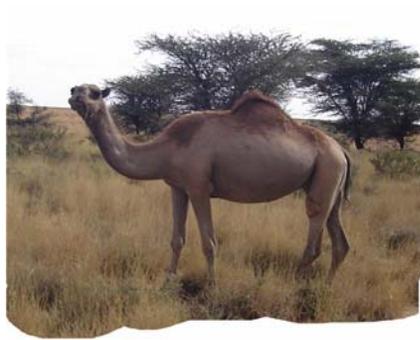


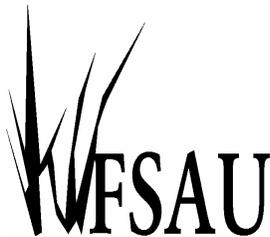
## **NUTRITION ASSESSMENT**

### **SOOL PLATEAU OF SOOL/SANAG REGIONS**

**Food Security Analysis Unit (FSAU/FAO)  
United Nations Children's Fund (UNICEF)  
Ministry of Health & Labour (MOHL)  
Ministry of Health (MOH)**



**AUGUST 2006**



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## Abbreviations and acronyms

ARI	Acute Respiratory Infections
FAO	Food and Agriculture Organisation
FSAU	Food Security Analysis Unit
GAM	Global Acute Malnutrition
HAZ	Height- for- Age Z scores
HDDS	Household Dietary Diversity Score
HFA	Height for Age
IDP	Internally Displaced Person
KM	Kilo Metres
MCH	Maternal and Child Health
MUAC	Mid Upper Arm Circumference
NGOs	Non-Governmental Organisations
NRC	Norwegian Refugee Council
NIDs	National Immunisation Days
OR	Odds Ratio
RR	Relative Risk
SMART	Standardised Monitoring & Assessment of Relief and Transitions
UN	United Nations
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

## **ACKNOWLEDGEMENTS**

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## EXECUTIVE SUMMARY

The Sool Plateau is a pastoral livelihood zone that cuts across Sanag, Sool and Bari regions in Northern Somalia. Following three years (2002 – 2004) of successive drought, pastoral communities in Sool Plateau lost substantial numbers of livestock, including about 80% of pack camels. This impacted significantly on livelihoods, food security and nutrition. Findings from a nutrition assessment conducted in the Sool Plateau in June 2004 indicated a serious situation, with global acute malnutrition levels (Weight for Height < -2 z scores or oedema) of 13.7% (CI: 11.5 – 16.1). The FSAU Post Gu 2004 Analysis classified Sool Plateau as a Humanitarian Emergency (Technical Series Report No IV.2 2004). Nevertheless, the Deyr 2004, Gu 2005 and Deyr 05/06 rains were above normal and have facilitated ongoing recovery efforts. Findings from the FSAU Post Gu 2006 analysis continue to identify the Sool Plateau in a phase of Acute Food and Livelihood Crisis, however, the population in this phase is significantly reduced and is roughly half of what it was estimated at, during the Post Deyr '05/'06 Analysis.

In order to assess the current situation and provide information to all the stakeholders of the humanitarian situation in the Sool plateau, a nutrition assessment was found necessary.

FSAU in collaboration with UNICEF, MOHL, MOH, SRCS and Horn Relief conducted a nutrition assessment in Sool Plateau of Sool and Sanag regions from August 22<sup>nd</sup> to 30<sup>th</sup>, 2006. This area has an estimated population of 45,845 (WHO/UNICEF August 2005 NID polio figures, which were further verified by the assessment team). A two-stage (30x30) cluster sampling methodology was used to identify and assess 935 children aged 6-59 months and/or measuring 65-109.9 cm in height/length. Additionally, a total of 919 households were assessed for mortality data. The main objective of this assessment was to determine the current nutritional status using children as representatives of the population. Moreover the levels of morbidity and mortality as well as the water and sanitation situation was assessed and documented.

Findings indicate global acute malnutrition (Weight-for-Height <-2 z scores or oedema) rate of **8.7% (CI: 6.1 – 12.3)** and severe acute malnutrition rate of **0.8% (CI: 0.0- 1.8)** which signify an alert nutrition situation (FSAU, WHO). The findings show an improvement over the typical levels for the area (10 – 14.9%) and the June 2004 nutrition assessment which indicated a serious situation (GAM of 13.7%). Additional findings indicate a retrospective crude mortality rate (CMR) of 0.54 (CI: 0.40- 0.69), which is acceptable according to WHO (though alert according to Sphere) and under five mortality rate of 1.45 (CI: 0.89 – 2.02) deaths/10,000/day which indicates an alert situation. This is an improvement from the results of 2004, when crude mortality rate was 2.89 deaths/10,000/day (FSAU, 2004).

Morbidity was high, with at least 35.6% of all the assessed children reporting to suffer from at least one of the communicable childhood illnesses (ARI, diarrhoea, febrile illness and measles) in the two weeks prior to the study (one month for measles cases). In particular, ARI (21%) and diarrhoea (14.1%) cases are still high. The assessment also found reported cases of febrile illness (10.7%) and suspected measles (2.7%). Additional findings are provided in table 1 below.

Indicator	No	% (95% CI)
Total number of households assessed	494	100
Total number of children assessed	935	100
Global Acute Malnutrition (WHZ<-2 and or oedema)	84	8.7% (CI: 6.1 – 12.3)
Severe Acute Malnutrition (WHZ<-3 and or oedema)	7	0.8% (CI: 0.0- 1.8)
Oedema	0	0
Global Acute Malnutrition (WFH< 80% and or oedema)	45	4.8 (3.6 – 6.4)
Severe Acute Malnutrition (WFH< 70% and or oedema)	2	0.2 (0.0 – 0.9)
Proportion of children aged 6– 24 months breastfeeding (N=324)	135	42.0 (36.3– 47.3)
Proportion of children introduced to solid food before 6 months (n=324)	216	66.7
Proportion of children, reporting an illness in 2 weeks prior to assessment (n=935)	333	35.6 (32.6– 38.8)
Proportion reporting diarrhoea in 2 weeks prior to assessment	132	14.1 (12.0 -16.6)
Proportion reporting ARI within 2 weeks prior to assessment	196	21.0 (18.4– 23.7)
Proportion reporting febrile illness in 2 weeks prior to assessment	100	10.7 (8.8 -12.9)
Suspected measles within one month prior to assessment (N=885)	25	2.7 (1.8 -4.0)
Children (9-59 months) immunised against measles (N=885)	670	75.7 (72.7– 78.5)
Children who have ever received polio vaccine (N=935)	771	82.5 (79.8– 84.8)
Children supplemented with Vitamin last 6 months or before	505	54.0 (50.8–57.2)
Households consuming ≥4 food groups	400	81.0 (77.2 – 84.3)
Households consuming ≤3 food groups	94	19.0 (15.7 – 22.8)
Households using open wells/ berkads (unprotected) as the main source of water	383	77 (73.0 – 80.6)
Proportion of households who used the bush for faecal disposal	286	58.0 (53.0–62.0)
Under five Mortality Rate (U5MR) as deaths/10,000/ day		1.45 (CI: 0. 89 – 2.02)
Crude Mortality Rate (CMR) as deaths/10,000/ day		0.54 (CI: 0.40 – 0.69)

The improvement in the nutrition situation is attributed to dietary diversity, with the majority of households (81%) consuming four or more food groups<sup>1</sup>. Improved dietary diversity is in turn attributed to improved livelihoods and food security situation. Since the Deyr 2004, the rainfall situation has been improving, leading to recovery in livestock herd size, body condition and production. Additional information shows that there is increasing access to income and animal source-foods especially meat and milk, which, when combined with cereals, provided a diverse and healthy diet for the households. The substantial humanitarian response that followed the drought of 2002- 2004, including food distribution by the World Food Programme and immunisation campaigns led by UNICEF and other agencies in the region, has also supported the recovery process.

The morbidity level (36%) in the two weeks preceding the assessment was high, and negatively influenced the nutrition situation of the affected children. Suspected measles incidents were high (2.7%), posing a risk of an epidemic and further decline of the nutrition situation. The water and sanitation

<sup>1</sup> The FAO food grouping system

situation is poor for most of the communities in the plateau; about 58% of the households use the bush for faecal disposal. Moreover, 77% of the households use unprotected wells/berkads as the main source of water. Unprotected water sources are prone to contamination by dirt and/or faecal matter and therefore predisposing factors to water-borne diseases. Humanitarian and social supports are on the decline, and in the three months prior to the assessment, were accessed by 16% and 1.8% of the households, respectively. This has reduced access by the poor households to food and health care services. Infant and child feeding practices such as non-exclusive breastfeeding of infants up to the age of six months as recommended (Facts for Life), continue to negatively influence the nutrition status of children.

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. Initiation of an immediate measles vaccination campaign with Vit A supplementation
2. Continuation and intensification of health, water and sanitation interventions especially rehabilitation and protection of water points and provision of sanitary facilities
3. Assistance in asset recovery and stock redistribution to pastoral drop outs and poor households.
4. Continued monitoring of the food security and nutrition situation.

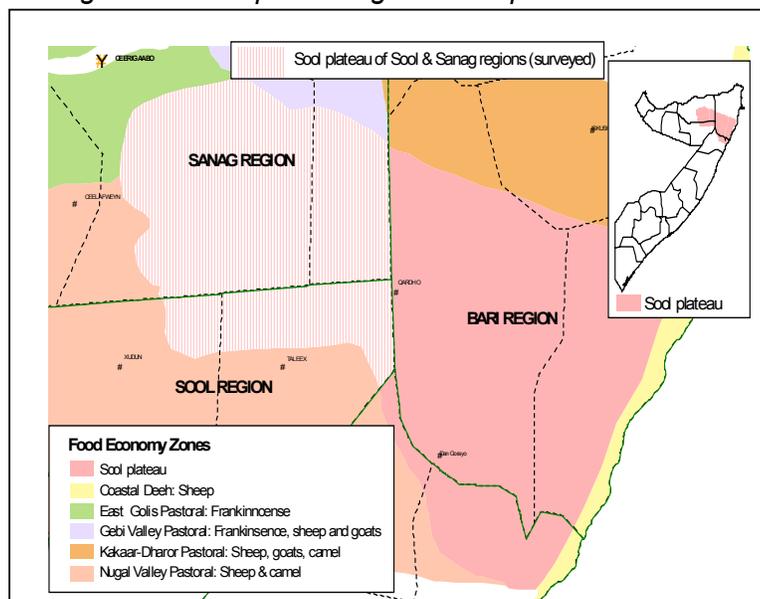
*Long-term Recommendations*

1. Promotion of strategies that enhance caregiver's knowledge and attitude towards breastfeeding and child feeding.
2. Promotion of processing and preservation of meat and milk products during the peak season to enhance food security especially when drought strikes.
3. Continued efforts to improve humanitarian access and increase the number of humanitarian actors presents in these contested regions.

## 1.0 INTRODUCTION

Sool-Sanag plateau covering 46,644km<sup>2</sup> extends from Dararweyne (Erigavo) to Bixin (Banderbeyla) and includes Sanaag, Sool and Bari regions. The Sool-Sanag livelihood zone is pasture-rich, patchy bushy land with vegetation cover including *Accacia Bucia* and extensive grassy plains. Excessive livestock pressure for the last four decades compounded by over-cutting of trees to make charcoal is gradually degrading the ecosystem.

Figure 1. A map showing the Sool plateau of Sool and Sanag



This livelihood zone experiences four seasons (Gu, Haggaa, Deyr and Jilaal/Diraac). The main rainy seasons are Gu (longest) and Deyr which is a short rainy season. Jiilaal is the longest dry season compared to the other seasons of the year and Hagar is a relatively shorter dry period. Sool plateau is a drought prone livelihood zone threatened by seasonal water scarcity, compounded by the environmental degradation of the area. The main water sources are boreholes, *berkads*, earthen dams and trucked water.

Pastoralism is the main livelihood in this zone with significant number of urban centres. Main source of income is sale of livestock and livestock products. Shoats (goats & sheep) are the dominant species currently raised in the

area.

Due to the fluctuating amounts of rain during the rainy seasons since 2001, this rain dependent region experienced severe stress. In the 2004/05 Sool-Sanag pastoralists mostly moved (all species) to the less affected neighbouring livelihood zones (e.g. Golis, Dharoor and Hawd livelihood zones). The camel population had drastically reduced due to the drought and further declined in the first two seasons of 2004/2005. The decline in camel numbers restricted the pastoralists' mobility and increased dependence on trucks to migrate.

## 1.2 Assesment Justification

The FSAU's nutrition assesment for the Sool Plateau in July 2004 indicated a GAM of 13.7% (CI: 11.5 – 16.1%). However with the good Deyr of 2004/05, livestock situation showed signs of improving and returned and increased immigration from Golis and Dharoor was evident. Camel conception rates were high and the population was expected to grow steadily increasing milk availability to the human population. In order to understand the current situation and provide information to partners and agencies operating in the region, a nutrition assessment was planned to cover the Sool plateau area covering the Sool and Sanag regions (see figure 1). This assessment was done by FSAU in collaboration with UNICEF, MOHL, MOH, SRCS and Horn Relief from August 22<sup>nd</sup> to 30<sup>th</sup>, 2006. The main aim was to follow up and evaluate the nutrition and health situation of the Sool plateau population of Sool and Sanag regions.

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.
3. To identify factors likely to have influenced malnutrition in young children.
4. To estimate the prevalence of some common diseases (measles, diarrhoea, malaria, and ARI).
5. To estimate the dietary diversity status of the Sool plateau population
6. To estimate measles and polio vaccination and Vitamin A supplementation coverage among children.
7. To estimate the crude and under-five mortality rates.

## **2.0 BACKGROUND INFORMATION:**

### **2.1 General overview**

The plateau faced a three year drought beginning 2001 and ended only with the Deyr rains of 2004/05. Water sources in the Sool are primarily dependent on rainfall as there are minimal permanent natural water sources. Ground water levels have declined drastically due to the previous droughts and over-pumping of boreholes and increased demand by animals. Historically, fifty years ago, the Sool plateau was a grazing area only in the wet seasons and Nugal and Dharoor were the prime dry season grazing areas due to the presence of permanent water sources. With the growth of berkads since the sixties, the Sool plateau became an all-year round grazing area and has increased sedenterization of pastoralists. The Sool and Sanaag plateau is pasture rich but heavily dependent on the performance of the rainy seasons. If there are good rains in both seasons, the pasture is adequate to meet the annual needs. However due to recurrent droughts, over -grazing, competition of resources and negative environmental trends, land productivity and plant diversity has drastically reduced. The spread of man-made water sources, increased competition for resources and drought have accelerated environmental degradation of the Sool plateau. The proliferation of man-made water sources (boreholes, berkads and shallow wells) paved the way for increased sedentarization and has made the area an all -year round grazing area.

Charcoal production by indiscriminate cutting of trees, as an alternative income source is compromising the ecosystem and has led to the significant loss of important plant species such as the Acacia Busia (*Galool*). The charcoal is supplied to the major towns like Bossaso, Erigavo, Garowe, Galkayo, Las Anod, Qardo and Badhan. Increased sheet erosion of soil is due to the wind and water erosion, extended droughts, increased trucking in rural areas and associated human and livestock pressure.

### **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 berkards 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 has worked in collaboration with the Ministry of Education to support basic education in all the four districts.

### **2.3 Nutrition**

Long term trends of malnutrition rates observed on the Sool plateau (1995-2005) range between 10-14.6%. Due to the drought, and consequent lack of access to food and huge asset losses; FSAU's nutrition assesment for the Sool Plateau in July 2004 indicated a GAM of 13.7% (CI: 11.5 – 16.1%). Concurrent mortality assesment revealed under five mortality rate of 2.89 deaths/10,000 children/day and a crude mortality rate of 0.86 deaths /10,000 people per day both depicting an alert situation.

## **2.4 Water and Environmental Sanitation**

Water shortage is a major problem for both the humans and the livestock, becoming more acute during the *jilaa* 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 *Jilaa* 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.

## **METHODOLOGY**

### **3.1 Assessment design**

This was a cross-sectional study in the Sool plateau 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 Sool plateau, with their respective populations was used to construct cumulative population figures for the assessment area (Appendix 1). Using WHO/UNICEF Polio population figures, generated during National Immunization Days (WHO, August 2005) 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 45,585 from all settlements/villages was obtained from which 30 clusters were selected. Using the Nutriassessment software a random number, 1131 was chosen to determine the first cluster. The subsequent clusters were determined systematically by adding the cluster interval (1520) to the first randomly selected number (see appendix 1). From the 30 randomly selected clusters, a total of 935 children (938 less 3 flags) aged 6-59 months and/or height/length of 65-109.9 cm from 494 households were assessed.

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 919 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 Sool plateau 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 towards the cluster/village to determine the direction to follow in the systematic selection of the households to interview. 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 questionnaire was 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 was *weight for height* as the best indicator of 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 assessed until the 30<sup>th</sup> household. Each household assessed 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 919 households were included in the assessment.

The crude and under five mortality rates were generated automatically by the Nutri Survey 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  $\geq 2$  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.

### 3.3.6 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 Sool plateau Nutrition Assessment*

Major Activity	Dates, 2006
Resource mobilization ; Joint planning meetings with partners Preparation of tools, methodology & review of secondary data (Nairobi);	July 20 <sup>th</sup> – 9 <sup>th</sup> August
Training of enumerators, pre-testing questionnaire and cluster Identification	22 <sup>nd</sup> -25 <sup>th</sup> August
Collection of data	26 <sup>th</sup> – 30 <sup>th</sup> June
Entry of data	29 <sup>th</sup> August to 3 <sup>rd</sup> September
Data cleaning and analysis	4 <sup>th</sup> September to 7 <sup>th</sup> September
Presentation of preliminary results to partners	8 <sup>th</sup> September
Circulation of draft report	14 <sup>th</sup> October
Circulation of final report	3 <sup>rd</sup> November

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 and Ministry of Health and Labour in Somaliland and SRCS. 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 estates in the outskirts of Erigavo 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 e.g. a child's age was set to have values from 6 to 59 and values outside this range were automatically rejected. Moreover, 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 EPINUT programmes 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). 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:

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

b) For pregnant women:

≤ 20.7 cm	= Severely at risk
≤ 23.0 cm	= Total at risk
> 23.0 cm	= Normal

## 4.0 ASSESSMENT RESULTS

### 4.1. Household Characteristics of Study Population

The nutrition assessment covered a total of 494 households with a mean household size of 6.6 (SD= 2.8) persons. The mean number of the under fives per household was 2.0 (SD=0.9).

*Table 3: Household Characteristics*

Characteristics	n	%	95% CI
Total number of HHs assessed	494	100	
Household Size	Mean= 6.6		SD= 2.8
Number of Under fives	Mean= 2.0		SD= 0.9
<i>Residential status: (N=494)</i>			
Residents	459	92.9	90.2 – 94.9
Internal Immigrants	23	4.7	3.0—7.0
IDPs	12	2.4	1.3 – 4.3
<i>Origin (N=35)</i>			
Within the Sool/Sanag	26	74.3	
Within Sool/Sanag	9	25.7	
<i>Duration of Stay (N=12)</i>			
Less than 6 months	8	22.9	
6 to 12 months	4	11.4	
More than 12 months	23	65.7	
	Mean = 19.9		SD = 13.3
<i>Reason for Migration (N=12)</i>			
Lack of food/pasture/water	18	51.4	
Seeking employment	8	22.9	
Destitution	9	25.7	

Most (92.6%) of the assessed households were residents<sup>2</sup> and the rest of the households were internal immigrants (4.7%) or internally displaced (2.4%) The non residents were mainly (74.3%) from within the Sool/Sanag plateau.

Overall the non residents had stayed in their current locations for an average of about 19.9 months with most of them having arrived into the locations at least 12 months prior to the assessment. The main reason for movement was food, pasture and water shortage (58.3%). Others moved due to destitution (25.7%) and others in search of employment (22.9%).

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

#### *Income*

<i>Livelihoods (N=494)</i>		
Pastoral	379	76.7 (72.7 – 80.3)
Agro-pastoral	2	0.4 (0.1 – 1.6)
Urban	113	22.9 (19.3 – 26.9)
<i>Main Source of Income (N=494)</i>		
Sale of animals & products	118	23.9 (20.2 – 27.9)
Petty trade	113	22.9(19.3– 26.9)
Casual labour	174	35.2 (31.0 – 39.6)
Remittances/ gifts	36	7.3 (5.2 – 10.0)
Salaried employment	46	9.3 (7.0 – 12.3)
Crops sales	3	0.6 (0.2 – 1.9)
Charcoal burning	4	0.8 (0.3 – 2.2)

Majority of the surveyed households were pastoral (76.7%). Slightly more than one fifth (22.9%) were in urban livelihood while the rest were agro-pastoral (0.4%). Casual labour (35.2%), sale of animals and their products (23.9%) and petty trade (22.9%) were the three main sources of income for over half of the households. Salaried employment (9.3%), Remittances (7.3%) and crop sales (0.6%) as well as charcoal burning were the other

sources of household income.

<sup>2</sup> Residents were taken as those who dwelt in the places of their residences for an extended period or permanently

#### 4.2. Water Access and Quality

Most (76.7%) of the surveyed households drew water from unprotected water sources, mainly *berkards*. Only about a quarter of the surveyed households had access to protected wells/boreholes.

Table 5: Water Access and Quality

Water access and Quality	N	(%)
<i>Main source of drinking water (N=494):</i>		
Unprotected wells/ berkads	379	76.7 (72.7 -80.3)
Protected wells/boreholes	115	23.3(19.7– 27.3)
<i>Distance to nearest water point (N=494):</i>		
≤ 500 meters	129	26.1 (22.3 – 30.3)
501m - < 1 km	208	42.1 (37.7 – 46.6)
1 – 3 km	90	18.2 (15.0- 22.0)
More than 3km	67	13.6 (10.7 – 17.0)
<i>Number of clean water containers:(N=494)</i>		
1 - 2 containers	347	70.2 (66.0 – 74.2)
3 - 4 containers	109	22.1 (18.5 – 26.0)
5 containers	11	2.2 (1.2 – 2.1)
> 5 containers	27	5.5 (3.7 – 8.0)
<i>Method of water storage:</i>		
Covered containers	392	79.4 (75.5 – 82.8)
Open containers	85	17.2 (14.0 – 20.9)
Constricted neck ( <i>Ashun</i> )	17	3.4 (2.1 – 5.6)

Majority (42.1%) of the households were beyond the recommended (Sphere guidelines 2004) distance of less than 500m to water points. This implies more time was spent fetching water. Households also had insufficient clean water storage and collecting containers implying that they require frequent trips to fetch water. About 70.2 % 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. Majority (79.4%) of the households covered their water containers,

suggesting good hygiene practices.

### 3.7 Sanitation and Hygiene Practices.

Most (57.3%) of surveyed households had no access to sanitation facilities and used the bush. Traditional pit latrines (16.0%), Ventilated Improved Pit latrines (26.1%) were reported as the commonly used for those households who had access to sanitation facilities. In most (85.8%) of these cases, the distance between latrine and water source was more than 30 meters according to the international recommendation (Sphere, 2004).

Table 6: Distribution of households by sanitation & Hygiene

<b>Sanitation and hygiene</b>	n	% (CI)
<b>Access to Sanitation facility (N=494)</b>		
VIP latrines	129	26.1(22.3– 30.3)
Traditional pit latrine	79	16.0 (12.9 – 19.6)
Open pit	3	0.6 (0.1 – 2.9)
No latrine (Open ground/Bush)	283	57.3 (52.8 – 61.7)
<b>Distance from latrine to water source (N=211)</b>		
< 30meters	30	14.2 (9.8 – 19.7)
≥ 30 meters	181	85.8 (80.3 – 90.2)
<b>Washing Agent (N=494)</b>		
Soap	449	90.9 (87.9 – 93.2)
Shampoo	14	2.8 (1.6 – 4.8)
Ash	18	3.6 (2.2 – 5.8)
Plant extracts	1	0.2 (0.0 – 1.3)
None	12	2.4 (1.3 – 4.3)
<b>Method of Food Storage (N=494)</b>		
Suspended in hooks/ropes	2	0.4 (0.1 – 1.6)
Put in pots beside fire	157	31.8 (27.7 – 36.1)
Put in covered containers	136	27.5 (23.7 – 31.7)
Don't store	199	40.3 (36.0 – 44.8)

Most (90.9%) of the households used soap for washing. About 40% of the households did not store any food. However 27.5% stored food in covered containers. This is risky as it increases the rate of deterioration especially for high protein foods. Another 31.8% stored food in pots besides fire. Some 0.4% of the households suspend their food in ropes/hooks.

### 4.3 Health Seeking Behaviour

Over a third (35.2%) of all the children reportedly fell sick during

two weeks prior to the assessment. Majority of them (42.9) sought health care assistance from traditional healers while 22% were taken to private clinics and 4.2% children were taken to public health facilities while 21% did not received any medical attention. About 105 of the children received medication from their guardian's prescription.

Table 7: Health seeking behaviour (N=935)

	n	% (CI)
<b>Child fell sick?</b>		
Yes	333	35.6(32.6 – 38.8)
No	602	64.4 (61.2 – 67.4)
<b>Where assistance was sought (N=333)</b>		
Private clinic/ pharmacy	74	22.2 (18.0 – 27.1)
Public health facility	14	4.2 (2.4 – 7.1)
Own medication	32	9.6 (6.8 – 13.4)
Traditional healer	143	42.9 (37.6 – 48.8)
No assistance sought	70	21.0 (16.9 – 25.9)

#### 4.4 Formal and informal support

About 16% of the households reported having received some informal support during three months prior to assessment. Most of the social support was in the form of small loans (11.5%) or remittances from abroad (1.4%). Others received gifts (1.2%) or *zakat* (0.6%) from better off households

Formal support was received by a very small percentage (1.8%) assessed households and was mainly in form of free food (0.8%), cash for work (0.4%) and water subsidy, transport subsidy and veterinary care each received by 0.2% of the households. This suggests minimal humanitarian activity in the region.

#### 4.5 Characteristics of assessment children

Table 9: Distribution of children according to age and sex

Age	Boys		Girls		Total		Ratio
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
6-17 months	111	22.4	103	23.4	214	22.9	1.1:1
18-29 months	117	23.6	85	19.3	202	21.6	1.4:1
30-41 months	104	21.0	96	21.8	200	21.4	1.1:1
42-53 months	107	21.6	95	21.6	202	21.6	1.1:1
54-59 months	56	11.3	61	13.9	117	12.5	1:1.1
Total	495	52.9	440	47.1	935	100	1:1.1

those over 54 months (12.5%).

#### 4.6 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)	84	8.7% (CI: 6.1 – 12.3)
Severe Acute Malnutrition (<-3 Z score or oedema)	7	0.8% (CI: 0.0- 1.8)
Oedema	0	0%

The global acute malnutrition using WFH Z score (<-2 z-scores or oedema) was **8.7%** (CI: 6.1 – 12.3) while severe acute malnutrition (<-3 z-score or oedema) was **0.8%** (CI: 0.0- 1.8). No cases of oedema were detected during the assessment. Distribution of the weight-for-height scores (mean=-0.75; median=-0.80; SD=0.99) were skewed towards the left depicting a poorer

nutrition situation according to international (WHO) standards (Fig 3).

Table 8: Formal and informal support

	N	% (CI)
<i>Informal support (N =494)</i>		
Received:		
Yes	79	16.0 (12.9 – 19.6)
No:	415	84.0 (80.4 – 87.1)
Type of support		
Zakat from better off households	3	0.6 (0.2- 1.9)
Remittances within Somalia	6	1.2 (0.5 – 2.8)
Remittances from abroad	7	1.4 (0.6 – 3.0)
Gifts	6	1.2 (0.5 – 2.8)
Loans	57	11.5 (8.9 – 14.8)
<i>Formal support (N = 494)</i>		
Received:		
Yes	9	1.8 (0.9 – 3.6)
No	485	98.2 (96.4 – 99.1)
Type of Support (N=9)		
Free food	4	0.8
Cash for work	2	0.4
Water subsidy	1	0.2
Transport subsidy	1	0.2
Veterinary care	1	0.2

A total of 935 children were surveyed from 494 households of whom 47.1% were girls and 52.9% were boys. The ratio of boys to girls was 1:1.09. Each age group as shown in table 9 represented between 21% and 22% of all the children but for

Figure 2. Weight for Height distribution Curve

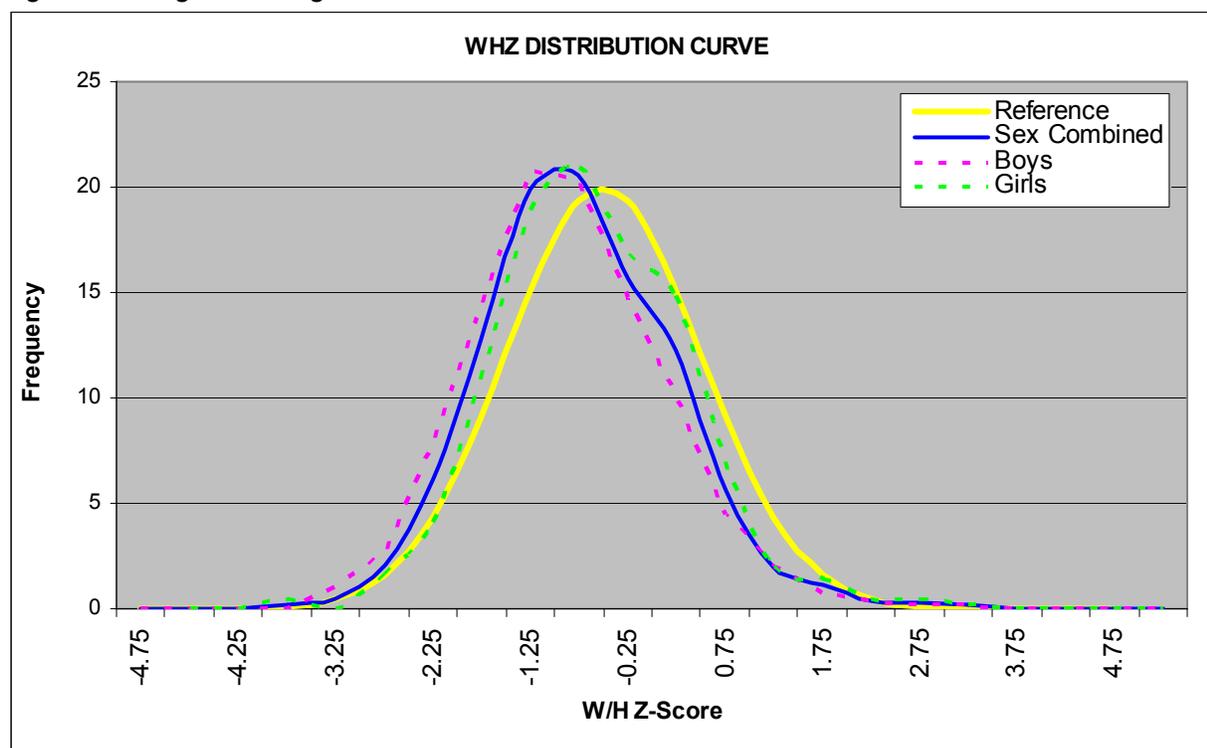


Table 11: Distribution of children by nutritional status (WHZ-score or oedema) and child sex

Nutrition status category	Males		Females		Total	
	No	% (CI)	No	% (CI)	No	% (CI)
Global acute malnutrition (WFH < -2 z score/oedema)	57	11.5 (8.9 – 14.7)	27	6.1 (4.2 – 8.9)	84	<b>8.7% (CI: 6.1 – 12.3)</b>
Severe acute malnutrition (WFH < -3 z score/oedema)	5	1.0 (0.4 – 2.5)	2	0.5 (0.1 – 1.8)	7	<b>0.8% (CI: 0.0- 1.8)</b>
Oedema	0	0	0	0	0	0

About 11.5% of the boys and 6.1% of the girls were acutely malnourished in the surveyed Sool plateau population, using weight for height < -2 Z score or presence of oedema. Boys were more likely to be malnourished ( $p=0.01$ ) 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	1 (0.5%)	10 (4.7%)	11 (5.2%)	203 (94.8%)	214 (22.9%)
18-29 months	2 (1.0%)	13 (6.4%)	15 (7.4%)	187 (92.6%)	202 (21.6%)
30-41 months	1 (0.5%)	14 (7.0%)	15 (7.4%)	185 (92.5%)	200 (21.4%)
42-53 months	2 (1.0%)	17 (8.4%)	19 (9.4%)	183 (90.6%)	202 (21.6%)
54-59 months	1 (0.5%)	23 (19.7%)	24 (20.6%)	93 (79.4%)	117 (12.5%)
Total	7 (0.7%)	77 (8.3%)	84 (9.0%)	851 (91.0%)	935 (100%)

Age was significantly associated with malnutrition. Older children were more likely to be malnourished than the younger ones (p=0.001).

This is more likely a reflection of inadequate household food security for these kids.

**Table 13: Malnutrition prevalence using WFH percentage of median categories**

Nutrition status categories	Males		Females		Total	
	No	(%)	N	(%)	No	(%)
Global acute malnutrition (WFH<80% or oedema)	28	5.7 (3.9 – 8.2)	17	3.9 (2.3 – 6.2)	45	4.8 (3.6 – 6.4)
Severe acute malnutrition (WFH<70% or oedema)	0	0	2	0.5 (0.1 – 1.8)	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 4.8% (CI: 3.6 – 6.4) 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 1.8% (CI: 1.2 – 3.2) of the children were malnourished (MUAC<12.5 cm or oedema). About 0.5% (CI: 0.1 – 1.2) were severely malnourished (MUAC<11.0 cm or oedema) while 7.8% (CI: 6.1 – 9.9%) were at risk (12.5<MUAC <13.5 cm).

**Stunting and Underweight Levels: Total chronic malnutrition (HFA< -2 z scores) is at 11.1% while total underweight (WFA < -2 z scores) at 13.8% and are within acceptable WHO levels.**

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

Malnutrition	Males		Females		Total (N=825)	
	N	%	N	%	N	% (95% CI)
Severe (MUAC <11 cm) or oedema	1	0.2 (0.0 - 1.5)	2	0.5 (0.1- 2.1)	3	0.5 (0.1 - 1.2)
Moderate (11≤MUAC<12.5 cm)	7	1.6 (0.7 - 3.4)	6	1.6 (0.6- 3.5)	13	1.6 (0.9-2.8)
Total (MUAC <12.5 cm) or oedema	8	1.8 (0.8 - 3.7)	8	1.8 (0.8 - 3.7)	16	1.8 (1.2 - 3.2)
At risk (MUAC 12.5- <13.5 cm)	34	7.7 (5.5 – 10.7)	30	7.8 (5.4 – 11.1)	64	7.8 (6.1 - 9.9)
Normal (MUAC ≥13.5 cm)	399	90.5 (87.2 – 93.0)	346	90.1 (86.6 – 92.8)	745	90.3 (88.0 – 92.2)
Total	441	53.5 (50.0- 56.9)	384	46.5 (43.1- 50.0)	825	100

#### 4.7 Morbidity, measles immunisation, polio vaccination and vitamin A supplementation

The reported incidence of ARI (21%) and diarrhoea (14.1%) and suspected measles (2.7%) within two weeks prior to the assessment indicates a downward trend compared to previous survey in 2004 (ARI 22%; diarrhoea, 17.8% and measles 8.0%). No major outbreak was reported during the period. Due to highly contagious nature of measles, the current finding calls for immediate action in form of a measles vaccination campaign. Moreover only about three quarters of the children were immunised against measles, leaving the other quarter highly vulnerable.

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

	No.	%(CI)
<i>Incidence of major child illnesses (N=935)</i>		
ARI within two weeks prior to assessment	196	21.0 (18.4 – 23.7)
Diarrhoea within two weeks prior to assessment	132	14.1 (12.0 – 16.6)
Febrile illness within 2 weeks prior to assessment	100	10.7 (8.8 – 12.9)
Measles within one month prior to the assessment (N=885)	24	2.7 (1.8 – 4.1)
<i>Immunization Coverage</i>		
Children (9-59 months) immunised against measles (N=885)	670	75.7 (72.7 – 78.5)
Children who have ever received Polio dose (N= 935)	871	82.5 (79.8 – 84.8)
<i>Vitamin A supplementation (N= 920)</i>		
Children who received Vitamin A supplementation in past 6 months	505	54.5 (51.2 – 57.7)
<i>Micronutrients Deficiencies (N=494)</i>		
Households who reported night blindness	4	0.8 (0.3 – 2.2)
Member with night blindness (n=4)		
< 5 years	2	0.4 (0.1 – 1.6)
≥ 5 years	2	0.4 (0.1 – 1.6)

Measles vaccination coverage for eligible children (9-59 months old) was 75.7%. Most (82.51%) of the children aged 6-59 months had received at least a dose of polio vaccine. Over one half (54.5%) of the surveyed children had received Vitamin A supplementation in the 6 months prior to the assessment.

#### 4.8 Vitamin A Deficiency

About 0.8% of the households reported cases of night blindness, which is a proxy indicator of vitamin A deficiency. Half of these night blindness cases were reported among children less than six years and the other half among those six years and above including adults.

#### 4.9 Feeding practices

None of the children, in the breastfeeding age group of 6-24 months, were exclusively breastfed in the first six months according international recommendation and about 42% of the children aged 6-24 months were breastfeeding at the time of the assessment. Over half (57.0%) of the children who were breastfeeding breastfed 3- 6 times and another 40% breastfed on demand. For those who had stopped breastfeeding before the recoded age of 24 months, three quarters of them stopped before their first birthday. About 15% had stopped breastfeeding before between 12 and 18 months while 2.1% did not breastfeed at all.

Table 16: Children feeding practices

Children aged 6-24 months (N=325)	N	% (CI)
<i>Is child breastfeeding?</i>		
Yes	135	41.5 (36.2 – 47.1)
No	190	58.5 (52.9- 63.8)
<i>Breastfeeding frequency (N=135)</i>		
1-2 times	4	3.0
3-6 times	77	57.0
On demand	54	40.0
<i>Age stopped breastfeeding (N=190):</i>		
0 - 5 months	62	32.6
6 - 11 months	87	45.8
12 – 18 months	28	14.7
More than 18 months	9	4.7
Never breastfed	4	2.1
<i>Introduction of Complementary feeding (N=325)</i>		
0 - 3 months	245	75.4 (70.3 – 79.9)
4 – 5 months	50	15.4 (11.7 – 19.9)
6 Months	16	4.9 (2.9 – 8.0)
7 or more months	14	4.3 (2.5 – 7.3)
<i>Feeding frequency (N=325)</i>		
Once	29	8.9 (6.2 – 12.7)
2 times	104	32 (27.0 37.4)
3 – 4 times	162	49.8 (44.3 – 55.4)
5 or mores times	30	9.2 (6.4 – 13.0)

Most (75.4%) 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 a fifth were introduced to food at 4 to 5 months. Only about 9% were introduced to complementary food as recommended at the age of 6 months.

About a quarter of the children were fed at least twice a day with mainly cereal-based meals. The majority of children were fed 3-4 times (49.8). Only 9.2% were fed 5 or more times, which suggests suboptimal feeding practices for children, while 8.9% of the children were fed only once.

#### 4.10 Dietary Diversity

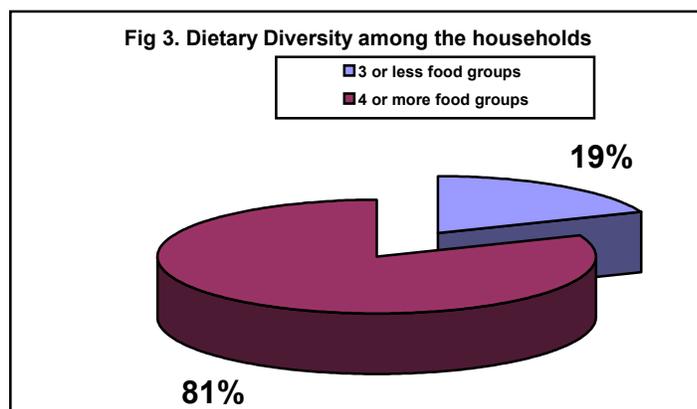
Table 17: Distribution of dietary diversity among households

No of food groups consumed (N=494)	N	% (CI)
1 food group	1	0.2 (0.0 – 1.3)
2 food groups	13	2.6 (1.5 – 4.6)
3 food groups	79	16.0 (13.0 – 19.6)
4 food groups	135	27.4 (23.5 – 31.6)
5 food groups	84	17.0 (13.9 – 20.7)
6 food groups	72	14.6 (11.7 – 18.6)
7 food groups	72	14.6 (11.7 – 18.6)
8 food groups	25	5.1 (3.4 – 7.1)
9 food groups	11	2.2 (1.2 – 4.1)
10 food groups	2	0.4 (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	5.0	SD=1.7
Mode = 4		
<i>Main source of food (N=494)</i>		
Purchasing	441	89.3 (86.1- 91.8)
Own production	1	0.2 (0.0 – 1.3)
Gifts/donations	15	3 (1.8 – 5.1)
Borrowing	34	6.9 (4.9 – 9.6)
Gathering	1	0.2 (0.0 – 1.3)

About 0.2% of the households had consumed only one food group while the majority had consumed 4 (mode=4) food groups within the same period. Households consumed an average (HDDS) of 5.0 food groups (SD=1.7) with the number of food groups consumed ranging from one to ten.

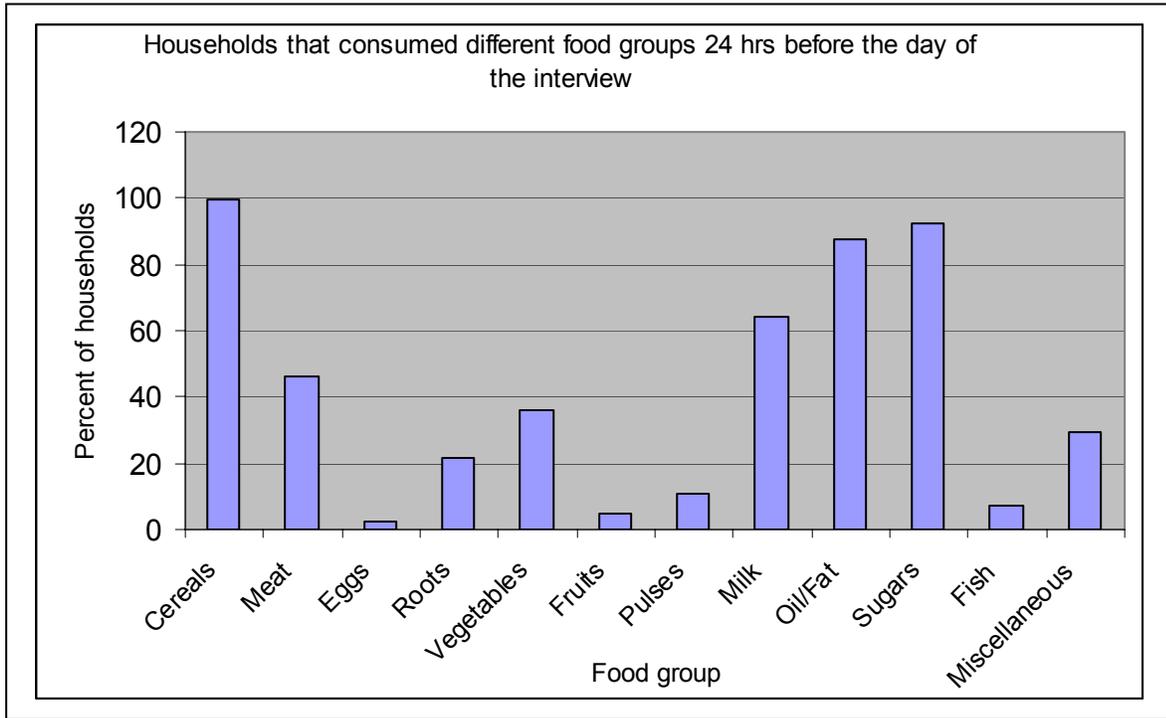
Most (89.3%) of the households surveyed mainly obtained their food through purchasing, 0.2% through own production and about 7% relied on borrowing. Other households obtained their food as gifts (1.8%) or through hunting/gathering (0.2%).

As shown on figure 3, about 19% of the households had consumed three or fewer food groups within 24 hours prior to the assessment. Most households (81%) 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 sugar as tea (92.7%), oil/fat (87.7%) milk (64.6%) and meat (46.2%). About a fifth of the households consumed roots (21.5%) and 36.2% of the households consumed vegetables. Eggs (2.2%), Fish (7.3%) and Fruits (4.7%) were consumed by a small percentage of the households. About a third of the households consumed other miscellaneous foods including condiments.

Figure 4. Food Consumption in the 24-hr recall.



#### 4.11 Adult Malnutrition by MUAC

Table 18: Adult nutrition status by MUAC

	n	%	95% CI
Total mothers assessed	481		
Total non mothers assessed	79		
Total women assessed	560		
<i>Non Pregnant (N=468)</i>			
Severe acute malnutrition (MUAC<16.0 cm)	0	0	0
Global acute malnutrition (MUAC≤18.5)	8	1.7	0.8 – 3.5
Normal	460	98.3	96.5 – 99.2
<i>Pregnant women (N=93)</i>			
Severe Risk (MUAC≤20.7 cm)	1	1.7	
Total at risk (MUAC≤23.0 cm)	9	9.8	
Normal	83	90.2	

About 1.7% of non-pregnant women (aged 15-49 years) were malnourished (MUAC<18.5cm) while none were at severe risk of malnutrition (MUAC<16.0 cm).

About 10% of pregnant women (N=89) were acutely malnourished (MUAC<23.0cm) while 1.7% were at severe risk of acute malnutrition (MUAC<20.7cm).

#### 4.12. Relationship between malnutrition and other factors.

Table 19: Risk factors and their relation to total malnutrition.

Exposure variable	N	(%)	Crude RR	95% CI	p-value
<i>Child sex</i>					
Male	57	11.5	1.88	1.21 – 2.91	0.01*
Female	27	6.1			
<i>Age group</i>					
6-24 months	23	7.1	0.71	0.45 – 1.13	0.18
25-59 months	61	10.2			
<i>Morbidity patterns</i>					
<i>Illness</i>					
Yes	38	11.4	1.49	0.99 – 2.25	0.07
No	46	7.6			
<i>Health programmes</i>					
<i>Vitamin A Supplement:</i>					
Yes	46	9.1	1.03	0.68 – 1.55	0.98
No	38	8.8			
<i>Dietary &amp; feeding patterns</i>					
<i>Breastfeeding (N=356)</i>					
Yes	8	5.9	0.75	0.33 – 1.72	0.64
No	15	7.9			
<i>Dietary diversity</i>					
≤ 3 food groups	49	9.2	1.05	0.69 – 1.58	0.91
≥ 4 food groups	35	8.8			

The data show that boys were 1.9 times more likely to be malnourished than girls (p=0.01)

Further analysis revealed no significant association between malnutrition and other factors.

#### 4.13 Mortality 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	= 1,153
Number of under fives who joined the households	= 3
Number of under fives who left the households	= 29
Number of births	= 49
Number of under five deaths	= 15

Under five death rate (deaths /10,000 children per day) = **1.45 (CI: 0.89 – 2.02)**

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

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

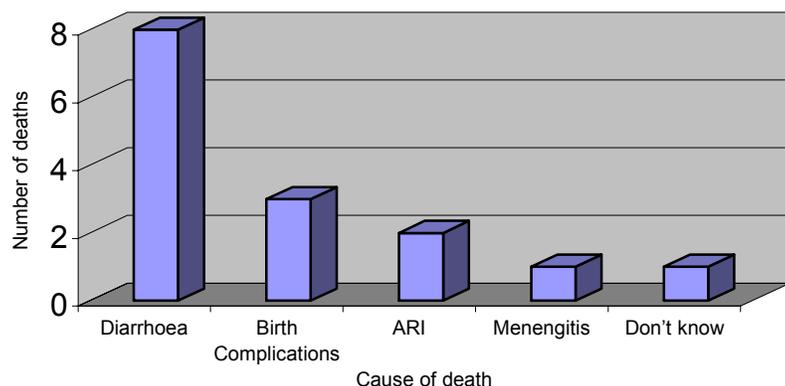
Total population in surveyed households	= 5186
Total people who joined the households	= 39
Total people who left the households	= 310
Total number of births	= 49
Total number of deaths in the households	= 26

CMR as deaths per 10,000 persons per day = **0.54 (CI: 0.40 - 0.69)**

The under five mortality and the indicate and crude mortality reflect a normal situation according to the international standards (WHO classification).

As shown on figure 6, diarrhoeal diseases were the main reported cause of under-five mortality. Other factors include death resulting from birth complications ARI and Meningitis

Figure 5: Reported causes of under five mortality



#### 4.14 Qualitative information

Qualitative information was collected from observations, focus group discussions and key informant interviews. 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.

##### **Care and feeding practices**

In most cases, the duration of breastfeeding did not exceed 12 months. Water is given mostly at birth and as the first thing even before breast milk. In addition, most children are given complementary food (animal milk – mostly camel or goat's milk) before they are one month old. Furthermore, solid food 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)

##### **Change in dietary consumption 3 months before the assesment .**

Availability and access of meat, goat milk, camel milk, rice, sugar, and oil increased within the previous 3 months before the assesment . 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.

##### **Constraints to child feeding and care.**

Food insecurity/hunger and too much work especially fetching water are the major constraints to breast/complementary feeding of young children under two years of age. However cultural beliefs sometimes also negatively affect breastfeeding, for instance in this study some mothers said that they belief that colostrum is not good for children.

##### **Water and sanitation**

The main source of water is the Berkads which is usually not protected. Most households use the bush

for human waste disposal including that of the children. On average the distance to the water points for most of the households is less than a kilometre.

**Main income sources.**

Sale of livestock and their products was by far the most important income source. Furthermore petty trade including renting of vehicles, charcoal burning and sale as well as casual work, supplement the income from sale of livestock.

**Common illnesses**

Among the adults in the region the most commonly reported illnesses include ARI, skin diseases and Malaria. For children diarrhoea is the most commonly reported although ARI and malaria are also fairly common.

## 5.0 DISCUSSION

### 5.1 Nutrition Situation

The assessment results indicate a Global Acute Malnutrition (Weight-for-Height  $<-2$  Z score or oedema) of **8.7% (CI: 6.1 – 12.3)** and Severe Acute Malnutrition of **0.8% (CI: 0.0- 1.8)**. 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 June 2004 found a GAM of 13.7% and the current findings confirm a significant improvement in the nutrition situation for the region. However the nutrition situation indicates an alert situation suggesting a need for continued assistance in recovery.

This improvement in the situation could be explained by increased access to a diverse diet. Moreover there is a continued improvement in the rangeland condition and trend since the end of 2004 which consequently has resulted to increased gains in livestock numbers and body condition. This in turn has led to increased access to income for food and non-food needs as well as access to the nutritious Animal Source Foods especially milk and meat.

The retrospective crude and under five mortality rates of 0.54 (CI: 0.40 – 0.69) and 1.45 (CI: 0.89 – 2.02) deaths/10,000/day indicate acceptable levels according to WHO classification. Moreover, it indicates a reduction in mortality rates since the last assessment in June 2004. This reduction in mortality is possibly explained by the high and sustained levels of immunisation especially following the three year drought of 2002 – 2004. However the cases of morbidity are high which is attributed to poor access to health facilities and cultural beliefs. Only about a quarter of the sick children are taken to the public or private health facilities while nearly half were taken to the traditional healers when they got sick.

### 5.2 Child Feeding, Food Consumption and Food Security

Analysis of qualitative data suggests that child feeding practices especially breastfeeding and complementary feeding are suboptimal. The duration of breastfeeding in most cases is less than one year against the recommended 24 months. Moreover complementary feeding is introduced so early, sometimes in the first day of life.

Dietary diversity is good for most of the households and a good proxy indicator of food security. At the moment the level of dietary diversity suggests that most of the households are able to access a variety of foods.

### 5.3. Water, Sanitation and Health issues

Most of the population draw water from unprotected water sources (*berkads*). 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 until the onset of the Jilaal season. However the quality of water, especially for human consumption, is poor. Moreover households had insufficient water holding containers implying that they require frequent trips (mostly by women) to fetch water hence spending more time. Indeed, this was identified by women as a key constraint to proper child feeding and care.

The general sanitation of the population's residential areas is poor. Access to sanitation facilities is very low with majority using bush. This kind of sanitation situation combined with unprotected water sources and suboptimal and inappropriate food and water storage methods possibly explains the prevalence of diarrhoea as key factor in morbidity and mortality.

## **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. Initiation of an immediate measles vaccination campaign with Vit A supplementation
2. Continuation and intensification of health, water and sanitation interventions especially rehabilitation and protection of water points and provision of sanitary facilities
3. Assistance in asset recovery and stock redistribution to pastoral drop outs and poor households.
4. Continued monitoring of the food security and nutrition situation.

### **6.2. Long-term Recommendations.**

1. Promotion of strategies that enhance caregiver's knowledge and attitude towards breastfeeding and child feeding.
2. Promotion of processing and preservation of meat and milk products during the peak season to enhance food security especially when drought strikes.
3. Continued efforts to improve humanitarian access and increase the number of humanitarian actors presents in these contested regions.

## 7.0 APPENDICES

### Appendix 1. The Sampling frame for the Sool plateau assessment, August 2006.

No	VILLAGE	EST. POP. 2006	CUMULATIVE POPULATION	CLUSTER NUMBER
1	Goof	500	500	
2	GodCanod	800	1300	1
3	Ceeryaan	850	2150	
4	Sugbo	500	2650	
5	GarabCade	450	3100	2
6	Xamlika	425	3525	
7	Midhacaanyo	300	3825	
8	Fiqiga	2500	6325	3;4
9	Booda Cade	800	7125	
10	Gelisle	700	7825	5
11	Beer Wayso	300	8125	
12	DararWayne	1500	9625	6
13	Dalya	500	10125	
14	Karin Biyood	400	10525	7
17	Caadayo	200	10725	
18	Mooda	200	10925	
20	Dibqarax	100	11025	
21	BiyoGuudud	550	11575	
22	DuudCas	300	11875	8
23	Ardaa	1110	12985	
24	Aden labi	300	13285	
25	Dhabaro	800	14085	9
26	LayMadh	500	14585	
27	Guryo San	500	14945	10
28	Dhadhin Yaxy	600	15685	
29	Jed Xilood	400	16085	
30	Kulaal( Jeexa)	700	16785	11
31	Camayulug	500	17285	
32	Siiga Dheer	800	18085	12
33	Far Dhidar	400	18485	
34	Ceel Nimcoon	600	19085	
35	Suuf Dheere	800	19885	13
36	DanWayn/Eil Ofwayn	900	20785	
37	Carmale	600	21385	14
38	Dhanaan	250	21635	

No	VILLAGE	EST. POP. 2006	CUMULATIVE POPULATION	CLUSTER NUMBER
39	Shimbiraale	800	22435	15
40	Dawaco	500	22935	
41	Damalehagare	1200	24135	16
42	Sibaayo	200	24335	
43	Qoyan	200	24535	
44	Xingalool	4000	28535	17;18;19
45	Wardheer	1000	29535	
46	Baraagtagol	2000	31535	20;21
47	QolofWayne	200	31735	
48	Dhahar	7200	38935	22;23;24;25
49	Balli Basle	1200	40135	26
51	Habarshile	700	40835	27
52	Gooran	200	41035	
54	Kala dhac	1000	42035	
55	Ceel Buh	2000	44035	28;29
57	Dikhsule	300	44335	
58	Durdur	650	44985	
59	Shidaleh	600	45585	30
		<b>45585</b>		

Cluster Interval =1520 45585/30 Clusters

Random Number=

1131

WHO/[UNICEF](#) August 2005 NID polio figures further verified by the assesment team

## Appendix 2 SOOL/SANAG PLATEAU NUTRITION ASSESSMENT HOUSEHOLD QUESTIONNAIRE August 2006.

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)<sup>3</sup>? \_\_\_\_\_

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

**Q3** What is your present household residence status? 1= Resident<sup>4</sup> 2=Internally displaced<sup>5</sup> 3=Returnees<sup>6</sup> 4=Internal immigrant<sup>7</sup> 5=Other  
 (specify) \_\_\_\_\_

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

**Q4** Place of origin (categorize during questionnaire design) \_\_\_\_\_ 1=In Sool plateau 2=outside sool plateau 3=Ethiopia other  
 (specify) \_\_\_\_\_

**Q5** Duration of stay (in months) \_\_\_\_\_

**Q6** Reason for movement: 1= Insecurity 2=Lack of jobs 3= Food/pasture/water shortage 4=Water shortage only 5= pasture shortage only 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 trade 4=  
 Casual labour

5= Salaried employment 6= Remittances/gifts 7= Others, specify \_\_\_\_\_

<sup>3</sup> Number of persons who live together and eat from the same pot at the time of assessment

<sup>4</sup> A person who dwells in a particular place permanently or for an extended period

<sup>5</sup> A person or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights, or natural or human-made disasters, and who have not crossed an internationally recognized State Border" source, guiding principles on internal displacement

<sup>6</sup> Refugees who have returned to their country (Somalia) or community of origin, Somalia, either spontaneously or through organized repatriation [ UNHCR definition]

<sup>7</sup> A person who moves (more or less permanently) to a different administrative territory due to a wide range of reasons (e.g. job related, security)

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

Sno	First Name  (if child is aged >24, skip to Q14)	Q9  (If 6-24 months)  Are you breastfeeding <sup>8</sup> the child?  (if no, skip to Q11)  1=Yes 2=No	Q10  (If 6-24 months)  If breast feeding, how many times/day?  1=<3 times 2=3-6 3=On demand	Q11  (If 6-24 months)  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  (If 6-24 months)  At what age was child given water/ foods other than breast milk?  1=0-3 months 2=4-5 months 3=6 months 4=7 months or more.	Q13  (If 6-24 months)  How many times do you feed the child in a day (besides breast milk)?  1= Once 2= Twice 3= 3-4 times 4= 5 or more times	Q 14  Has child been provided with Vitamin A in the last 6 months?  (show sample)  1=Yes 2=No	Q15  (If ≥9 months old)  Has child been Vaccinated against measles?  1=In past 6 months 2=Before 6 months 3=None	Q16  How many times has the child been given vaccine oral?  1=1-2 times 2=3 and above 3=Never
1									
2									
3									
4									

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

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

<sup>8</sup> Child having received breast milk either directly from the mothers or wet nurse breast within the last 12 hours

<sup>9</sup> Diarrhoea is defined for a child having three or more loose or watery stools per day

<sup>10</sup> ARI asked as of warea or wareento. The three signs asked for are cough, rapid breathing and fever

<sup>11</sup> Suspected malaria/acute febrile illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma

**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 = open wells, ponds 4=Taps  
5=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/open ground (*If Bush skip to Q36*)

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

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

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

**Q 38 Food Consumption & 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.

<b>Food group consumed:</b> What foods groups did members of the household consume	Did a member of your	*Codes:
--	----------------------	---------

<sup>12</sup> Measles (*Jadeeco*): a child with more than three of these signs– fever and, skin rash, runny nose or red eyes, and/or mouth infection, or chest infection

		1= Own production 2=Purchases 3=Gifts from friends/families 4=Food aid 5=Bartered 6=Borrowed 7=Gathering/wild 8=Others, specify _____ 9=N/A
<b>Type of food</b>		<b>What is the main source of the dominant food item consumed? (Use codes above)?</b>
1. Cereals and cereal products (e.g. maize, spaghetti, pasta, caanjera, bread)?		
2. Meat, poultry, offal (e.g. goat/camel meat, beef; chicken/poultry)?		
3. Eggs?		
4. Roots and tubers (e.g. potatoes, arrowroot)?		
5. Vegetables (e.g. leafy vegetables, tomatoes, carrots, onions)?		
6. Fruits (e.g. water melons, mangoes, grapes)?		
7. Pulses/legumes, nuts (e.g. beans, lentils, green grams, cowpeas)?		
8. Milk and milk products (e.g. goat/camel/ fermented milk, milk powder)?		
9. Oils/fats (e.g. fat, butter, ghee, margarine)?		
10. Sugar and honey?		
11. Fish and sea foods (e.g. fired/boiled/roasted fish, lobsters)?		
12. Miscellaneous (e.g. spices)?		
<b>Q39 In general what is the main source of food in household? (*Use codes above)</b>		_____

**Q40 Total number of food groups consumed (filled by enumerator):** \_\_\_\_\_

**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 of Events for Sool plateau August 2006.**

Month	2001	2002	2003	2004	2005	2006
Jan		55	43	31	19	7
Feb		54 XAJ	42 XAJ	30 XAJ	18 XAJ	6
March		53(Dago)	41 Dagalkii Ciraq	29	17	
Apr		52 Mawlid	40 Mawlid	28 Mawlid	16 Mawlid	
May		51	39	27 Codaya Dastunte	15	
Jun		50	38	26	14	
Jul		49 Dabshid	37 Dabshid	25 Dabshid	13 Dabshid	
Aug		48	36	24	12	
Sep	59	47	35	23	11	
Oct	58 Ramadhan	46 Ramadhan day	34 Ramadhan	22 Ramadhan	10 Ramadhan	
Nov	57	45 Eid Fidr	33 Ramadhan	21 Eid Fidr	9	
Dec	56 Ramadhan	44	32 Abaar tu ku qood	20 Suraam	8	

Jiilaal
IGU'
Xagaa
Deyr

**Appendix 5: Prevalence of chronic malnutrition based on height for age Z-score**

	<i>Males</i>		<i>Females</i>		<i>Total</i>	
	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>
Global chronic malnutrition (HFA<-2 z score)	11.3 (CI: 8.7 – 14.5)	56	12.0 (CI: 9.2-15.5)	53	11.7 (9.7 – 13.9)	109
Severe chronic malnutrition (HFA<-3 z score)	2.6 (CI: 1.5 – 4.6)	13	2.5 (CI: 1.3 – 4.6)	11	2.6 (CI: 1.7 – 3.9)	24

**Appendix 6: Prevalence of underweight based on weight for age Z-score**

	<i>Males</i>		<i>Females</i>		<i>Total</i>	
	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>
Underweight malnutrition (W/A<-2 z score)	17.6 (CI: 14.4 –21.3)	87	13.0 (CI:10.0 – 16.5)	57	15.9 (CI: 13.2 – 17.9)	144
Severe underweight malnutrition (W/A<-3 z score)	1.4 (CI: 0.6 – 3.0)	7	2.7 (CI: 1.5 - 4.8)	12	2.0 (CI: 1.3 – 3.2)	19

**Appendix 7: Assessment Team Composition (26- 30 August 2006)**

1	Zaynab Ahemed Diriiye Ibado Warsame Abdi	Ahmed Jama	1	GodCanod
			7	Karin Biyood
			10	Guryo San
			12	Siiga Dheer
			13	Suuf Dheere
2	Nafiss Hassan Abdi Asha Mohammed Noor	Osman Warsame	2	GarabCade
			3	Figiga
			4	
			6	DararWayne
			11	Kulaal( Jeexa)
3	Jawir Osman Jama Ali Farah	Hassan Mohammed	5	Gelisle
			8	DuudCas
			9	Dhabaro
			14	Carmale
			30	Shidaleh
4	Mohammed Farah Hodan Mohammed	Abdillahi Warsame	15	Shimbiraale
			16	Damalehagare
			20	Baraagtagol
			21	
			26	Balli Basle
5	Ahmed Abdillahi Zaynab Abdi	Fuad Hassan	17	Xingalool
			18	
			19	
			28	Ceel Buh
			29	
6	Abdirizak Ahmed Jama Mohammed Samanter	Mohammed Hassan (Gani)	22	Dhahar
			23	
			24	
			25	
			27	Habarshile
	Coordinators:	Peter Kingori - FSAU Nutrition Project Officer Tom Oguta - FSAU Nutrition Project Officer		
	Technical and managerial support	Ahono Busili – FSAU Deputy Nutrition Project Manager		

**Appendix 9: 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: \_\_\_\_\_

## **8.0 REFERENCES**

**WHO, 1995:** Guide on rapid nutritional assessment in emergencies

**Sphere (2004).** Humanitarian Charter and Minimum Standards in Disaster Response. The Sphere Project.