

JILIB RIVERINE NUTRITION SURVEY

MIDDLE JUBA REGION

SOMALIA

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FSAU/UNICEF/UN-OCHA/SRCS/AFREC



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The community's contribution of the guides to accompany the teams during the survey undertaking cannot be overlooked. The input on recommendations from the community gives plausibility to those points outlining the way forward for the district.

Much gratitude also goes to the key informants, mothers, fathers and caregivers whose co-operation and support helped the survey team achieve its objective.

ABBREVIATIONS

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
WFP	World Food Programme
UNICEF	United Nations Children's Fund
UN OCHA	United Nations Office for Coordination of Humanitarian Assistance

EXECUTIVE SUMMARY

Over the past three years, the Southern Juba riverine livelihood group of Jilib district has experienced successive drought that has led to a decline in crop production, and increased food insecurity within the poor socio economic group.

Since September 2002, over five assessments have been conducted by SRCS, ICRC, MSF-Holland, FSAU and WFP in the riverine villages and have confirmed critical nutrition situation, manifesting as oedema, and high mortality among children. These have been attributed partially to declining food security and outbreaks of measles. MSF Holland established a day care therapeutic feeding center (TFC) and out-patient's department (OPD) in June 2003 in an effort to contain the situation. A survey involving FSAU, UNICEF, UNOCHA, SRCS AFREC and the Jilib community was undertaken in May 2004 to determine the nutrition and mortality situation, their underlying causes and to document recommendations.

A total of 913 children aged 6-59 months and measuring 65-110 cm, from southern Juba Riverine livelihood group were surveyed using 30x30 cluster sampling methodology. Results indicate global (WFH < -2 z score or oedema) and severe acute malnutrition (WFH < -3 z score or oedema) of 19.5% (CI: 17.0 – 22.2) and 3.7 (CI: 2.6 – 5.2) respectively, which depict a critical nutrition situation. About 82% of the surveyed children were from the Bantu household. Among the malnourished, about 79.8% of them came from the Bantu households. Findings on the retrospective under-five and crude mortality rates of 5.4/10,000/day and 2.2/10,000/day, depict an emergency situation (WHO). A summary of findings is tabulated below.

The critical levels of global acute malnutrition and mortality rates were attributed to general food insecurity, lack of access to safe water, health services and a poor social care environment for women and children and poor sanitation, with the insecure environment being a major contributor.

In a normal year, poor households in the Juba riverine livelihood zone mainly access food through own-production and income through agricultural labour. Due to the successive poor crop harvests, production for household consumption has declined greatly. This also led to a decline in income accessed through agricultural labour and crop sales. Coping mechanisms currently employed include self employment, intensified bush collection and charcoal burning, change of food preferences from cereals to dried mangoes and family splitting for labour to urban area. Despite these coping mechanisms, the poor socio economic group experiences an acute food deficit likely to predispose them to malnutrition and mortality. The riverine community's vulnerability is escalated by their lack of livestock (due to tsetse fly infestation), a subsistence farming livelihood and a fragile social support network system with limited access to remittance. This situation has been exacerbated by civil unrest in the district in the last decade and resulted persistent critical levels of acute malnutrition and disease within this livelihood group. The number of road blocks between Kismayo (where most of the food items come from) and Jilib is high. Taxes are paid at each of the road blocks resulting in high retail prices of food and non food commodities.

Most (97%) of the surveyed children came from households that depend mainly on open hand dug wells, river and stagnant water for water, with only about 3% depending on borehole/protected wells for water. The water is of poor quality, and is neither treated nor boiled prior to consumption. The river is highly infested with crocodiles which often attack those who draw close by to fetch water. About 92% of the children came from households which do not use pit latrines and dispose of human waste indiscriminately, leading to poor environmental sanitation and contamination of the water points. This practice, coupled with lack of hand washing prior to feeding children has exacerbated prevalence of diarrhoeal diseases (43%) and infestation with intestinal parasites, ailments identified by MSF OPD, to be the leading causes for morbidity. Unfortunately, due to the long distance covered in accessing health services, most children do not receive treatment promptly, resulting in malnutrition and mortality. Diarrhoeal diseases and oedema/malnutrition were identified to be the leading causes for under five mortality (30% and 22%) and for crude mortality (16% and 11%) respectively. Statistical analysis of the survey data found significant association between malnutrition and diarrhoea (p=0.00019).

Indicator	No.	%
Children aged 6-59 months assessed	913	100
Number of households	514	100
Global acute malnutrition (WFH <-2 Z-score or oedema)	178	19.5
Severe acute malnutrition (WFH <-3 Z-score or oedema)	34	3.7
Children with diarrhoea in 2 weeks prior to the survey	392	42.9
Children with ARI in 2 weeks prior to the survey	311	34.1
Children with measles in 1 month prior to the survey	46	5
Children with Malaria in 2 weeks prior to the survey	293	32.1
Measles coverage(n=836)	194	23.2
Vitamin A supplementation coverage	645	70.6
Source of water: Borehole	23	2.5
Source of water: Unprotected wells/springs/river	885	97.0
Faecal disposal:		
Use pit latrines	73	8
Do not use pit latrines	840	92
Frequency of feeding: less than 3 times a day	394	43.1
Access to health services		
NGO health clinics	365	40
Private clinics	192	21
Traditional healers	320	35
Other (prayers)	37	4
Under-five mortality rate (per 10,000/day)	69	5.4
Crude mortality rate (per 10,000/day)	88	2.2

A relatively high prevalence of diseases during the two weeks preceding the survey was revealed in the study group. About 34% of the assessed children had a respiratory infection: 43% with diarrhea, 32% with suspected malaria and 5% with measles. About 71% of the assessed children had received Vitamin A supplementation, 23% of immunisable age had been vaccinated against measles while about 84% had received at least one dose of polio vaccine during the polio campaign. Majority of the assessed children (96%) were taken for medical assistance when sick (about 40% to the four NGO-sponsored public health facilities, 35% from traditional healers and 21% from private clinics). Unfortunately, the distance of the NGO-sponsored clinics (which were located in the major villages of Marere, Gududei and Jilib) ranged from 1-50 km, limiting attendance from villages located beyond 12 km radius. Additionally, medical assistance from the clinics was often sought at advanced stages of infections when signs of malnutrition had manifested. The survey also found inadequate technical capacity in the SRCS sponsored clinics at Gududei and Jilib (with about only 60% trained staff) and limited medical supplies to address the needs, leading to overstretched services at the OPD (MSF-Holland) in Marere where most of the services could be accessed. These factors have contributed to high malnutrition and mortality rates.

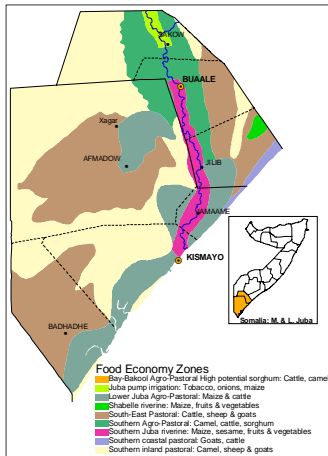
A large proportion of the children (46%) came from households that had consumed one or two food groups in the previous 24 hours and cereal was the most common food group consumed in the Juba riverine community. This indicates a limited food variety access at the household level. About 97% of the assessed children had been introduced to foods other than breast milk in their first three months of age. About 18% of the children had stopped breastfeeding within their first year of life. About 43% of the children received less than three meals a day. Care takers spent little time on child care practices, mainly due to farm labour engagement. These practices limit appropriate nourishment of children and contributed to malnutrition.

Based on the analysis of the situation, the survey team concluded that the nutrition and mortality levels were critical and required urgent interventions to contain the situation. Following the poor nutrition and food security situation, the mission made the recommendations below.

1. Due to the critical nutrition situation and 'emergency' level of mortality, the following interventions are required urgently in order to save life, between now and the next harvest:
 - i. Increase the household food basket through provision of food assistance, through an appropriate approach (short term general food distribution, food for work, SFP), as already recommended by WFP.
 - ii. Improve the access to health and EPI services. Specific recommendations to increase access to health include
 - Increasing the capacity (technical capacity for the staff, drugs and supplies) of the MCH centres in this area.;
 - MSF-Holland highly recommends that an international health agency moves into the location to complement their effort in health care provision. This agency may need to consider provision of mobile health services to villages located far away from the static health facility.
 - Provision of EPI services is crucial and needs to be addressed
 - iii. Improve the access to safe water for consumption, including storage issues. Specific interventions include
 - rehabilitation of the existing shallow wells
 - construction/protection of wells in villages which do not have access and rely on river water;
 - Provision of health education for improved sanitation.
2. Improve the immediate environmental sanitation and hygiene at house hold level through health awareness, facilitating construction of pit latrines.
3. Opportunities to restore livelihoods include:
 - i. construction of canals from the river for irrigation purpose,
 - ii. Flood protection and river embankment plans
 - iii. provision of farm inputs, fruit trees and fishing gear
 - iv. Controlling the crocodiles in the Juba river which hinder fishing and water fetching activities
4. Closer monitoring of the situation is essential.

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-born diseases and tse-tse flies attacks 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 Survey 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.

This survey was conducted to examine the factors underlying the persistent critical levels of wasting among the riverine community of Jilib district and develop appropriate recommendations to address these problems.

1.2 Survey 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 65-110cm.
2. To determine the food security situation
3. To determine the health situation, including the coverage of measles vaccination and Vitamin A supplementation among the Jilib riverine community
4. To determine the incidence of some common disease two weeks prior to the survey
5. To determine the coverage of therapeutic feeding programmes among the riverine community of Jilib District
6. To determine the retrospective crude and under-five mortality rates.

2: BACKGROUND INFORMATION

2.1 Political and Social Situation of Jilib District

Jilib district is situated within the Middle Juba region. Jilib town is located 120km 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 communities' interested 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 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 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 source of livelihoods for the majority of the population.

The security situation and access

Security in Jilib district has been unstable for several years, but deteriorated considerably from February 2004, with reported security incidents involving two militia groups (Sheikhal and JVA).

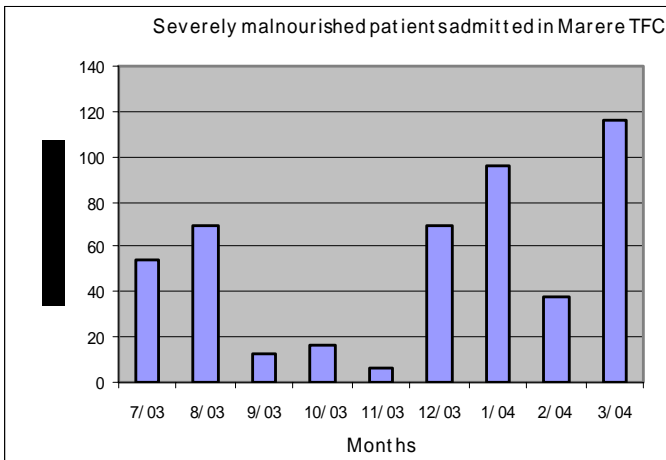
The number of roadblocks (at which taxes are extorted) on the Jilib – Kismayo road has increased significantly, resulting in triple costs of transport for passengers and goods using the road. These extra costs have been transferred to retail prices which have also risen from February 2004.

2.2 Humanitarian presence

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

2.2.1 Nutrition

In September 2002, SRCS/ICRC reported a significant number of cases of severe malnutrition manifested as oedema, among children in some villages alongside Juba River in Western Jilib. An assessment conducted by MSF-Holland in June 2003 highlighted deaths and significant numbers of severely malnourished /oedema among under five children in some villages on the



western bank of Juba River. MSF subsequently established a TFC in June 2003. The number of admissions has been varying over the months with a significant increase being noted since December 2003.

A follow up mission by FSAU in Jilib's riverine community in July 2003 attributed the critical nutrition situation with high severe acute malnutrition (mainly oedema) to depleting food security and an outbreak of measles. The riverine community of West Jilib was also found to be very vulnerable due to lack of livestock and productive animals (attributed to tsetse fly infestation), a sedentary farming livelihood, a fragile social support network system with limited remittance access and poor economic status. A further rapid assessment by FSAU in October 2003 using MUAC in which all children in 11 Jilib riverine villages measured a poor nutrition situation with 14% malnourished (MUAC less than 14%).

In January 2004, FSAU in collaboration with MSF, SRCS and the local community began to undertake a nutrition survey in Jilib District; however, the exercise was not completed due to security reasons.

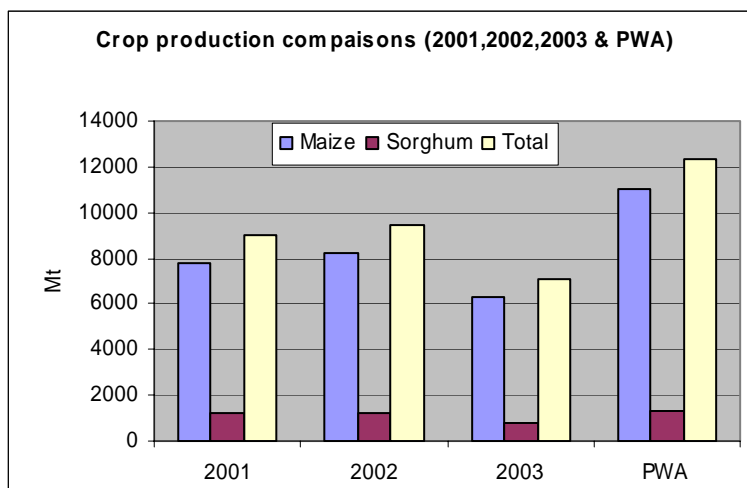
2.2.2 Food Security

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 along 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-borne diseases and tse-tse flies. They rear all types of livestock including camels.

There has been a declining crop production over the past three years (2001 -2003) 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. A 50% drop of local crop production was recorded in 2003 crop assessment compared to post war average and that indicates the spreading food insecurity amongst the poor households along the Juba River coupled with the increased disease incidents (Malaria, ARI, Diarrhoea, etc) and extremely poor hygiene / environmental sanitation in all villages visited.



2.2.3 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.

2.2.4 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 10 complete hand-pumps with accessories for installation to 10 rehabilitated wells. Plans are underway for this intervention to be undertaken through AFREC.

Assessments Conducted in the Area

Besides the nutritional assessments highlighted above, WFP Wajid Sub-office, on April 20-27, 2004 conducted a rapid food security analysis and vulnerability assessment focusing on the Riverine Food Economy Group of Jamame, Marere and Buale districts (Middle and Lower Juba Region). The objectives were: to determine appropriate interventions (and strategies) that WFP could undertake in each district and to identify potential implementing partners on the ground. WFP findings highlighted high rates of malnutrition among the children under five years with significant mortality rates. This was attributed to lack of food at the household level, diseases, poor water quality, lack of proper childcare practices and chronic poverty. WFP plans to undertake a one -off general food distribution to reduce the current shock in all the villages along the river, but subject to the security situation; rehabilitation work using food for work (FFW), in partnership with AFREC; and to provide family rations to households with malnourished children undergoing therapeutic and supplementary feeding, through MSF-H.

3: SURVEY METHODOLOGY

3.1 Survey design

The descriptive data collected in this survey was obtained using standard questionnaires (attached in the appendix). Two types of questionnaires were used, one with household details, food security questions and child's anthropometrical and health details; and the other, a mortality questionnaire. Additional qualitative data were collected through focus group sessions and key informant interviews as well as visits to the villages and markets. Data collection took place between 16th and 22nd 2004.

3.2 The sampling procedure

A two-stage cluster sampling methodology was applied whereby 30 clusters were randomly selected from the entire Jilib riverine population sampling frame (Appendices). Initially a sampling frame was constructed, using revised WHO NIDs population figures whereby all the riverine villages was considered. This list of riverine villages, with their respective populations was used to construct cumulative population figures for the riverine part of the Jilib District. The population figures were received from the WHO population estimates and the verification/ review conducted jointly by FSAU, UNICEF and UNOCHA field teams. An estimated population of 52,625 (WHO, August 2003) was used from which a cluster interval of 1754 was calculated. (The 52,625 was the Jilib riverine population used in the survey.) Using random number tables a random number of 1131 was chosen within the cluster interval to determine the first cluster. The subsequent clusters were determined systematically by adding the cluster interval (1754) to the first randomly selected number (see appendix) until all the 30 clusters was selected. A total of 913 children between the heights/length of 65 and 110cm and 6-59 months old were assessed from the 30 randomly selected clusters. Out of the total, 6 clusters were from Jilib town and its satellite villages.

In each of the clusters, mortality questionnaires were exercised to 30 households. Same sampling frame was used in cluster selection hence the same clusters selected for the nutrition data were also used for the mortality data. In total, mortality data was collected from 906 households irrespective of whether with an under-five or not (details of household selection, below).

3.3 Study population and sampling criteria

The study population consisted of people living in the district and comprised all the children aged 6-59 months or measuring 65-110 cm for height/length. On the visit to each cluster, the centre for the clusters was identified and a pen was spun to determine the direction to follow in the selection of the households with children aged 6 to 59 months. The total number of the households from the centre to the end was established and given numbers to enable random selection of the first household with a child of the required age or height. From the first household with a child aged 6-59 months, the same direction was followed to get the next household. On reaching the edge of the cluster the right-hand direction (clockwise direction) was followed until details of 30 children were collected from that cluster. If a cluster was exhausted of children before the required 30 children had been reached, a neighbouring village was randomly selected. All eligible children in the randomly selected household were measured and if a child or primary caregiver was absent, an appointment was booked for a later visit in the course of survey. In case a randomly selected child was admitted into the therapeutic feeding centre, thus absent from the house, follow up was made to assess child in the TFC.

With reference to mortality, the data was collected retrospectively with the first questionnaire being exercised on the first randomly selected household irrespective of presence of an under-five child or not. (The entire population was included in the mortality rates determination.) Same direction (which has been randomly picked by spinning a pen) as indicated above was followed. But unlike the survey for children where only households with children were visited for interview, the mortality questionnaire was exercised in every household in the identified direction. The survey team turned to the right side on reaching the cluster edge, until 30 households were assessed from the cluster.

3.4 Data collection

Anthropometrical measurements

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

Weight: Salter scale with calibrations of 100g-unit was used. This was adjusted before weighing every child by setting it to zero when the weighing pant was on. The female children would be lightly dressed before having the weight taken while clothes for the male children were removed. Two readings were taken for each child and the average recorded on the questionnaire. The measurements were taken to the nearest 0.1kg.

Height: For height, a vertical measuring board reading a maximum of 132cm and capable of measuring to 0.1cm was used to take the height or length of a child. The child would stand on the measuring board barefooted; have hands hanging loosely with feet parallel to the body, and heels, buttocks, shoulders and back of the head touching the board. The head would be held comfortably erect with the lower border of the orbit of the eye being in the same horizontal plane as the external canal of the ear. The headpiece of the measuring board was then pushed gently, crushing the hair and making contact with the top of the head. Height was then read to the nearest 0.1cm. Two readings were recorded and the computed average used in the analysis.

Length: For children aged 6 to 24 months or between 65cm to 84.9cm length instead of height was taken using a horizontal measuring board. The child was made to lie flat on the length board. The sliding piece was placed at the edge of the bare feet as the head (with crushing of the hair) touched the other end of the measuring device. Then two readings were taken and the average computed. The measurements were taken to the nearest 0.1cm

Oedema: Defined as bilateral oedema on the lower limbs detected by gently pressing the feet to check if a depression is left after at least three seconds of pressing. All children were checked for oedema first before being taken their height or weight.

Children identified to be in critical condition (2 oedema cases) were advised to visit the MSF Switzerland health centre or Jilib MCH where supplementary feeding programme is being implemented.

Child age determination

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

Morbidity terminologies

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

Measles: A child with more than three signs of the following was considered having measles: fever, and skin rash, runny nose or red eyes, and/or mouth infection, or chest infection

Acute Respiratory Infection (ARI): Asked as *oof wareen or wareento*. The signs asked included cough, rapid breathing, pneumonia, bronchitis and fever or any other respiratory illness.

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

3.5 Description of survey activities

Table 1: Chronology of activities for the Jilib Riverine Assessment

Major Activity	Period
Preparation of tools, methodology & review of secondary data (Nairobi)	April 15 - May 10 th
Assessment planning meeting and confirmation of the equipment and staff	
Training of enumerators and pre-testing of questionnaire	May 14 –16
Cluster Identification	May 16
Collection of data and entry	May 17 – 22
Data cleaning and presentation of preliminary analysis to community	May 23-26 th
Presentation of draft report	June 14 th

Six teams consisting of two enumerators and one supervisor conducted the survey with each team handling one cluster in a day. An elder from a particular village/cluster assisted the teams in identification of the cluster boundaries and its centre. Supervisors were seconded from the participating organizations; namely; FSAU, UNICEF, while the enumerators came from the SRCS health facilities and the local community. UNOCHA played a security/coordination role. The survey team consisted of qualified enumerators who were selected on the basis of their experience with previous nutrition assessments or surveys. Overall support, supervision and co-ordination were done by FSAU nutritionist with support from.

3.6 Quality control procedures

A comprehensive training of enumerators and supervisors was conducted covering interview techniques, sampling procedure, inclusion and exclusion criteria, sources of errors when taking measurements, standardizing the questions in the questionnaire, levels of precision required in measurements, diagnosis of oedema, handling of equipment and the general courtesy during the survey. A standardization tests were conducted to six children during the training.

The survey teams were also taken to the field to familiarize with village/cluster entry; administering the questionnaire, sampling procedure, correct taking of measurements and documentation. After the field exercise, views were exchanged to address the difficulties identified; appropriateness of the questions reviewed and necessary changes were made.

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

3.7 Data analysis

Entry, cleaning, processing and analysis

Data was entered and analyzed using EPIINFO 6.04 computer based package. Running and tabulating all variable frequencies was carried out as part of data cleaning. The EPINUT programme was used to convert the measurements (weight and height) into nutritional indicators and comparison made with the National Centre for Health Statistics (NCHS) references as designed by WHO (1983).

General characteristics of study population

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

Creation of nutritional status indices

The anthropometrical measurement of weight and height were used to compute the nutritional status indicators of the studied children. Weight For Height (W/H) expressed the weight of the child as a percentage of the expected weight for the standard child of that height as given by NCHS. WFH measures acute malnutrition or wasting. Using EPINUT, Z-scores were generated and the anthropometrical 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

3.8 Mortality data collection and analysis

The mortality data was collected retrospectively from 906 households through a questionnaire using the methodology described above. Each household assessed was asked the composition of their members in two parts: (i) those members less than 5 years and (ii) the total number of household members. The number of deaths three months prior to the survey and the cause for death was also investigated and documented.

Mortality data analysis

Using the formula for calculating mortality (below), the under-five mortality rates were calculated.

Formula (steps):

- Total the deaths for a given number of days (n)
- Divide the total deaths (n) by the mid period population size $[(n + N_1 + N_2)/2]$
- Divide the outcome with recall period (p)
- Multiply by 10,000 for a daily under-five mortality rate

The formula summary: Under-five mortality rate = $\{[n / (n + N + N)/2] / p\} * 10,000$

Same formula was applied in the calculation for crude mortality rate.

4: SURVEY RESULTS

4.1 Characteristics of the study population

Out of the 913 children assessed from the 514 households, 469 (51.4%) were males and 444 children (48.6%) were females with the ratio of males to females being 1.05:1. About 95.6% of the children came from male headed households while the rest 4.4% were from female headed households. The mean household size in Jilib Riverine population is 6 (SD= 1.8). About 82.3% of the assessed children were from the *Jareer* (Bantu) households while the rest (17.7%) were from the *Jileec* (non-Bantu) households.

Majority of the children (96.6%) were from households currently staying in their indigenous residential area while 3.2% were from internally displaced households. Insecurity (90% of the displaced children) was the main factor causing displacement in the Juba riverine population. The displacement mainly occurred within the riverine villages.

Table 2: Distribution of the sample population by sex and age groups				
Age categories	Males	Females	Total	Ratio
6-11	65 (51.2%)	62 (48.8%)	127 (13.9%)	1.0
12-23	123 (55.2%)	100 (44.8%)	223 (24.4%)	1.2
24-35	89 (48.1%)	96 (51.9%)	185 (20.3%)	0.93
36-47	90 (54.2%)	76 (45.8%)	166 (18.2%)	1.2
48-59	102 (48.1%)	110 (51.9%)	212 (23.2%)	0.92
Total	469 (51.4%)	444 (48.6%)	913 (100%)	1.05

4.2 Water and Sanitation

Unprotected wells and the river are the main water sources the Juba riverine population depends on for drinking and washing/ proper hygiene activities. The water is readily available but of poor quality.

Table 3: Sources for water for drinking and hygiene		
Water sources	Drinking water	Hygiene water
Unprotected wells/springs	612 (67.1%)	612 (67.1%)
River	273 (29.9%)	274 (30.0%)
Borehole/protected wells	23 (2.5%)	21 (2.3%)
Others (berkads, public tap)	5 (0.5%)	6 (0.6%)

trash into the commonly used water points (see photos).

The sanitation condition was extremely poor with improper waste disposal being practiced in the area. About 92% of the children came from households not accessing toilets. Faecal matter disposal is poorly done with much of it being disposed on the river banks and sites where runoffs flow through thus draining all

4.3 Livelihood and asset holding

Most children came from households depending on rain fed crop production (79%) as their main livelihood. Crop production in the *dhesheks* (12% of the children) and dependency of casual labour for income are also livelihood strategies adopted by significant Juba riverine population.

About 8% of the children came from households that had no cultivated land. About 67% of the children came from households which had less than 7 hectares of land. The land under cultivation is determined by the ability to clear the bushes (in terms of workforce and tools required). Consecutive poor harvests in the past three seasons have also contributed to the reduced households' capacity to cultivate land due to loss of income.

Majority of the assessed children came from households without cattle or shoat. This is mainly due to tse-tse flies' attacks which cause diseases. Almost all the cattle found were cow bulls popularly used as pack animals and pulling the plough during land preparation.

4.4 Health services

Majority of the assessed children (96%) were taken for health care assistance when sick. About 40% were taken to the four NGO-sponsored public health facilities (Mercy International, MSF-H and 2 by SRCS); 35% of the children are attended by traditional healers while 21% were taken to private clinics for assistance (Table above). About 4% were prayed for by the household member for healing. Distance limits the utilization of the public health facility since they are situated in the main villages (Marere, Gududei and Jilib). Further, the quality service (to both children and adults) through the MSF-H clinic leads to increased attendance. Consequently, the MSF-H work force is sometimes overwhelmed by the large number of attendants. Additionally, private clinics are situation relatively bigger villages thus compelling the health service seekers to travel for long distance. It is worth noting that only 60% are taken to trained health personnel.

Table 4: Distribution of children by household livelihoods and asset ownership

		No	%
Livelihood	Riverine rain fed	725	79.4
	Riverine <i>dhesheks</i>	109	11.9
	Casual labour	39	4.3
	Crop-production-outside riverine	25	2.7
	Destitute- begging	8	0.9
	Pump irrigation-commercial	7	0.8
Cultivated land size	3 hectares and below	345	37.8
	4-6 hectares	267	29.3
	7-10 hectares	196	21.4
	Over 10 hectares	105	11.5
Cattle owned	Zero	814	89.2
	1-3 cattle	72	7.9
	4 and above	27	2.9
Shoats owned	Zero	763	83.6
	1-5 shoats	130	14.2
	6 and above	20	2.2
Toilet	With access to toilet	75	8.2
Healthcare assistance	Seeking healthcare services	879	96.3
Source of help	Public health facilities	364	39.9
	Traditional healers	322	35.3
	Private clinic	193	21.1
	Prayers	34	3.7

4.5 Nutritional status

Table 5: Prevalence of acute malnutrition based on W/H Z-score and/or oedema

	Males		Females		Total	
	%	No	%	No	%	No
Global acute malnutrition (W/H<-2 z score + oedema)	20.0 (95% CI:16.4-23.8)	95	18.4 (95% CI: 14.8-22.2)	83	19.5 (95% CI: 17.0-22.2)	178
Severe acute malnutrition (W/H<-3 z score + oedema)	4.3 (95% CI: 2.5-6.4)	21	2.7 (95% CI: 1.3 – 4.5)	13	3.7 (95% C.I: 2.6-5.2)	34
Oedema	0.2	2	0.2	2	0.4	4

The prevalence of global acute malnutrition defined as W/H<-2 Z score or oedema was 19.5% (95% C.I. 17.0-22.2) while the prevalence of severe acute malnutrition, defined as W/H<-3 Z score or oedema, was 3.7% (95% CI. 2.6- 5.2). About 79.8% of the malnourished children came from the Bantu households.

Table 6: Prevalence of acute malnutrition based on W/H % of median and/or oedema

	Males		Females		Total	
	%	No	%	No	%	No
Global acute malnutrition (W/H<80% of med/ oedema)	15.6 (95% CI:12.3-19.0)	74	14.6 (95% CI: 11.4 -18.1)	66	15.3 (95% CI: 13.1-17.9)	140
Severe acute malnutrition (W/H<70% of med/ oedema)	2.3 (95% CI: 1.1-4.0)	12	2.0 (95% CI: 0.8-3.7)	10	2.4 (95% C.I: 1.6-3.7)	22
Oedema	0.2	2	0.2	2	0.4	4

The prevalence of global acute malnutrition defined as W/H<80% or oedema was 15.3% (95% C.I. 13.1-17.9) while the prevalence of severe acute malnutrition, defined as W/H<70% or oedema, was 2.4% (95% CI. 1.6- 3.7). Two severely malnourished children, which had been randomly selected in the clusters, were followed up into the feeding centre and measured.

Table 7: Global acute malnutrition prevalence (based on Z-score or oedema) by sex

	Severe (W/H<-3 z-scores+ oed)	Moderate (-3 Z-Sc. ≤WFH< -2 Z-Sc.)	GAM (W/H<-2 z-sc. + oed.)	Normal (W/H≥ -2Z-Sc.)
Males	21 (4.5%)	74 (15.8%)	95 (20.3%)	374 (79.7%)
Females	13 (2.9%)	70 (15.8%)	83 (18.7%)	361 (81.3%)
Total	34 (3.7%)	144 (15.8%)	178 (19.5%)	735(80.5%)

The difference in malnutrition between sexes was not statistically significant.

4.5.1 Comparison of the Juba riverine population's nutrition status and the reference population

Measures of central tendency indicate a general shift to the left of the population nutrition status vis a vis the reference population. This implies that the Juba riverine population's nutrition status was relatively poorer than that of the reference population with an aggregate mean z-score of -0.83 and a median of -0.84 being recorded.

Table 8: Prevalence of acute malnutrition by specific age categories, based on W/H z-score and/or oedema

	Severe (W/H<-3 z-scores+ oed)	Moderate (-3 Z-Sc. ≤WFH< -2 Z-Sc.)	GAM (W/H<-2 z-scores+ oed)	Normal (W/H≥ -2 z-scores)
6-11 months	5 (3.9%)	34 (26.8%)	39 (30.7%)	88 (69.3%)
12-23 months	12 (5.4%)	48 (21.5%)	60 (26.9%)	163 (73.1%)
24-35 months	6 (3.2%)	25 (13.5%)	31 (16.8%)	154 (83.2%)
36-47 months	6 (3.6%)	14 (8.4%)	20 (12.0%)	146 (88.0%)
48-59 months	5 (2.4%)	23 (10.8%)	28 (13.2%)	184 (86.8%)

The relationship between malnutrition and age categories was statistically significant with the younger children (6-11 and 12-23 categories) being more malnourished than those aged 24 months and above ($X^2 = 32.65$, $df=8$, $p=0.000071$).

4.6 Health, feeding practices and immunisation coverage

Table 9: Disease prevalence, immunisation and childcare in Juba Riverine population		
Characteristics	Proportion	Number
Disease prevalence & immunisation		
Children with acute respiratory infection in past two weeks	34.1	311
Children with diarrhoea in past two weeks	42.9	392
Malaria in the past two weeks	32.1	293
Measles cases in the past two weeks	5.0	46
Vitamin A supplementation in past 6 months	70.6	645
Measles immunisation (N=838)	23.2	194
Children who have ever received polio vaccine in life	84.5	772
Child feeding		
<i>Frequency of feeding in a day</i>		
➤ Once	3.9	36
➤ Twice	39.2	358
➤ 3-4 times	52.7	481
➤ Five and above	4.2	38
<i>Age of stopping breastfeeding (N=659)</i>		
Less than 6 months	2.0	13
6-11 months	16.1	106
12-18 months	39.4	260
Above 18 months	42.2	278
Never Breastfed	0.3	2
<i>Child's age at introduction to complementary food</i>		
0-3 months	886	97.0
4-6 months	19	2.1
7 months and above	8	0.9
Children ever admitted in the TFP	3.1	28

A relatively high prevalence of diseases was revealed in the study group. About 34% of the assessed children had a respiratory infection¹, 43% with diarrhea, 32% with suspected malaria and 5% with measles. About 71% of the assessed children had received Vitamin A supplementation, 23% of immunisable age had been vaccinated against measles while about 84% had received at least one dose of polio vaccine during the polio campaign.

About 97% of the children in the Juba riverine are introduced to other foods other than breast milk in their first three months of age. About 18% of the children not breastfeeding stopped breastfeeding in their first year of life. Though about 57% of the children received a minimum of three meals per day, the food is mainly cereal based.

Relationship between malnutrition and other factors

- There was a statistically significant association between malnutrition and diarrhoea. Children who had experienced diarrhoea two weeks prior to the survey were about 1.7 times more likely to be malnourished than children who had not experienced diarrhoea (RR: 1.67, CI: 1.28-2.17, Corrected Yates: $\chi^2 = 13.88$, $p=0.00019$).

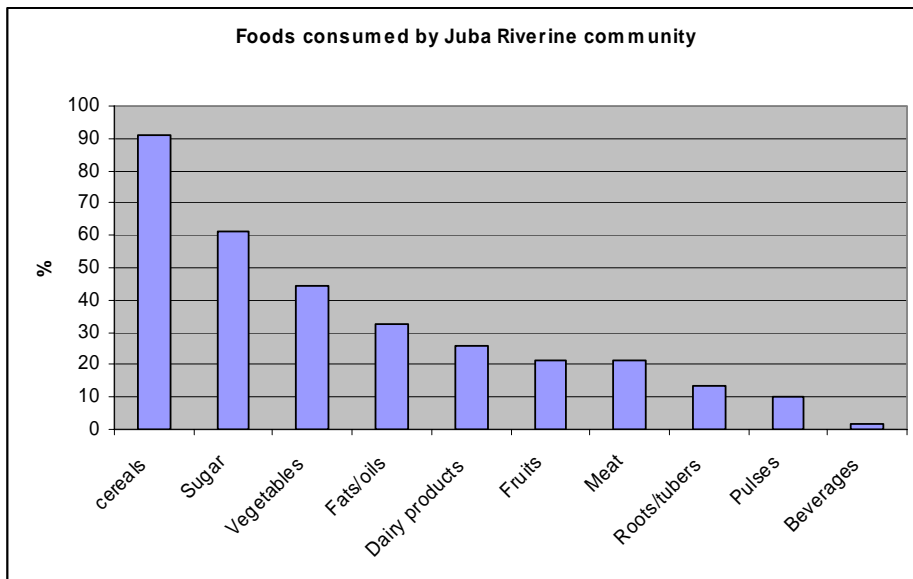
¹ -Respiratory infection includes coughs, rapid breathing, pneumonia, bronchitis or any other respiratory illness

- There was a statistically significant association between malnutrition and malaria incidences. Children who had experienced malaria two weeks prior to the survey were about 1.4 times more likely to be malnourished than children who had not experienced malaria (RR: 1.37, CI: 1.05-1.79, Corrected Yates: $X^2=4.9$, $p=0.0268$).
- There was no significant relationship between malnutrition and household livelihood system, acute respiratory infection, polio coverage, age of introduction of weaning foods, frequency of feeding, access to toilet facilities and source of drinking water.

4.7 Dietary diversity

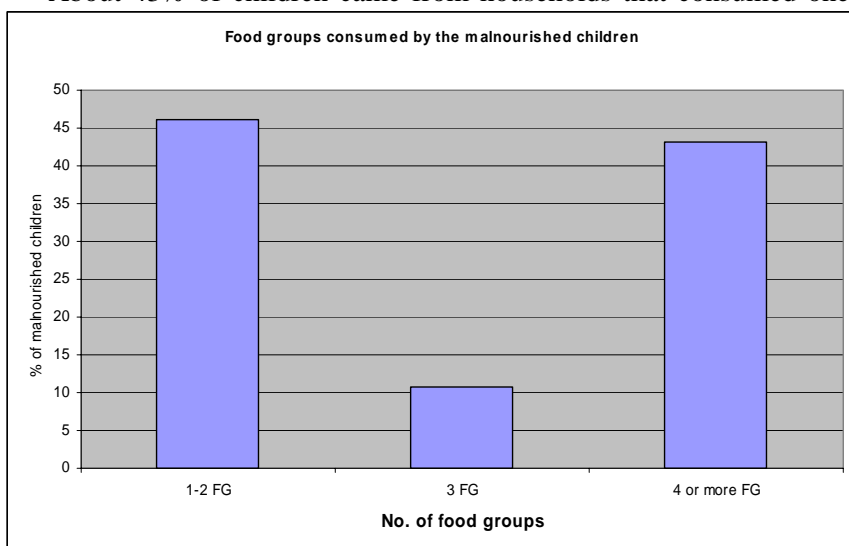
The FAO food group classification was adopted to establish the level of food diversification in the study group in the previous 24 hours. The main food groups used were as follows: 1) Cereals, 2) Beans and other pulses 3) Meat and meat products, fish, sea foods and eggs; 4) Roots and tubers, 5) Vegetables, 6) Fruits, 7) Fats and oil, 8) Dairy products, 9) Sugars and honey, 10) beverages, spices & other products.

Cereals were consumed by most of the households (91%). Sugar in tea was the second most consumed food group consumed with about 61% of the household consuming it 24 hours prior to the survey. Wild vegetables obtained from the river banks were consumed by about 44% of the households.



Due to tse-tse fly attacks on the livestock, they are rarely kept along the Juba valley. (Only few bulls are found in area and are used as pack animals or for pulling the plough during the weeding seasons). Therefore the dairy product consumed was the imported skimmed powder and only households which could access consumed it.

About 43% of children came from households that consumed one or two food groups in the previous 24 hours, 17.5% from households which consumed 3 food groups while about 40% came from those which consumed four or more food groups.



There was statistically significant relationship between malnutrition and the number of food groups consumed in the previous 24 hours with the children consuming few food groups being at higher risk of malnutrition than those consuming more food groups in the meals ($p=0.027$). About 46% of the malnourished children ($n=178$) had consumed one or two food groups in the previous day.

4.8 Coping strategy

An investigation on a number of coping strategies having been employed, 30 days prior to the survey, due stress was made with most households confirming use of them. The coping strategies were employed to obtained daily food for the entire family members. The following proportion of children came from households which had employed at least one of the strategies.

Coping strategies	% of children from Households adopting	
	%	No
Gather wild food, hunt, or harvest immature crops	57.3	523
Reduce number of meals eaten in a day	49.6	453
Switch from high quality to low quality less expensive foods	48.4	442
Limit portion size at mealtimes	48.1	439
Purchase food on credit	42.2	385
Consume seed stock held for next season	41.7	381
Restrict consumption of adults in order the small children to eat?	39.2	358
Borrow food, or rely on help from a friend or relative	36.5	333
Send household members to eat elsewhere	20.5	187
Deplete assets to get food, i.e. sell land, jewelry, etc)	19.2	175
Send household members to beg	8.4	77
Feed working members of HH at the expense of non-working members	8.4	77
Skip entire day without eating	8.4	77

Gathering of wild foods or immature crop, reducing the number of meals, switching of high quality to low quality foods and limiting the amount of food consumed are some of the commonly employed strategies by most of the households. Only two children (0.2%) came from households that never adopted any of the highlighted strategies to obtain food. This coping strategy data is also being piloted in the development of the coping strategy index for Somalia, upon which subsequent surveys will adopt to generate coping strategy index of the different livelihoods.

4.9 Mortality

The retrospective mortality survey (92 days) was done concurrently with nutrition survey in which a 30 by 30 cluster sampling methodology was used. The survey methodology used for the nutrition survey was adopted with the exception that households were selected as the second sampling unit. The selection of clusters and households were the same as for nutrition survey. At least 30 households were 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 survey irrespective of whether a child under five years was present or not. Households were systematically assessed until the 30th household. Each household assessed was asked the composition of their members in two parts; - those members less than 5 years and the total number of household members. The household was then asked how many if any of the household members had died in the last three months. The mortality questionnaire is appended in the report. A total of 906 households with or without under-five child/children at the time of the survey were included in the survey.

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

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

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

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

The retrospective mortality rate was calculated on the basis of a recall period covering between February 15th and May 17th 2004. Mortality rates per 10,000 persons per day were obtained by dividing the figure above by 92 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 illness before death. Where appropriate, verification of the death was done by counting the graves.

Mortality rates can be interpreted according to the following WHO 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 (crude mortality rate)

- Mortality rates ≥ 1 deaths/10,000 persons/day indicate an alert situation
- Mortality rates ≥ 2 deaths/10,000 persons/day indicate an emergency.

Mortality Rates

A total of 906 households were assessed for mortality indicator with a follow-up period of 92 days prior to the survey. The results are presented below:

Under Five Mortality rate;

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

Under five population in assessed households (Average of population at the beginning and end of the 92 days)	= 1348.5
Number of under five deaths in 92 days	=69
Under five mortality rate	=69 deaths/1383/ 92 days = 0.75/1383/day =5.42/10000/day

The under five mortality rate is therefore approximately 5.42 deaths per 10000 under fives per day. This rate indicates an emergency situation according to WHO classification.

The deaths were mainly attributed to diarrhoeal diseases (30%), malnutrition (kwashiorkor in particular) (22%); fever (7%), malaria (6%) and pneumonia (6%).

Crude Mortality Rate

Total population in assessed households (average at the beginning and end of the 92 days)
= 4289

Total number of deaths in the households	= 88
Crude mortality rate	= 88 deaths/4333/92 days = 0.9565/4333/day = 2.21 deaths/10000/day

Crude mortality rate is therefore approximately 2.21 deaths per 10,000 persons per day. This rate indicates an emergency according to WHO classification.

About 16% of the deaths were attributed to diarrhoeal diseases, 11% to tuberculosis, 11% to childbirth related problems, 11% to malnutrition and kwashiorkor, with the rest to measles, fever, epilepsy and gun shots.

4.10 Food security

Jilib district comprises of four main livelihoods zones: the southern Juba riverine (*Dheshek*), south-east Agro-pastoral, Pastoral communities and Urban dwellers.

Through focus group discussions, key informant interview and direct observations the food security issues related to the underlying cause of the chronic vulnerability and malnutrition in the Jilib riverine community were explored. The food security findings indicated that most of the malnourished children came from poor households. It was nevertheless notable that some of the poor households had well nourished children.

The following points highlight the factors, within the poor households, that contributed to the poor nutrition status of the children:

- ✓ Poor households which were polygamous (with two or more wives) had more mal-nourished children compared to monogamous households.
- ✓ Poor households with continued chicken and eggs consumption had less malnourished children compared to those who have limited or no access.
- ✓ Poor households with enough able bodied labourers for charcoal and self-employment activities had better income options and then their children were likely not to fall for extreme malnourished cases.
- ✓ Poor households with milk access were also better nourished compared to those who had limited milk consumption.
- ✓ Poor households who have good access to medical and feeding centres of the MSF in Marere had less malnourished children compared to others.
- ✓ The households with fair access to plantain and other fruit trees along the river had also benefited better than those lacking and had better nutritional status compared to the rest.

On overall, production for household consumption needs has declined due to the successive poor crop harvests. This has led to a decline in the income accessed through agricultural labour and crop sales. Coping mechanisms currently employed to access the food and income include self employment, intensified bush product collection and charcoal burning, change of food preferences from cereal to dried mangoes, reduced frequency of meals, increased fruit consumption, decreased non staple purchases to minimum and family splitting for labour to urban area.

Vulnerability within the southern Juba riverine livelihood group is increased by their lack of livestock, a subsistence farming livelihood, and a fragile social support network system with limited access to remittances. Most of the households did not have any food stock at all. This situation has been exacerbated by civil unrest in the district which has led to increased erection of road blocks between Kismayo and Jilib. Taxes are extorted at each of the road blocks resulting in high retail prices of food and non food commodities in the area.

Some of the factors that contribute to persistent chronic vulnerability and the food insecurity amongst the poor households in Jilib Riverine areas include the following: Limited livestock asset and its related benefits; constrained land cultivation and access to irrigation facilities; poor economic status and availability; higher population density and polygamy status; lower production and poor saving strategies; limited access of credits/ loan; less diaspora inclination and inadequate access of locally generated remittances; Engagement in subsistence farming; limited political involvement and less intervention access; poor educational status and, limited access to educational facilities; scarce job availability and access; remoteness of the area and destruction of the previous governmental institutions and persistence insecurity.

4.11 The public health environment

Using qualitative data collection methodologies of focus group discussions, key informants direct observation (and photography) and secondary data review a wide range of public health information, with reference to health access, water, sanitation and hygiene, was collected. Twelve focus group discussions and 4 case studies among the *Jareer* (*Bantu*) and *Jileec* (*non-Bantu*) families were conducted in randomly selected Jilib riverine villages. The aim of the

exercise was to obtain the qualitative data that can provide a picture to the situation of household food security, water, sanitation and hygiene, health issues, breast feeding and other care aspects.

4.11.1 Water, sanitation and hygiene

Main water source in the area



Unprotected dug wells contaminate the poor sanitation and hygiene around it, and putting the containers on the top of the wells. (Marerey village (left) Kalanjo village (right))

The main water sources of the riverine villages are either open hand dug wells or river water (supports the household data). Unfortunately, the water sources are contaminated mainly by indiscriminate faecal disposal in this area, and the water is of poor quality. Since the communities do not treat or boil drinking water, they are highly vulnerable to water borne infections such as diarrhoea and intestinal parasites. Rivers are also unsafe and crocodile attacks are common.



Pregnant women carrying 4 jerry cans of 35 liters collected the water from the river in Barakamajido village.



Barakamajida Village community is trying to dig a well which is now 8m deep, and want to reach the water in the depth of 12m but financially worrying about the rings to install for the protection of the collapse

Some of the villages use stagnant water from shallow hand dug wells. This is a big hole that acts as catchments for rain water (refer to the picture on the right).

In 1995-1996, ICRC undertook an intervention geared towards protection of the shallow wells and improvement of sanitation.

Currently, AFREC, a local NGO operates on the West of Jilib and implement different activities with support from World Concern. Rehabilitation of the shallow wells is their main project activities and this comprises of cleaning the wells, construction of platforms and drainage. AFREC has formed water committees who oversee the management of the rehabilitated shallow wells, and mobilize the community to good usage of water, appropriate sanitation and hygiene practices.



Makayuni and Gumayni wayney villages hand dug wells. AFREC has rehabilitated them and are ready for hand pump installation

To-date (May 2004) AFREC has completed the rehabilitation of 30 (out of 105) shallow wells in 24 (out of the 68) riverine village on the west bank. The 105 shallow wells on the western bank are located in 35 villages, with the remaining 33 villages accessing water from the river. Some of these villages are located 10km – 20km away from the river.

UNICEF, in response to a request from World Concern, has provided 10 complete hand-pumps with accessories to be used in the completion of the 30 rehabilitated shallow wells. Discussions are underway between UNICEF, World Concern and AFREC for AFREC to install the pumps.

Challenges

- Improper household waste disposal and indiscriminate excreta disposal leading to poor environmental sanitation/hygiene condition.
- Non existence of latrines at each household's level.
- Lack of clean safe drinking water
- Poor operation and maintenance of the existing water wells.
- Improper hand washing practices.
- Inadequate water collecting and storage equipments.

4.11.2 Sanitation and hygiene

Generally, environmental and household sanitation of this riverine community is very poor. There is minimal use of pit latrines and indiscriminate disposal of human waste. This has led to contamination of water and the environment and resulted in high levels of diarrhoea and intestinal parasites.



River banks seemed to be the preferred location for defecation for villagers from Gumayni yarey village (photo on the left), and Mubarak Village (photo on the right-above).

Faeces and garbage are also disposed off on footpaths and in empty storage facilities for cereals (photos, below).



Whereas there were no latrines, simple structures (photo, below) have been constructed to serve as urinals, and for bathing. These wastes finally end up in the open where children get into their contact.



Urinals/ bathing facilities at Mokayuni village (Left) and Kalanjo village (right)

Hand washing practices

Hands are washed before meals, and after defecation. Unfortunately, this is not done after cleaning dirty children's bottoms as it is perceived that the stool from children is harmless. Soap is not used during hand washing.

Education

There are no education facilities in the riverine villages and boys of school going age assist their fathers on farm activities, while girls assist their mother with household chores - taking care of babies and collecting water. This has an overall negative impact of the literacy level of the community and perception to issues on hygiene and use of quality water.



Children have no education facilities in all riverine villages. Boys go to the farms for planting and ploughing while girls fetch water for the family and take care of the younger children. From left Jaalle jogso village, Barakamajida village and Bulo sheikh village

4.11.3 Health care and morbidity

Majority of villages have limited access to health care, as most of people travel 7-20 Km to the nearest health facility. The main health problems identified were: malnutrition, malaria, ARI, pulmonary TB, tetanus, diarrhoea, Intestinal parasites, whooping cough, schistosomiasis and skin infection poor hygiene practices, and no toilets in the villages. Some of the villages have trained community health workers and traditional birth attendants.

MSF, AFREC, Mercy international and SRCS are currently providing the humanitarian activities in the district but the services are insufficient to address all the needs of the riverine communities. The capacity of Mercy International, SRCS and MSF-H are very limited mainly due to shortage of qualified staffs. Most of the people are in the villages where there are no health services, and unfortunately, MSF-H does not have an out reach program to cater for those who lives in remote areas.

The TFC of MSF-H in Marere operates on day care basis (as of end of May 2004). Most of beneficiaries of the TFC are those who live within a 10 – 15km radius (mainly Marere, Hargaisa yarey and Gududeu villages). The feeding program accommodates 82 children currently, with 203 being TFC exits after recovery. The children discharged from the TFC are in supplementary feeding programme. The TFC participating mothers attribute the high prevalence of malnutrition in the area to lack of adequate food.

Disease Trends at Various MCH Centres three months before the survey (Feb-April 2004)

Mercy MCH in Jilib

Diseases	February	March	April*	Total
Suspected Malaria	71	399	0	470
Aneamia	148	141	0	249
ARI	337	344	0	681
Intestinal Parasites	131	109	0	240

**no data available in Mercy MCH*

SRCS MCH in Jilib

Diseases	February	March	April	Total
Suspected Malaria	286	238	277	801
Aneamia	155	232	145	532
ARI	168	129	155	452
Intestinal Parasites	68	115	85	268

SRCS MCH in Guddudey

Diseases	February	March	April	Total
Suspected Malaria	309	268	240	817
Watery Diarrhoea	173	128	140	441
ARI	227	192	201	620
Intestinal Parasites	179	87	54	320

Total Performance of the MCHs in Jilib district

Diseases	February	March	April	Total
Suspected Malaria	666	905	467	2038
Watery Diarrhoea	173	128	140	441
ARI	732	665	356	1753
Intestinal Parasites	378	311	139	828

Breast feeding

Exclusive Breast feeding is not adequately practised in most of villages. Cultural factors influence breastfeeding practices as new born babies are first fed on cooked fine porridge prepared from the maize (known as *Dhuqle* or *Handa*). This was attributed to the cultural practice of introducing babies to the family diet at the earliest opportunity and the belief that breasts do not contain milk immediately on delivery.

Most of the mothers start breastfeeding 1-2 days after the baby is born. Breasts are dressed with herbs “to make them softer”. Unfortunately, colostrum is lost in the process. Mothers also complement breast milk with water. Breast feeding usually last for 8 – 12 months except when the mother falls sick or pregnant or the child falls sick in which case it is discontinued immediately.

Complementary feeding

Majority of mothers start complementary feeding right after birth with some liquid porridge made from maize flour. The amount given at the first four months of life is small and is served in the morning and afternoon. *Canbullo*, i.e. cooked maize with/without oil is served at night time. Young children usually eat with other older children. If the household head is a man, he is served first, while boys, girls and the mother are served later in that order. Baby boys are given more food than girls.

Hand washing by children prior to eating is rarely practiced.



4.11.4 Social care environment

Mothers don't have much time to devote to childcare as they are heavily involved in collection of firewood, fetching water from river beside other activities to earn the household food like farm labour. As these activities are



undertaken, the children are carried on their back or chest, or, children are put in the shade, where, unfortunately, they are not protected from wind or dust.

The only time amount that mother can give to her baby is during night or in the morning when she wakes up and she gives tea with milk or breast milk.

Adequate consumption of meals by the mother during pregnancy is not encouraged due to the belief of having overweight babies and related birth complications. When it comes to diarrhoeal illnesses, breastfeeding or child feeding is stopped due to the belief that this would increase the frequencies of the diarrhoea.

With regard to seeking health services, priority is given to children rather than the older household members. Most of the mothers have limited information on good child care practices. There is no social support existing in this area

Following discussions with community members and partners, the following are some of the factors associated with cases of malnutrition in the area

- Poor child feeding and breastfeeding practices with negligible exclusive breast feeding and low rate adequate complementary feeding
- Early weaning of children, which also leads to diarrhoea and malnutrition
- Inadequate health services in the area and the long distance bound to be covered when seeking medical assistance
- Persistent poor household food insecurity
- Increased trend disease of morbidity like whooping cough, diarrhoea, ARI, Intestinal worms, and anaemia
- Early pregnancy and minimal child spacing
- Cultural taboos hindering consumption of particular foods during pregnancy hence low birth weight children e.g. abstinence of protein rich foods like liver, kidney,
- Low family income and accessibility of job opportunity in the current situation
- Poor household hygiene practices and lack of toilets
- Poor water storage and unsafe clean drinking water

Challenges to health care

- Insecurity
- Poor access to health care services due to the distance and geographical coverage.
- Inadequate trained health workers.
- Limited health services in the riverine villages
- Poor coverage of EPI immunization and seasonal disease outbreaks of communicable diseases and maternal and neonatal deaths
- Lack of awareness on the health information related about exclusive breast feeding, child health care practices and eating food balance in normal situations
- Unskilled traditional birth attendants to assist deliveries
- Limited coverage of nutrition interventions
- Limited income for the population to prioritise seeking healthcare services from the private clinics available

5: DISCUSSION AND CONCLUSIONS

The seasonal food insecurity and the recent successive poor harvests have predisposed the Juba riverine population to nutritional challenges which have also led to high levels of both child and adult mortality. Insecurity has made it difficult for agencies to implement and monitor their programme.

5.1 High malnutrition rates in the Juba riverine.

A total of 913 children, mainly from riverine rain-fed and riverine *dhesheks* farming livelihoods, were surveyed with critical levels of wasting [global acute malnutrition rates of 19.5% (CI: 17.0 – 22.2) (W/H<-2 z-score or oedema) and severe acute malnutrition of 3.7 (CI: 2.6 –5.2) (W/H<-3 z-score or oedema)] being recorded. This confirmed result of a series of assessments conducted past three years which showed deterioration in nutrition situation with the worst period being just before the harvesting period. According to WHO, global acute malnutrition rates of above 15% are considered a critical situation in need of emergency interventions. About 0.4% of the surveyed children had oedema. Were it not for the recently established therapeutic feeding centre by MSF-Holland, high number of cases of oedema could have been recorded. The community mobilisation by MSF-Holland seems to facilitate referral of the oedema cases reported from the village level. About 70% of the TFC beneficiaries in Marere TFC have oedema. The under-five mortality rate was 5.4/10,000/day and crude mortality rate was 2.2/10,000/day. Both of these rates indicate an emergency situation (WHO classification).

5.2 Morbidity as it relates to the malnutrition rates

The MSF-H sponsored OPD and the MCH are overwhelmed by the high daily attendance and the wide range of medical complications. Patients are brought from far distance seeking assistance. Other health facilities located in Gududei and Jilib are also having daily attendance. Despite the high demand for services, there health structure is facing the challenge of inadequate qualified personnel. The poor environmental conditions contribute greatly to the increased episodes of diseases particularly diarrhoea which is caused by consumption of unsafe water. The prevalence of diarrhoea, ARI, malaria and measles were about 43%, 34%, 32% and 5% respectively. These are high prevalence of disease which has great potential to negatively affect the immune system of this population. Apart from the Vitamin A supplementation coverage (71%) which was relatively better, the measles and polio immunization coverage low (23% and 54% respectively). The statistically significant association between malnutrition and diarrhoea and malaria further confirms that diseases continue to undermine the Juba riverine wellbeing. Aspects like child spacing and large families were also highlighted to influence the nutritional situation of the population by virtue of their negative impact on childcare.

The critical under five mortality rate was attributed to diarrhoeal diseases (30%), oedema (22%); fever and/or malaria (13%), pneumonia (6%), with the rest to other diseases. The critical crude mortality rate was mainly attributed to diarrhoeal diseases (16%), tuberculosis (11%), oedema (11%) and childbirth related problems (11%), with the rest to measles, fever, epilepsy and gun shots.

5.3 Poor food security situation affects the Juba riverine population

The riverine community of West Jilib has encountered about three years (2001-2003) of poor crop harvest thus putting the population to continuing food security challenges. Lack of food stocks and the poor performance of the current cropping season pronounce a bleak future as far as improvement in food security is concerned. This riverine population was found to be very vulnerable due to lack of livestock and productive animals (attributed to tsetse fly infestation), a sedentary, farming livelihood, and a fragile social support network system with little if any, remittance access and poor economic status.

Increase food prices due to tax extortion and reduced local production, reduced food availability in the market, decreased income options due to reduced income from agricultural labour and crop sales and overall decreased expenditure have great negative impact on the population wellbeing. Overall, there is reduced access among the poor households. To cope up with the situation the poor households have adopted decreased quantity purchase;

increasing regard for self employment through intensified bush collection and charcoal burning; changed food preferences from cereals to dried mangoes; adopted family splitting for labour to urban areas and decreased non-staple to minimum.

Additionally, the significant association between malnutrition and food diversity has been revealed in this study with a high proportion consuming two or less food groups mainly. The limited food diversity indicate compromised coping options of the population to diversify their diets. This has obvious implication on the micronutrients provided to the body. About 46% of the malnourished children were feeding poor diet in quality.

5.4 Poor sanitation and childcare

The main water sources were found to be open hand dug wells, river and stagnant water. Majority of the households use an average of 40-80 litres per day for domestic purposes, ablution and personal hygiene. Water for drinking is not safe as it is not treated nor is it boiled. The use of pit latrines is not common. Environmental sanitation is very poor due to defecation outside the compounds. Contaminated storage facilities for maize with faecal matter during off season when empty; hand washing is generally not practiced before feeding children; intestinal parasites, diarrhoeal diseases and schistosomiasis are very common.

The child care practices were found to be poor with majority of the assessed children receiving less than three meals a day; meals being discontinued during bouts of diarrhoea. The practices of early initiation of breastfeeding, introduction to other foods at the age of six months and persistence of breastfeeding throughout the second year of life were rarely practiced. These factors predisposed children to diarrhoeal diseases and malnutrition.

Most mothers' engagement on farm labour, search for firewood, and the long distance covered when seeking health services all compromise the wellbeing of the children.

In conclusion, the high malnutrition rates, under five and crude mortality rates, high disease prevalence, food shortage presents an emergency situation in the Juba Riverine population which is accompanied by a wide range of aggravating factors. The existence of the problem had earlier been highlighted in the FSAU surveillance reports. In light of the prevailing aggravating factors and inadequate intervention initiatives by both local and international humanitarian agencies, there are indications of potential deterioration of the situation. Already the crop performance looks bleak and the security situation continues to be fluid. There is therefore a need for continued short term emergency interventions to save life as longer term solutions to the chronic problems are sought.

5.5 Recommendations and possible interventions

Based on the analysis of the situation, the survey team concluded that the nutrition and mortality levels were critical and required urgent interventions to contain the situation. Following food security situation, the mission made the recommendations below.

1. Due to the critical nutrition situation and ‘emergency’ level of mortality, the following interventions are required urgently in order to save life, between now and the next harvest:
 - i. Increase the household food basket through provision of food assistance, through an appropriate approach (short term general food distribution, food for work, SFP), as already recommended by WFP.
 - ii. Improve the access to health and EPI services. Specific recommendations to increase access to health include
 - Increasing the capacity (technical capacity for the staff, drugs and supplies) of the MCH centres in this area.
 - MSF-Holland highly recommends that an international health agency moves into the location to complement their effort in health care provision. This agency may need to consider provision of mobile health services to villages located far away from the static health facility.
 - Provision of EPI services is crucial and needs to be addressed
 - iii. Improve the access to safe water for consumption, including storage issues. Specific interventions include
 - rehabilitation of the existing shallow wells
 - construction/protection of wells in villages which do not have access and rely on river water;
 - Provision of health education for improved sanitation.
2. Improve the immediate environmental sanitation and hygiene at house hold level through health awareness, facilitating construction of pit latrines.
3. Opportunities to restore livelihoods include:
 - i. construction of canals from the river for irrigation purpose,
 - ii. Flood protection and river embankment plans
 - iii. provision of farm inputs, fruit trees and fishing gear
 - iv. Controlling the crocodiles in the Juba river which hinder fishing and water fetching activities
4. Closer monitoring of the situation is essential.

APPENDICES

Appendix 1: Traditional Calendar for Jilib Riverine Nutrition Survey

Month	Events	1999	2000	2001	2002	2003	2004
Jan.	Beginning of Jiilaal		53 Siditaal	41 Siditaal	29 Siditaal	17 Siditaal	5 Siditaal Safari park retreat
Feb.	Mid of Jiilaal		52 Arafo/Dul-Xaj	40 Arafo/Dul-Xaj	28 Arafo/Dul-Xaj	16 Arafo/Dul-Xaj	4 Arafo/Dulxaj
Mar.	End of Jiilaal		51 Sako	39 Sako	27 Sako	15 Sako	3 Sako
Apr.	Beginning of Gu'		50 Safar	38 Safar	26 Safar	14 Safar	2 Safar
May	Mid of Gu'		49 Mawlid	37 Mawlid	25 Mawlid	13 Mawlid	1 Mawlid
Jun.	End of Gu'		48 Malmadoone	36 Malmadoone	24 Malmadoone	12 Malmadoone	
July	Beginning of Xagaa	59 Jamadul-Awal	47 Jamadul-Awal	35 Jamadul-Awal	23 Jamadul-Awal	11 Jamadul-Awal	
Aug.	Mid of Xagaa	58 Jamadul-Akhir	46 Jamadul-Akhir - Carta meeting /election in Djibouti	34 Jamadul-Akhir	22 Jamadul-Akhir	10 Jamadul-Akhir	
Sep.	End of Xagaa	57 Rajab	45 Rajab	33 Rajab	21 Rajab	9 Rajab	
Oct.	Beginning of Deyr	56 Shacbaan	44 Shacbaan	32 Shacbaan	20 Shacbaan Start of Edoret reconciliation meeting, Kenya	8 Shacbaan	
Nov.	Mid of Deyr	55 Ramadhan	43 Ramadhan	31 Ramadhan	19 Ramadhan	7 Ramadhan	
Dec.	End of Deyr	54 Soonfur	42 Soonfur	30 Soonfur	18 Soonfur	6 Soonfur	

Jiilaal

GU'

Xagaa

Deyr

* Carta meeting – The Djibouti meeting which culminated to the election of TNG

Appendix 2: Prevalence of chronic malnutrition based on height for age Z-score

	Males		Females		Total	
	%	No	%	No	%	No
Global chronic malnutrition (H/A<-2 z score)	35.6 (95% CI:31.3-40.2)	167	27.7 (95% CI: 23.6-32.2)	123	31.8 (95% CI: 28.8-34.9)	290
Severe chronic malnutrition (H/A<-3 z score)	16.4 (95% CI: 13.2-20.2)	77	11.0 (95% CI: 8.4 – 14.4)	49	13.8 (95% C.I: 11.7-16.2)	126

The prevalence of chronic malnutrition defined as H/A<-2 Z score was 31.8% (95% C.I. 28.8- 34.9) while the prevalence of severe chronic malnutrition, defined as H/A<-3 Z score, was 13.8% (95% CI. 11.7- 16.2).

Appendix 3: Prevalence of underweight based on weight for age Z-score

	Males		Females		Total	
	%	No	%	No	%	No
Underweight malnutrition (W/A<-2 z score)	38.8 (95% CI:34.4-43.4)	182	32.4 (95% CI: 28.1-37.0)	144	35.7 (95% CI: 32.6-38.9)	326
Severe underweight malnutrition (W/A<-3 z score)	15.6 (95% CI: 12.5-19.2)	73	11.7 (95% CI: 8.9 – 15.2)	52	13.7 (95% C.I: 11.6-16.1)	126

The prevalence of underweight malnutrition defined as W/A<-2 Z score was 35.7% (95% C.I. 32.6- 38.9) while the prevalence of severe underweight malnutrition, defined as W/A<-3 Z score, was 13.7% (95% CI. 11.6- 16.1).

Appendix 4: Case studies

Case study 1: Bantu Family from Osman Motto

Habiba Aden Ibrahim lives in a small village called Osman Moto in Jilib District. She is married to 34 year old Hassan Sheikh Mudey. Habiba is aged 28 years and is a mother of eight children, eldest being 12 years old. One of her child died of tetanus 7 days after delivery. The family consists of five females and three males. Hassan is jobless and has been away for two weeks looking for a job opportunity in Jilib town, about 50km away.

Recent fighting in the area between Habargidir and Sheikhal clans and the many road blocks erected along the main Jilib-Mogadishu road have affected business and consequently job opportunities in Jilib. Even casual jobs like porting are not available.

There's no income generated by this family. The family has 4 *darab* of farm land (about 1 hectare) and they don't have any animal. But the grand son collects the stuff made for the local mats from palm trees. One bundle of palm trees weaving materials costs about 3000 Ssh. The delayed rains have led to lack of farm activities in the area. Habiba's family has not been displaced of late but the lack of rains has affected their crop negatively.

Habiba has a rectangular house made from clay/muddy house grass thatches. There is no bed in the house and the family uses old rotten mats to sleep on. The house is poorly ventilated. Further, they do not have toilet and their human waste is thrown into a nearby bush. Sanitation condition of the village is very poor at the entry point of the village there are human wastage. The only water point used by the household plus others village residents is the river. Habiba does not boil the water drinking.

The children were wearing dirty cloths mostly T-shirts with no trousers and the girls were wearing a long gowns. The two youngest children among the family had been sick for the last 2 months, with whooping cough. No health services are available in the nearby villages with the nearest health facility being about 30km away. No public transport is available to commute to the health facility. The only treatment available is the traditional healers while children possess bracelets made from dick-dick leather on the right hand in addition to the clean shaven heads.

In the previous day, the family had eaten only a small amount of cooked mango peels (which had peeled off and dried up 3 months ago) and tea without sugar.

Case study 2: Bantu Family from Beled Karim village

Hawo Ali Guudeey aged 20 years is a mother of two daughters and a son. She is married to Aweys Salah Mohamed. The youngest child is 14 months and oldest is 48 months. The family has a farm of only three *darabs* (around 0.75 hectare) along North West of Juba river. The family got 6 bags of Maize last Gu' season and absolutely no harvest was received in the last deyr (2003/04 seasons from the farm since the seeds were destroyed by rodents before the germination. The family has four chicken and no other assets or farm implements.

The family live in four by four metre house made from sticks and it is roofed with grass. The family has separate kitchen with small table to keep the utensils. The family collect water from open well close to the house using 10 litre Jerrican, about four times a day. They have separate container for drinking Ashun. The family have no latrines and house was dirty. A personal hygiene practice was poor as children go without a bath for at least two days.

For the last four months, Aweys family managed to survive on two bags of maize borrowed from a relative. The maize was cooked and prepared at nights for dinner while during the day time family's main dish was cooked dried mangoes skin which had peeled off three months ago (popularly known as *Lafaaf*) mixed with available wild foods (*Ambaqa*). Aweys is involved undertaking agricultural employments, though it is currently diminishing in the area.

Hawo normally introduces breast milk after the infant has already taken traditional porridge made from maize and water. She applies traditional herbs on the breasts to become softer and open the nipples. Breast feeding complemented with porridge is given to the baby for about two years. Hawo feeds her child on breast feeding 5 times a day, three times of mashed biscuits and two meals of porridge from the maize.

Siyad who is now 14 months, experienced repeated infections like diarrhoea and malaria, in the three months. The child currently admitted MSF feeding program, where the child gets biweekly ration composing 3 cartons of BP5, 2kg of maize, 300g of beans and 200 g of oil.

Case study 3: Non Bantu family from Hargeisa Yarey village

Yusur Mohammed Jama 25 years old is mother of one, four months old, child. The husband is Ali Duwane Keyre 29 years old. The husband mans a check point where tax is paid as vehicles pass. The family does not own a farm. Yusuri's family is not displaced in this village and have not been affected by the insecurity.

No other income exists apart from the little money paid after the tax has been paid. Yusuris's house is made up of rectangle clay/muddy house with thatches on roof. No beds are available at the house though the cooking utensils are of good quality.

The baby is being breast fed and has not been introduced to other foods other than breast milk, except some water ones in a while. Yusur intends to breast feed until the child reaches two years. The baby had received the first dose of DPT1/OPV vaccine from Gududei MCH which she recent come from with.

The mother and her child were neatly clothed and she was responding the questions very nicely. This family had spent 50,000 Ssh the previous day which had been obtained from the checkpoint. They had had rice and goat meat the previous day.

She seeks treatment when the baby or any other household member falls sick from Guddudey MCH, which is 9km South of Hargeisa Yarey village.

Case study 4: Non Bantu family from Kamtiirey Village

Amino Khamis Ali, aged 26 years has given birth 9 times though only 6 are alive. These are five daughters and a son. Amina is a housewife and the husband Mr. Abdi Wahab is the only blacksmith in the village. The family has a farm, two *darabs* (about half a hectare) along the juba river, where the family produces 4 bags of maize and half bag of cowpea during the normal Gu' seasons and two bags and a bag of sesame in the deyr seasons. In the previous year, 2003, the family had received no production from the farm. The family has no other assets like live animals and farm implements.

The family live in a thatched room with no plastering, the kitchen was inside the room with one kettle, small *sufuria* (cooking pot) and 10 litre Jeri can. The family have no beds and only mats are used. The family has no latrines and house environment was dirty.

The husband normally works during the day and what he earns is used to purchase 1kg of maize, every two or three days for family use. Due to the current stressful conditions and poor rains the income has declined as people have less to spend on services like blacksmithing. In the previous 24 hours the household had received two meals of porridge (lunch and supper). The children have not had any breakfast that morning. The husband had provided five raw mangoes from the farm for them to use as lunch. Amino had mentioned that the family had not experienced worst scenario than this. As some days in the past three months family ate wild leaves (*Siila*) and raw mangoes.

Amina had delivered the 9th child three weeks prior to the interview and she reported to be getting pregnant almost every year. The new born baby had mild diarrhoea in the previous three days and had received traditional medicine, *Dawo-Goleed*, which was the only health service available in the village. The baby was fed on breastfeeding and water. The water was not boiled. Other young children were fed twice a day and all ate together with one meal of raw mango and semi-liquid porridge. The children most of time year expressed repeated infections like intestinal parasites, persistent diarrhoea, fever and others. Unfortunately, the family lost three children in past two years.

Annex 4: Sampling frame for the 30 clusters for Nutrition and Mortality Survey

			Population figures reviewed by survey team		
Fixed Villages		NID population estimate for Aug 2003	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	
Jiija	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	
Naftaqaaur	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	
Baladul 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
89		67,977	52625		

Cluster interval

1754.166667

Random
Number

1131

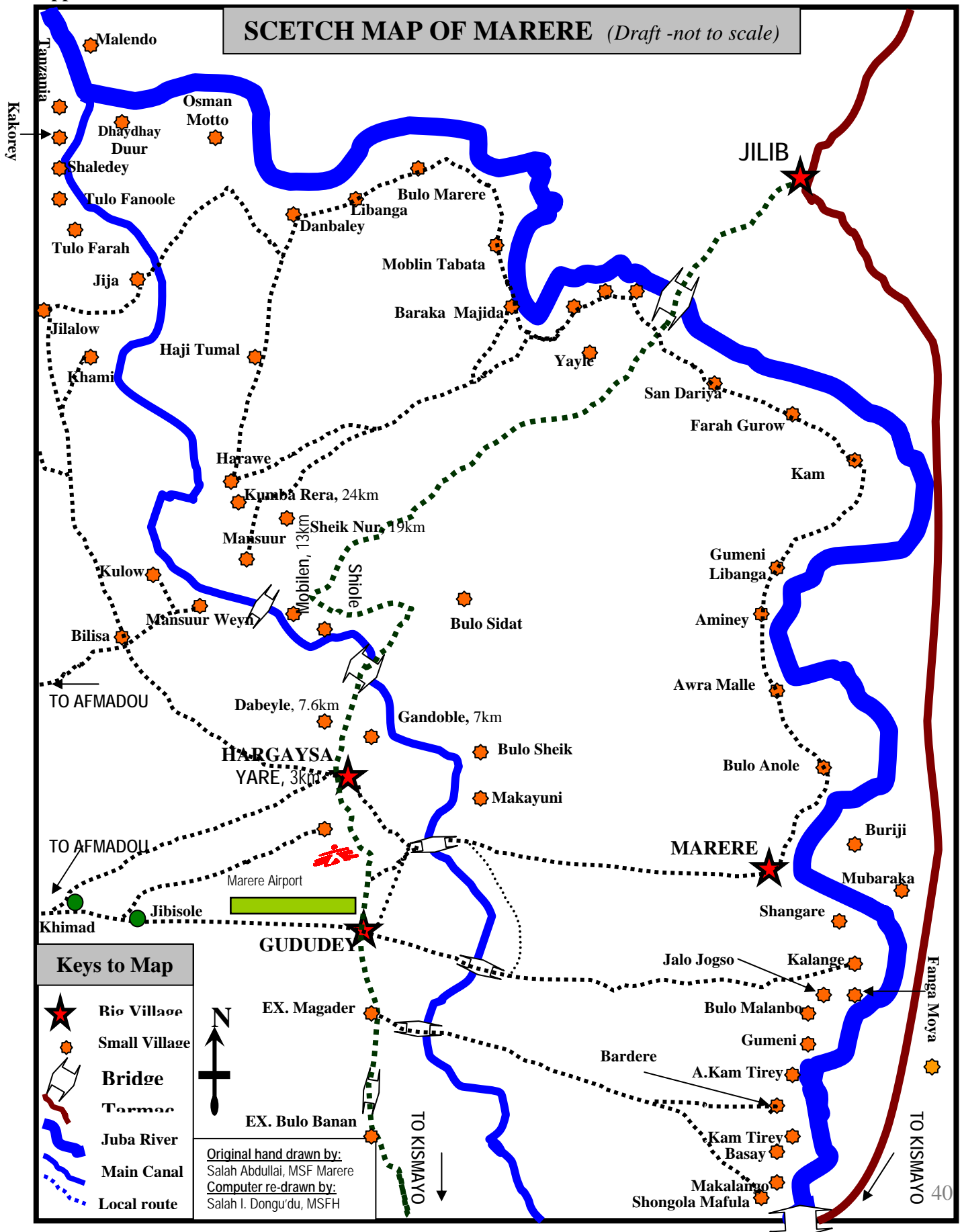
Annex 5: Jilib Riverine villages where food security and nutritional qualitative information was collected

Village Name	Date	Location	Nutritional Categorization	Wealth group/ No. interviewed	Remarks
1. Gumeyni	18/05/04	East	G1 Malnourished	Poor (5)	Part of the intended group found and reliable
2. Mubarak	18/05/04	East	G2 Non Mal-nour.	Poor (6)	Somehow reliable
3. Kalanja	18/05/04	West	G1 malnourished G2 non Malnour.	Poor (3) Poor (9)	Satisfactory interview done
4. Harawe	19/05/04	West	G1 malnourished G2 non malnour.	Poor (3) Poor (7)	Both interviews were reliable and informative
5. Bardhere	19/05/04	West	G2 non malnour.	Poor (6)	Reflects their condition
6. Kamtiirey weyn	19/05/04	West	G1 malnourished	Poor (5)	Real poor households were met and interviewed
7. Belet karim	20/05/04	West	G1 malnourished	Poor (5)	Good and confident
8. Baraka Majiida	20/05/04	West	G1 malnourished	Poor (6)	Reliable information
9. Mobleyn Tabata	21/05/04	West	G2 non malnour.	Poor (6)	Un-reliable and confused. High expectation
10. Makayuni	21/05/04	West	G1 malnourished	Poor (4)	Intermediate and understandable
11. Mareerey	21/05/04	West	G2 non malnour.	Poor (5)	Reliable and confident
12. Hargeisa Yarey	21/05/04	West			
13. Kamtanda	21/05/04	West			
Jilib	15/05/04	town	Focus group	Poor wealth group/ IDPs accessed	Information on market, business and trade, food availability, prices and community support mechanisms was collected

Annex 6: HH BUDGET ANNALYSIS

	BASELINE	CURRENT	% CHANGE
FOOD SOURCE			
Own production	53%	26%	27%
Staple purchase	21%	20%	1%
Non-staple purchase	18%	10%	8%
Gifts	3%	1%	2%
Wild food	1%	1%	-
TOTAL	96%	58%	38%
INCOME SOURCE			
Crop sales	28%	18%	10%
Agricultural labour	31%	25%	6%
Self employment	15%	34%	19%
Gift/loan	25%	15%	10%
Animal production sales	0%	8%	8%
TOTAL	99%	100%	37%
Expenditure			
Staple purchase	12%	31%	19%
Non-staple purchase	31%	32%	1%
HH items	12%	20%	8%
Social services	4%	2%	2%
Farm input	5%	0%	5%
Others	35%	15%	20%
TOTAL	99%	100%	1%

Appendix 7: Western river bank for Jilib riverine



Appendix 8: JILIB RIVERINE NUTRITION SURVEY QUESTIONNAIRE

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

Name of Village/Town _____ Name of section _____ Village is located on which side of the river a.) West Bank or b.) East Bank

Household Number _____ Name of the household head _____ Household ethnicity is a.) Somali Bantu or b.) Somali Somali

Q1-11 Characteristics of Household

Q1 Sex of the household head? 1=M, 2=F

Q2 Household size _____

Q3 Number of < 5 years _____

Q4 Household residence status: 1= Residents 2= Internally displaced 3=Returnees 4=Other (specify) _____

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

Q5 Place of origin _____

Q6 Duration of stay _____

Q7 Reason for movement: 1= Insecurity 2=Lack of jobs 3= Food shortage 4=Water shortage 5=Others; specify _____

Q8 What is the livelihood systems used by this household? 1= Pump irrigated commercial crop production 2= Riverine Dheshek 3=Riverine rainfed 6= Business 7=Other (specify) _____

Q9 What is the total size of the land cultivated (ha) _____

Q10 How many cattle does household own (ha) _____

Q11 How many shoats does the household own (number) _____

Q12a: When your child is sick, do you seek assistance 1= Yes 2= No

Q12b: If yes in Q12a, where do you seek assistance: 1= traditional healer 2= private clinic/ Pharmacy 3= Public health facility

Q13-17 Anthropometry for children aged 6 – 59 months (or 65 – 110cm) in the household

Serial No	Name	Q13 Sex (F/M)	Q14 Age in months	Q15 Oedema (Yes/No)	Q16 Height (cm)	Q17 Weight (kg)	Q18 MUAC (cm)	Ever admitted in TFC? Haa/Maya	If ever admitted, when was the child discharged (months ago)
1									
2									
3									

Q19- 28
Morbidity, feeding and immunization status of

Sno	Name	Q19 Diarrhoea in last two weeks 1= Yes 2= No	Q20 ARI in the last two weeks 1=Yes 2=No	Q21 Malaria in the last two weeks 1=Yes 2=No	Q22 Measles in last one month 1=Yes 2=No	Q23 Vaccinated against measles 1=In past six months (by card) 2=In past six months (Recall) 3=Before six months (by card) 4=Before six months (Recall) 5= None	Q24 Vitamin A provided in the last 6 months 1=Yes 2=No	Q25 Are you breast feeding the child? 1=Yes 2=No	Q26 If not breast feeding, how old was the child when you stopped breast-feeding? 1= Less than 6 months 2= 6 – 11 months 3=12 – 18 months 4=18 months or more 5= Never breastfed	Q27 At what age was child given water/ foods other than breast milk 1=0-3 months 2=4-6 months 3=7 months or more.	Q28 How many times do you feed the child in a day? 1= Once 2= Twice 3= 3-4 times 4= 5 or more times	Q29 How many times has the child ever been given polio vaccine orally 1=1-2 times 2=3 and above 3=Never
1												
2												
3												

children aged 6 – 59 months (or 65 – 110cm) in the household.

Q30 Consumption Coping Strategies

In the past 30 days, if there have been times when you did not have enough food or money to buy food, how often has your household had to:	Relative Frequency				
	All the time? Every day	Pretty often? 3-6 */week	Once in a while? 1-2 */week	Hardly at all? <1 */ week	Never 0*/week
a. Switch from high quality to low quality less expensive foods?					
b. Borrow food, or rely on help from a friend or relative?					
c. Purchase food on credit?					
d. Gather wild food, hunt, or harvest immature crops?					
e. Consume seed stock held for next season?					
f. Send household members to eat elsewhere?					
g. Send household members to beg?					
h. Limit portion size at mealtimes?					
i. Restrict consumption of adults in order for small children to eat?					
j. Feed working members of HH at the expense of non-working members					
k. Reduce number of meals eaten in a day?					
l. Skip entire days without eating?					
m. Deplete assets to get food, i.e. sell land, jewelry, etc)					

Q 31 Consumption Diversity

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

Food consumption and source of food, source of income for food purchases What members of this household consumed these foods in the last 24 hours?	Beginning yesterday when people woke up, did any of these members in your household consume these foods. 1=Yes 0=No	Codes: 0 =none 1 = once 2 = twice 3 =3 times 4 =4 times 5 =5 or more times	
		Frequency (<5yrs)	Frequency-adults
a) Cereals/staples (rice, wheat, pasta, sorghum, maize)			
b) Beans and other pulses/legumes			
c) Dairy and dairy products (milk)			
d) Fish/ sea foods, eggs, meat/offal			
e) Sugar in tea and others			
f) Fats/oils/ghee			
g) Roots and tubers			
h) Fruits			
i) Vegetables			
j) Beverages, spices & other products			

Q32-37 Access to water (quality and quantity)

Q32 Main source of drinking water 1 = piped 2 = public tap 3 = Tube well/borehole 4= protected well or spring 5 = Rain water 6= unprotect spring and well 7= river 8= other

Q33 Main source of water for cooking and personal hygiene 1 = piped 2 = public tap 3 = Tube well/borehole 4= protected well or spring 5 = Rain water 6= unprotect spring and well 7= river 8= other

Q34 Average household water use per day per person for drinking, cooking and personal hygiene is 1= 0-2 litres 2 = 3 – 5 litres 3 = 6-10 litres 4= 11-15 litres 5= more than 15 litres

Q35 Distance to the nearest water point 1= 0-250 metres 2 = 251 – 500 metres 3= 501 – 750 metres 4 = 751 – 1000 metres 5 = more than 1000 metres

Q36 Water and systems are maintained such that quantities of water are available 1 = never 2 = sometimes 3 = almost always 4= always

Q37 Number of clean water collecting containers of 10-20 litres 1= 1-2 containers 2 = 3-4 containers 3 = 4-5 containers 4= more than 5 containers

Q38-42 Sanitation and Hygiene (access and quality)

Q38 Type of toilet used by most members of the household 1= Flush or sewage system 2= Pour flush toilet 3=Improved pit latrine 4 = Traditional pit latrine 5 =Open pit 6 = Bucket 7= Other

Q39 Number of people who use the same toilet 1= 1-5 people 2= 6-10 people 3 = 11-15 4= 16 – 20 people 5= more than 20 people

Q40 Household members wash their hands after defecation 1= always 2= often 3=sometimes 4= hardly rarely

Q41 Household members wash their hands before eating or food preparation 1= always 2= often 3=sometimes 4= hardly rarely

Q42 Distance between toilet and water source 1 = 0 – 5 metres 2= 6 – 10 metres 3= 11- 20 metres 5= 21 - 29 metres 5= 30 metres or more