provided in the last 6 months  1=Yes 2=No	Q25. Are you breast feeding the child?  1=Yes 2=No	Q26. If not breast feeding, how old was the child when you stopped breast-feeding?  1=less than 6 months 2= 6 – 11 months 3=12 – 18 months 4= 18 months or more	Q27. At what age the child was given foods other than breast milk  1=Less than 3 months 2=4-6 months 3=7 months or more	Q28. How many times do you feed the child in a day?  1= Once 2=Twice 3=3-4 times 4=5 or more times	Q 29 How many times has a the child ever been given polio vaccine orally  1= 1-2 times 2=3 and above 3= never
1												
2												
3												

**Appendix 2**

**BURAO IDPs MORTALITY QUESTIONNAIRE SET**

**Qaabka Su'aalaha Qoyska ee Foomka dhimashada.**

Date \_\_\_\_\_ Team Number \_\_\_\_\_ Cluster Number \_\_\_\_\_  
 Tariikh \_\_\_\_\_ Numbarka koxda \_\_\_\_\_ Kalaster Numbar \_\_\_\_\_  
 Name of Interviewer \_\_\_\_\_ Name of Village/Town \_\_\_\_\_  
 Magaca waydiiyaha \_\_\_\_\_ Magaca Tuulada/magallo \_\_\_\_\_  
 Name of section \_\_\_\_\_ Household Number \_\_\_\_\_  
 Magaca Qaybta \_\_\_\_\_ Nambarka Gurga \_\_\_\_\_  
 Name of the household head \_\_\_\_\_  
 Mgaca madaxa Qoyska \_\_\_\_\_

<p>MORTALITY MODULE                  SU'ALLAHA DHIMASHADA.</p>	
<p>CHILD: <i>(This questionnaire should be preferably administered to all women in the household)</i></p>	
<p>Have you ever given birth?                  Weligaa ilma ma dhashay.  <i>(Birth- a child who ever breathed or cried or showed signs of live even if he/she lived only a few minutes or hours)</i>                  Ilma nool oo neefsanaya markuu dhasho oo leh callmadihii nololeed.</p>	<p>Yes.....                  Haa                  No.....                  Maya</p>
<p>Have you any other child in this household who is not your biological child?                  Ilma aadan dhalin ma idin la' nool yahay.</p>	<p>Yes.....                  Haa                  No.....                  Maya</p>
<p>If yes to Q1 and/or Q2, then how many?                  Haddii su'aasha 1 ama 2 noqoto waa immisa.                  If No to both Q1 &amp; 2, then go to Q11 <i>(List the names somewhere separate and account for everybody as per the questions below)</i>                  Haddii ay noqdaan jawabta su'aalahaasi maya u gudub su'asha 11.</p>	<p>No. below 5 years .....                  Tirada ka yar shan sano                  No. above 5 years .....                  Tirada ka weyn shan sano</p>
<p>Have you any live birth between the 24<sup>th</sup> July 2003 and now?                  Miyaad dhashay ilma nool intii u dhaxaysay 24 Bishii July 2003 iyo hadeertada aynu joogno.</p>	<p>Yes..... No.....                  Haa.....Maya                  If yes, how many?...                  Haddii ay haa tahay waa imisa?.....</p>
<p>Have you any under five child other than your own in your household coming in since the 24<sup>th</sup> July 2003.  <b>Miyey jiraan wax carruur ah shan sano ka yar oo aadan dhalin oo idiin yimi ila bishii Maaajo 24<sup>th</sup> July 2003.</b></p>	<p>Yes..... No.....                  Haa.....Maya                  If yes, how many?.....                  Haddii ay haa tahatay waa imisa.....</p>
<p>How many under 5yrs children were living in this household as on the 24<sup>th</sup> of July 2003.                  Imisa carruura oo shan sano ka yar ayaa gurigan ku nool illaa bishii Maajo 24 July sanadkan 2003.</p>	<p>Number.....                  Tirada.....</p>
<p>How many Under 5yrs children live with you now?                  Imisa carruur shan sano ka yar ayaa hadda ku nool guriga.</p>	<p>Sons at home.....                  Imasa wiilal ah                  Daughters at home .....                  Imisaa gabdh ah</p>
<p>Have you any Under 5yrs children born alive but do not live with you now?                  Imisa carruur shan sano ka yar oo aad nolol ku</p>	<p>Yes.....Haa.....No.....                  Maya..... If yes then, how many? No. of sons ..... Imisa</p>

dhashay ayaan kula noolayn hadeer, ama iminka.	will.....imisa gabdhood.... No. of daughters .....
Do you have any Under 5yrs child who has died since the <b>24<sup>th</sup> July 2003?</b> <b>Imisa wax carruur shan sano ka yar ayaa kaa dhintay ilaa 24<sup>th</sup> July 2003.?</b>	Yes.....No.....If yes, then Sons dead ....., Haa.....Maya.....haday jirti imisa wiil.. ama gabdhood baa dhintay..... Daughters dead.....
If there has been death of an Under 5yrs child in this household, then what were the signs and symptoms of death?/suspected cause of death? Miyuu jiraa ilmo shan sano kar oo ka dhintay gurigan, muxuuse ahaa calamadaha ama waxa aad umalaynaysid inuu u dhintay.	Child1..... Ilmaha kowaad..... Child2..... Ilmaha Labaad..... Child3..... Ilmaha sadexaad..... Child4 .....
<b>ABOVE FIVE YEARS OLD IN THE HOUSEHOLD( Inta ka weyn shan sanadood ee Gurigaan)</b>	
How many above five years old were living in this household as on the <b>24<sup>th</sup> July 2003?</b> <b>Imisa qof oo shan sano ka weyn ayaa gurigan ku noolaa ilaa 24<sup>th</sup> July 2003?</b>  <b>Ku qor magacyada meel gaara ee dadkan (List the names somewhere separate and account for everybody as per the questions below)b</b>	Number >5yrs..... Tirada shan sano ka yar.....
Has there been any above 5yrs old who has come to the household since the <b>24<sup>th</sup> July 2003?</b> <b>Miyuu jiraa qof ka weyn shan sano oo meel kale idiin ka yimid/idin ku soo biiray ilaa 24<sup>th</sup> July 2003.?</b>	Yes..... No..... If yes, then how many..... Haa.....Maya..... haddii ay jirti waa imisa.....
H as there been any above 5yrs old who has left the household since the <b>24<sup>th</sup> July 2003.?</b> <b>Miyuu jiraa qof ka weyn shan sano oo gurigan ka tagay illaa 24<sup>th</sup> July 2003?</b>	Yes..... No..... If yes, then how many..... Haa.....Maya haddii ay jirto waa imisa
How many above 5 yrs live in this household now? Imisa qof oo shan sano ka weyn ayaa ku nool gurigiina imika?	Number..... Tirada.....
Do you have any over 5 years old person in this household who has died since the <b>24<sup>th</sup> July 2003.?</b> <b>Miyuu jiraa qof shan sano ka weyn oo gurigan ah oo dhintay ilaa 24<sup>th</sup> July 2003?</b>	Yes.... No..... Haa.....Maya.....haday jirti imisaa ka yar shansano..... If yes, no. >5yrs.....
If there has been death of >5yrs person in this household, then what were the signs and symptoms of death? Haddii uu jiro qof ka weyn shan sano oo dhintay, maxay ahaayeen calamadihii iyo sababtii uu u dhintay, imisa qofbaa se dhintay?	Peron1..... Ilmaha 1aad..... Person2..... ILmaha 2aad..... Person3..... Ilmaha 3aad..... Person4 ....., Ilmaha 4aad.....

## Appendix 5: List of participants

S/N	Name	Designation	Organization/Designation
1	Mohamed Elmi Hassan	Enumerator	SRCS
2	Rahma S. Adan	Enumerator	SRCS
3	Sahra A Abdi	Enumerator	Community
4	Kowsar M Abokar	Enumerator	SRCS
5	Farhiya M Naley	Enumerator	SRCS
6	Faysal A Abdi	Enumerator	SRCS
7	Said F Hersi	Enumerator	MOHL
8	Ali Guleed	Enumerator	MOHL
9	Hayad J Botaan	Enumerator	MOHL
10	Fara M Mohamed	Enumerator	MOHL
11	Noah E Egal	Enumerator	MOHL
12	Najah A hassan	Enumerator	MOHL
13	Fuad Yusuf Ismail	Supervisor	SRCS
14	Aden Ibrahim Ali	Supervisor/ coordinator	FSAU
15	Abdulle A Ismail	Supervisor/ coordinator	MOHL –PHC coordinator

## Appendix 6: Traditional Calendar of Events (Buraq Settlement Survey)

Months	Annual Events	1998	1999	2000	2001	2002	2003
<b>JAN</b>	Mid of Jiilaal		55 Ramadaan	43	Soon 31	19	7
<b>FEB</b>	End of Jiilaal		54	42	Soon fur 30	18 lid Arafo	6
<b>MAR</b>	Start of Gu Season		53 lid Carafo	41 lid Carafo	Sidataal 29	17	5 lid Arafo
<b>APR</b>	Middle Gu Season		52	40	Arafo lid Al-Ad- haa 28	16	4
<b>MAY</b>	End of Gu Season		51 Safar	39 Safar	27 C.Dastuur	15 Safar	3 Safar
<b>JUNE</b>	Start of Haga Season		50	38	26 Rajal Dhexe	14	2
<b>JULY</b>	Middle of Haga Season		49	37	25	13 Rajab Hore	1
<b>AUG</b>	End of Haga Season		48 Rajal Hore	36	24	12 Rajab Dhexe	
<b>SEPT</b>	Start of Deyr Season	59 Rajab Dhexe	47 Rajal Dhexe	35	23	11 Rajab Danbe	
<b>OCT</b>	Middle of Deyr Season	58 Rajab Dambe	46 Rajal Danbe	34	22 Ramada an	10	
<b>NOV</b>	End of Deyr	57	45 Shacbaan	33	21	9 Ramada an	
<b>DEC</b>	Start of Jiilaal	56 Ramada an	44 Ramadaan	32	20	8	

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