

# JILIB RIVERINE NUTRITION ASSESSMENT

## MIDDLE JUBA REGION

### SOMALIA

MAY 2006

FSAU/UNICEF/WORLD CONCERN/AFREC



AFREC

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**LIST ACRONYMS**

AFREC	.....	African Relief Committee
FSAU	.....	Food Security Analysis Unit
ICRC	.....	International Committee of the Red Cross
MSF-H	.....	Medicines sans Frontiers- Holland
SRCS	.....	Somalia Red Crescent Society
UNICEF	.....	United Nations Children’s Fund
WFP	.....	World Food Programme
WHO	.....	World Health Organisation

## **ACKNOWLEDGEMENT.**

This assessment was undertaken through the collaborative efforts of FSAU, UNICEF, World Concern and AFREC. World Concern/ AFREC mobilized the community and its leaders to participate in the nutrition assessment; identified vehicles, supervisors and enumerators for the assessment. UNICEF funded the vehicles and provided anthropometric equipment for the assessment.

FSAU provided a team of three nutritionists and two nutrition field analysts who provided overall technical and logistical coordination. FSAU conducted the assessment training, supervised data collection and entry, data cleaning and analysis and produced the assessment report.

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

We also express our sincere appreciation to the entire assessment team for the high level of commitment, diligence and ingenuity demonstrated during all stages of the assessment.

## EXECUTIVE SUMMARY

Jilib district is among the most populated in the Middle Juba Region in southern Somalia. It comprises six livelihood zones: Juba riverine (*dheshek*), Southeast agro-pastoral, Southern inland pastoral, Southern agropastoral, lower juba agropastoral and Shabelle riverine. This assessment concentrated on the riverine livelihood zone (see map on page 1).

In the 2005/2006 Post *Deyr* analysis and projection to June 2006, the Jilib Riverine is classified in the humanitarian emergency phase (FSAU, 2006). The last assessment done in May 2004, found high rates of malnutrition (GAM, 19.5 % CI: 17 – 22.2) and alarming under five mortality rate (5.42 deaths/10000/day).

From 2<sup>nd</sup> to 8<sup>th</sup> May 2006 FSAU in collaboration with UNICEF, World Concern and AFREC undertook a nutrition and mortality assessment in the Jilib Riverine zone. Using the 30 by 30 cluster sampling methodology (30 clusters by 30 children), a total of 884 children aged 6 – 59 months and measuring 65 – 109.9 cm in height/length, were assessed for anthropometric data and 900 households for mortality data. This assessment was conducted to examine the current nutritional situation and factors underlying the persistent high levels of malnutrition and mortality as found in the previous assessment among the riverine community.

The global acute malnutrition (weight for height <-2 Z score or oedema) was 16.2% (95%CI: 13.8-18.8) while the severe acute malnutrition (weight for height <-3 Z score or oedema) was 4.4% (95%CI: 3.2-6.0). The results indicate a critical nutrition situation according to WHO classification and a persistently poor nutrition situation (see maps on page 6). Additional findings indicate persistently high admissions in the MSF Marere TFC centre.

The crude and under five mortality rates were 0.80 (CI: 0.32- 1.28) and 2.05 (CI: 0.65- 3.44) deaths /10,000/day respectively. The crude mortality rate falls under acceptable level while the underfive mortality rate is in the alert level according to WHO classifications. In addition, about 19.2% of the 99 assessed pregnant women were malnourished (MUAC <23 cm) but there was no case of under-nutrition reported for the non pregnant women. Furthermore, 1.3% of the households reported cases of night blindness.

About 17.5% of children were introduced to complementary foods at the age of six or more months. More than half (55.8%) of the households consumed three or fewer food groups in the previous 24 hours to the time of the study which indicates poor dietary diversity.

Access to sufficient and diverse diet and prevalence of common childhood illnesses appear to have been the major factors contributing to high levels of malnutrition. About 53% of the children had suffered one or more communicable childhood diseases during the two weeks prior to the assessment.

The on-going humanitarian interventions which may also have mitigated the nutrition situation include: food assistance by WFP/AFREC, out-patient health care services, supplementary and therapeutic feeding services in Marere by the MSF/Holland, maternal and child health services by SRCS.

In the shorter-term we recommend;

1. Increased surveillance and community mobilisation to ensure that all the children severely wasted are taken to the Marere MSF-TFC for rehabilitation
2. Continued rehabilitation of malnourished children and pregnant mothers
3. Provision of seeds for planting after the destruction of newly planted crop by floods.

4. Increased access to food distribution

In the long-term we recommend:

1. Increased access to food at household level and in particular by assisting farming communities with means of increasing food production, processing and storage especially during the *Gu* season.
2. Increased access to health care services and management programmes for severe malnutrition.
3. Nutrition education especially targeting mothers of child bearing age on the importance of continuous breastfeeding of children to 2 years of age and preparation local nutritious complementary foods

Table 1.1 Summary of Findings

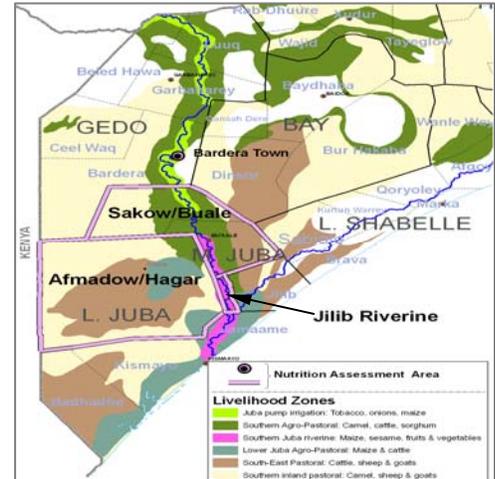
<b>Indicator</b>	<b>No</b>	<b>% (95% CI)</b>
Total number of households assessed	405	100
Total number of children assessed	884	100
Global Acute Malnutrition (WHZ<-2 and or oedema)	143	16.2 (13.8-18.8)
Severe Acute Malnutrition (WHZ<-3 and or oedema)	39	4.2 (3.2- 6.0)
Oedema	7	0.8 (0.3 – 1.7)
Proportion of children with diarrhoea in 2 weeks prior to assessment	239	27 (24.1 -30.1)
Proportion of children with ARI within 2 weeks prior to assessment	128	14.5 (12.3 -17)
Children with suspected malaria in 2 weeks prior to assessment	264	29.5 (26.-32.6)
Suspected measles within one month prior to assessment (N=884)	172	19.7 (17.9-22.3)
Children (9-59 months) immunised against measles (N=802))	778	97
Children who have ever received polio vaccine (N=810)	663	81.9
Children supplemented with Vit. A in last 6 months or before study	778	88.4
Under five Death Rate (U5DR) as deaths/10,000/ day	2.05 (CI:0.65-3.44)	
Crude Death Rate (CDR) as deaths/10,000/ day	0.80 (CI: 0.32 –1.28)	

## 1. INTRODUCTION

Jilib is one of the largely populated districts of Middle Juba Region in southern Somalia. It comprises of three main livelihood zones: Juba riverine (*dheshek*), southeast agro-pastoral and pastoral.

The riverine livelihood group, mainly Bantus, are pure farmers who depend solely on crop production. They live along the river and plant food crops such as maize and cow-peas during the *Gu* season, and cash crops, mainly sesame in the *deyr* season. The southern agro-pastoral livelihood groups depend on mixed crop production while the pastoral group depend on livestock keeping and live further away from the river to avoid water-borne diseases and tse-tse flies attack on livestock.

The Bantu community has little political and social networks. Moreover, they are the most vulnerable community to food shortage or adverse conditions due to lack of diversity in their livelihood. They also do not have social networks and do not benefit from remittances.



### 1.1 Assessment Justification -

Jilib district is divided into two by the River Juba. On east bank of river where Jilib town is located, security is unstable. Mercy international based in Jilib, and SRCS, based in Jilib town and Gududeey are the humanitarian agencies operational in this area, providing health care services. ICRC has a local representative based in Jilib and has periodically distributed non food items (plastic sheets, fishing gear and resettlement kits). Due to uncertainty of security situation in Jilib District, only few organizations have managed to offer humanitarian assistance to the population in a long time.

The west bank of the Juba river in Jilib district is more stable in terms of security, enabling humanitarian agencies (MSF Holland, AFREC and SRCS) to operate smoothly in Marere. MSF-Holland undertakes health and nutrition while AFREC, a local NGO undertakes water interventions. Despite these humanitarian efforts, the nutritional situation has remained critical for over one year.

In the 2005/2006 Post *Deyr* analysis and projection up to June 2006 by FSAU, the Jilib Riverine is classified to be in the humanitarian emergency phase. The last assessment done in May 2004, found high rates of malnutrition (GAM, 19.5 % CI: 17 – 22.2) and under five mortality (5.42 deaths/10000/day). In view of this worrying trend, it was important that another assessment be done to obtain an up to date data for use in decision making by the stakeholders for intervention in the emergency situation prevailing in the Jilib riverine given the previous assessments.

### 1.2 Assessment Objectives –

1. To determine the prevalence of acute malnutrition in the riverine community of Jilib District through the anthropometrical measurement and identification of oedema in children aged 6-59 months or measuring 65-109.9cm.
2. To determine the prevalence of acute malnutrition among women (aged 15-49 years) in the riverine community of Jilib District

3. To identify likely factors of malnutrition in the riverine community.
4. To determine the health situation, including the coverage of measles vaccination and Vitamin A supplementation among the Jilib riverine community
5. To determine the incidence of some common disease two weeks prior to the assessment of Jilib District
6. To determine the retrospective crude and under-five mortality rates.

**2: BACKGROUND INFORMATION**

**2.1 Political and Social-economic Situation of Jilib**

Jilib district is situated within the Middle Juba region. Jilib town is located 120 km north of the seaport of Kismayo, on the eastern side of the River Juba. Control of the town and the district is disputed with each of the interested communities claiming legitimacy. The Juba Valley Alliance (JVA) military faction, based in Kismayo is considered to have little or no power to extend its authority over the district or the town. The security situation in the district remains fragile and dynamic.

JVA authority in Kismayo may not have time to work with the aid interventions before they address the problems faced inside Kismayo. However there is a window of opportunity for agencies to work on the west bank, due to the relative civil security and good will of the clan elders.

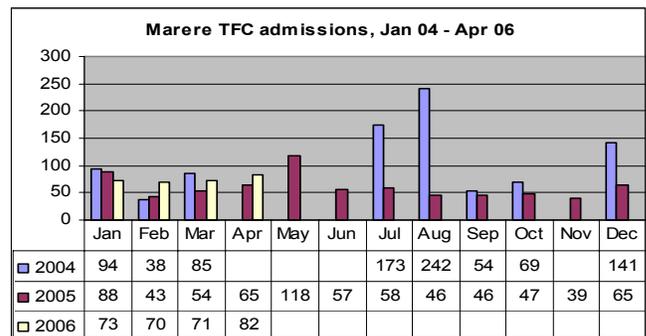
The Juba river banks are predominantly inhabited by the Bantu communities, with nomadic clans inhabiting areas far from the riverine belt. Subsistence farming is the main livelihood for the Bantus who do not keep livestock due to tsetse fly infestation around the rivers. The Bantus have little influence in the politics of the region and district, and have poor social support systems – including limited access to credit and remittances. The east and west sides of the Juba River are controlled by two different clans, the Habar Gidir and Ogaden respectively. During the mission, meetings were held with representatives from both sides. Similarly, enumerators and vehicles were hired from both sides to avoid social conflict.

The lack of political stability in the region, and clan clashes in the district, has led to frequent population displacement and significantly reduced business activities and local investments in the agricultural sector, which remains the main source of livelihood for majority of the population.

**2.2 Humanitarian Activities**

The west bank of the river (the Marere area) is considered more stable in terms of civil security. Consequently, there are some small number of humanitarian agencies operating in this area namely: MSF Holland, AFREC and SRCS. The only airstrip in the district is located in Marere. Civil security on the east bank, where Jilib town is located, is unstable. Mercy international, based in Jilib, and SRCS, based in Jilib town and Gududey are the humanitarian agencies operational in this area providing health care services. ICRC also occasionally undertakes health related humanitarian activities in the region.

Figure 1.1. Admissions the Marere MSF-TFC



**2.3 Food Security**

There are three main livelihood groups in Jilib district: - Juba Riverine Food Economy Groups (*dheshek*), Southeast Agro-pastoral Food Economy Groups and Pastoral Food Economy Groups. The Riverine Food Economy Group are pure farmers mainly Bantus, who depend solely on crop production and products. They live a long the river and are highly / densely populated. They plant food crops such as Maize and cow -peas during the Gu season while in the deyr season they plant cash crop such as sesame.

The Southern Agro-pastoral Food Economy Group is dependent on mixed crop production and livestock

rearing with cattle -keeping as the main dominant activity. Most are non-Bantu who have adopted farming as an additional economic activity. The Pastoral Food Economy Group lives the furthest from the river to avoid water-born diseases and tse-tse flies. They rear all types of livestock including camels.

There has been a declining crop production compared to Post War Average (1995- 2002) data in Jilib district. The prominent livelihood group of Jilib District is the southern Juba Riverine: (who depend on maize, sesame, vegetable and fruits), where the successive poor rainfalls over the past three years made a drastic decline for the poor household's crop production.

#### **2.4 Health Environment**

MSF-Holland, AFREC, Mercy international and SRCS are the main health care providers in Jilib District. The capacity of Mercy, SRCS and MSF-H are limited due to inadequate human resource. The TFC of MSF-H in Marere provides day care services but plans were underway to accommodate the severely malnourished children for 24 hour care after May 2004.

#### **2.5 Water and Sanitation**

AFREC, a local NGO operates in the West of Jilib where they implement different activities with support from World Concern. AFREC is involved in rehabilitation of the shallow wells in the West bank of Juba River in Jilib district. Specific activities undertaken include cleaning of the wells, construction of apron surfaces, platform, drainage as well as formation of water committees. These committees mobilize the communities on safety in water usage, sanitation and hygiene. To-date, AFREC has completed the rehabilitation of 30 (out of the 105) shallow wells, located within 24 (out of the 68) villages on the west bank. Other sources of water are the Juba River and the *dhesheks*.

UNICEF, in collaboration with World Concern, has delivered about 10 complete hand-pumps with accessories for installation to 10 rehabilitated wells.

### **3.0 ASSESSMENT METHODOLOGY**

#### **3.1 Assessment design**

One cross-sectional study was conducted among the population of Jilib Riverine Livelihood Zone.

Both qualitative and quantitative data collection techniques was used. Quantitative data was collected through a standard household questionnaire for nutrition (attached). Retrospective mortality data for 90 days prior to the assessment would also be collected among the study households using the standard mortality questionnaire (attached). Qualitative data was collected by an interagency team comprising of assessment supervisors and coordinators through focus group discussions and key informant interviews to provide further understanding of possible factors influencing nutritional status.

#### **3.2. Sampling procedure**

Using a two-stage cluster sampling methodology, 30 clusters was randomly selected based on population proportion to size. A list of all settlements/villages/towns within the region, with their respective populations would form a sampling frame and used to construct cumulative population figures for the assessment area from which 30 clusters was randomly drawn. Using WHO 2005 Polio population figures and the input of key informants from the livelihood zone, all settlements/villages/towns was listed in the sampling frame and their population estimates further verified for authenticity by the assessment team. Using the Nutrisurvey software a random number, 1131 was chosen to determine the first cluster. The subsequent clusters would then be determined systematically by adding the sampling interval, 1754 to the first randomly selected number. From the 30 randomly selected clusters, children aged 6-59 months and/or height/length of 65-109.9 cm from each cluster was assessed.

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

All sampled households were visited, the supervisor noting whether it is empty and whether children in the target age group are present or not. In households without children in the target age group, the household and mortality questionnaires were administered. If a cluster is exhausted of children before the required 30 children are obtained, a neighbouring village with similar characteristics, but which was not part of the sampled clusters was selected to complete the cluster. All eligible children in the households was measured and if a child or primary caregiver is absent, an appointment was booked for a later visit in the course of the assessment.

#### **3.3. Sample Size**

The 30 by 30 cluster assessment design was used in the assessment and 884 children (910 less 26) were assessed. This sample size gives a relatively high precision when there is a high prevalence of malnutrition and is designed to ensure that most assessments would have sufficient children. With a 30X30 sample we would be able to achieve a 5% desired precision of results for malnutrition prevalence of between 15 and 25% with a relatively low design effect of 1 to 2. The

same sample size is adequate to provide a 1% desired precision for crude mortality rates of between 1 and 2 with design effects of 1 to 1.5

### **3.4. Data collection**

#### ***Anthropometric measurements***

The anthropometric data was collected using the procedure stipulated by the WHO (1995) for taking anthropometric measurements. Adherence to this procedure was ensured. The protocol to be used is 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 was removed. Two readings was taken for each child, shouting loudly and the average recorded on the questionnaire.

*Height:* For height, a vertical or horizontal measuring board reading a maximum of 175cm and accurate to 0.1cm was used to take the height or length of a child. The child would stand on the measuring board barefooted; have hands hanging loosely with feet parallel to the body, and heels, buttocks, shoulders and back of the head touching the board. The head would be held comfortably erect with the lower border of the orbit of the eye being in the same horizontal plane as the external canal of the ear. The headpiece of the measuring board was then pushed gently, crushing the hair and making contact with the top of the head. Height/length is then read to the nearest 0.1cm. Two readings was 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 is placed at the edge of the bare feet as the head (with crushing of the hair) touched the other end of the measuring device. Then two readings taken and the average computed.

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

#### ***Child age determination***

Where useful documents like growth monitoring/clinic attendance cards and birth certificates are available, they was used to determine the child's age. Calendar of events (developed by key informants and the assessment team) would also used as proxies to age determination.

*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 of pressing and was confirmed if present by the supervisor and then recorded.

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

- ◆ Diarrhoea is defined for a child having three or more loose or watery stools per day
- ◆ ARI asked as oof wareen or wareento. Three signs asked for are cough, rapid breathing and fever
- ◆ Suspected malaria/acute febrile illness: - the three signs to be looked for are periodic chills/shivering, fever, sweating and sometimes a coma.
- ◆ Measles (Jadeeco): a child with more than three of these signs– fever and, skin rash, runny nose or red eyes, and/or mouth infection, or chest infection

***Dietary Diversity***

Dietary diversity as the number of 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 was considered which include Cereals & cereal products; Roots & tubers; Vegetables; Fruits; Meat and meat products, Eggs; Fish; Legumes; Milk & its products; Fats & oil; Sugar & honey and Miscellaneous.

***Mortality***

The mortality assessment was done concurrently with nutrition assessment in which a 30 by 30 cluster sampling methodology is used. The assessment methodology used for the nutrition assessment was adopted with the exception that households were selected as the second sampling unit. At least 30 households was randomly selected in each cluster and the mortality questionnaire administered to a responsible member of that household. All households within the selected cluster were eligible for inclusion in the mortality assessment, whether there is a child under the age of five years or not. Households was 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 would then be asked how many if any of the household members had died, left or arrived in the last three months (see questionnaire).

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

Mortality rates was interpreted according to the following reference

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

**3.5 Description of assessment activities**

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

**3.6. Quality control procedures**

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

Standardisation of measurement and pre-testing of the questionnaire and equipment was carried out in a village not selected as a cluster for the actual assessment. Pre-testing involved familiarising assessment teams with entry to a village/cluster/household; administering the questionnaire, sampling procedure,

correct taking of measurements and recording. After the field exercise, views were exchanged to address the difficulties identified; appropriateness of the questions reviewed and necessary changes made.

Quality of data was also ensured through (i) monitoring of fieldwork by coordination team, (ii) crosschecking of filled questionnaires on daily basis and recording of observations and confirmation of measles, severe malnutrition and death cases by supervisors. All households sampled was visited and recorded including empty ones (iii) daily review was undertaken with the teams to address any difficulties encountered, (iv) progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis, (v) continuous data cleaning upon and after entry made it easy to detect any outliers/ mistakes and to replace or repeat households depending on magnitude of error (vi) monitoring accuracy of equipment (weighing scales) by regularly measuring objects of known weights and (vii) continuous reinforcement of good practices. All measurements was loudly shouted by both the enumerators reading and recording them to reduce errors during recording.

### 3.7. Creation of nutritional status indices

The anthropometric measurement of weight and height are used to compute the WFH nutritional status indicators of the studied children. Weight For Height (WFH) expressed as 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 are 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	= Normal

For adults, the following categories were used:

a) For non pregnant women:

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

b) For pregnant women:

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

## 4.0 ASSESSMENT RESULTS.

### 4.1 Household Characteristics of Study Population

The nutrition assessment covered a total of 407 households with a total population of 2478 persons and mean household size of 6.1 (SD= 2.3) persons. The households size ranged from 2 -11 persons. The mean number of children under five years was 2.3 (SD=0.9).

Table 4.1. Household Characteristics

<i>characteristic</i>	<i>N</i>	<i>% (CI)</i>
<i>Household size (Mean):</i>	6.1	(SD=2.3)
<i>Mean No of Underfives</i>	12.3	(SD=0.9)
<i>Household residence status (N=407)</i>		
Those in their residence (for $\geq 2$ years)	388	95.3 (92.7 – 97.1)
Internally displaced	17	4.2 (2.5 – 6.7)
Returnee	2	0.5 (0.1 – 2.0)

Most (95.3%) of the assessed households were residents<sup>1</sup>. About 4.2% of the households were IDPs while 0.5% of the households were returnees to the community.

### 4.2 Livelihood systems and sources of income.

Table 4.2 Distribution of households by means of livelihood and income source.

<i>Livelihood system (N=407)</i>	<i>N</i>	<i>% (95% CI)</i>
Riverine farmers	379	93.1(89.8 – 95.1)
Agro pastoral	14	3.4 (2 – 5.3)
Urban	13	3.2 (1.8 – 5.5)
Pastoral	1	0.2 (0-1.69)
<i>Income sources</i>		
Crop sales	328	80.6 (76.3- 84.3)
Casual labour	63	15.5 (12.2 – 19.4)
Petty trade	5	1.2 (0.5 – 3)
Sale of animals and products	5	1.2 (0.5 – 3)
Salaried employment	4	1 (0.3 – 2.7)

Most (93.1%) of the assessed households were riverine farmers while 3.4% were agro pastoralists. Another 3.2% lived in urban areas and only a miniscule 0.2% practiced pure pastoralism. As would be expected for mainly farming community, the most important source of income was crop sales (80.6%).

Casual labour was the second most important source of income (15.5%) while Petty trade (1.2%), Sale of animals and their products (1.2%) and Salaried employment (1%) seems to have been the main sources of income for a very small proportion of the assessed households.

### 4.3. Water Access and Quality

Majority (56%) of the assessed households drew water from protected boreholes. While about a third (31.7%) of the households relied on water from unprotected wells. The river was the main source of water for 8.8%. There rest got water from catchments (1.2%) and piped water (2.2%).

More than half (57.7%) the households took less than half an hour to the water source while just over a third took between half and hour and one hour. Less than 10% of the households spent more than one hour fetching for water. Water was mainly collected and stored in containers of between 10 and 20 litres capacity. Majority (52.8%) of the households had between 1 and 2 containers and just over a third had

<sup>1</sup> Residents were taken as those who had stayed in their residences for over two years

between 3 and 4 containers. About 10% of the households had more than 4 containers.

Table 4.3. Distribution of households on the basis of water access and storage.

<b>Water access and Quality</b>	<i>N</i>	<i>% (95% CI)</i>
<i>Main source of drinking water (N=407)</i>		
Protected boreholes/wells/spring	228	56 (51-60.9)
Unprotected well	129	31.7 (27.2-36.5)
River	36	8.8(6.4-12.1)
Piped water	9	2.2 (1.1-4.3)
Water catchments	5	1.2 (0.5-3)
<i>Time taken to the nearest water point: (N=407)</i>		
Less than 30 minutes	235	57.7 (52.8 – 62.6)
30 to 60 minutes	137	33.7 (29.1–38.55)
1 2 hrs	29	7.1 (4.9 – 10.2)
More than two hours	6	1.5 (0.6- 3.3)
<i>Clean water collecting &amp; storage containers of 10-20 litres.</i>		
1 - 2 containers	215	52.8 (47.8-57.7)
3 - 4 containers	148	36.4 (31.7-41.3)
4 – 5 containers	25	6.1(4.1-9.1)
> 5 containers	19	4.7 (2.9-7.3)
<i>Method of water storage and in the household.</i>		
Covered containers	173	42.7 (37.9- 47.7)
Open containers	87	21.5 (17.6 -25.9)
Constricted containers ( <i>Ashuun</i> )	145	35.8 (31.2 – 40.7)

About one fifth of the households did not cover their water storage containers at all. But a majority (42.7%) covered their water storage containers while over a third used constricted containers (*Ashuun*).

#### **4.4. Sanitation and Hygiene Practices**

Majority (35.1%) of assessed households had access to or used an improved pit latrine for sanitation, while about a third used the traditional pit latrine. About a third used the bush and 6.6% used an open pit for sanitation

Table 4.4 Sanitation &amp; Hygiene

<i>Sanitation and hygiene</i>	n	% (95% CI)
<i>Access to Sanitation facility (N=407):</i>		
Improved pit latrine	143	35.1 (30.5 -40)
Traditional pit latrine	126	31 (26.5- 35.7)
Open pit latrine	27	6.6 (4.5- 9. 6)
No latrine at all (Bush)	111	27.3(23.1- 31.9)
<i>Distance from latrine to water source (N=406):</i>		
-30 meters	136	33.5(29- 38.4)
≥ 30 meters	270	66.5 (61.6- 71)
<i>Household Washing agents</i>		
Soap	182	44.7
Shampoo	67	16.5
Asha	144	35.4
Plant extracts	3	0.7
Nothing	11	2.7

For the majority (66.5%) of the households, the distance between the toilet and the water source was 30 meters or more while for just over a third of the households, it was less than 30 metres.

Use of washing agents was prevalent. Majority (44.7%) of the households used soap to wash hands and utensils; and more than a third used a local agent *Asha*. The others

used shampoo (16.5%) and plant extracts (0.7%). A small percentage (2.7%) did not use anything for washing.

#### 4.5 Health Seeking Behaviour

Table 4.5: Health seeking behaviour

	N	%
<i>Seek healthcare assistance when a member is sick (N=407):</i>		
Yes	392	96.3 (93.9- 97.8)
No	15	3.7 (2.2- 6.1)
<i>Where (n=392)</i>		
Public health facility	215	54.3 (49.2- 59.3)
Traditional healer	97	24.7 (20.6- 29.4)
Self medication	50	12.9 (9.8- 16.7)
Private pharmacy/clinic	32	8.1 (5.7- 11.3)

Nearly all (96.3%) the households sought assistance when the child got sick, majority from the public health facility (54.3%). About a quarter sought a traditional healer while the rest prescribed their own medication (12.9%) or visited private clinic (8.1%)

#### 4.6 Formal and Informal Support

Table 4.6 : Formal and informal support

Social support networks, especially remittances are a major source and/or supplement of livelihood undertakings in Somalia. However both formal and informal support in the Jilib riverine were low. Only about a quarter of the households had received some informal (social) support, within three months prior to the assessment mainly in the form of loans, remittances and Zakat. Majority (17.4%) of the households had received loans from friends or relatives while only 5.4% had received remittances from abroad. The rest had received either zakat (1.2%) from the well of members of the community, remittances from within Somalia (1.2%) or gifts (0.7%)

	N	% (CI)
<i>Informal support (N = 407)</i>		
Received:		
Yes	108	26.6
No:	299	73.4
Type of support (N=407)		
Zakat from better off households	5	1.2 (0.5-3)
Remittances within Somalia	5	1.2 (0.5-3)
Remittances from abroad	24	5.9(3.9-8.8)
Gifts	3	0.7(0.2-2.3)
Loans	71	17.4(14-21.6)
Nothing	299	73.4(68.6-77.4)
<i>Formal support (N = 407)</i>		
Received:		
Yes	162	39.8
No	245	60.2
Type of support		
Cash for work	20	4.9(3.1-7.6)
Free food (food aid)	124	30.5(26.1-35.2)
Supplementary food	5	1.2(0.5-3)
Food for work	11	2.7(1.4-4.9)
Water subsidy	2	0.5(0.1-5)
Nothing	245	60.255.2-65)

Formal support was higher than informal support. It was received by over a third of the households assessed. Free food/food aid (30.5%) was the main form of formal support followed by cash for work (4.9%). Food for work (2.7%), supplementary food (1.2%) and water subsidy (0.5%) formed a small proportion of the formal support. The West Bank of the riverine appears to have received more of the food aid (88.7%) than the East bank households (11.3%)

#### 4.7 Characteristics of Assessment Children

Table 4.7 Distribution of children according to age and sex

Age	Boys		Girls		Total	
	n	%	n	%	N	%
6-17 months	114	24.8	91	21.5	205	23.2
18-29 months	119	25.9	107	25.2	206	25.2
30-41 months	105	23.3	108	26.2	213	24.1
42-53 months	76	16.5	71	16.7	152	17.2
54-59 months	44	9.6	44	10.4	88	10
Total	460	52	424	48	884	100

A total of 884 children were assessed from 407 households of whom 52% were boys and 48 % were girls. The ratio of boys to girls was 1:1.08 the age distribution is such that there are more boys at earlier ages but this balances out towards the 54-59 age

bracket. Suggesting that more boys than girls under the age of five die in this community. But further studies are needed to confirm this.

### 4.8 Nutritional Status of Assessment Children Using Anthropometry

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

<i>Malnutrition Rates</i>	<i>No</i>	<i>Proportion</i>
Global Acute Malnutrition (<-2 Z score or oedema)	104	16.2 (13.8-18.8)
Severe Acute Malnutrition (<-3 Z score or oedema)	39	4.2 (3.2-6)
Oedema	7	0.8 (0.3 – 1.7)

The global acute malnutrition using WFH Z score (<-2 z-scores or oedema) was 16.2% (CI: 13.8-18.8) while severe acute malnutrition (<-3 z-score or oedema) was 4.2 % (CI: 3.2-6). Seven cases of oedema were detected during the assessment. The distribution of the

weight-for-height scores (mean= -0.77; median= -0.80; SD=1.24) were skewed to the left. This suggests poorer nutrition situation for the population according to international (WHO) standards (Fig 1).

Figure 4.1 Distribution of the study children compared to the NCHS/WHO/ of references 1978.

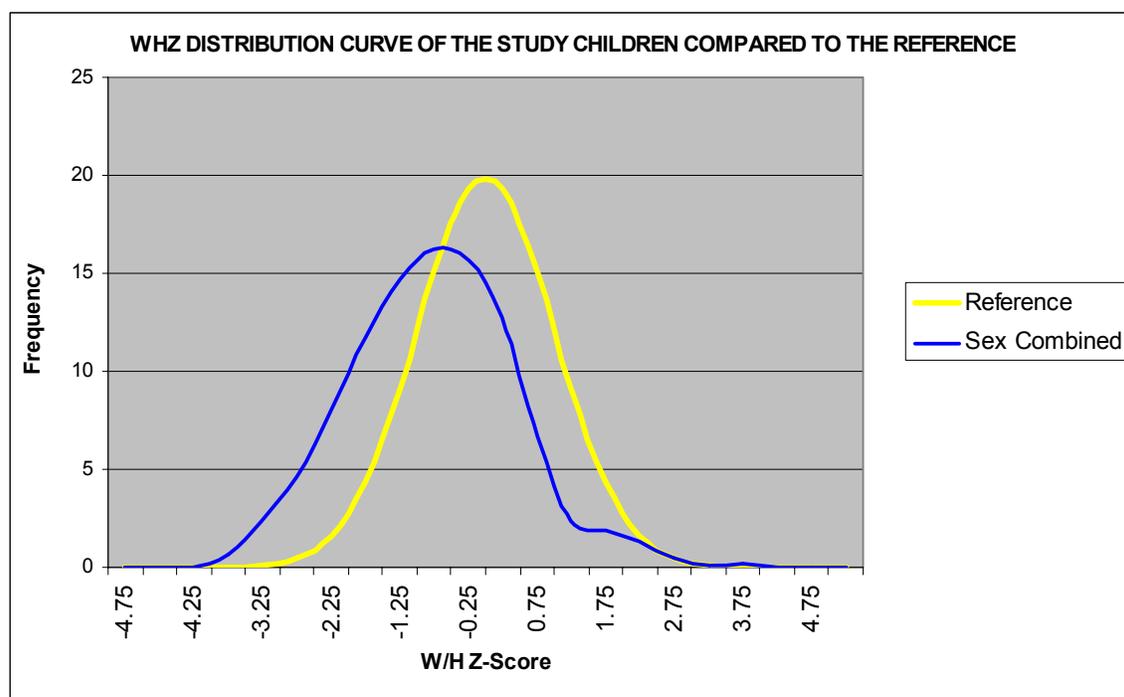


Table 4.9 Distribution of children by nutritional status (weight/ height z-score or oedema) and child sex

<i>Nutrition status categories</i>	<i>Males</i>		<i>Females</i>		<i>Total</i>	
	<i>No</i>	<i>% (CI)</i>	<i>No</i>	<i>% (CI)</i>	<i>No</i>	<i>% (CI)</i>
Global acute malnutrition (WFH<-2 z score/oedema)	82	17.8 (14.5- 17.7)	61	14.4 (11.3- .2)	143	16.2 (13.8-18.8)
Severe acute malnutrition (WFH <-3 z score/oedema)	18	3.9 (2.4-6.2)	21	5 (3.2-7.6)	39	4.4 (3.2-6)
Oedema	3	0.7 (0.2-2.1)	4	0.9 (0.3-2.6)	7	0.8 (0.3-1.7)

About 17.8% of all the boys and 14.4% of all the girls were malnourished in the Jilib riverine, using weight for height  $<-2$  Z score or presence of oedema, the difference in nutritional status between the two sexes was however not significant ( $p>0.5$ )

Acute malnutrition was higher at lower age groups and declined with age. It was higher in the 6-17 months age group where about one-third of the children were malnourished. In addition, acute malnutrition declined with age from a high of 32.9% for the age group 6-17 months to 15.9% for the 54 to 59 months age group (See table 10 below).

Table 4.10: Distribution of Acute Malnutrition by Age

Age groups	Severe (WH $<-3Z$ )	Moderate (WH $\geq-3Z<-2Z$ )	GAM (Total malnourished-WH $<-2Z$ )	Normal (WH $\geq-2Z$ )	Total
6-17 months	12 (5.9%)	35 (17.1%)	47 (32.9%)	158 (77.1%)	205 (23.2%)
18-29 months	8(3.5%)	32 (14.2%)	40 (28%)	186 (82.3%)	226 (25.6%)
30-41 months	13(6%)	17 (7.8%)	30 (21%)	188 (86.2%)	218 (24.7%)
42-53 months	5 (3.4%)	7 (4.8%)	12 (8.4%)	135 (91.8%)	147 (16.6%)
54-59 months	1 (1.1%)	13(19.2%)	14 (15.9%)	74 (84.1)	88(10%)
Total	39(4.4%)	104 (11.8%)	143 (16.2%)	741 (83.8%)	884 (100%)

The global acute malnutrition among children aged 6 - 59 months using weight for height  $<80\%$  of median or presence of oedema was 11.9% (CI: 8.5% - 12.7%), while the severe acute malnutrition  $<70\%$  of median or presence of oedema was 1.5% (CI: 0.8% - 2.6%).

Table 4.11 Malnutrition prevalence using WFH percentage of median categories

Nutrition status categories	Males		Females		Total	
	No	Proportion (%)	No	Proportion (%)	No	Proportion (%)
Global acute malnutrition (WFH $<80\%$ or oedema)	52	11.3 (8.6 - 14.6)	40	9.4 (6.9 - 12.7)	105	11.9 (8.5- 12.7)
Severe acute malnutrition (WFH $<70\%$ or oedema)	3	0.7 (0.2 - 2.1)	10	2.4 (1.2- 4.4)	13	1.5 (0.8-2.6)

Using mid upper arm circumference (MUAC) measurements for children aged 12-59 months, 13.7% (CI: 11.4- 16.4) of the children were malnourished (MUAC $<12.5$  cm or oedema). About 0.8% (CI: 0.3- 1.8) were severely malnourished (MUAC $<11.0$  cm or oedema) while 20.5% (CI: 17.7- 23.5) were at risk (MUAC 12.5- $<13.5$  cm).

Table 4.11. Nutrition status of Children by MUAC

<i>Malnutrition</i>	<i>Males</i>		<i>Females</i>		<i>Total (N=781)</i>	
	N	%	N	%	N	% (95% CI)
Severe (MUAC <11 cm) or oedema	3	0.8 (0.2-2.5)	3	0.58 (0.2- 2.5)	6	0.8 (0.3- 1.8)
Total (MUAC <12.5 cm) or oedema	54	13.5 (10.4- 17.40)	53	13.9 (10.6- 17.8)	107	13.7 (11.4- 16.4)
At risk (MUAC 12.5- <13.5 cm)	91	22.8 (18.8- 27.3)	69	18.1 (14.4- 22.4)	160	20.5 (17.7- 23.5)
Normal (MUAC >=13.5 cm)	251	62.9 (57.9- 67.6)	257	67.3 (62.3- 71.9)	508	65 (61.6- 68.4)
Total	399	51.1	382	48.9	781	100

#### 4.9 Morbidity, Measles Immunisation, Polio Vaccination and Vitamin A Supplementation.

Table 4.12: Morbidity, measles immunisation, polio vaccination and vitamin A supplementation

	<i>No.</i>	<i>%(CI)</i>
<i>Incidence of major child illnesses (N=884)</i>		
ARI within two weeks prior to assessment	128	14.5 (21.4 – 27.1)
Diarrhoea within two weeks prior to assessment	239	27 (24.1- 30.1)
Malaria (suspected) within two weeks prior to assessment	264	29.5 (26- 32.6)
Measles within one month prior to the assessment (N=861)	172	19.7 (17.9-22.3)
<i>Immunization Coverage (N=)</i>		
Children (9-59 months) immunised against measles (N=802)	878	97
Children who have ever received Polio dose (N= 810)	663	81.9
<i>Vitamin A supplementation (N= 884)</i>		
Children who received Vitamin A supplementation past 6 months or before	778	88 (86.1- 90.4)
<i>Households who reported night blindness (N=407)</i>		
Member with night blindness (n=5)		1.2
< 5 years	1	20
≥ 5 years	4	80

The incidences of suspected malaria (29.5%), diarrhoea (27%) and ARI (14.5%) within two weeks prior to the assessment were high but no disease outbreak was reported during the period. Moreover, about 19.7% had measles one month prior to the assessment was

Measles vaccination coverage for eligible children (9-59 months old) was 97%. More than three quarters (81.4) of the children aged 6-59 months had received at least a dose of polio vaccine. Vitamin A supplementation coverage was also high and most (88.4%) children had received supplementation in the 6 months prior to the assessment. The higher coverage of especially measles could be attributed to recent campaigns by UNICEF, WHO and local partners.

#### 4.10 Vitamin A Deficiency

About 1.2% of the households reported cases of night blindness, which is a proxy indicator for vitamin A deficiency. More than three quarters of the reported cases was for children over five years of age.

### 4.11 Feeding practices

About two-third (61.9%) of children in the breastfeeding age (6 to 24 months) were breastfeeding at the time of the assessment. However more than a third in this category were not breastfeeding at all. None of the assessed children were exclusively breastfed for the recommended first six months. For those who had stopped breastfeeding, about 21.5% had stopped breastfeeding before six months of age, 18.8% before their first birthday and the rest (51.2%) within their second year of life.

Table 4.13: Children feeding practices

Children aged 6-24 months (N=360)	N	% (CI)
<i>Is child breastfeeding?</i>		
Yes	223	62.2 (56.8 – 67.4)
No	137	37.8 (32.6 – 43.2)
<i>Age stopped breastfeeding (N=186):</i>		
0 - 5 months	40	21.5 (15.8- 28.1)
6 - 11 months	35	18.8 (13.5—25.2)
12 – 18 months	54	29 (22- 36.1)
More than 18 months	42	22.6 (16.8– 29.3)
<i>Introduction of Complementary feeding</i>		
0 - 3 months	182	70.8 (64.8- 76.3)
4-5 months	30	11.7 (8- 16.2)
4 – 6 months	45	17.5 (13.1- 22.7)
<i>Feeding frequency:</i>		
Once	48	11 (8.3- 14.4)
2 times	175	40.1 (35.5- 44.9)
3 – 4 times	166	38.1 (33.5 – 42.8)
5 or more times	47	10.8 (8.1 – 14.2)

Most (70.8%) 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 and the rest (29.2%) after the fourth month.

More than half of the children were fed at most twice a day. About another half (48.9%) of the children were fed at least 3 times a day and mostly 3 to 4 times a day (38.1%) and on diet that was mainly cereal based. Only a small percentage (10%) was fed five or more times a day.

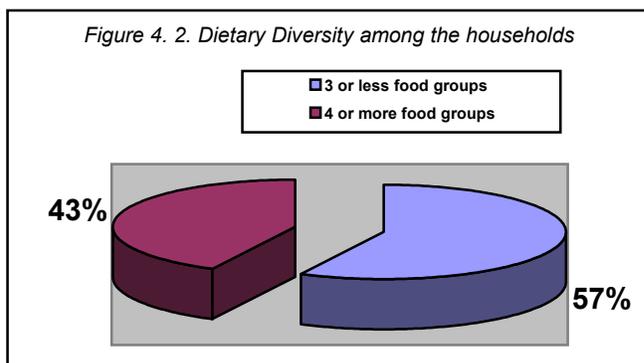
### 4.12 Dietary Diversity

Table 4.11: Distribution of dietary diversity among children

No of food groups consumed (N=407)	N	% (CI)
1 food group	5	1.2 (0.5-3)
2 food groups	160	39.3 (34.6- 44.3)
3 food groups	69	17 (13.5– 21 )
4 food groups	84	20.6 (16.9- 25)
5 food groups	89	21.9 (18- 26.3)
Mean HDDS	3.5	SD=1.8
<i>Main source of food (N=407)</i>		
Own production	90	22.1(18.2- 26.5)
Purchasing	79	19.4 (15.7- 23.7)
Gifts/donations	38	9.3 (0.2 – 2.0)
Bartering	47	11.5 (8.7- 15.2)
Food aid	61	15 (11.7- 18.9)
Borrowed	72	17.7 (14.2- 21.8)
Gathering in the wild	20	4.9(2.5- 6.7)

As shown on table 14, more than half (57.5%) of the households had consumed three or fewer food groups within 24 hours prior to the assessment. About one-fifth (20.6%) had consumed 4 food groups and another fifth (21.9%) had consumed five or more within the same period.

The assessed households consumed an average (HDDS) of 3.5 food groups (SD=1.8) with the number of food groups consumed ranging from one to twelve. Majority (57%) did not consume a diversified (Fig 2). Cereal-based diets especially sorghum and maize and were the most common. Other food items commonly consumed were sugar (in tea), oil, pulses, fruits and milk



The main sources of food were almost uniformly distributed. About a fifth obtained food through own production while for another 19.4%, purchasing was the main source of food. Borrowing (17.7%) and food aid were also important food sources. Gathering food from the wild was the main source of food for only 4.9% of the households

### 4.13 Adult Malnutrition by MUAC

Table 4.12. Adult nutrition status by MUAC

	n	%	95% CI
<i>Non Pregnant women (N=310)</i>			
Severe acute malnutrition (MUAC<16.0 cm)	0	0	
Global acute malnutrition (MUAC≤18.5)	2	0.6	0.1- 2.6
Normal	308	99.4	97.4 – 99.9
<i>Pregnant women (N=97)</i>			
Severe Risk (MUAC≤20.7 cm)	0	0	
Total at risk (MUAC≤23.0 cm)	22	22.7	14.8- 32.3
Normal	75	77.3	67.7- 85.2

About one fifth of the pregnant were malnourished (MUAC<23.0cm) but none was in severe risk of malnutrition. More than three quarters of the pregnant women were under normal nutritional

condition for their physiological status. About 0.6% of non-pregnant women (aged 15-49 years) were malnourished (MUAC<18.5cm).

#### 4.14 Relationship between Malnutrition and Other Factors

Table 4.13: Risk factors and relation to total 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>Child sex:</i>					
Male	82	57.3	1.12	0.96-1.32	0.20
Female	61	43.6			
<i>Age group</i>					
6-24 months	77	53.8	1.41	1.18-1.68	0.001
25-59 months	66	46.2			
<i>Morbidity patterns</i>					
<i>ARI</i>					
Yes	17	11.9	0.79	0.49-1.28	0.4
No	126	88.1			
<i>Diarrhoea:</i>					
Yes	35	24.5	0.89	0.65-1.21	0.5
No	108	75.5			
<i>Health programmes</i>					
<i>Vitamin A Supplement:</i>					
Yes	123	86	0.97	0.90-1.04	0.7
No	20	14			
<i>Measles vaccine (N=861)</i>					
Yes	31	21.7	1.14	0.81-1.61	0.5
No	112	78.3			
<i>Dietary &amp; feeding patterns</i>					
<i>Breastfeeding</i>					
Yes	67	46.9	1.18	0.97-1.44	0.1
No	76	53.1			
<i>Dietary diversity</i>					
≤ 3 food groups	82	57.3	1.05	0.90- 1.22.	0.60
≥ 4 food groups	61	42.7			

Acute malnutrition rates were higher among children boys compared to girls. Indeed boys were 1.12 times likely to be malnourished than girls. Moreover for malnutrition was significantly determined by the age of the child, those aged 24 months or less were 1.41 times likely to be malnourished than those age over two years (p=0.001)

Breast feeding status, dietary diversity and measles vaccine seemed to influence nutritional status but the relationship was not significant. Further analysis revealed no significant association between malnutrition and other factors.

### 4.15 Mortality Rates.

A total of 904 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:

Death rates;

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

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

\* 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 assessed households	=1,255
Number of under fives who joined the households	= 13
Number of under fives who left the households	=4
Number of under five deaths	= 23

Under five death rate (deaths /10,000 children per day) = **2.05 (CI: 0.65- 3.44)**

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

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

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

Total population in assessed households	= 5,130
Total people who joined the households	= 43
Total people who left the households	= 86
Total number of births	= 27
Total number of deaths in the households	= 37

CMR as deaths per 10,000 persons per day = **0.8 (CI: 0.32 – 1.28)**

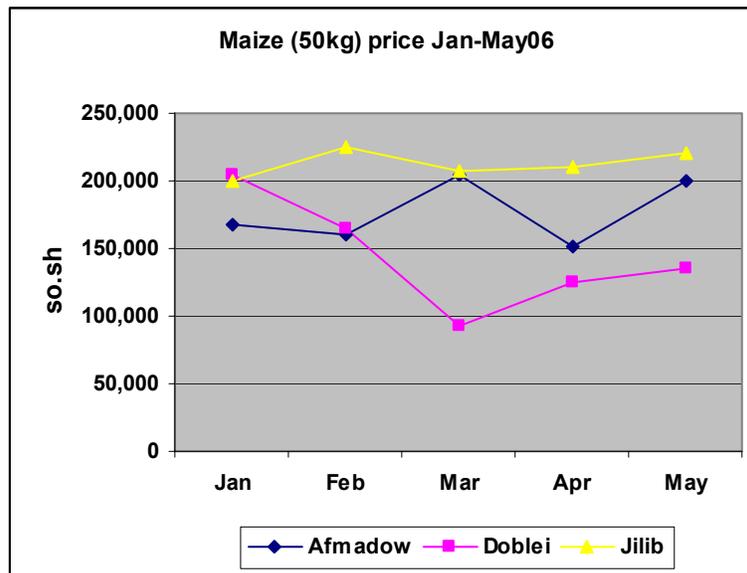
This crude mortality rates reflects an normal situation according to the international standards (WHO classification).

### 4.16 Qualitative Information

#### 4.16.1 Food Security

Households don't have cereal stock as farmers experienced four successive crop failures. All families live on food purchase. No local cereals available at all markets. Only WFP donated maize is available at the market. Cereal price is high specially the riverine area which WFP distributed sorghum during late March 2006. Cereal supply was blocked by GU rains and transport are unable to collect from Doblei to the riverine area where there is a large difference of price (please see the graph below). Current maize (50kg bag) price at Buale, Sakow and Hagar are 260,000, 230,000 and 260,000so.sh respectively. Sorghum is available at Afmadow, Jilib, Buale and Sakow at a price of 180,000, 175,000, 220,000 and 200,000so.sh/50kg bag respectively. Cereal market availability is poor except Doblei market were maize supply from Kenya is available since road between Doblei and Garissa was passable throughout the GU season due to poor rainfall. Alternative Sources: Food aid from WFP and Muslim world, Wild Foods, river fishing and hunting

Figure 4.3. Cereal Availability in Market in Jilib, Afmadow and Doblei



#### 4.16.2 Food sources.

There is a complete change on food source for south-east pastoralist and riverine LZ comparing to typical year. There is no cattle milk production which pastoralists use to consume a lot at this time of year. Cereal price had increased by 100% comparing to typical year and TOT of local qty goat to maize were reduced 50%. Riverine households have zero cereal stock and have reduced quantity of food purchased because of unbearable price increase. Poor households had stopped non-staple food purchase to spare more money for staple food. Riverine households doubled the consumption of wild food while pastoralists hunt wild animals for meat.

#### 4.16.3 Income sources.

Main income source for Riverine poor households is agricultural labour which is active and provides considerable amount of money; bartering at main towns of Jilib, Jamame and Kismayo harbour which is

still contribute little but significant, construction and bush product sales. Pastoralist main income source is livestock sales only, though camel pastoralists sell milk and receive considerable amount of money. Middle WG of riverine receive their income from oxcarts which is the only transport could carry goods through these muddy roads and very small scale of petty trade.

#### **4.16.4 Expenditures.**

All poor households live on food purchase, wild food, small scale of fishing and hunting. As prices of food commodity and cereals are high and no own food production available at the moment since the area is just coming from a severe drought. The cost of staple food expenses had doubled and completely reduced the quantity of non-staple food purchased. Most of poor households purchase sorghum which is not preferable for Juba valley community and its cheaper than maize. Other expenses are farm and livestock inputs which are enormous as livestock are recovering from the draught related disease and required animal drugs and most of the standing crop were destroyed by the run-offs, river floods and severe pests attack that made necessary to replant all recessional farms. Recent rains had generated excessive weeds and farms needed more extra rounds of weeding than usual.

#### **4.16.5 Coping strategies in the Riverine Zone.**

The following are the key coping strategies adopted by the households.

- Reduced staple food purchase
- Reduced/stopped non-staple food purchase
- Increased wild food consumption
- River/dhashek fishing

**BOX 1. Flood report on Jilib Riverine May, 2006**

The River broke down at Afar-matoor 1km and Kombarera 30 km north of Marereri village and then flooded to the farms at south Marerei, Bulo Gudud, Jalle joogso, Bardhere yarei, makalango mubarak, Baladul kariim Hararwe, Malendo and all the way down to Kamsuma. Most of the grazing area closer to these villages was flooded and domestic livestock were evacuated and kept in doors. Most of the standing crop in the flooded areas of these villages had started wilting. An estimated cropped area of 3000ha of Jilib Riverine is either flooded or at risk of flooding as of the end of May 2006. The roads between Marerei and Gududei and Marerei to Jilaalow/Buale were cut off by the flood. Over 300 houses at the farms were flooded and people had to be evacuated although there were no casualties reported or observed during the visit. So far no entire villages were evacuated but villages like Awramale Kamtanda, Faragurow and Bandarjadid are at risk and likely to be flooded if river Juba continues flooding. Transport between riverine villages was blocked by mud and water, even oxcarts could not move across flooded areas because of crocodile attacks.

Riverine villages have limited access to market and they use only locally made boats to cross the river and the floodwater. Human traction and these locally made boats can transport a limited amount of food. Price of food had increased by 20% since the flooding began in early May comparing to last week and it is expected to increase because, market feeding roads to Kismayo were cut off at Mugambo and Fagan while road to Mogadishu were cut off at 3-Bundo and Dhay-tubako. Food availability at riverine villages is getting below normal and this will continue to decline until feeder roads re-open and possibly until late June

Most of the river crack points were open and as soon as river water level rose up into the dhasheks where strong recede cultivation was going on, Most village farmers lost their crops. Riverine community have lost an estimated of 3000ha of cropped area. Farmers used the few seeds distributed by AFREC and only better-off households have access of seeds while poor and most of the middle class households will not be able to replant at the recessional area due to lack of seeds. Now poor riverine households live on wild food and limited cereals purchased from the cash received from labour which was going on before the flooding. Very limited agro-labour is going on and this had negatively affected poor households' income which eventually has reduced food accessibility as riverine community live on food purchase and had experience of four successive seasons of crop failure. Poor households have reduced the number of meals and quantity taken per day.

## 5. DISCUSSION

The household characteristics especially residence status (95.3% are residents in the area), income sources (crop sales key income source for 80%) and livelihood system (93.1% are farmers) are typical of a settled riverine community as opposed to migrating pastoral communities.

The global acute malnutrition observed in this assessment (16.2%, 95%CI: 13.8-18.8) as well as the severe wasting levels (4.4%, CI: 3.2-6.0) indicate that the Jilib riverine is still in a state of humanitarian emergency. This is consistent with the long term FSAU estimates of 1999- 2005. However, since the last assessment in 2004, the situation has improved slightly from GAM of 19.5 % (CI: 17 – 22.2) in 2004 to 16.2% in this assessment. Moreover, there is a dramatic decline in under-five mortality since the last assessment from an emergency mortality level (5.4/10,000/dy) in 2004 to an alert level currently (2.05/10,000/day). In addition, prevalence of common childhood illnesses like diarrhoea, measles and acute respiratory infections has declined from the previous assessment. The high rates of severe wasting and lower levels of GAM suggest that mortality will go up if the situation is not arrested at the moment.

The nutritional status of the children under five years was influenced by four key factors. The age of the child and the breast feeding status were key determinants of nutritional status. In a crisis situation, breastfeeding practises may be threatened by lack of enough food for the mother, increased anxiety and trauma among other things. Children less than two years of age were 1.4 times likely to be malnourished than those over two years. Furthermore, those in this category who were not breastfeeding were 1.2 times more likely to be malnourished compared to those who were breastfeeding. This suggests that child care and feeding practices are suboptimal.

In crisis situation, the availability of and access to food depend on opportunities for agricultural production, purchasing power and access to markets, access to wild foods and access to general ration distribution (FAO, 2005). All these ensure a diverse diet and food security. In this assessment, diversity had a strong bearing on nutritional status. Indeed children who came from household that consumed three or fewer food groups were 1.1 times more likely to suffer malnutrition. The low dietary diversity among the households assessed could be attributed to the severe drought that was prevailing in the area until few weeks before the study when the *Gu* rains began. The drought led to depletion of cereal stock and reduced quantity of food purchased because of unbearable price increase and even for the households who depended on gathering wild foods, the drought situation meant low availability of edible wild foods. Poor households had stopped non-staple food purchase to spare more money for staple food, further reducing the dietary diversity. The general ration distribution did not cover all the households (only 30.5% of the assessed households received aid) in this assessment and this reduced the overall food available to the house holds.

Although the prevalence of common childhood illnesses has declined since the previous assessment, the current levels are still high and could have contributed to high malnutrition levels. However the continued presence of health care providers especially MSF-Holland in Marere could have contributed to the decline in these common childhood illnesses and mortality since the previous assessment. It is observed that from January this year admissions in the Therapeutic Feeding Centre run by MSF in Marere have increased steadily. This is an indication

that in the absence of such a facility, severe wasting and mortality would have been higher.

Key factors that could have prevented further deterioration in nutritional status include high coverage of Vitamin A supplementation (88%) and measles vaccination (97%). Indeed, those children who had not received a measles vaccination were 1.1 times more likely to be wasted. Furthermore, lack of vitamin A is one of the most serious childhood nutritional diseases. Vitamin A is recognized as a critical factor in child health and survival. Measles, diarrhoea and other diseases that occur in emergencies due to overcrowding in and poor sanitation are more severe among vitamin A deficient children (FAO, 2005). Moreover, the presence and humanitarian activities of several NGOs including food distribution by WFP/AFREC, MSF-Holland out-patient health care services, supplementary and therapeutic feeding services, maternal and child health services by SRCS, WORLD CONCERN/AFREC water and sanitation project as well as other projects by international and local partners are considered in this assessment as some of the important factors that mitigated the nutrition situation.

## 6. CONCLUSION AND RECOMMENDATIONS.

The nutrition situation in the Jilib riverine remains disturbingly high putting the community in a persistent humanitarian emergency situation. This could deteriorate further especially with likely rise in diseases due to recent flooding and the attack of crops by army worms immediately after the onset of the current *Gu* rains. The communities in this livelihood zone continue to be in need of elaborate external assistance.

It is tempting to conclude that with the onset of rains the riverine communities will need no more assistance. But whereas rain may lead to increased cropping and potential high harvest, this will not translate into increased food supplies until the next harvest season which is not due until August. The following is therefore recommended:

In the shorter-term:

1. Increased surveillance and community mobilisation to ensure that all the children severely wasted are taken to the Marere MSF-TFC for rehabilitation
2. Continued rehabilitation of malnourished children and pregnant mothers
3. Provision of seeds for planting after the destruction of newly planted crop by floods.
4. Increased access to food

In the long-term

1. Increased access to food at household level and in particular by assisting farming communities with means of increasing food production, processing and storage especially during the *Gu* season.
2. Increased access to health care services and rehabilitation centres for severe malnutrition.
3. Nutrition education especially targeting mothers of child bearing age on the importance of continuous breastfeeding of children to 2 years of age and preparation local nutritious complementary foods

## 7.0 APPENDICES

### Appendix 1: Sampling Frame for the Jilib Riverine Nutrition Assessment, May 2006

			Population figures reviewed by assessment team		
Fixed Villages			Village population	Cum. Popn	Cluster
JILLIB	E	10,575	10575	10575	1-6
Buruuji	E	705	705	11280	
Miniasa	E	280	280	11560	
Qalaaliyow	E	201	0	11560	
Mubaarak1	E	980	980	12540	7
Mubarak 2	E	675	675	13215	
Mashaani	W	280	0	13215	
Tarbaakunyo	E	225	225	13440	8
Tarbaa dhoble	E	370	370	13810	
Kaytoy	W	1,250	1250	15060	
Kaakorey	E	190	190	15250	9
B/Cabdiraxman	W	245	245	15495	
Fanoole	W	305	305	15800	
Fakiyo	W	280	280	16080	
Baraka	W	300	300	16380	
Tansania	W	295	0	16380	
Jafaaley	E	335	335	16715	
Marere	W	105	900	17615	10
Malenda	E	917	360	17975	
Nasiib yaasin	E	675	800	18775	11
Tufaanyo	W	200	200	18975	
B/mayoonde	W	105	105	19080	
Dhaydhay	W	350	100	19180	
Danbaley	W	395	260	19440	
Jijja	W	740	150	19590	
Cusmaan Mooto	W	1,405	1405	20995	12
Waagaade	E	900	900	21895	
Hargeisa	W	323	1000	22895	13
Libaanga	W	720	375	23270	
X. Tumaal	W	360	100	23370	
Qalaaliyow B	W	115	115	23485	
Kalanji	W	180	1500	24985	14
Dibidow	E	150	210	25195	
Helashiid	E	450	450	25645	
Mobilyn tabata	W	300	190	25835	15
Bandar	E	115	115	25950	
Adoomow	E	520	520	26470	
Bodboode	E	630	630	27100	
Barakamajiido	W	615	850	27950	16
B/Taag	E	100	250	28200	
Jalle Joogso	W	150	900	29100	

B/ Balley	E	680	750	29850	17
B/Mareer	W	435	570	30420	
B/nasiibow	E	625	695	31115	18
Mugaala	E	280	280	31395	
Madhooka	East	515	515	31910	
Bardheere Yare	West	0	1800	33710	19
Limoole	East	295	295	34005	
Maanyagaabo	East	420	420	34425	
Gumeyni	East	0	1000	35425	20
Bulo Sheikh	West	0	280	35705	
Makayuni	West	0	560	36265	21
Cawramale	West	335	800	37065	
Gandoble	West	0	100	37165	
Bashir Malaga	West	650	180	37345	
Shongara	West	376	300	37645	
Fomga Moya	West	627	140	37785	
Kamtire weyne	West	605	750	38535	22
Baasay	West	345	190	38725	
Dabayle	West	450	180	38905	
Haranka	East	1,250	1250	40155	23
Bulo Shiidle	West	365	300	40455	
Bulo Shidaad	West	0	850	41305	
Nasiib Buundo	East	575	575	41880	24
Bandar Salaam	East	555	555	42435	
Naftaaquur	East	375	375	42810	
Gumeeni-East	East	395	395	43205	
Haraawe	West	1,075	1075	44280	25
Kuulow	West	312	312	44592	
Buula farxaan	West	285	285	44877	
Mansuur	West	660	240	45117	26
Mansuur weyn	West	310	420	45537	
Yaaqle	West	325	325	45862	
Kumbareere	West	525	525	46387	
Baladol Kariim	West	725	900	47287	27
Caliyo Guubow	West	390	100	47387	
Cusbooley	West	715	715	48102	
Sandaria	West	315	315	48417	
Bandar Jadiid	West	424	424	48841	28
Mobileyn	West	235	235	49076	
C/kakane	West	460	380	49456	
Bandarjadiid 2	West	250	250	49706	
Balado Raxma	West	810	1000	50706	29
xandal barake	West	645	645	51351	
Misra	West	474	474	51825	
Kamdaada	West	1,075	800	52625	30
<b>8</b>		<b>67,977</b>	<b>52625</b>		
Cluster interval				1754	
Random Number					1131

**Appendix 2. JILIB RIVERINE NUTRITION ASSESSMENT QUESTIONNAIRE**

Date \_\_\_\_\_ Team Number \_\_\_\_\_ Cluster Number \_\_\_\_\_ Name of enumerator \_\_\_\_\_ Name of Village/Town \_\_\_\_\_ Household Number \_\_\_\_\_ Name of the Respondent \_\_\_\_\_

**Q1-8 Characteristics of Household**

- Q1** How many people live in this household (Household size)<sup>2</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>3</sup> 2=Internally displaced<sup>4</sup> 3=Returnees<sup>5</sup> 4=Internal immigrant<sup>6</sup> 5=Other (specify) \_\_\_\_\_  
**If answer to the above is 1, then move to Question 7.**
- Q4** Place of origin (categorize during questionnaire design) \_\_\_\_\_
- Q5** Duration of stay \_\_\_\_\_
- Q6** Reason for movement: 1= Insecurity 2=Lack of jobs 3= Food shortage 4=Water shortage 5=others; specify \_\_\_\_\_
- Q7** What is the livelihood systems used by this household? 1= Pastoral 2=Agro- pastoral 3=Urban 4= Riverine (irrigated agriculture; fishing)
- Q8** What is the household's main source of income? 1= Animal & animal product sales 2= Crop sales 3= Petty trade 4= Casual labour 5=Salaried employment 6= Remittances 7= Other, specify \_\_\_\_\_

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

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

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

<sup>3</sup> A person who dwells in a particular place permanently or for an extended period

<sup>4</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>5</sup> Refugees who have returned to their country (Somalia) or community of origin, Somalia, either spontaneously or through organized repatriation [ UNHCR definition]

<sup>6</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)

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

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

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

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

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

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

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

Q31 Average time taken to and from the nearest water point (including waiting and collecting time) 1= <30 min 2=30 – 60 min 3= 1-2 hrs 4= more than 2 hrs

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

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

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

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

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

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

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

**Q 38 Food Consumption Diversity**

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

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

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

<sup>11</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

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

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

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

**Q41** Which of these informal supports did you receive in last three months

- 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?

- 1= Free cash    2=Free food    3=Cash for work    4=Food for work  
 6=Water subsidy    7 Transportation of animals subsidy    8=Veterinary care

5=Supplementary food    9=None    10=Other (specify) \_\_\_\_\_





## 8.0 Assessment Team

Household data collection was undertaken by 10 teams which constituted of a supervisor, two enumerators and one field guide. These were selected from the local agencies (AFREC, SRCS) and local community based on their prior experience in health and/or nutrition surveillance.

The following team of nutrition and/or food security professionals undertook the specified tasks:

Noreen Prendiville FSAU	Provided Technical Advice, overall leadership and managerial support at all stages of the assessment
Ahono Busili FSAU	Coordinated the Assessment
Peter Kingori FSAU Nutritionist	Data Analysis and report writing
Tom Oguta FSAU Nutritionist	Data Analysis and report writing
Khaliif Nouh Abdullah FSAU	Trainer/Field supervision and coordination
Ibrahim Mohamed FSAU	Trainer/Field supervision and coordination
Abdirizak FSAU	Analyzed the food security situation

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