

HIRAN PASTORAL & AGRO-PASTORALS NUTRITION ASSESSMENT

**HIRAN REGION
CENTRAL SOMALIA**



March 2007



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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
HAZ	Height for Age
IDP	Internally Displaced Person
IMC	International Medical Corps
MCH	Maternal and Child Health
MUAC	Mid Upper Arm Circumference
NCHS	National Centre for Health Statistics
NGOs	Non-Governmental Organisations
PWA	Post War Average
SACB	Somalia Aid Coordination Body
SMART	Standardised Monitoring & Assessment of Relief and Transitions
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNHCR	United Nations High Commission of Refugees
VAD	Vitamin A Deficiency
UNICEF	United Nations Children's Fund
WAZ	Weight for Age Z Scores
WFP	World Food Programme
WHO	World Health Organisation
WHZ	Weight for Height Z scores

EXECUTIVE SUMMARY

Hiran Region is located in the South Central Zone of Somalia and borders Galgaduud to the East, the Middle Shabelle to the South, Bakool to the west and Ethiopia to the north. It has a population density of 329,811 (UNDP 2005). Hiran Region comprises of three districts: Belet-Weyne, Bullo Burti and Jalalaqsi. The regional administrative structures have been established in Belet-Weyne Town of Belet-Weyne District; however these are relatively ineffective primarily due to limited resources and constant internal strife. Besides the riverine and urban, Hiran pastoral and agro pastorals comprise the two main livelihood zones in Hiran region.

The most recent nutrition assessments conducted in 2002 and 2003 in Hiran Region focused on Belet-Weyne District (and covered all livelihood zones including the pastoral, agro pastoral, urban and riverine). Findings from these assessments have indicated a district with persistently critical nutrition situation. Rapid assessments conducted in December 06/07 in 12 riverine villages of Hiran (4 in Belet Weyne, 4 in Bullo Burti and 4 in Jalalaqsi Districts) of children aged 1-5 years indicated levels of 6% or less of the children being at risk of malnutrition (MUAC < 12.5cm). The situation remained of concern with the recent flooding especially along the riverine area with the Deyr 06/07, coupled with an escalation of the insecurity situation in December 2006 in most of the southern regions. The factors together provided a similar critical analysis of the nutrition situation (FSAU Nutrition Update January 2007). However, the Deyr rains also improved the food security condition with increasing body condition of livestock and bumper harvest for the agro pastoral and pastoral population resulting in a down grading of the phase classification from Acute Food and Livelihood Crisis to Chronically Food Insecure. The FSAU Post Deyr'06/07 analysis indicates Hiran Pastoral and Agro pastorals as faced with **Chronic Food Insecurity**.

In order to provide up to date information therefore, between 22nd and 30th March 2007, UNICEF and FSAU in collaboration with IMC and SRCS conducted a nutrition assessment in the Hiran Pastorals and agro pastorals livelihood zones to determine the nutrition situation of children, establish the current factors influencing the nutrition situation and to provide recommendations related to on-going and future interventions to address the problem. A mortality assessment was undertaken concurrently to estimate the retrospective under five and crude mortality for the preceding three months.

Using a standard two-stage random cluster sampling methodology, a total of 897 children aged 6-59 months and measuring 65-109.9 cm were examined. Nutritional status assessment was based on weight and height measurements and detection of oedema, excluding flags. Moreover, information relating to the common childhood diseases, child feeding practices, access to basic health services, safe water, sanitation and other care practices were collected through the household assessment and focus group discussions.

The prevalence of global acute malnutrition in children in this assessment was estimated at **15.6 %** (CI: 11.9-19.3) which indicates a critical nutrition situation (WHO). The under five mortality rate was 0.87 deaths/10000/day, and the crude mortality rate (CMR), **0.22** deaths/10000/day. The CMR indicated an acceptable situation (WHO, Sphere 2004).

Morbidity was high with 47.3% of the children reported to have suffered from at least one communicable childhood illnesses in the preceding two weeks to the assessment. Reported incidences of diarrhoea (20.5%) and ARI (33.2%) may have contributed to the worrying nutrition situation. The high incidences of diarrhoea could be attributed to the sanitation situation given that about 78.8% of the households reportedly sourced their water directly from the river with 67.7% of the assessed population using open bush as the main method of disposal of human waste. This increased the risk of consuming contaminated water and thus exposure to water borne illnesses. In addition health coverage especially Vitamin A supplementation (56.4%) and measles vaccination ((51.5%) were by far below the recommended standard of 95% (Sphere, 2004). Other factors that could have negatively contributed to poor nutrition include poor child feeding practices where children are weaned too early, fed less than the recommended minimum of five times a day.

Some of the factors that could have mitigated the situation include dietary diversity with about 95% of the households reported to have consumed a diversified diet of 4 or more food groups (food groups consumed mode=6) in the previous 24 hours. Additionally, about a quarter of the households had received some formal support mostly in form of free food (21.6%).

The following are recommended to help stabilise the situation and improve the long-term health and nutrition of Hiran Pastoral and Agro pastorals

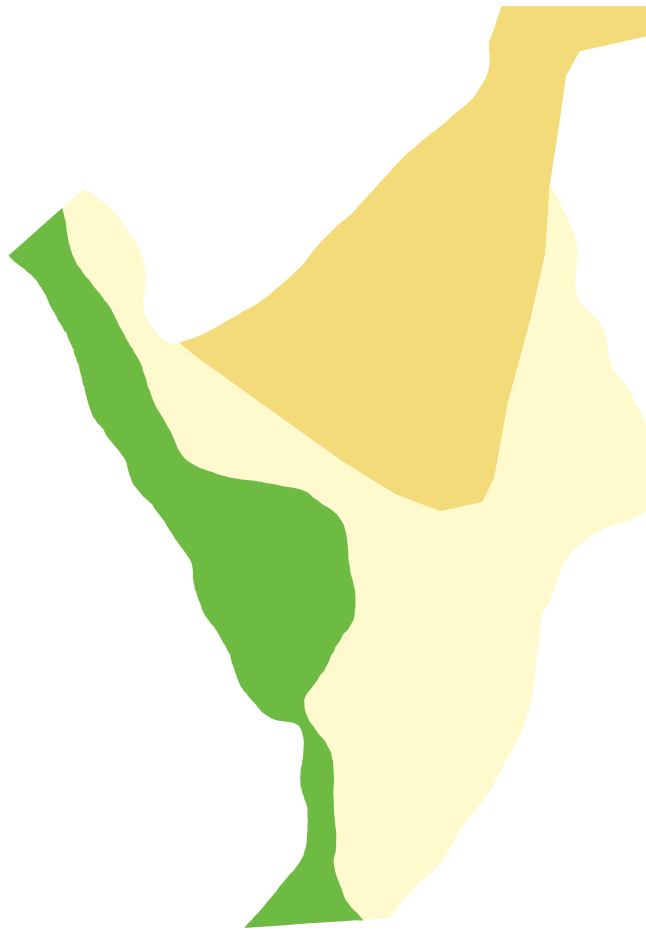
- i). Intensified efforts to rehabilitate malnourished children. This might be achieved through selective feeding programs that are already in place together with increasing the access to food in the short term, for households with the affected children.
- ii). Continued efforts to control acute watery diarrhoea. This includes
 - Chlorination of water points
 - Dissemination at community level, the key messages aimed at reducing the spread, consumption of freshly prepared foods boiled drinking water and hand-washing after visiting the toilet.
- iii). Intensified basic health care services including EPI acceleration (and measles vaccination), Vitamin A supplementation and general access to health care
- iv). Efforts to resolve governance and security related issues in Hiran Region and Somalia as a whole, will increase free movement and access of people and resources into the region and possibly contribute to the establishment of systems that would enhance nutritional security
- v). Interagency participation in the Post Gu'07 Food Security Situation analysis is encouraged for a multisectoral approach on addressing food insecurity in Hiran Region and Somalia in general.

Summary of Findings

Indicator	March 2007	
	No.	%
Under five children screened during the assessment.	897	100
Number of boys in the sample	456	50.8 (CI: 47.5-54.2)
Number of girls in the sample	441	49.2 (CI: 45.8-52.5)
Global acute malnutrition according to Weight for Height Index in Z-Score or presence of oedema (N=897)	140	15.6 % (CI: 11.9-19.3)
Severe acute malnutrition according to Weight for Height Index in Z-Score or presence of oedema (N=897)	16	1.8% (0.7-2.9)
Oedema	0	0
Proportion of children reported to have diarrhoea in the 2 weeks prior to the assessment (N=897).	184	20.5 (CI: 17.9-23.3)
Proportion of children reported to have ARI in the 2 weeks prior to the assessment (N=897).	298	33.2 (30.2-36.4)
Proportion of children reported to have febrile illness or suspected Malaria in the 2 weeks prior to the assessment (N=897)	131	14.6 (CI: 12.4-17.1)
Proportion of children reported with Suspected Measles in the one month prior to the assessment (N=897)	28	3.1 (CI: 2.2-4.8)
Proportion of children supplemented with Vitamin A in last six months prior to the assessment. (N=897)	518	57.7 (CI: 54.4-61.0)
Proportion of children immunised against Measles (N=857)	438	51.1 (CI: 48.1-54.9)
Proportion of children fed five or more times a day	53	19.4 (CI: 14.5-26.1)
Under five mortality rate (deaths/10,000 per day)	0.87 (0.31-1.43)	
Crude mortality rate (deaths/10,000/day)	0.22 (0.02-0.42)	

1 INTRODUCTION

Background information



Food security context

The population in Hiran Region is categorised into four main livelihood groups namely: pure pastoralists, agro-pastoralists, pure farmers/Riverine, and urban dwellers. The pastoralists keep cattle, camels, sheep and goats, while the agro pastoralists are engaged in both livestock and rain fed crop production. The pure farmers are found along the Shabelle river and depend on both rain-fed and irrigated crop production, mainly sorghum, maize and, cowpeas. Cash crops include sesame, onions, tomatoes, green peppers, watermelon, and mangoes. They sell cowpea leaves, sorghum and maize stalks for fodder to augment household income. This group also own a small number of cattle.

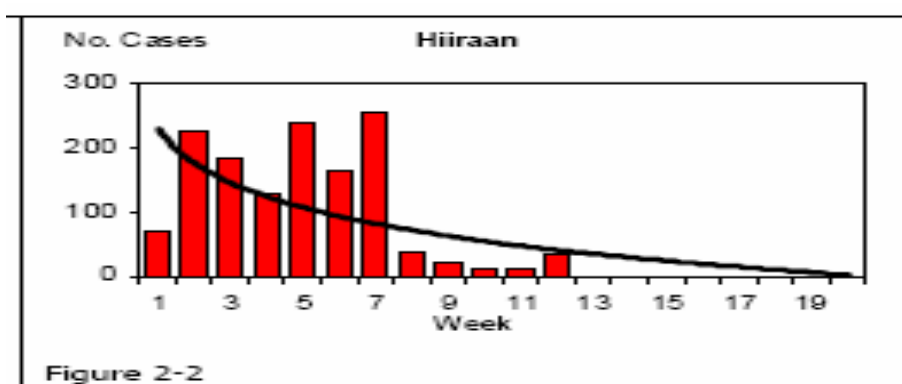
The FSAU Post Deyr 06/07 in Hiran Region Agro-pastoral areas indicated an improvement in the food security and was therefore downgraded from the previous phase of **Acute Food and Livelihood Crisis** to **Chronically Food insecure**. In addition to improvements in livestock conditions, productivity, prices and terms of trade, Deyr '06/'07 rain fed sorghum production in agro-pastoral areas was near average (94% of PWA and 544% of Deyr '05/'06).

Humanitarian Interventions

Humanitarian organizations based in Belet -Weyne town and conducting interventions in parts of Hiran Region include IMC, CARE, FSAU, WHO, UNICEF, DRC and SRCS. UNICEF, WHO, IMC and SRCS supports health related interventions, CARE, undertakes food aid related interventions while DRC supports food security related projects. FSAU undertakes nutrition and food security surveillance.

Acute Watery Diarrhoea Incidence

Hiran Region reported the first case of the current outbreak of Acute Watery Disease in Week 1 of Year 2007. The incidence increased and with it, associated deaths. To-date, a total of 1371 cases have been identified in Hiran Region, and 40 deaths, translating into a Case Fatality Rate (CFR) of 2.92% (WHO AWD Update, May 18th, 2007).



On-going interventions to combat acute watery diarrhoea include chlorination of water, trucking of safer water, health education on appropriate hygiene practices. There is subsequently, a declining trend of cases.

2 ASSESSMENT JUSTIFICATION

The past two assessments conducted in 2002 and 2003 in Belet-Weyne District indicate persistently critical nutrition situation. Moreover the recent flooding and high incidences of acute watery diarrhoea in Hiran Region coupled with escalation of insecurity in December 2006 in most of the southern regions calls for closer monitoring of the nutrition situation in order to guide humanitarian interventions to alleviate human suffering.

Thus, between 22nd March and 30th March 2007, FSAU and UNICEF, in collaboration with IMC, SRCS, SC-UK and CARE conducted an assessment aimed at determining the current nutrition situation in Hiran Pastorals and Agropastorals. A mortality assessment was conducted concurrently to estimate the retrospective under five and crude mortality levels in the preceding three months to the assessment

2.1 Assessment Objectives

1. To determine the level of malnutrition through anthropometric measurements using weight for height for children between 6-59 months or 65-110 cm.
2. To determine the coverage of measles vaccination and vitamin A supplementation in children 6-59 months
3. To establish possible factors contributing to the nutrition situation
4. To estimate under 5 mortality and crude mortality rates in the last 3 months
5. To provide recommendations related to on-going and future interventions based on the findings.

3. METHODOLOGY

3.1 Study Design

This study was both descriptive and analytical in nature. It utilized cross-sectional data collected through a standard household questionnaire as well as a concurrent mortality assessment (see appendices). Additional qualitative data were collected during the study through four focus group discussions and six key informant interviews designed to gain further understanding of the underlying issues influencing the current nutrition situation, and to capture diversity of understanding of the factors influencing nutritional status between population groups. Data collection took place between 22nd and 30th March 2007.

3.2 Sampling procedure

Study population and sampling criteria

For the nutrition assessment, the study population consisted of rural populations in the district and comprised of all children aged 6-59 months (and measuring 65 – 110cm). In order to provide valid estimates of the prevalence of malnutrition in children with a 95% confidence level, a two stage cluster sampling methodology in 911 children was undertaken with 30 children being randomly selected from each of the selected 30 clusters.

With regard to mortality, 900 households, (30 households randomly selected from 30 clusters) were assessed.

3.3 Sampling methodology

A two-stage cluster sampling methodology was used in which a list of villages with population estimates for all villages in Hiran Pastoral and Agropastorals was obtained from the UNDP population estimates for Somalia (2005). A table of cumulative population and attributed numbers was developed, and clusters selected based on population proportional to size. The sampling interval was determined by dividing the total population by 30. The calculated cluster interval was **3712. (See Annex: 1)**. A random number **1462**, selected within the cluster interval was used to determine the location of the first cluster. The next and subsequent clusters were determined by adding the cluster interval to the preceding random number selected. A total of 16 clusters were from Belet-Weyne town and 14 clusters from far off rural villages.

The second stage of sampling was carried out in the cluster to select the first and subsequent households. Each team, directed by assessment guides selected from the community, went to the middle of the cluster assigned and determined a random direction by spinning a pencil. All households along the direction selected to the border of the cluster were counted and assigned numbers on a piece of paper. The assessment guide randomly selected the first household to be visited from among those numbers. Subsequent households were selected on the basis of proximity following a clockwise direction. All eligible children in each household visited were measured and weighed. If a caregiver or child was absent an appointment was made and the household revisited until the child was

examined. The mortality questionnaire was administered in all randomly selected households, including those that did not have an under five.

A total of 897 children were examined for weight for height and, their caregivers interviewed as to whether the children had received Vitamin A or Measles vaccination in the past 6 months, or had suffered from diarrhoea or ARI diseases two weeks prior to the assessment. A total of 406 households responded to the questions on nutrition.

Child age determination

Difficulties were encountered in determining the exact ages of children. Calendars of events were therefore used as proxies to age determination. The nutrition indicator employed the weight for height as interest was in wasting status (acute malnutrition).

3.4 Description of assessment activities

Major Activity	Period
Preparation of tools and methodology	1- 13 March 2007
Identification of enumerators	1- 13 March 2007
Training of enumerators	15 -18 March 2007
Cluster Identification	17 March 2007
Collection of data	22 to 30 March 2007
Data Entry and cleaning	25 March to 5 April 2007
Data Analysis and preliminary report writing	11- 30 April 2007
Preparation of draft report	1- 29 May 2007
Circulation of Draft report	June 8, 2007
Circulation of Final report	June 25th, 2007

Five teams participated in data collection. Each team had two enumerators, one supervisor and one team leader. Enumerators were selected based on their experience with previous nutrition assessment conducted in Hiran Pastoral and Agropastorals. IMC, SRCS, SCF-UK and the Belet-Weyne District Commissioner assisted in the identification of qualified persons. The team leaders were health and nutrition professionals from UNICEF, FSAU and IMC.

3.5 Quality control procedures

A comprehensive training of enumerators and supervisors was conducted and covered: 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, handling of equipment, interview techniques and the general courtesy during the assessment .

Rigorous pre-testing of the questionnaire and equipment was carried out in one of the sections of the town (not selected for data collection). Each team had the opportunity to practise familiarisation in village/cluster entry, exercising 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 appropriate

changes made.

Quality of data was also ensured through; close monitoring of fieldwork by UNICEF, FSAU, IMC staff, cross-checking of completed questionnaires on daily basis, and daily reviews undertaken with the team leaders to address any difficulties encountered. Progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis. Continuous data cleaning after entry in the field made it easy to detect outliers and mistakes in data collection. Accuracy of equipment was also monitored through checks by measuring objects of known weights.

As part of the quality control checks, the Nutrisurvey software was used to review the following checks:

- Standard Deviation which should be between 0.85 and 1.10
- Skewness of WHZ: Skewness characterizes the degree of asymmetry around the mean; positive skewness indicates a long right tail, negative skewness a long left tail.
- Kurtosis of WHZ: Kurtosis characterizes the relative peakedness or flatness compared with the normal distribution, positive kurtosis indicates a relatively peaked distribution, negative kurtosis indicates a relatively flat distribution)

3.6 Variables examined

Age – Only children aged 6-59 months were selected for examination. The age of a child was determined from the mother/caregiver's recall, the under fives card, or from a local events calendar (**See Annex 2**) when the birth date was not stated.

Weight – UNICEF electronic scales were used to weigh children to the nearest 0.1 kg or 100g.

Height – Children were measured barefoot and bare head using height measuring boards graduated to the nearest 0.5cm. Children with height < 85 cm were measured lying, while those equal to or >85 cm were measured standing.

Oedema – Children were examined for the presence of bilateral pedal oedema. The occurrence of pitting as a result of thumb pressure on the foot or leg for 3 seconds was indicative of nutritional oedema.

Diarrhoea – Mothers/caregivers were interviewed regarding any episode of three or more loose, watery stools in a day, within the preceding two weeks.

Acute Respiratory Infections (ARI) – collected by asking the mother/caregiver whether the child had "*oof wareen or wareento*", a local term for pneumonia, two weeks prior to the assessment. This term was validated, by further asking if the child had cough, fever and rapid breathing.

Malaria– collected from interviewing the mother/caregiver whether the child had malaria two weeks prior to the assessment , followed by some probing by the health worker in the team to exclude other infections.

Measles immunisation status – the information was either provided by the mother or recorded from the child's vaccination card.

Measles prevalence– collected from interviewing the mother/caregiver whether the child had measles in one-month period prior to the assessment.

Vitamin A supplementation - the information was collected from interviewing the mother or recorded from the child's vaccination card.

Residential status – In all households visited, the mother/caregiver was asked whether they were originally resident from the village/town, or if they were displaced from elsewhere.

Sex of household head – The mother/caregiver was asked to state the sex of the person who takes decisions regarding welfare of all household members.

Feeding – Introduction of breastfeeding and weaning practices and frequency of feeding children assessed by interviewing mother/caregiver to all children.

Household -was defined as a group of people living together and sharing food from the same pot. Being a polygamous community, unless in exceptional situations, the respondent was the female. (A homestead with three women married to one man was therefore treated as three households, and eligible children from each of these female-headed households given an equal chance of participating in the assessment).

Mortality

The same methodology used in identification of the under fives for the nutrition assessment (i.e. 30 clusters x 30 children) was used for the mortality assessment with the exception that in each of the 30 clusters, 30 households were selected. The team went to the household, assessed all eligible children, and administered the questionnaire on mortality. However, in the absence of under fives, the mortality questionnaire was still administered. The nearest household in the selected direction was then selected both for the under five and mortality assessment. The questionnaire on mortality was administered irrespective of whether or not there was an eligible under five for anthropometric measurements, until a total of 30 households had been covered.

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 assessment households using the formulae below:

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

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

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

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

3.7 Data 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 analysis. 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).

3 ASSESSMENT RESULTS

3.1 Household Characteristics of Study Population

The nutrition assessment sampled a total of 406 households with a mean household size of 6.7 (SD= 2.7) persons. The mean number of the under fives per household was 1.9 (SD=0.9).

Most (99.0%) of the assessed households were resident¹ and the rest of the households internal immigrants as shown in Table 3. One of the non-resident households were from within while and the other three from outside Hiran Region.

Table 3: Household Characteristics

Characteristics	n	%	95% CI
Total number of HHs assessed	406	100	
Household Size	6.7 SD=2.7		
Number of Underfives	2.3 SD=0.9		
Residential status: (N=464)			
Residents	402	99.0	97.3-99.7
Internally displaced	4	1.0	0.3-2.7
Origin (N=4)			
Southern Somalia			
Within Hiran	1	25	
Outside Hiran	3	75	
Duration of Stay (N=4)			
1 month	2	50	
2 months	1	25	
3 months	1	25	
Reason for Migration (N=4)			
Civil insecurity/ fighting	2	50	
Pasture/ water shortage	1	25	
Seasonal/ climatic changes	1	25	

Overall the non residents had stayed in their current locations for a period of less than six months. The main reason for the in-migration was civil Insecurity/fighting (50%), limited access to food/pasture and water.

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

Means of livelihood

When questioned on their livelihoods, the majority of the assessed households reported to be agro pastoral (33.7%), pastoral (25.9%) or urban (21.3%). Sale of animal and products and casual labour were reported to be the main sources of income for the assessed households. Additional information is provided in the table below.

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

Main Livelihood System	N	%	CI (95%)
<i>Livelihoods (N=464)</i>			
Pastoral	105	25.9	21.7-30.5
Agro-pastoral	137	33.7	29.2-38.6
Urban	86	21.3	17.4-25.5
Fishing	1	0.2	0.0-1.6
Agriculture/farming	77	19.0	15.3-23.2
<i>Main Source of Income (N=464)</i>			
Animal and products sales	135	33.3	28.7-3.1
Agriculture/Crops sales	97	23.9	19.9-28.4
Trade	37	9.1	6.6-12.4
Casual labour	128	31.5	27.1-36.3
Salaried/ wage employment	4	1.0	0.3-2.7
Remittances/ gifts/Zakat	5	1.2	0.5-3.0

3.2 Water Access and Quality

Most households draw water from unprotected sources that include unprotected wells (45.6%) and the river (33.0%). Only 21.4 drew water from protected sources (wells and tap water). Table 5 provides more details.

Table 5: Water Access and Quality

Water access and Quality	N	(%)	
<i>Main source of drinking water (N=464):</i>			
Tap/ piped	5	1.2	0.5-3.0
Protected wells	82	20.2	16.5-24.5
unprotected open wells	185	45.6	40.7-50.6
River	134	33.0	28.5-37.8
<i>Distance to nearest water point (N=464):</i>			
≤ 500 meters	156	38.4	33.7-43.4
501m - < 1 km	79	19.5	15.8-23.7
1 – 3 km	69	17.0	13.5-21.1
<3 km	102	25.1	21.0-29.7
<i>Number of clean water containers</i>			
1 - 2 containers	126	31.0	26.6-35.8
3 - 4 containers	120	29.6	25.2-34.3
4 - 5 containers	46	11.3	8.5-14.9
≥ 5 containers	114	28.1	23.8-32.8
<i>Method of water storage:</i>			
Covered containers	307	75.6	71.1-79.7
Open containers	70	17.2	13.8-21.4
Constricted neck	24	5.9	3.9-8.8
(Ashuun)	5	1.2	0.5-3.0

While the water sources do not provide good quality water, over a third of the households (38.6%) were within a distance of ≤ 500 metres to the sources which is below as recommended by Sphere guidelines (2004). Households also reported to have insufficient clean water storage and collecting containers. This implies that they require frequent trips to fetch water. About a third (31.0%) of the households reported to 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. Nearly 75.6% of the households stored water in covered containers, while a significant number of the households (17.2%) stored water in open posing the risks of water contamination at the point of storage.

3.3 Sanitation and Hygiene Practices

Most (67.7%) of the assessed households had no access to sanitation facilities and used the bush. Traditional pit latrines (15.0%) and open pits (12.3%) were also commonly used. Unfortunately, about 28.2% of the sanitary facilities were located within 30 meters from water sources, posing a risk to contamination. International guidelines recommend a minimum of 30 meter distance (Sphere, 2004). Table 6 provides additional information.

Table 6: Distribution of households by sanitation & Hygiene

Sanitation and hygiene	n	%	(CI)
<i>Access to Sanitation facility (N=406)</i>			
No latrine at all (Bush)	275	67.7	62.9-72.2
Traditional pit latrine	61	15.0	11.8-19.0
VIP latrines	14	3.4	2.0-5.9
Flush Toilets	6	1.5	0.6-3.4
Open pit	50	12.3	9.4-16.0
<i>Distance from latrine to water source (n=131)</i>			
< 30meters	37	28.2	20.7-36.8
≥ 30 meters	34	71.8	63.2-79.3
<i>Type of washing agents used (N=406)</i>			
Soap	373	91.9	88.7-94.3
None	15	3.7	2.2-6.2
Ash	9	2.2	1.1-4.3
Shampoo	5	1.2	0.5-3.0
Plant extract	4	1.0	0.3-2.7
<i>Method of Food Storage (N=406)</i>			
Don't store	156	38.4	33.7-43.4
Put in covered containers	133	32.8	28.3-37.6
Put in pots beside fire	99	24.4	20.3-28.9
Suspended in hooks/ropes	18	4.4	2.7-7.0

The assessed households reportedly use some form of washing agents, mostly soap (91.9%). Other washing detergents used are shown in Table 6. This is a positive indication of better hygiene standards. About 32.8% of the households assessed store food in covered containers or in pots beside the fireplace (24.4%). The use of suspending pots with hooks and ropes is minimal though this is recognized to be a good practice that protect against external contaminants.

3.4 Health Seeking Behaviour

About 47.3% of all the children were reported to have fallen sick in the two weeks preceding the assessment. 42.2% of these children obtained medical assistance from private clinics/pharmacies or the public health facility (18.9%). Medical assistance however was not sought for about 25.2% of the sick children. Additional information is provided in the Table 7 below.

Table 7: Health seeking behaviour (N=897)

	n	%	(CI)
<i>Child fell sick? (n=897)</i>	424	47.3	44.0-55.0
Yes	473	52.7	49.4-56.0
No			
<i>Where assistance was sought (N=424)</i>			
	179	42.2	37.5-47.1
Private clinic/ pharmacy	33	7.8	5.5-10.9
Traditional healer	107	25.2	21.2-29.7
No assistance sought	80	18.9	15.3-23.0
Public health facility	25	5.9	3.9-8.9
Own medication			

4.5 Formal and informal support

Table 8: Formal and informal support

	n	%	(CI)
<i>Informal support (N = 406)</i>			
Received:			
No	383	94.3	91.5-96.3
Yes	23	5.7	3.7-8.5
Type of support (N=23)			
Zakat from the better off	2	0.5	0.1-2.0
Remittances from within	4	1.0	0.3-2.7
Remittances from abroad	8	2.0	0.9-4.0
Loans	6	1.5	0.6-3.4
Gifts	3	0.7	0.2-2.3
<i>Formal support (N = 406)</i>			
Received:			
Yes	141	34.7	30.1-39.6
No	265	65.3	60.4-69.9
Type of support			
Food aid	132	32.5	28.0-37.3
Water Subsidy	0	0	0
Vet Care	0	0	0
Free Cash	1		
Cash For Work	6	1.5	0.6-3.4
Food for Work	2	0.5	0.1-2.0

About 5.7% of the assessed households reported having received informal support in the three months prior to assessment. This support was mostly in the form of remittances from abroad (2.0%) or loans (1.5%). Other forms of support received included zakat (0.5%), remittances from within (1.0%) and gifts (0.7%) (Refer to Table 8).

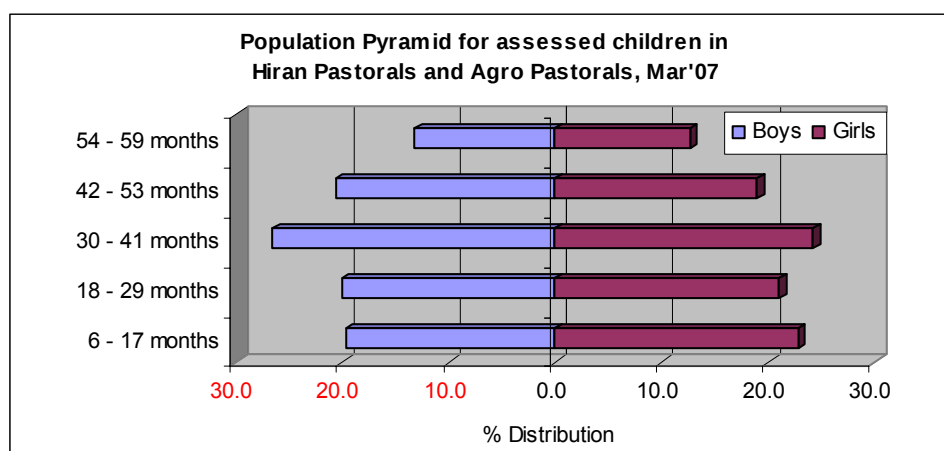
Formal support was received in 34.7% of the assessed households and included food aid (32.5%), cash for work (1.5%) and food for work (0.5%). See Table 8.

4.6 Characteristics of assessed children

A total of 897 children from 406 households were assessed of whom 50.8% were boys and 49.2% were girls. The ratio of boys to girls was 1:1 which represents an un-biased sample. Each age group as shown in table 9 and the population pyramid below, represented between 19.0% and 24.3%, with, as expected, those over 54 months having the lowest representation (12.7%).

Table 9: Distribution of children according to age and sex

Age	Boys		Girls			Total	Ratio Boys: Girls
	n	%	n	%	n	%	
6-17 months	90	19.7 16.2-23.8	101	22.9	191	21.3	0.9:1
18-29 months	91	20.0 16.4-24.0	93	21.1 17.4-25.3	184	20.5	1:1
30-41 months	121	26.5 22.6-30.9	107	24.3 20.4-28.6	228	25.4	1:1.3
42-53 months	94	20.6 17.1-24.7	84	19.0 15.6-23.1	178	19.8	1.1:1
54-59 months	60	13.2 10.3-16.7	56	12.7 9.8-16.3	116	12.9	1:1.1
Total	456	50.8 47.5-54.2	441	49.2 45.8-52.5	897		1:1



4.7 Nutritional status of assessed children using anthropometry

The global acute malnutrition using WFH Z score (<-2 z-scores or oedema) was **15.6 %** (CI: 11.9-19.3) while severe acute malnutrition (<-3 z-score or oedema) **1.8%** (0.7-2.9). Oedema was not reported.

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

Malnutrition Rates	No	Proportion
Global Acute Malnutrition (<-2 Z score or oedema)	140	15.6 % (CI: 11.9-19.3)
Severe Acute Malnutrition (<-3 Z score or oedema)	16	1.8% (CI: 0.7-2.9)
Oedema	0	0

Distribution of the weight-for-height scores (mean= -1.07 median= -1.13, SD=1.14) was skewed towards the left depicting a poorer nutrition situation according to international (See chart).

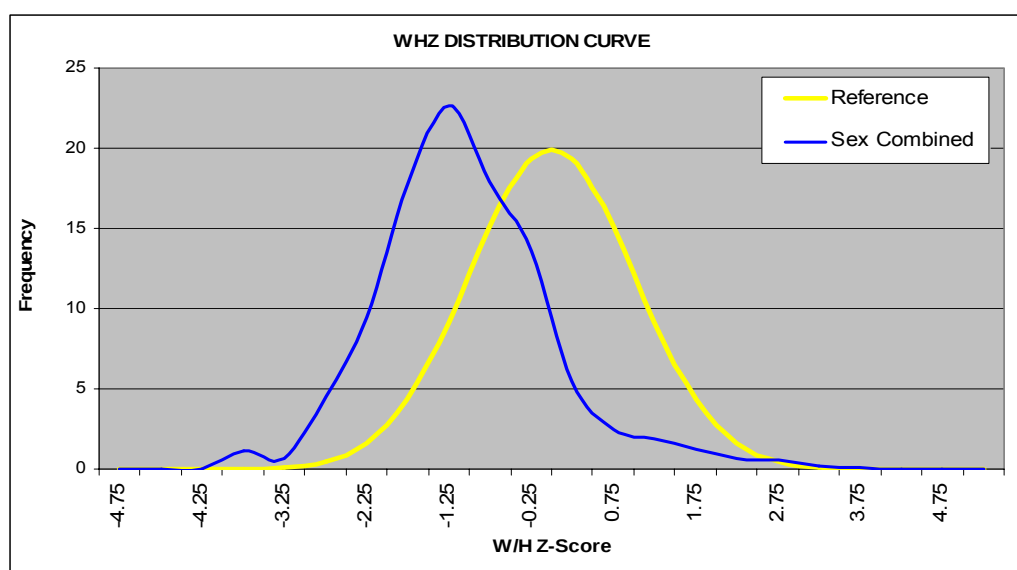


Table 11: Distribution of children by nutritional status (WHZ-score or oedema) and child sex

Indicator	Boys		Girls		Total	
	N	CI %	N	CI %	N	CI %
Global Acute Malnutrition (WHZ <-2 or Oedema)	71	15.6 12.4-19.3	69	15.6 12.5-19.5	140	15.6 % (CI: 11.9-19.3)
SAM (WHZ <-3 or Oedema)	8	1.75 0.3-3.3	8	1.81 0.4-3.2	16	1.8% (CI: 0.7-2.9)
Median	-1.22			-1.01		-1.13
Mean	-1.17	-1.27- -1.07	0.97	-1.08- -0.86	-1.07	-1.15- -1.0
Standard Deviation (SD)		1.03		1.21		1.14

About 15.6% of boys and 15.6% of girls were acutely malnourished. However, there was no statistical difference between the malnourished boys and girls ($p \geq 0.5$).

Age categories

A total of 375 (41.8%) children were aged below 30 months while 58.2% (N=522) were in the 30-59 months age category. 14.1% of the 6-29 age group were malnourished compared to 16.7% of the older counterparts. Cross tabulation between age category (6-29 and 30-50 months) with acute malnutrition indicated no statistical significance ($p=30$).

Weight for Height % of the Median

The global acute malnutrition among children aged 6 – 59 months using weight for height <80% of median or presence of oedema was 11.1% (CI: 9.2-13.4), while severe acute malnutrition <70% of median or presence of oedema was 1.8% (CI: 1.1 – 2.9%). Table 13 provides the breakdown.

Table 13: Malnutrition prevalence using WFH percentage of median categories

	Boys		Girls		Total	
	N	%	N	%	N	%
Global Acute Malnutrition (WHM<80%)	71	10.3 7.7-13.6	53	12.0 9.2-15.5	100	11.1 9.2-13.4
Severe Acute Malnutrition (WHM<70%)	7	1.5 0.7-3.3	9	2.0 10.-4.0	16	1.8 1.1-2.9

Chronic Malnutrition

The **Total chronic malnutrition rate (Stunting)** based on Height for age, **HAZ<-2** was **21.2% (CI: 18.6-24.0)**, with **severe stunting level of 7.9% (CI: 6.3-9.9)**. This highlights a poor situation (WHO classification).

	Indicator	Boys		Girls		Total	
		n	CI %	n	CI %	n	CI %
Chronic Malnutrition/ Stunting	Severely Stunted (HAZ<-3)	87	8.1 5.9-11.1	37	7.7 10.7	71	7.9 6.3-9.9
	Total Stunted (HAZ<-2)	104	22.8	86	19.5	190	21.2 18.6-24.0

Underweight

The **Total underweight rate** based on weight for age, **WAZ<-2** was **31.2% (CI: 28.2-34.4)**, with 7.5% (CI: 5.9-9.4) being severely stunted with WAZ < -3. Based on the WHO classification, underweight levels of $\geq 30\%$ reflect a critical situation. Hence the current situation is **critical**.

	Indicator	Boys		Girls		Total	
		n	CI %	n	CI %	n	CI %
Underweight	Severe (WAZ<-3)	35	7.7 5.5-10.0	32	7.3 5.110.2	67	7.5 5.9-9.4
	Total (WAZ<-2)	154	33.8 29.5-38.3	126	28.6 24.4-33.1	280	31.2 (28.2-34.4)

Using mid upper arm circumference (MUAC) measurements for children aged 12-59 months, a total of 5.8% (CI: 4.4-7.6) of the children were malnourished (MUAC<12.5 cm or oedema). About 0.8% (CI: 0.3-1.7) were severely malnourished (MUAC<11.0 cm or oedema) while 22.3% (CI: 19.6-25.2) were at risk (MUAC 12.5-<13.5 cm).

Table 14: Nutrition status of Children (12-59 months) by MUAC, N=836

MUAC Indicator	Boys		Girls		Total	
	n	CI %	n	CI %	n	CI %
Severe (MUAC<11.0CM)	1	0.2 (0.0-1.4)	6	1.4 (0.6-3.1)	7	0.8 (0.3-1.7)
Moderate (11.0 ≤ MUAC<12.5CM)	23	5.0 (3.3-7.6)	22	5.0 (3.2-7.6)	45	5.0 (3.7-6.7)
GAM (MUAC <12.5CM)	24	5.3 (3.5-7.8)	28	6.4 (3.8-10.7)	52	5.8 (4.4-7.6)
At Risk (12.5≤ MUAC<13.5CM)	97	21.3(17.7-25.4)	103	23.4 (19.5-27.6)	200	22.3 (19.6-25.2)

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

About 51.4% of the assessed children were reported to have suffered from one or more childhood diseases in the preceding two weeks prior to the assessment. This included ARI (33.2%), diarrhoea (20.5%) and febrile illness (14.6%). The incidence of suspected measles among children aged 9-59 months one month prior to the assessment was 3.3%.

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

	N	(%)
Age group: 6-24 months	35	25
25-59 months	105	75
<i>Morbidity patterns</i>		
<i>Illness</i>		
Yes	72	51.4
No	68	48.6
<i>ARI</i>		
Yes	298	33.2
No	599	66.8
<i>Diarrhoea:</i>		
Yes	184	20.5
No	713	79.5
<i>Suspected Malaria/febrile illness:</i>		
Yes	131	14.6
No	766	85.4
<i>Measles:</i>		
Yes	28	3.3
No	823	96.7
<i>Health programmes</i>		
<i>Vitamin A Supplement:</i>		
Yes	79	56.4
No	61	43.6
<i>Dietary & feeding patterns</i>		
<i>Breastfeeding (N=274):</i> Yes	13	37.1
No	22	62.9
<i>Dietary diversity</i>		
≤ 3 food groups	7	5
≥ 4 food groups	133	95

Measles vaccination coverage for eligible children (9-59 months old) was estimated at 51.5%. Most (87.2%) of the children aged 6-59 months had received at least a dose of polio vaccine. About 57.7% of the assessed children had received Vitamin A supplementation in the 6 months prior to the assessment. Measles immunization coverage and vitamin A supplementation was relatively low.

4.9 Feeding practices

About 54.7%) of the children aged 6-24 months were not breastfeeding at the time of the assessment. This indicates that most children are breastfed for less than 24 months. More than half (63.7%) of the children who were breastfeeding at the time of assessment was breastfed on demand as recommended. About two-third of the children (66.6%) had stopped breastfeeding before twelve months of age, while 87.9% had stopped before eighteen months of age.

Table 16: Children feeding practices

Characteristic	N	%	CI
Children aged 6-24 Months	274	30.5	27.6-33.7
Proportion Breast feeding			
Yes	124	45.3	39.3-51.4
No	150	54.7	48.6-60.7
Breast feeding freq (n=124)			
<3 times	4	3.2	0.9-8.1
3-6 times	41	33.1	24.9-42.1
On demand	79	63.7	54.6-72.2
Breast feeding duration (n=50)			
<6 Months	47	31.3	24.0-39.4
6-11 Months	53	35.3	27.7-43.5
12-18 Months	32	21.3	15.1-28.8
>18 Months	3	2.0	0.4-5.7
Never breastfed	15	10.0	5.7-16
Compl. Food Intr. (n=274)			
0-3 Months	177	64.6	58.6-70.3
4-5 Months	52	19.0	14.5-24.1
6 Months	38	13.9	10.0-18.5
≥7 Months	7	2.6	0.8-6.7
Freq of compl. Feeding (n=274)			
Once	14	5.1	2.8-8.4
Twice	88	32.1	26.6-38.0
3-4 times	119	43.4	37.5-49.5
≥ 5 times	53	19.4	14.5-26.1

Findings indicate that only about 13.9% of children aged 6-24 months were introduced to non-breast milk at the recommended age of six months (Facts for Life 2002) with about 64.6% of the children introduced to foods other than breast milk early in life 0-3 months. Table 16 provides additional details.

Children were mainly fed on porridge diets with the majority of them fed two to three times in a day (75.5%). Only 19.4% were fed at the recommended frequency of 5 or more times (Facts for Life, 2002), which suggests suboptimal feeding practices for children, while 5.4% of the children were fed only once.

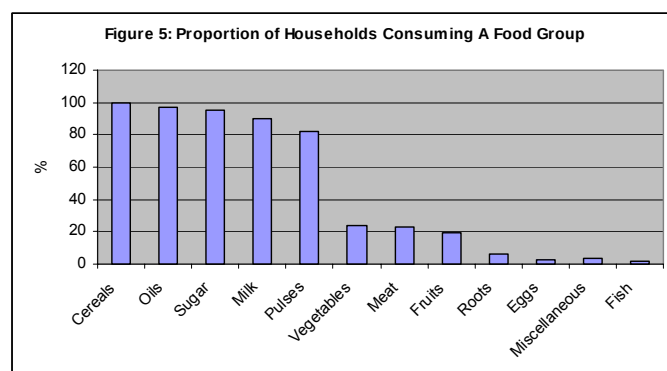
4.11 Dietary Diversity

Table 17: Distribution of dietary diversity among households

Variable	n	%	CI
Type of foods			
Cereals	405	99.8	98.4-100
Meat	94	23.2	19.2-27.6
Eggs	10	2.5	1.3-4.6
Roots	24	5.9	3.9-8.8
Vegetables	95	23.4	19.4-27.9
Fruits	79	19.5	15.8-23.7
Pulses	334	82.3	78.1-85.8
Milk	364	89.7	86.2-92.4
Oils	393	96.8	94.4-98.2
Sugar	387	95.3	92.7-97.1
Fish	6	1.5	0.6-3.4
Miscellaneous	13	3.2	1.8-5.6
Number of food groups			
Three	20	4.9	3.1-7.6
Four	46	11.3	8.5-14.9
Five	201	49.5	44.5-54.5
Six	55	13.5	10.4-17.4
Seven	41	10.1	7.4-13.6
Eight	30	7.4	5.1-10.5
Nine	6	1.5	0.6-3.4
Ten	2	0.5	0.1-2.0
Mean = 5.4			
Mode = 5			
Median = 5			
Dietary diversity			
≤ 3 food groups	25	6.2	4.1-9.1
≥ 4 food groups	381	93.8	90.9-95.9
HDDS			
Main source of food			
Purchasing	672	74.9	71.9-77.7
Own production	110	12.3	10.2-14.6
Food gifts	3	0.3	0.1-1.1
Borrowing	31	3.5	2.4-4.9
Food Aid	63	7.0	5.5-8.9

As shown on table 17, the majority of the households (93.8%) had consumed four or more food groups in the previous 24 hours. The mean number of food groups consumed was 5.4. Most of the households (74.9%) accessed food through purchase. Own production (12.3%) and food aid (7.0%) were also significant sources of food as indicated in table 17. As shown on Table 17, most households (93.8%) consumed a diverse diet comprising of four or more food groups within 24 hours prior to the assessment.

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 (95.3%), oil (96.8), milk mostly with tea (89.7%) and pulses (82.3%). The food groups that were consumed the least were: meats (23.2%), vegetables (23.4%), fruit (19.9%), roots (5.9%), eggs (2.5%) and fish (1.5%).



4.13 Relationship between malnutrition and other factors

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

<i>Exposure variable</i>	<i>N</i>	<i>(%)</i>	<i>Crude RR</i>	<i>95% CI</i>	<i>p-value</i>
<i>Age group</i> 6-24 months 25-59 months	35 105	25 75	0.76	0.53-1.08	0.15
<i>Morbidity patterns</i>					
<i>Illness</i> Yes No	72 68	51.4 48.6	1.18	0.87-1.60	0.33
<i>Health programmes</i>					
<i>Vitamin A Supplement:</i> Yes No	79 61	56.4 43.6	0.95	0.70-1.29	0.80
<i>Dietary & feeding patterns</i>					
<i>Breastfeeding (N=274)</i> Yes No	13 22	37.1 62.9	0.71	0.38-1.36	0.39
<i>Dietary diversity</i> ≤ 3 food groups ≥ 4 food groups	7 133	5 95	0.89	0.4-1.8	0.90

Factors such as child sex, age, morbidity, and health programme coverage, breastfeeding and dietary diversity did not show any significant statistical association with malnutrition ($p \geq 0.05$).

4.13 Mortality rates

A total of 444 households were assessed 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:

Mortality rates for children aged 0-59 months, i.e. Under-five mortality rate (U5MR)

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

* 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 assessed households	= 1280
Number of under fives who joined the households	= 10
Number of under fives who left the households	= 6
Number of births	= 26
Number of under five deaths	= 10

U5MR (deaths /10,000 children per day) is **0.87(CI: 0.31-1.43)**.

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

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

Total population in assessed households	= 5060
Total people who joined the households	= 0
Total people who left the households	= 50
Total number of births	= 26
Total number of deaths in the households	= 10

CMR as deaths per 10,000 persons per day is **0.22 (CI: 0.02-0.42)**

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

4. DISCUSSION AND CONCLUSION

The assessment results indicate a Global Acute Malnutrition (Weight-for-Height <-2 Z score or oedema) of **15.6 % (CI: 11.9-19.3)** and Severe acute malnutrition of **1.8% (0.7-2.9)**. This indicates a critical situation². Findings indicate the under five mortality rate of **0.87** deaths/10000/day (CI: 0.31-1.43) and crude mortality rate of **0.22** deaths/10000/day (CI: 0.02-0.42). These levels are categorized as acceptable³. The most recent nutrition assessments conducted in 2002 and 2003 in Hiran Region focused on Belet-Weyne District (and covered all livelihood zones including the pastoral, agro pastoral) have indicated a persistently critical nutrition situation.

Additional findings indicate generally sub-optimal infant and feeding practices (based on Facts for Life 2002) with only 45.3% of the assessed children aged 6-24 months currently breastfeeding; only 13.9% introduced to complementary feeding at the recommended age of six months with the majority (83.6%) having been introduced prior to six months. Further, only 19.4% of the assessed children who had been introduced to complementary feeding were fed the recommended five times a day, with majority fed two to three times a day. Sub-optimal infant and child feeding practices may have contributed to the inadequate dietary intake in the short and medium term and led to the worrying levels of acute malnutrition. Nevertheless, dietary diversity in the assessed households was generally high with 93.8% reportedly consuming a diverse diet of four or more food groups. The most commonly consumed foods were cereals, oils, sugar, milk and pulses. This may have mitigated the nutrition situation.

Assessment findings further reveal high levels of reported communicable child illness in the preceding two weeks to the assessment. About 47.3% of the assessed children were reported to have suffered from one or more childhood diseases in the preceding two weeks to the assessment: ARI (33.2%), diarrhoea (20.5%) and febrile illness (14.6%). The reported incidence of suspected measles (3.3%) was high and attributed to limited access to immunization and health care services. Limited access to health care services is a challenge that may have hindered households from seeking medical assistance for 25.5% of the reportedly sick children, contributing to deterioration of the nutrition situation.

Access to safe water for drinking is poor with 78.6% reported to access water from unprotected sources (river and open wells). Additionally, most of the households did not have access to sanitation facilities and used the bush (67.7%) for fecal disposal. This practice may have contributed to increased contamination of water sources especially during this rainy season and led to the high levels of diarrhoeal diseases, contributing further to the critical levels of acute malnutrition.

The FSAU post Deyr'06/07 analysis categorized the Hiran pastoral and agro-pastorals as **chronically food insecure**, the best case scenario observed in the region and Somalia in general, compared to the previous season. There was plenty of pasture for grazing and livestock were generally in good body condition.

²WHO classification

³ WHO and Sphere 2004

⁴However, the threat of the Rift valley fever and the unknown camel disease contributed to reduced consumption and/or demand for livestock and livestock products within and outside Hiran Region, leading to reduced income for the pastorals and agro-pastorals. This is in addition to the security situation of the region which has worsened day after day, and been unpredictable, limiting flow of food and non-food items from/to Mogadishu markets (FSAU February 07 field reports).

The on-going FSAU Post'Gu/07 analysis will highlight further on the situation.

6.0 RECOMMENDATIONS

- i). Intensified efforts to rehabilitate malnourished children. This might be achieved through selective feeding programs that are already in place together with increasing the access to food in the short term, for households with the affected children.
- ii). Continued efforts to control acute watery diarrhoea. This includes
 - Chlorination of water points
 - Dissemination at community level, the key messages aimed at reducing the spread, consumption of freshly prepared foods boiled drinking water and hand-washing after visiting the toilet.
- iii). Intensified basic health care services including EPI acceleration (and measles vaccination), Vitamin A supplementation and general access to health care
- iv). Efforts to resolve governance and security related issues in Hiran Region and Somalia as a whole, will increase free movement and access of people and resources into the region and possibly contribute to the establishment of systems that would enhance nutritional security
- v). Interagency participation in the Post Gu'07 Food Security Situation analysis is encouraged for a multisectoral approach on addressing food insecurity in Hiran Region and Somalia in general.

⁴ FSAU Field Report for Feb 2007

6. APPENDICES

Appendix 1: Sampling frame for Hiran Pastoral and Agropastorals

Sn	District	Livelihood	Settlement Name	Maximum Population Estimates	Cumulative Population	Clusters
1	Beletwein	Agropastoral	Beer Xano	720	720	
2	Beletwein	Agropastoral	Faaf Gumare	900	1620	1
3	Beletwein	Agropastoral	Xuj	1080	2700	
4	Beletwein	Agropastoral	Bardere	540	3240	
5	Beletwein	Agropastoral	Tre Cento (Seddex Boqol)	1500	4740	
6	Beletwein	Agropastoral	Nur Fanah	540	5280	2
7	Beletwein	Pastoral	Ceel LahCeelay	780	6060	
8	Beletwein	Agropastoral	Horjoog	180	6240	
9	Beletwein	Agropastoral	Bur Fiiq	240	6480	
10	Beletwein	Agropastoral	Morodiile	360	6840	
11	Beletwein	Agropastoral	Caag Sibiri	600	7440	
12	Beletwein	Pastoral	Kirkiri	1380	8820	
13	Beletwein	Agropastoral	Farlibah	2160	10980	3
14	Beletwein	Pastoral	Baadikeen	480	11460	
15	Beletwein	Pastoral	Doonyale	480	11940	
16	Beletwein	Pastoral	CeCeel Idad	600	12540	
17	Beletwein	Agropastoral	Buq Koosaar	1530	14070	4
18	Beletwein	Pastoral	CeCeel Dhere	1080	15150	
19	Beletwein	Agropastoral	Doon Maleyko	300	15450	
20	Beletwein	Agropastoral	Doon Dhere	480	15930	
21	Beletwein	Pastoral	CeCeel Cali	1620	17550	5
22	Beletwein	Agropastoral	Caag Xoog	600	18150	
23	Beletwein	Agropastoral	Wabxo	990	19140	
24	Beletwein	Pastoral	Haraale	2100	21240	6
25	Beletwein	Agropastoral	CeCeel Gaal	1980	23220	
26	Beletwein	Agropastoral	Hiiran	1200	24420	7
27	Beletwein	Agropastoral	Tuulo Hiran	1200	25620	
28	Beletwein	Agropastoral	Jawil	720	26340	
29	Beletwein	Pastoral	Baar	240	26580	
30	Beletwein	Agropastoral	Luuq JeCeelow	390	26970	

31	Beletwein	Agropastoral	Ilka code	360	27330	
32	Beletwein	Agropastoral	Kalabeyr	390	27720	
33	Beletwein	Pastoral	Baar- guduud	1000	28720	8
35	Buloburti	Agropastoral	Buqda	2580	31300	
36	Buloburti	Pastoral	Mukalye	1980	33280	9
37	Buloburti	Pastoral	Dharyow	1020	34300	
38	Buloburti	Agropastoral	Showli	252	34552	
39	Buloburti	Pastoral	Biyonef	540	35092	
40	Buloburti	Pastoral	CCeel Ware	1230	36322	10
41	Buloburti	Agropastoral	Gulalamay	180	36502	
42	Buloburti	Agropastoral	Masajidley	240	36742	
43	Buloburti	Agropastoral	Ceymooy	390	37132	
44	Buloburti	Agropastoral	Ceymoy	390	37522	
45	Buloburti	Pastoral	Yasooman	720	38242	
46	Buloburti	Agropastoral	Cagmarer	180	38422	
47	Buloburti	Agropastoral	Dabayodle	960	39382	11
48	Buloburti	Agropastoral	Kusow	270	39652	
49	Buloburti	Agropastoral	Labi Gadud	960	40612	
50	Buloburti	Agropastoral	Halgan	2820	43432	12
51	Buloburti	Agropastoral	CeCeel Dhere	780	44212	
52	Buloburti	Agropastoral	Harar Kabaray	960	45172	
53	Buloburti	riverine	Farqalal	1260	46432	13
54	Buloburti	Agropastoral	Ceelmitur	1740	48172	
55	Buloburti	Agropastoral	Garashka	360	48532	
56	Buloburti	Agropastoral	Berdiga	540	49072	
57	Buloburti	Agropastoral	Hagar	360	49432	
58	Buloburti	Pastoral	Sagal Ged	2340	51772	14
59	Buloburti	Pastoral	Ceel-Timiro	800	52572	
60	Buloburti	Agropastoral	Abooreey	2500	55072	15
61	Buloburti	Agropastoral	Beeroyabaal	720	55792	
62	Buloburti	Agropastoral	Buqcagable	560	56352	
63	Buloburti	Agropastoral	Habasweyn	420	56772	
64	Buloburti	Agropastoral	Kabxanloow	280	57052	
65	Buloburti	Agropastoral	Showligga	270	57322	

66	Buloburti	Agropastoral	C/Xaaseey	270	57592	
68	Jalalaqsi	Pastoral	Shaw	1500	59092	16
69	Jalalaqsi	Pastoral	Raso	1200	60292	
70	Jalalaqsi	Pastoral	Qob Yaxaas	990	61282	
71	Jalalaqsi	Pastoral	CeCeeldheem	600	61882	17
72	Jalalaqsi	Agropastoral	Dheen	600	62482	
73	Jalalaqsi	Agropastoral	Ban Eyle	240	62722	
74	Jalalaqsi	Agropastoral	Buur Weyn	1530	64252	
75	Jalalaqsi	Agropastoral	Garas Weyne	480	64732	
76	Jalalaqsi	Agropastoral	Jameeco Alindi	120	64852	
77	Jalalaqsi	Agropastoral	Jimbley	180	65032	
78	Jalalaqsi	Agropastoral	Raaxoole	240	65272	
79	Jalalaqsi	Agropastoral	Jaciir	360	65632	18
80	Jalalaqsi	Agropastoral	Bilaal	900	66532	
81	Jalalaqsi	Agropastoral	Biyo Kulul	420	66952	
82	Jalalaqsi	Agropastoral	Fiidow	780	67732	
83	Jalalaqsi	Agropastoral	Damal	240	67972	
84	Jalalaqsi	Agropastoral	Quracleey	780	68752	
85	Jalalaqsi	Agropastoral	Buulo Madul	390	69142	
86	Jalalaqsi	Agropastoral	Qurac Jafle	540	69682	19
87	Jalalaqsi	Pastoral	Jaro	240	69922	
88	Jalalaqsi	Agropastoral	Buulo Weyne	720	70642	
89	Jalalaqsi	Pastoral	Qoryaale	690	71332	
90	Jalalaqsi	Agropastoral	Xuduley	330	71662	
91	Jalalaqsi	Agropastoral	Buulo Sheikh Cilmi	360	72022	
92	Jalalaqsi	Agropastoral	Daba Yare	850	72872	
93	Jalalaqsi	agropastoral	Tugaarta	390	73262	20
94	Jalalaqsi	Agropastoral	Sariiro	375	73637	
95	Jalalaqsi	Agropastoral	Tuugaareey	360	73997	
96	Jalalaqsi	Pastoral	Ceel ciid	300	74297	
97	Maxaas	Pastoral	Maxaas	4542	78839	21
98	Maxaas	Pastoral	Tedan	420	79259	
99	Maxaas	Pastoral	Suubo	600	79859	
100	Maxaas	Pastoral	Moqokori	5400	85259	22, 23

101	Maxaas	Pastoral	CCeel Qoxle	300	85559	
102	Maxaas	Pastoral	Habiino	300	85859	
103	Maxaas	Pastoral	Yasooman	240	86099	
104	Maxaas	Pastoral	Gumarre	420	86519	
105	Maxaas	Pastoral	Hawo Gadid	210	86729	
106	Maxaas	Pastoral	Hees	300	87029	
107	Matabaan	Pastoral	Matabaan Town	5598	92627	24, 25
108	Matabaan	Pastoral	Ilgule	800	93427	
109	Matabaan	Pastoral	Yibirsuge	300	93727	
110	Matabaan	Pastoral	Ceelosoro	480	94207	
111	Matabaan	Pastoral	Daba-Yod	490	94697	
112	Matabaan	Pastoral	Daga-Yar	600	95297	26
113	Matabaan	Pastoral	Qod Qod	6000	101297	26, 27
114	Matabaan	Pastoral	Lebi-Hiran	1200	102497	
115	Matabaan	Pastoral	Ceelmi-Jowle	180	102677	
116	Matabaan	Pastoral	Dogobley	180	102857	
117	Matabaan	Pastoral	Hajo-Hababis	300	103157	28
118	Matabaan	Pastoral	Tuulo Cano	300	103457	
119	Matabaan	Pastoral	Geri Jir	390	103847	
120	Matabaan	Pastoral	Dugile	330	104177	
121	Matabaan	Pastoral	Ceel Dinle	270	104447	
122	Matabaan	Pastoral	Sanan-Weyne	240	104687	
123	Matabaan	Pastoral	Goofado	480	105167	
124	Matabaan	Pastoral	Kaneecale	750	105917	
125	Matabaan	Pastoral	Gaheyre	270	106187	
126	Matabaan	Pastoral	Lamo	540	106727	
127	Matabaan	Pastoral	Ber Gadiid	3000	109727	29
128	Matabaan	Pastoral	Omad	270	109997	
129	Matabaan	Pastoral	Xawadley	900	110897	30
130	Matabaan	Pastoral	Laandaer	275	111172	
131	Matabaan	Pastoral	Waniiqle	240	111412	
132	Matabaan	Pastoral	kariyefarur	300	111712	
133	Matabaan	Pastoral	Bilcile	250	111962	
134	Matabaan	Pastoral	mareere	420	112382	

135	Matabaan	Pastoral	Cincle	300	112682	
136	Matabaan	Pastoral	CeCeel dhiinla weyne	180	112862	
				Cluster Interval	3762	
				Random number	1462	

Appendix 3: Standard Nutrition Assessment Questionnaire

HIRAN RIVERINE/PASTORAL/AGROPASTORAL NUTRITION ASSESSMENT

QUESTIONNAIRE

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

Name of Village/Town _____ Household Number _____ Name of the Respondent _____

Q1-14 Characteristics of Household

Q1 Household size⁵ _____

Q2 Number of < 5 years (U5s)? _____ Number of children aged 24-71 months (2 - <6 years): _____

Q3 Household residence status: 1= Resident⁶ 2=internally displaced⁷ 3=Returnees⁸ 4=Internal immigrant⁹ 5=Destitute 6=Other (specify) _____

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

Q4 Place of origin (categorize during questionnaire design) Within Hiran region 2= Outside Hiran (within Somalia) 3= Ethiopia 4= other (specify) _____

Q5 Duration of stay _____

Q6 Reason for movement: 1= Civil insecurity/ fighting 2=Seeking jobs 3= Food shortage 4= Food/pasture/water shortage 5= Seasonal/climatic 6= Others; specify _____

Q7 What is the main livelihood systems used by this household? 1= Pastoral 2=Agro- pastoral 3=Urban 4=Fisheries 5=Agriculture

Q8 Main Source of income? 1= Animal & animal product sales 2= Crop sales 3= Petty trade 4= Casual labor 5= Salaried employment 6= Remittances/gifts 7= Others, specify _____

Q9-17 Feeding and immunization status of children aged 6 – 59 months (or 65 – 109.9cm) in the household.

⁵ Number of persons who live together and eat from the same pot at the time of assessment

⁶ A person who dwells in a particular place permanently or for an extended period

⁷ 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

⁸ Refugees who have returned to their country (Somalia) or community of origin, Somalia, either spontaneously or through organized repatriation [UNHCR definition]

⁹ 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)

First Name	Q9 Age (months) (if child is more than 24 months old, skip to Q21)	Q10 (If 6-24 months) Are breastfeeding ¹⁰ you the child? (if no, skip to Q18) 1=Yes 2=No	Q11 (If 6-24 months) If breast feeding, how many times/day? 1=2 times or less 2=3-6 3=On demand	Q12 (If 6-24 months) If not breast feeding, how old was the child when you stopped breast-feeding? 1= less than 6 months 2=6-11 months 3=12 – 18 months 4=≥18 months 5= Never breastfed	Q13 (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.	Q14 (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 15 Has child been provided with Vitamin A in the last 6 months? (show sample) 1=Yes 2=No	Q16 (Only if ≥9 months old) Has child been Vaccinated against measles in the last 6 months? 1=Yes 2=No	Q17 Has the child ever been given polio vaccine orally? 1=Yes 2=No
1									
2									
3									

Q18-33 Anthropometry and morbidity for children aged 6 – 59 months or (65 – 109.9cm) in the household

First Name	Q18 Child Sex 1=Male 2=Female	Q19 Oedema 1=yes 2=no	Q20 Height (cm)	Q21 Weight (kg)	Q22 MUAC (cm)	Q23 Diarrhoea ¹¹ in last two weeks 1= Yes 2= No	Q24 Serious ARI ¹² in the last two weeks 1=Yes 2=No	Q25 Febrile illness/ suspected Malaria ¹³ in the last two weeks 1=Yes 2=No	Q26 (If ≥9 month) Suspected Measles ¹⁴ in last one month 1=Yes 2=No	Q27 [Applicable for a child who suffered any of the diseases in Q29 – 32) Where did you seek healthcare assistance when (Name of child) was sick? 1=No assistance sought 2=Own medication 3=Traditional healer 4=Private clinic/ Pharmacy 5= Public health facility
Follow same order as per preceding table (on page 1)										

¹⁰Child having received breast milk either directly from the mothers or wet nurse breast within the last 12 hours¹¹Diarrhoea is defined for a child having three or more loose or watery stools per day¹²ARI asked as oof wareen or wareento. The three signs asked for are cough, rapid breathing and fever¹³Suspected malaria/acute febrile illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma¹⁴Measles (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										
2										

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

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

Codes for adult illnesses

0= None	1= ARI
2=Diarrhoeal	3=Malaria/febrile
4=Joint ailments	5=Urinal
6=Organ ailments	7=Anaemia
8= Reproductive	9=Other, specify

Q29 Does any member of the household have difficulty seeing at night or in the evening when other people do not? 1= 24- 71 months (U6 years) 2= ≥ 6 years 3= None

Q30-33 Access to water (quality and quantity)

Q30 Main source of drinking water 1 = Tap/ piped water 2= Protected wells, boreholes 3 = Unprotected shallow wells or berkads 4=Others, specify _____

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

Q32 Number of water collecting and storage containers of 10-20 litres in the household: 1=1-2 containers 2= 3-4 containers 3=4-5 containers 4= more than 5

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

Q34-37 Sanitation and Hygiene (access and quality)

Q34 Type of toilet used by the household: 1=Flash toilet 2=Improved pit latrine (VIP) 3=Traditional pit latrine 4=Open pit 5= designated area 6=Bush (*If Bush skip to Q36*) 7=Others _____

Q35 Distance between toilet and water source 1= less than 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.

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

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 within the 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) _____

Checked by supervisor
(signed):

Appendix 5: SURVEY PARTICIPANTS

Overall Coordination of the Survey		Sicily Matu, FSAU Senior Project Officer
		Peter Kingori, FSAU Project Officer
Team number	Enumerators	Supervisor/team leader
1.	Hassan Haji Abdullah Galbeed	Khalif Nouh, FSAU Nutrition Focal Point Mumin Mohammed
2.	Hibo Jama Hassan Mohammed Gureh	Osman Warsame, FSAU Nutrition Focal Point Omar Hassan
3.	Ali Omar Hassan Nur	Abdilahe Warsame, FSAU Nutrition Analyst Mohammed Omar
4.	Mohammed Abdi Faadumo Ali	Moalim Hussein, FSAU Nutrition Analyst Mohammed Abdullahi
5.	Abdirahman Abdulle Abdillahi Ahmed	Omar Farah Adbikarim Jama
6.	Qadro Dahil Abukar Hassan	Abdikarim Dualle, FSAU Nutrition Analyst Mohammed Hussein
7.	Abdi Amin Makul Osman Adow	Hassan Odawa
8.	Hassan Sugow Ali Osman	Ahmed Ugas
9.	Yussuf Abdillahi Omar Farah	Abdurrahman Mohamed
10.	Ali Mohammed	Hared Farah
Data Analysis & Report Writing		Peter Kingori, FSAU Nutrition Project Officer Ahono Busili, FSAU Deputy Nutrition Manager
Technical Support		Grainne Moloney FSAU Nutrition Project Manager