# NUTRITION SURVEY REPORT

## TALEEX AND HUDDUN DISTRICTS-
## SOOL REGION, SOMALIA

**Food Security Analysis Unit (FSAU/ FAO) and
United Nations Children's Fund (UNICEF)**

*In Collaboration with:*

**Ministry of Health & Labour (MOHL)
Somali Red Crescent Society (SRCS)**

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# Abbreviations and acronyms

| | |
|---|---|
| ARI | Acute Respiratory Infections |
| FAO | Food and Agriculture Organisation |
| FEG | Food Economy Group |
| FSAU | Food Security Analysis Unit |
| GAM | Global Acute Malnutrition |
| Ha | Hectares |
| HFA | Height for Age |
| IDP | Internally Displaced Person |
| KM | Kilo Metres |
| MCH | Maternal and Child Health |
| MT | Metric Tonnes |
| NCHS | National Centre for Health Statistics |
| NGOs | Non-Governmental Organisations |
| LNGO | Local Non-Governmental Organisation |
| INGO | International Non-Governmental Organisation |
| NIDs | National Immunisation Days |
| OR | Odds Ratio |
| RR | Relative Risk |
| SACB | Somalia Aid Coordination Body |
| SMART | Standardised Monitoring & Assessment of Relief and Transitions |
| UN | United Nations |
| UNICEF | United Nations Children's Fund |
| WFA | Weight for Age |
| WFH | Weight for Height |
| WFP | World Food Programme |
| WHO | World Health Organisation |

# Definitions

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

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

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

# ACKNOWLEDGEMENTS

# EXECUTIVE SUMMARY

Taleex and Huddun Districts are located within the Sool Region.  Both districts have an estimated population of 60,700 (WHO NID figures, verified by the survey teams).  The population is dominantly pastoral and falls in two main livelihood zones of the Sool Plateau and Nugal valley in Northern Somalia.   Pastoral livelihood is practiced with shoats, camels and donkeys being the dominant animal species.

The districts have experienced chronic drought over the last three years until the onset of the *Gu* rains in April this year.  The drought situation led to severe pasture depletion, water scarcity and cumulative degradation of rangeland, accompanied with massive livestock deaths including pack camels. The devastating effect of the long drought situation has made recovery and regeneration slower even after the more than usual rains.

A nutrition survey and an inter-agency assessment were conducted in May/June 2004 in the adjacent areas of Sool and Sanaag regions, besides three rounds of sentinel sites data collection in the Sool Plateau of Sool and Sanaag regions which revealed continued serious malnutrition (>15% with WHZ<-2) in the under fives since December 2003.   Humanitarian agencies have implemented various interventions in the region, and the need to establish the nutrition situation in Taleex and Huddun has persisted.

Between 4th and 11th June 2005 a nutrition survey was conducted by FSAU and UNICEF in collaboration with MOHL and SRCS to determine nutritional status and establish the influencing factors in the two districts.  Using a two-stage (30x30) cluster sampling methodology, a total of 895 children, 52.7% boys and 47.3% girls aged 6-59 months and/or measuring 65-110 cm in height/ length were surveyed.  The children came from 475 randomly selected households of which 45.5% and 54.5% were from Huddun and Taleex districts respectively.  A high proportion (74.7%) of the households was male headed while the rest (about one quarter) were female headed.  A total of 902 households were surveyed for mortality.   Vitamin A deficiency and dietary diversity were also assessed.  Qualitative data on care and feeding practices, food security and health related issues were collected through focus group discussions, key informant interviews or direct observations.

Global acute malnutrition using WFH Z score (<-2 z-scores or oedema) was 10.5% (CI: 8.6-12.7) while severe acute malnutrition (<-3 z-score or oedema) was 0.7% (CI: 0.3-1.5). There was no oedema case reported during the survey. The level of malnutrition was however not significantly (p>0.5) different among the two sexes. Only ARI, personal hygiene and dietary diversity had association with malnutrition. Overall, nutrition and food security situation is gradually improving following good kidding and water availability in the last two months, along with continued humanitarian interventions.

Within Taleex and Huddun of Sool Region livelihood zone pastoralism would normally be the main means of livelihood but with the past chronic drought situation and massive loss of livestock, there is a gradual shift in people's livelihood patterns, as they try to cope with the challenges.  For instance about 39.8% of the households relied on other means of livelihood especially self employment/trade (27.6%) and external assistance (6.3%). The pastoralists have lost most of their livestock while the remaining livestock have had suboptimal production and poor market values. Of the 467 households that owned an average of 165 shoats each three years ago, about 68.8% had lost between 50% and 99% of the shoats while some 20% had lost all their shoats. Similarly, of the 397 households that owned camels three years prior to the survey, about a half (51.9%) had lost between 50% and 99% of the camels while about 22.9% had lost all their camels at the time of survey.

All surveyed households reported to have employed one or more consumption coping strategies. Borrowing of food from relatives, selling out livestock at give-away prices, use of assets as security to get foods, reducing portion size and number of meals; reliance on credit and switching from high quality to low quality foods are some of the most common coping strategies employed by more than two-thirds of the households in the districts.  Qualitative information from focus group discussions,

key informant interviews and food security information indicate that the situation was worse just months ago and that the situation might relapse if the forthcoming deyr rains fail.

About one third (34.1%) of the children aged between 6-24 months were breastfeeding at the time of the survey.  Of those who had been stopped from breastfeeding, about 18.2% had stopped breastfeeding before six months, 41.6% before their first birthday and 40.2% after their first year of life.

A high proportion (65.4%) of the children aged 6-24 were introduced to foods other than breast milk early within their third month of life. About one quarter (25.7%) were introduced to complementary feeding at 4-6 months and a few (8.9%) beyond the recommended six months. Most children were fed at least twice a day.  Majority were fed 3-4 times (44.9%) or 2 times (43.4%). Only 3.6% fed once while some 8.2% were fed more than four times a day.  These results are comparatively fairer than those of the 2004 Sool Sanag survey in which 42% of the children were fed few times (1-2 times), about 7% fed more than 4 times and a high proportion (93.1%) inappropriately introduced to complementary foods at 0-3 months.

The incidences of ARI (37.8%) and diarrhoea (18.9%) within two weeks prior to the survey were high. However, no disease outbreak was reported during the period. Malaria was relatively low (12.6%) within the same period. The incidence of measles among the under-five population one month prior to the survey was about 1.5%.

Measles vaccination coverage for eligible children was fairly good.  About two-thirds (65.5%) of the eligible children had been vaccinated against measles based on mothers recall and card verification. About 40% of the children had received between 3 doses of polio while 22.6% had received 1-2 doses.  However, some one third (37.4%) of the children had not received any polio vaccine. About 5.5% of the households reported cases of night blindness of which 34.6% were under fives.  Slightly less than half (42.9%) of the surveyed children had received Vitamin A supplementation in the last six months.

Majority of the households were relying on water from unprotected wells/springs for drinking (55.8%) and for cooking and personal hygiene (52.6%). Most water is very salty and not suitable for drinking. Majority (77%), however got water within 1 km of their residence but about 10.3% of the households were travelling over five kilometres in search of water.

Latrine presence and use in the survey area is quite low. Collectively only 9.7% of the population reported using improved pit latrines, traditional pit latrines or open pit. The remaining overwhelming majority (90.3%) disposed faecal waste on open ground or in the bush.  Personal and food hygiene was also low, about one half were not always washing their hands after defecation (51.4%), before eating or during food preparation (48.8%).

Overall, food insecurity from previous successive drought spells had far reaching effects on the livelihood means of this dominantly pastoral population. Access to food in sufficient quantities or good quality diversified food was greatly compromised following significant losses of livestock and shortage of other food supplies.   The situation has been improving with continued food aid distributions and increased availability of goat milk over the last 3 months and the population is on a recovery path.

The ongoing interventions from WFP, UNICEF and the local and international NGOs (NPA, SVO and UGBAAD) have played a key role in preventing deterioration in the nutrition situation in the region. As was noted in the focus group discussions, following the interventions several deaths had been averted, however much more need to be done for the community to recover fully.  Much is also dependent on the impending rains (Deyr 2005 rains) expected in the next two to three months. However, even if good Deyr rains are received, it will take time for the population to recover.

From the findings the following recommendations were made:
   a. Promote nutrition education through the MCH/outposts focusing on hygienic practices for caregivers, child feeding as well as dietary diversity.
   b. Continuation of targeted food distribution in the highly vulnerable areas of the districts for next 2-3 months assuming proper 2004 Deyr rains in October.
   c. Continued food-for work and cash for work activities for the physically healthy persons in targeted vulnerable villages.
   d. Continuation of supplementary feeding programme for pregnant/lactating mothers and children under five years in the districts also in the next 2-3 months and treatment of the severely malnourished children assuming proper Deyr rains.
   e. Continued close monitoring (surveillance) of the food security and nutrition situation in the area.
   f. Intensify promotive and preventive health care interventions focusing on immunisation, hygiene, and control of water related diseases. Additionally, improve access to public health facilities.  CHWs especially need to be more capacitated to handle the basic health cases in their areas.  Where MCHs are available mainly in Huddun and Taleex towns, there are no qualified health staff to effectively manage them.  In some areas, the sick travel over 50 km to access the nearest medical facility (in most cases LasAnod, Galcaiyo or Bosaso).
   g. Introduction of livestock restocking (shoats and puck camels) programmes by relevant agencies
   h. Rehabilitate run-down boreholes, *Berkads* and dams with an aim of ensuring water availability for both human and livestock in the long run.
   i. Promote alternative income generating activities through a credit programme to reduce over-reliance on livestock sources of livelihood.


# SUMMARY OF FINDINGS

*Table 1: Summary of survey findings*

| Indicator | No | % (95% CI) |
|---|---|---|
| Children under five years screened during the survey | 895 | 100 |
| Global acute malnutrition – W/H <-2 Z score and/or oedema | 94 | 10.5 (CI: 8.6-12.7) |
| Severe acute malnutrition – W/H <-3 Z score and/or oedema | 6 | 0.7 (CI: 0.3-1.5) |
| Global acute malnutrition – W/H <- 80% of median and/or oedema | 52 | 5.8 (CI: 4.4-7.6) |
| Severe acute malnutrition – W/H <- 70% of median and/or oedema | 3 | 0.3 (CI: 0.1-1.1) |
| Oedema | 0 | 0 |
| Total chronic malnutrition – H/A < -2 Z score | 143 | 16.0 (CI: 13.7-18.6) |
| Severe chronic malnutrition – H/A < -3 Z score | 41 | 4.6 (CI: 3.4-6.2) |
| Proportion (children) with diarrhoea in two weeks prior to survey | 169 | 18.9 (CI: 16.4-21.6) |
| Proportion with ARI in two weeks prior to survey | 338 | 37.8 (CI: 34.6-41.0) |
| Proportion of children with malaria  in two weeks prior to survey | 113 | 12.6 (CI: 10.6-15.0) |
| Proportion of children with measles in one month prior to survey | 13 | 1.5 (CI: 0.8-2.5) |
| Proportion of children supplemented with Vitamin A in the last six months prior to the survey | 384 | 42.9 (CI: 39.6-46.2) |
| Proportion of children (9-59 months) immunised against measles (N=857) | 561 | 65.5 (CI: 62.1-68.5) |
| Proportion who have ever received polio vaccine | 560 | 62.6 (CI: 59.3-65.8) |
| Proportion of malnourished children (MUAC< 12.5 cm) | 58 | 6.5 (CI: 5.3-7.7) |
| Under five death rate (deaths/10,000/day) | 3.16 (CI: 2.07-4.25) | |
| Crude death rate (deaths/10,000/day) | 0.97 (CI: 0.70-1.24) | |

# 1   INTRODUCTION

Taleex and Huddun Districts are located within the Sool Region.  Both districts have an estimated population of 60,700 (WHO NID figures, verified by the survey teams).  The population is dominantly pastoral and falls in two main livelihood zones of the Sool Plateau and Nugaal valley in Northern Somalia.  The pastoral livelihood is dominated by keeping of shoats (80%) and camels (15%).
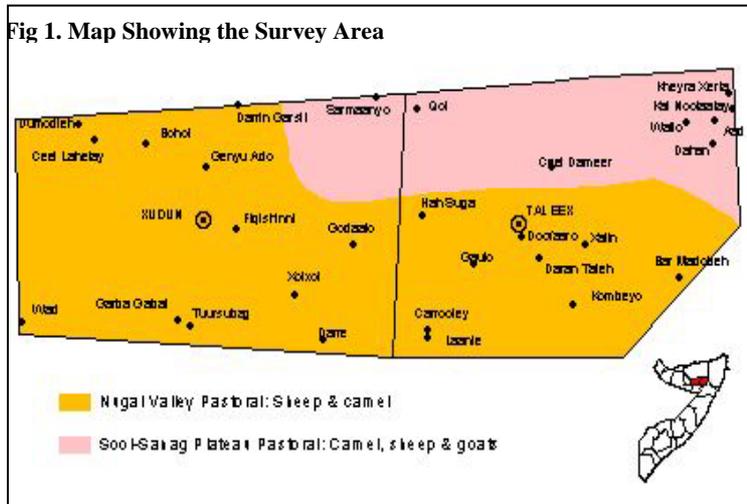


Fig 1. Map Showing the Survey Area

The districts have experienced chronic drought over the last three years until the onset of the 2005 *Gu* rains in April. The drought situation led to severe pasture depletion, water scarcity and cumulative degradation of rangeland, accompanied with massive livestock deaths including pack camels. The devastating effect of the long drought situation has made recovery and regeneration slower even after the rains. Overall, nutrition and food security situation was expected to be gradually improving following good kidding and water availability in the last two months after the onset of Gu rains, along with continued humanitarian interventions.

## 1.1   Survey Justification

FSAU has undertaken nutrition surveillance activities in Taleex and Huddun Districts over the past five years.  The surveillance activities have been undertaken through health facilities and sentinel sites surveillance systems.  All these systems have formed a basis for an overall analysis of the nutrition situation for the area - whether the rate is within or above the usual range for the area, or still whether the rate seems to have significantly dropped below the usual range.  However, there has been a need for a nutrition survey to complement the existing surveillance systems and to quantify the current malnutrition rate for the area.  Over a long period the need for a nutrition survey in the two districts has persisted and previous efforts to undertake one have been severed by security and logistical factors.  An understanding of the current nutrition status would further inform the humanitarian organizations that have implemented intervention programs in the area.

## 1.2   Survey Objectives

1. To determine the levels of malnutrition in Taleex and Huddun districts through anthropometric measurements using weight for height of children aged 6 - 59 months or 65 - 110 cm tall.
2. To describe factors influencing the nutrition status of children in Taleex and Huddun districts in relation to care practices, food security, health, water and sanitation conditions.
3. To determine the coverage of measles vaccination and Vitamin A supplementation in Taleex and Huddun districts.
4. To determine the incidence of diarrhoea, measles and ARI two weeks prior to the survey in Taleex and Huddun districts.
5. To estimate the levels of night blindness (as proxy indicator of vitamin A deficiency) in the survey area
6. To determine the mortality rates (crude death rate and 0-5 death rate) among the population in Taleex and Huddun districts

# 2   BACKGROUND INFORMATION

## 2.1   General background

Sool plateau is an ecosystem mainly inhabited by pastoralists. The plateau covers three regions in northern Somalia: Sanaag, Sool and Bari Regions. The current nutrition survey was conducted in part of Sool and Sanaag Regions, where previous surveys had not covered, but have been considered nutrition and food security hot spots based on previous health facility, rapid assessments and intervention screening data.  Both Taleex and Huddun districts have an estimated population of 60,700 (WHO NID figures, verified by the survey teams).   The population of the plateau are mainly pastoralists most of whom live the nomadic lifestyle keeping camels, goats, sheep and cattle with a small proportion of agro-pastoral and urban inhabitants.  The surveyed part of the plateau has had recurrent political tensions being claimed by both the Somaliland and Puntland governments.  The inhabitants are an independent community who have maintained their traditional administrative structure of chiefs and sheikhs or had parallel administrative structures for both governments in order to benefit from either government.

## 2.2   Food Security Overview

The Sool plateau has been predominantly a pastoral community (accounting for 85-90% of the population) who keep camel, cattle, sheep and goats.  The remaining 10-15% lives in urban areas. The area used to be good grazing area and could sustain a high livestock population.  Traditionally, the area was used only as a wet season grazing area, though with increased number of livestock over the last two decades, the area has been converted into an all year grazing area.  This and the previous serial drought situation have resulted to severe degradation of rangeland.

Pastoralism is the main source of livelihood for the population of Sool plateau. The sales from livestock and livestock products (milk, ghee and skins) provide the main income sources, out of which households purchase food and non- food items. In a normal year, the sales of livestock and livestock products contribute 60-70% of the poor household's income in a year. The rest of the income is generated from self employment activities such as collection and sale of bush products, employment and remittances. The plateau has had four successive years of poor rains since 2000 resulting in severe pasture depletion and water scarcity, high livestock deaths that has seriously affected people's livelihood. Over the years, the economic situation of the plateau has exacerbated by heavy animal loss and huge expenditure burden incurred by costly water trucking schemes for both human and livestock consumption. The cumulative impact of all these negative indicators caused the pastoral livelihood to subside.  Distribution of destitute families is widespread in the districts. The poor in the community is highly dependent on both formal and informal support for survival. This includes clan or kin based donations in kind or cash, food distribution by religious groups and interventions from the humanitarian community.

The main water sources within the plateau include *Berkads*, water catchments (*ballis*, open wells and ponds) mainly following a wet season and boreholes. Most of these water points yield hard water limiting its use especially for domestic purposes.    *Berkads* are highly prone to microbial contamination owing to the mode of water harvesting as well as handling of the same during collection for consumption purposes. Table 2 below summarises key events that have affected food security in the districts and the region.

*Table 2:.Chronology of events affecting food security in Taleex and Huddun of Sool and Sanaag*

| Period | Event |
|---|---|
| Jan- March 2003 | Reduced camel calving rate due to the effect of drought. Milk prices higher than normal by 30% due to low milk production. Terms of trade favourable due to increased demand at both local and export market but livestock still in poor body condition. Widespread depletion of natural resources. Water points pressured by the high concentration of livestock. Abnormal migration of livestock mainly in Eastern Sanaag. A drum of water costing $2 compared to $1.50 during the same period in 2002. Main expenditure for families is water and food. The poor pastoralists and the lower strata of the middle wealth group have limited access to daily food intakes. Cash and assets drawn down on the cost of the high water prices. Persistent drought of three years has decreased the number of animals in their herds and lessened the ability to cope with the long dry spell. |
| April – June 2003 | Parts of Sool plateau received heavy rains in April. Some rains received in May but the cumulative number of rainy days was below normal. Poor and middle pastoralists who did not move out of the plateau were finding it increasingly difficult to obtain sufficient cash to buy food having lost up to 60% of their income. With virtually no income from milk sales which used to provide approximately 40% of household's income and the rest coming from livestock sales now reduced by 50%. By June 3,500 households facing 25-35 % of their energy requirements. |
| July- Sept 2003 | Food insecurity reached an alarming stage. The pastoralists lost their assets and many in the middle wealth group slipping to the poor or very poor wealth groups and a danger of others becoming destitute. High water prices continue, sale of breeding and pack animals, movement of animals out of the plateau, normal coping strategies almost being exhausted. Reduction of number of meals from three to one per day. Drastic cut in asset holdings among all wealth groups, 80 % of the camels and more than 50% of the shoats on the plateau have been sold, moved out or died. As a result of complete failure of Gu rains water trucking continued. Terms of Trade were still favourable but the number of animals in good marketable condition was minimal. |
| Oct-2003 | Multi-agency assessment revealed that cumulative losses (mortalities and distress sales) over the past years greatly reduced herds and altered herd composition. Camel losses were 60-70 % with even higher losses of pack animals of over 80% and shoats 40-50%. Drop in reproduction rates thus 60-70 % drop in income from livestock sales thus drastically reducing the purchasing power. Terms of trade poor, in a normal year one shoat is exchanged for a 50kg bag of rice but had now changed to 2 - 3 shoats per 50kg bag of rice. |
| Dec 2003 | Some showers of rain received in the western border of Sool plateau towards the upper Nugal valley. Prior to these rains the pastoralists of Sool plateau of Sanaag had made the longest ever out migration to Sool plateau of Bari and coastal grazing area, while the others moved towards the Sool plateau of Sool region. The huge migration exceeded the rangeland carrying capacity and limited the possibility of pasture regeneration. Emergency interventions by the humanitarian community commenced in the plateau. |
| Jan –March 2004 | The area still remains under emergency situation. |
| April – 2004 | Some rains in Taleh and Sarmanyo villages from third week of march. These attracted livestock from the Sool of Sanaag. Sool plateau remain in a state of humanitarian emergency. |
| Aug-Dec 2004 | Poor deyr rains.  Food security severed.  Humanitarian interventions intensified |
| Jan- May 05 | Drought persists for the bigger part of the quarter.   Humanitarian assistance continues. Above normal Gu rains are received.  Flooding cause destruction in infrastructure and loss of property in some parts.  Good kidding occurs, milk production improves. |

## 2.3   Humanitarian operations in Taleex, Huddun and the larger Sool plateau

### 2.3.1   Development Activities

International agencies operating in the Sool region include CEFA and CINS that are involved in agriculture, fisheries, rehabilitation of social services etc.  CARE international and COOPI are also based in Erigavo and are involved in emergency humanitarian interventions.  Horn Relief is involved in cash relief, food for work and pastoral issues; ILO in rehabilitation of basic infrastructure and NPA in both water tracking and sources rehabilitation and health issues.  SRCS is also providing health services. Local NGOs like Havoyoco and SVO undertake water point's rehabilitation. UNICEF, MOHL, WHO and WFP are also involved in humanitarian interventions in the plateau.

Of these agencies, those with intervention programmes in Huddun and /or Taleex districts are WFP, UNICEF and the local NGOs SVO, NPA and UGBAAD.

*Table 3: Summary of humanitarian interventions in the Sool Plateau of Sool and Sanaag Regions*

| Intervention | Agency |
|---|---|
| Free food distribution | WFP, PENHA, Islamic, business groups and Diaspora in Hargeisa and Burao |
| Health related interventions | UNICEF, MOHL, WHO |
| Water and sanitation related interventions | NPA, SVO, UNICEF, COOPI and Horn Relief |
| Livestock interventions | COOPI, Candlelight |
| Cash related interventions | UN-OCHA, Horn Relief, NPA and CARE |

### Free Food distribution

WFP, from both North East and North West Somalia offices has undertaken more than three rounds of free food distribution in Taleex and Huddun targeting destitute and families of malnourished children identified through the screening process.   Each targeted family receives a family ration of 90kg of cereal (maize or rice), 10.3kg of pulses (peas or beans) and 3.6kg of vegetable oil during each round of distribution.   About 350 MT of food is distributed in the two districts each round (monthly during the drought) benefiting about 4,780 families in most of the locations in Taleex and Huddun.  This year UNICEF implemented a supplementary feeding programme distributing UNIMIX to malnourished children in March/April.

The programmes have, however been constrained by security and political tensions. Cases of looting relief consignment by the militia have been reported.  In some parts, the locals turn away relief food from the side of the government they do not identify with.  Humanitarian access to the area is hindered by political claims of the area from both governments and the logistics in organising transport and distribution into the areas.

### Health related interventions

UNICEF in collaboration with MOHL and WHO have in March/April this year undertaken micronutrient supplementation and health programme campaigns in Taleex and Huddun. Mass vitamin A distribution was carried out in April.  UNICEF implements health programme that includes essential drug supplies to two MCHs in Tallex and Huddun districts and related iron/folic acid supplementation to pregnant women, immunisation of under five children against the immunisable childhood diseases (measles, polio, BCG, diptheria and tetanus), antenatal care services and provision of health and nutrition education on child feeding and environmental hygiene.  In addition UNICEF regularly supports primary healthcare in the twelve health posts in Taleex and Huddun in Holhol, Hangey, Gorofley, Lafaweyne, Awrbogays, Kulal, Carrolay, Godalo, Sarmanyo, Halin, Kalcad and Lasocurdin locations by providing quarterly distribution of essential drugs for treatment of common illnesses on an out patient basis, the last round conducted in March/April 2005.

### Water and sanitation related interventions

Through its pastoralist livelihood emergency programme, COOPI is rehabilitating wells mainly in the western side of the plateau.  The majority of the water facilities have been either non-functional or functioning at low capacity.  An assessment carried out by COOPI showed that availability of water was the basis for establishment of the various settlements.  Key problems related to water and sanitation identified were user practices that lead to water contamination and lack of infrastructure for watering the livestock.  Within the plateau COOPI has plans to access water to about 5000 households by rehabilitating existing water sources.  The project is also creating awareness on the link between water contamination and water related diseases.

Between November 2003 and March 2004, Horn Relief in partnership with UNICEF rehabilitated thirty three wells in Eastern Sanaag targeting 15,000 direct beneficiaries. In January 2004 both agencies also distributed 600 jerry cans and 7 bladder tanks to 600 highly vulnerable pastoralists in Xingalool; Baragaha Qol; Shimbiralle and Ballibusle in Sanaag Region. Additionally, for 13 days in November 2003, Horn Relief with funding from CARE implemented the '*Subsidizing of Fuel for Water Trucking in Eastern Sanaag'* project through which 14 litres of water per day was distributed to several vulnerable pastoral households and their livestock. Subsequently, from March to May 2004, Horn Relief in partnership with VSF Suisse subsidized fuel for water truckers in 10 water collection points in villages in Eastern Sanaag Region. NPA was also involved in rehabilitation of water facilities (shallow wells and boreholes) and water trucking. PENHA contributed to water provision through water trucking in Habarshiro and Balibusle.

Steadfast Voluntary Organisation (SVO), a LNGO based in Sool and Sanag regions with grant from CARE International has supported rehabilitation of dams (*ballis*) in Dararweyne, Bohol, Lafaweyne and Huddun; shallow wells in Qindhiciley and Sufurweyne in addition to also gully erosion control in Dararweyne, hangey, Gorofley areas in Huddun.  Their aim has been to improve access of the locals to soft water.  The problem of shortage and limited access to clean soft water is a common problem in the district.  Soft water is trucked from as far as an average of 300 km and the cost is beyond the reach of the poor households, a barrel costing $5 especially during dry spells.

**Livestock related interventions**
Since March 2004, COOPI has been implementing a Pastoralists Livelihood Emergency Assistance programme that aims at reducing diseases or parasites among the livestock that have survived the drought.  The interventions include deworming, tick control and mass treatment of livestock.  The interventions are implemented in areas with high concentration of livestock.  At the time of the survey these activities had been implemented in Awbogays and Garadag in Sanaag and similar work had just started in Lasanood (Kalabadh, Yagoori and Sukiria).  The programme targets to treat 350,000 livestock and at the time of the survey a total of 80,000 had been treated for 2,000 families. Notable though, is that of the locations covered at the time of survey, only Awbogays is within the Sool Plateau of Sool and Sanaag Regions.

**Cash related interventions**
Between December 2003 and February 2004, Horn Relief with funding from NOVIB and in partnership with NPA and UN-OCHA, carried out the free cash distribution. A total of US $50 cash grants were distributed to 13,830 vulnerable households in the Gebi Valley and Sool Plateau of Sool and Sanaag regions covering Badhan, Dhahar, Erigavo, Taleex and Hudun Districts. CARE has also undertook cash for work activities.

### 2.3.2   Health

The Ministry of Health and Labour, Somaliland with support from UNICEF has continued to support healthcare provision in the area.  Currently there are two operational MCHs (Ceel Afwein and Dhahar) and 11 health posts.  There are however plans by ministry of health and labour and UNICEF to upgrade Xingalool health post to an MCH.  Awrbogeys and Daraweyne have also been recommended to be upgraded.  The MCHs are managed by auxiliary nurses who have been trained on the job while the health posts are managed by community health workers who operate a basic kit

for treatment of minor ailments. Traditional birth attendants provide antenatal and post natal care. Although not located within the plateau, Erigavo MCH supported by SRCS also benefits populations from the plateau.

The Minimum Essential health Service Package offered in MCH/OPDs includes antenatal care and postnatal services, under five clinics, OPD clinics, immunization services and preventive and promotive services.  The health posts offer treatment of small ailments.


### 2.3.3   Morbidity

Malaria, diarrhoea, respiratory tract infections and anaemia are among the common diseases reported in the districts.  With the current stagnant waters in the water water points, mosquito breeding is likely to cause an upsurge in malaria infections.


## 2.4   Water and environmental sanitation

There is extensive contamination of surface supplies and dug wells.  Most have no proper fencing and covers hence are liable to extensive contamination.  This is due to unhygienic drawing of water, lack of treatment processes for drinking water and poor understanding of the health risks associated with contaminated water.  Additionally, most households have no latrines with open defecation being the only means of disposal for human waste.


## 2.5   Previous nutrition information in Taleex and Huddun Districts

Over the past three years, the population in Taleex and Huddun Districts, Sool region has faced a drought situation that has resulted in massive livestock losses, high indebtedness and environmental degradation. Humanitarian interventions by international NGOs, local NGOs, local business communities and the strong social support network have continued to prevent a major humanitarian crisis in the area. A shift in the people's main means of livelihood (pastoralism) has also been noted with many families resulting to destitution. In July 2004, FSAU in collaboration with partners undertook rapid nutrition and food security assessments that revealed an increase above the usual levels of malnutrition observed in both Taleex and Huddun Districts (FSAU Nutrition Update, August 2004). Malnutrition levels were above 20% (MUAC <12.5 cm or oedema). Food insecurity and limited access to safe water were the key underlying causes of malnutrition.

The long awaited 2004 Deyr rains that would provide relieve to this population set in late and so far not benefited all parts of Sool region mainly the Sool plateau and Nugal valley.  Huddun District and the western parts of Taleex District received virtually no rains. FSAU October 2004 field reports further indicated a worsening situation as manifested by a rising number of deaths and diarrhoea cases among underfive children, reported significant cases of measles among children and adults, limited access to water as *Berkads* were not yet replenished and increasing food prices. This led to FSAU and UNICEF undertaking a joint rapid food security and nutrition assessment in Taleex and Huddun Districts in October 2004.

Since December 2003, UNICEF has undertaken supplementary feeding of malnourished children in Sool region during which nutrition screening is undertaken for underfive children in the villages visited. In the month of September 2004, nutrition screening data for nine of the ten assessment sites indicates malnutrition levels of 22.5% (WFH <80% median or oedema) and severe acute malnutrition of 4.3% (<70% median or oedema) among the 920 underfives screened indicating a poor nutrition situation. Past nutrition screening data is erratic for each of the assessment villages with the exception of four villages (Holhol, Carooley, Huddun and Lasurdhan) that have data for September and October 2004. Overall in the four villages, about 22.7% of the 589 underfive children screened in September 2004 were malnourished (WFH <80% median or oedema). In October 2004, 26.5% of the 584 underfive children screened were malnourished. The data indicated a rise in the levels of malnutrition in the area.
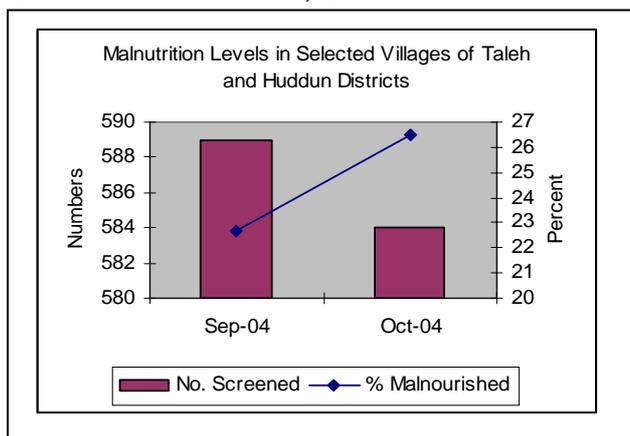
Malnutrition Levels in Selected Villages of Taleh and Huddun Districts

Table 4: Summary of the nutrition information in the Sool plateau of Sool and Sanaag Regions

| Area | Nutrition Information | Overall Analysis on the nutrition situation now |
|------|----------------------|------------------------------------------------|
| Sool Plateau of Sool and Sanaag | • Upto June 2004, a GAM of 12.5%, CDR of 0.88 deaths/10,000/day (June, 2003)<br>• Upto July 2004, a GAM of 13.7% and CDR of 0.86 deaths/10,000/day (June 2004)<br>• Sentinel sites surveillance data in January/February 2005 indicated stabilizing trends in malnutrition levels (see figure 1)<br>• Overall, 15.1% (weight for height <-2 z-score or oedema) of the 119 underfives assessed were malnourished (rate above the usual range for the area)<br>• Main food types consumed include cereal, fats/oils and dairy products - food aid, gifts, bartering or borrowing being the main sources<br>• Incidence of common illnesses declined but for ARI<br>Presently:<br>• Diet has generally improved with more milk and milk products consumption – freshly made ghee is available in most households.<br>• Food security situation is improving<br>• No disease outbreaks have been reported<br>• Significant humanitarian interventions have been ongoing, including social support<br>• No significant number of deaths have been reported | The nutrition situation is gradually improving and is considered to be within the usual range for the area (10% - 14.9%). |
| Lower Nugal valley | • GAM of 15.9% (Feb/March, 2004)<br>• GAM of 21.7% and CDR of 0.65 deaths/10000/day (July, 2004)<br>• Sentinel sites surveillance data in January/February 2005 indicated a declining trend in malnutrition levels (see figure 2)<br>• Overall, 17.2% (weight for height <-2 z-score or oedema) of the 268 underfives assessed were malnourished (rate above the usual range for the area)<br>• Decline in various diseases (diarrhea, measles and malaria) was | Within Lower Nugal valley, the nutrition situation has been above the usual range (10% - 14.9%).<br><br>Now it is possibly within the usual |

| | | |
|---|---|---|
| | noted except for ARI. <br> • Main food types consumed include cereal, fats/oils and dairy products - food aid, gifts, bartering or borrowing greatly contributed to availability <br> Presently: <br> • Diet has generally improved with more milk and milk products consumption. <br> • MCH data indicates a decline in levels of malnutrition e.g. Huddun MCH <br> • No significant number of deaths have been reported <br> • No disease outbreaks have been reported <br> • Significant humanitarian interventions have been ongoing, including social support <br> • Food security situation indicators are positive | ranges – Taleex and Huddun nutrition survey results to confirm actual situation |
| LasAnod District | • High GAM (>15%) of children screened monthly in HFs (upto June, 2004) <br> • GAM of 18.3% and CDR of 2.2 (July, 2004) | Key informant and HF of Lasanod show incidence of reduced acute malnutrition to <10% since January, 2005 |
| Huddun District | • High GAM (>15%) of children screened monthly in HFs (upto June, 2004) <br> • GAM of 28.3% and CDR < 1.0 (July, 2004) <br> • | Sentinel surveillance data indicate declining levels of acute malnutrition |
| Taleex District | • GAM of 27% (December 2003) <br> • GAM of 20.7%, CDR of 0.55 deaths /10,000/day (July 2004) | GAM of 10.5% and CDR of 0.97 (June, 2005 survey) |

Fig: Sentinel sites surveillance data in Sool Plateau          Fig: Sentinel sites surveillance data in Lower Nugal Valley



Malnutrition levels in Sites within Sool Plateau Livelihood Zone



Malnutrition levels within Sites in Lower Nugal Valley Livelihood Zone
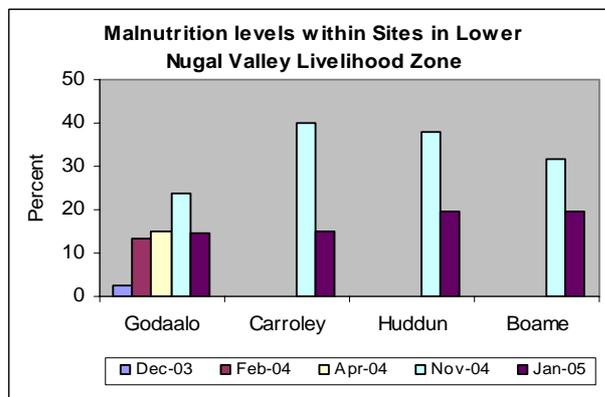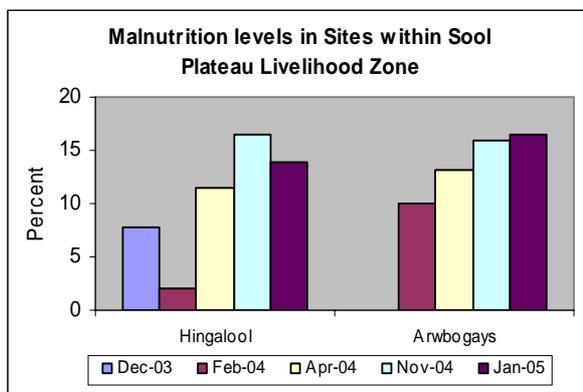
# 3  METHODOLOGY

## 3.1  Survey Design

The study was both descriptive and analytical in nature. Cross -sectional data was collected through a standard household questionnaire for nutrition (see appendix 2) Retrospective mortality data for 90 days prior to the survey was also collected among the study households (see appendix 3). Qualitative data was collected by survey supervisors and coordinators through focus group discussions and key informant interviews to provide further understanding of the underlying causes of malnutrition.

## 3.2  The sampling procedure

Using a two-stage cluster sampling methodology, 30 clusters were randomly selected based on population proportion of the villages. Initially a sampling frame was constructed from which a representative sample could be drawn. A list of all villages within the districts, with their respective populations was used to construct cumulative population figures for the survey area. With help of the survey team who comprised people from within the Sool plateau and Nugaal valley, all villages were listed in the sampling frame and classified as permanent settlement, temporary settlement, water point or transitory grazing area. The deserted villages/settlements were identified and deleted from the final list of villages/settlements. Population estimate figures were initially received from WHO (NID polio programme) and further verified for authenticity by the survey team. An estimated population of 60,700 from 51 villages was used from which 30 clusters were selected. Using the Nutrisurvey software a random number, 538 was chosen to determine the first cluster. The subsequent clusters were determined systematically by adding the cluster interval (2,023) to the first randomly selected number (see appendix 1). Due to insecurity in one of the randomly selected cluster/villages, replacement was done with the nearest accessible village inhabited by population with similar basic characteristics as the previously selected village. From the 30 randomly selected clusters, a total of 906 children aged 6-59 months and/or height/length of 65-110 cm were randomly surveyed. However, insufficient information on some children and extreme measurements led to the dropping off of 11 children at analysis. Thus only 895 were included in the analysis of child data.

In each of the clusters, mortality questionnaires were administered to 30 randomly selected households. Same sampling frame used for nutrition assessment was employed in cluster selection for mortality survey. In total, mortality data was collected from 902 households irrespective of whether with an under-five or not (see section 3.2.1 for details of household selection).

### 3.2.1  Study population and sampling criteria

The study population consisted of people living in the two districts and comprised all the children aged 6-59 months or measuring 65-110 cm for height/length. Sampling procedure as outlined in the SMART Guidelines was followed in this survey. On the visit to each cluster, the centre was identified and a pen was spun to determine the direction to follow in moving to the edge of the cluster. On reaching the edge of a cluster, a pen was spun a second round, now until the pen pointed inward the cluster/village to determine the direction to go in the systematic selection of the households with children aged 6 to 59 months. The households in this direction were counted/ established as the team crossed to the other edge and given numbers. A random number within the total number of households encountered was drawn to enable random selection of the first household with a child of the required age or height to be visited. From the first household with a child aged 6-59 months,

the team always moved in right direction to the next household in dense settlements, but to any nearest household for sparsely distributed pastoral settlements. This procedure was followed until the required 30 children were obtained in a cluster.  All sampled households were visited, the supervisor noting whether it is empty, has the required children in which case a household questionnaire administered, or has no under fives in which case only the mortality questionnaire is administered. If a cluster was exhausted of children before the required 30 children had been reached, a neighbouring area was randomly selected.  All eligible children in the households were measured and if a child or primary caregiver was absent, an appointment was booked for a later visit in the course of survey.  If a child was in a relative or neighbour's house, the child was followed up and assessed.

With reference to mortality, the data was collected retrospectively with the first questionnaire being exercised on the first randomly selected household.  The same direction right or nearest as indicated above was followed but unlike the survey for children where only households with the required children were visited for interview, the mortality questionnaire was exercised in every household in the identified direction.


## 3.3   Data collection

### 3.3.1   Anthropometric measurements

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

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

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

*Length*:  For children aged 6 to 24 months or between 65cm to 84.5cm length instead of height was taken.  The child was made to lie flat on the length board.  The sliding piece was placed at the edge of the bare feet as the head (with crushing of the hair) touched the other end of the measuring device.  Then two readings were taken and the average computed.

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


### 3.3.2   Child age determination

Difficulties were encountered in determining the exact ages of children.  Useful documents like growth monitoring/clinic attendance cards and birth certificates were not available in most cases.  Calendars of events (see in the appendix) were also used as proxies to

accurate age determination.  Though not entirely accurate, ages were still regarded as important indicators and were approximate/average pointers for identification.  The nutrition indicator employed as preference was *weight for height* as the best nutrition status (acute malnutrition) for emergency and transitory populations.

### 3.3.3  Oedema

Oedema, defined as bilateral oedema on the lower limbs was assessed by gently pressing the feet to check if a depression is left after at least three seconds of pressing and was confirmed if present by the supervisor and then recorded.

### 3.3.4  Morbidity

Morbidity pattern was assessed by asking any incidences of nutrition related common illnesses like diarrhoea, acute respiratory infections, malaria and measles in the previous two weeks following the survey.

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

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

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

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

### 3.3.5  Mortality

A proxy indication of mortality was taken retrospectively to provide some idea on the health situation of the population.  The mortality assessment 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.  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, whether there was under-five or not.  Households were systematically surveyed until the 30th household.  Each household surveyed was asked the composition of their members in two parts- those members less than 5 years and the total number of household members.  The household was then asked how many if any of the household members had died, left or arrived in the last three months.  The SMART guideline mortality questionnaire was modified to suit the Somalia situation and is appended to the report.  A total of 902 households with and with no under-five child at the time of the survey were included in the survey.

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

$MR=n/\{[(n+N)+N]/2\}$, Where:
       $n$=total number of persons reported dead in the households surveyed
       $N$=total number of people living in those households at the time of survey

The mortality was calculated retrospectively for the past **3 months,** the recall period. Mortality rates per 10,000 persons per day were obtained by dividing the figure above by 95 days that was used as the recall period.  Calculation of under-five mortality rates was done using the same formulae but with a denominator of under-five children in the surveyed households. In case a member had died, the household was asked to explain the signs and symptoms of the person before he/she died.

Mortality rates can be interpreted according to the following reference

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

### 3.3.6   Dietary Diversity

Dietary diversity was determined by taking a simple count of various food groups consumed in a given household over the past twenty four hours. Additionally, the frequency that given members of the household (less than five or over five year olds) consumed certain food groups was also determined.  The food groups considered were Cereals/staples and cereal based products; Legumes/meat/fish/eggs; Milk and milk products; Fats/oil/Ghee/honey and Sugars in tea and others; Roots/tubers and vegetables/Fruits/spices.

### 3.3.7   Vitamin A Deficiency

Vitamin A deficiency (VAD) can be assessed via clinical assessments namely night blindness, bitot's spots, corneal xerosis and corneal ulceration; biochemical or dietary assessments. During the survey, VAD prevalence was estimated by assessing if any member(s) of a household suffered from night blindness.

### 3.3.8   Consumption Coping Strategies

Consumption coping strategy was determined and calculated as per The Coping Strategies Index Field methods manual by CARE and WFP.  Respondents were asked to identify how many times a given coping strategy had been in the past 30 days prior to survey.

## 3.4   Description of survey activities

*Table 5: Chronology of activities for the Sool plateau nutrition survey*

| Major Activity | Dates.  2004 |
|---|---|
| Preparation of tools, methodology & review of secondary data (Nairobi) | 5th – 20th May |
| Resource mobilization; Joint planning meetings with partners (Hargeisa) | 22nd – 28th May |
| Training of enumerators and pre-testing (Burao) | 30th – 3r.d  June |
| Cluster Identification | 3rd  June |
| Collection of data | 5th  – 10th June |
| Entry of data | 12th – 18th June |
| Preliminary analysis | 18th – 19th June |
| Presentation of preliminary results | 19th June |
| Further data cleaning and analysis | 21st – 30th June |
| Report writing | 4th – 14th July |
| Circulation of report | 31st July |

Six teams each consisting of two enumerators and one supervisor conducted the survey with each team handling one cluster in a day.  An elder from each particular village/cluster assisted the teams in identification of the cluster, its centre and boundary.  Supervisors were seconded from the participating partners namely; MOHL, SRCS, and FSAU.  Overall support, supervision and co-ordination were done by two FSAU nutritionists and one MOHL representative/coordinator.  MOHL staff (PHC Coordinator) and FSAU nutrition analyst in the region assisted in the identification of the qualified enumerators who were selected on the basis of their experience with previous nutrition surveys and UNICEF multi-indicator cluster surveys.

## 3.5   Quality control procedures

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

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

Quality of data was also ensured through (i) monitoring of fieldwork by FSAU team led by two nutritionists and national MOHL PHC coordinator, (ii) crosschecking of filled questionnaires on daily basis and recording of observations and confirmation of measles, severe malnutrition and death cases by supervisors.  All households sampled were visited and recorded including empty ones (iii) daily review undertaken with the enumerators to address any difficulties encountered, (iv) progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis, (v) continuous data cleaning after entry in the field that made it easy to detect any outliers/ mistakes and to

replace or repeat households depending on magnitude of error and (vi) monitoring accuracy of equipment (weighing scales)  by regularly measuring objects of known weights.  All measurements were loudly shouted by both the enumerators reading and recording them to reduce errors during recording.


## 3.6   Data analysis

### 3.6.1   Data entry, cleaning, processing and analysis

Data was entered and analysed using both Nutrisurvey and EPIINFO computer based package.  Running and tabulating all variable frequencies was carried out as part of data cleaning.  The Nutrisurvey Anthropometry and EPINUT programmes were 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). Analysis of certain variables e.g. total food groups consumed and the total losses in livestock ownership was undertaken in Microsoft Excel.


### 3.6.2   General characteristics of survey population

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


### 3.6.3   Creation of nutritional status indices

The anthropometric measurement of weight and weight were used to compute the WFH nutritional status indicators of the studied children.  Weight For Height (WFH) expressed the weight of the child as a percentage of the expected weight for the standard child of that height as given by NCHS.  WFH measures acute malnutrition or wasting.  Using EPINUT Z-scores were generated and the anthropometric indicator, WFH, was used to classify children into categories of nutritional status as follows:

| | |
|---|---|
| < -3 Z-Scores or oedema | = Severe acute malnutrition |
| -3 Z-Scores $\leq$ WFH < -2 Z-Scores | = Moderate acute malnutrition |
| <-2 Z-score or oedema | = Global/total acute malnutrition |
| $\geq$ -2Z-Scores | = Normal |

Similarly, MUAC measurements were also used to classify children into categories of nutritional status and risks as follows:

| | |
|---|---|
| <11.0 cm | = Severe malnutrition |
| >=11.0 < 12.5 | = Moderate malnutrition |
| >=12.5 < 13.5 | = At risk of Malnutrition |
| >=13.5 | = Normal |

# 4  SURVEY RESULTS

## 4.1  Household characteristics of study population

The nutrition survey covered a total of 475 households with a mean household size of 7 (SD= 3) persons. Male headed households comprised 74.7% while the rest (25.3%) were female-headed households.  The mean number of the under fives per household was 1.9

*Table 6: Household characteristics*

| | N | % (CI) |
|---|---|---|
| *District (n=475)* | | |
| Huddun | 216 | 45.5 (40.9-50.1) |
| Taleex | 259 | 54.5 (49.9-59.1) |
| | | |
| Sex of Household head (n=475): | | |
| Male | 355 | 74.7 (70.5-78.5) |
| Female | 120 | 25.3 (21.5-29.5) |
| | | |
| *Household size:* | | 7.1 (SD = 2.8) |
| | | |
| *Household residence status (n=475)* | | |
| Those in their usual residential areas | 339 | 71.4 (67.0-75.3) |
| Internal migrants | 134 | 28.2 (24.3-32.5) |
| Returnees | 2 | 0.4 (0.1-1.7) |
| | | |
| *Place of origin (n=136):* | | |
| Within the Sool plateau | 123 | 90.4 (85.9-94.2) |
| Outside Sool | 13 | 9.6 (6.8-14.1) |
| | | |
| *Length of Stay (n=136)* | | |
| <=3 months | 15 | 11.0 (6.3-17.5) |
| 4 – 6 months | 18 | 13.2 (8.0-20.1) |
| 7-12 months | 59 | 43.4 (34.9-52.1) |
| 1-2 years | 40 | 29.4 (21.9-37.8) |
| > 2 years | 4 | 2.9 (0.8-7.4) |
| | | |
| *Reason for movement (n=136):* | | |
| Pasture and food shortage | 93 | 68.1 (59.6-75.9) |
| Water and food/pasture shortage | 30 | 22.1 (13.6-29.3) |
| Lack of Puck animals | 3 | 2.2 (0.5-4.4) |
| Others (insecurity and job search) | 10 | 7.4 (3.6-11.4) |

A large majority (71.4%) of the surveyed households were residents while slightly over one quarter (28.2%) were internal migrants. Only 0.4% of the surveyed households were returnees. The non residents were mainly from within the Sool Region (90.4%) and only 9.6% originated from outside Sool. Overall about three out of four (75.7%) non residents had arrived into the Plateau seven or more months prior to the survey. The main reason for movement was a combination of pasture and/or food shortage (68.1%); water, food and/or pasture shortage (22.1%) Lack of puck animals caused the immigration of 2.2% while the remaining households (7.4%) moved due to insecurity in areas of origin, divorce or in search of employment opportunities.

## 4.2  Livelihood, Assets Ownership and Coping Strategies

Most (60.2%) of the households were entirely pastoralists and relied on livestock as their main source of livelihood while agro-pastoralists were 5.9%.  Slightly more than one quarter (27.6%) depended upon self employment/petty trade or casual labour while the rest (6.3%) were destitute dependent on food aid or relatives for assistance or urban dwellers with no definite means of livelihood.  Within the survey districts (Taeex and Huddun) of Sool Region pastoralism would normally be the main means of livelihood but with the past chronic drought situation, the pastoralists have lost most of their livestock while the remaining

livestock have had suboptimal production and poor market values.

*Table 7: Distribution of households by means of livelihood, Assets Ownership and consumption coping strategies*

| Livelihood means  (N=475) | N | % |
|---|---|---|
| Pastoral | 286 | 60.2 (55.6-64.6) |
| Self employment/Petty trade | 131 | 27.6 (23.7-31.9) |
| Agropastoral | 28 | 5.9 (4.0-8.5) |
| Others (urban, food aid, destitute) | 30 | 6.3 (4.4-9.0) |
| | | |
| **Assets Ownership** | | |
| *Change in shoats owned in past 3 years (N=467)* | | |
| Gained shoats | 38 | 8.2 (6.9-11.1) |
| Lost <50% | 14 | 3.0 (2.1-4.3) |
| Lost between 50% to 99% | 321 | 68.8 (65.9-72.5) |
| Lost all shoats (100%) | 94 | 20.0 (18.9-23.2) |
| *Change in camels owned in past 3 years  (N = 397)* | | |
| Gained camels | 4 | 1.0 (0.3-1.9) |
| Lost <50% | 96 | 24.2 (21.7-25.9) |
| Lost between 50% to 99% | 206 | 51.9 (49.3-55.0) |
| Lost all camels (100%) | 91 | 22.9 (19.8-24.7) |
| | | |
| **Consumption coping strategies  (N=475)** | | |
| - Switch from high to low quality foods | 324 | 68.2 (63.9-72.5) |
| - Borrow food or rely on help from relatives | 349 | 73.5 (69.8-77.9) |
| - Purchase food on credit | 190 | 40.0 (37.4-42.5) |
| - Gather wild food or hunt | 60 | 12.6 (9.5-13.4) |
| - Sell livestock at low price to buy staples | 470 | 98.9 (95.9-99.3) |
| - Send household members to eat elsewhere | 6 | 1.3 (0.9-2.1) |
| - Send household members to ask for sadaka | 69 | 14.5 (13.7-15.1) |
| - Limit portion size at mealtimes | 349 | 73.5 (71.2-75.1) |
| - Restrict adult in order for small children to eat | 289 | 60.8 (58.7-63.3) |
| - Ration money you had to buy prepared food | 108 | 22.7 (20.3-24.5) |
| - Reduce number of meals eaten in a day | 357 | 75.2 (72.6-77.7) |
| - Skip entire days without eating | 195 | 41.1 (39.4-43.6) |
| - Deplete assets (land, jewellery,... to get food) | 29 | 6.1 (5.2-7.1) |
| - Use assets as security to get food | 454 | 95.6 (93.7-97.8) |

Of the 467 households that owned an average of 165 shoats in three years prior to the survey, 68.8% had lost between 50% and 99% of the shoats while about 20% had lost all their shoats. Only 8.2% had their shoats increase over the same period of time. The maximum number of shoats owned by a household dropped from 900 to 200 over the period. The average shoat ownership also dropped from 165 to 24.

Similarly, of the 397 households that owned camels three years prior to the survey, about a half (51.9%) had lost between 50% and 99% of the camels while about 22.9% had lost all their camels at the time of survey. Only 1.0% of the households had their camels increase over the same period.  The average number of camels owned by a household dropped from 33 to just 3 over the period, while the maximum number owned dropped from 400 to 70.

All surveyed households had employed one or more consumption coping strategies. Borrowing of food from relatives, selling out livestock at give-away prices, use of assets as security to get foods, reducing portion size and number of meals; reliance on credit and switching from high quality to low quality foods are some of the most common coping strategies employed by more than two-thirds of the households in the districts (Table 7).

## 4.3   Water access, sanitation and hygiene

As shown on table 8 below, at the time of survey, majority of the households were relying on water from unprotected well/spring for drinking (55.8%) and for cooking and personal

hygiene (52.6%), while about one third were depending on rain water from catchments for their drinking (29.3%) or cooking and personal hygiene (30.7%).  The rest got their drinking water from protected wells/springs (29.3%), boreholes (2.7%), and a few from either river (1.5%) or public tap (0.4%).

*Table 8: Water access, sanitation and hygiene practices*

| Water access | N | (%) |
|---|---|---|
| *Main source of drinking water (n=475):* | | |
|   Boreholes | 13 | 2.7 (1.5-4.8) |
|   Protected wells/springs | 49 | 10.3 (7.8-13.5) |
|   Rain water from catchments or ponds | 139 | 29.3 (25.3-33.6) |
|   Unprotected well/spring (including *Berkads*) | 265 | 55.8 (49.5-58.6) |
|   Public tap | 2 | 0.4 (0.1-1.4) |
|   River | 7 | 1.5 (0.6-3.1) |
| *Main source of cooking water and personal hygiene (n=475):* | | |
|   Boreholes | 11 | 2.3 (1.1-4.0) |
|   Protected well/spring | 49 | 10.3 (7.8-13.5) |
|   Rain water from catchments or ponds | 146 | 30.7 (26.7-35.1) |
|   Unprotected well/spring | 250 | 52.6 (48.0-57.2) |
|   River | 19 | 4.0 (2.5-6.3) |
| *Distance to the nearest water point: (n=475)* | | |
|   0 – 500 metres | 268 | 56.4 (51.8-60.9) |
|   501 – 1000 metres | 98 | 20.6 (17.1-24.6) |
|   1001 – 5000 metres | 60 | 12.6 (9.8-16.0) |
|   >5000 metres | 49 | 10.3 (7.8-13.5) |
| ***Sanitation and hygiene*** | | |
| *Sanitation facility (n=475):* | | |
|   Improved/ventilated pit latrine | 22 | 4.6 (3.0-7.0) |
|   Traditional pit latrine | 14 | 3.0 (1.7-5.0) |
|   Bush/open grounds | 429 | 90.3 (87.2-92.8) |
|   Open pit | 10 | 2.1 (1.1-4.0) |
| *Wash hands after defecation (n=475)* | | |
|   Always | 231 | 48.6 (37.7-51.9) |
|   Often | 104 | 21.9 (18.3-25.9) |
|   Sometimes | 139 | 29.3 (25.3-33.6) |
|   Hardly rarely | 11 | 2.3 (1.5-2.7) |
| *Wash hands before eating or food preparation: (n=475)* | | |
|   Always | 243 | 51.2 (46.4-55.5) |
|   Often | 109 | 22.9 (19.3-27.0) |
|   Sometimes | 116 | 24.4 (20.7-28.6) |
|   Hardly rarely | 7 | 1.5 (0.6-3.1) |

Similarly, minority obtained water for their cooking and personal hygiene from protected wells/ springs (10.3%), river 4.0%) or boreholes (2.3%).

Majority (77%) get water within 1 km of their residence. However, some 10.3% of the households were travelling over five kilometres in search of water.

Latrine presence and use in the survey area is quite low. Collectively about 9.7% of the population reported using improved pit latrines, traditional pit latrines or open pit. The remaining overwhelming majority (90.3%) disposed faecal waste on open ground or in the bush.  Personal and food hygiene was also low, about one half were not always washing their hands after defecation (51.4%), before eating or during food preparation (48.8%).  Not always washing hands by the caregiver showed significant association with high malnutrition rate (p=0.00), as well as with incidences of diarrhoea (p=0.02) and ARI (p=0.03).

### 4.4   Health seeking behaviour

*Table 9: Health seeking behaviour*

| | N | % |
|---|---|---|
| *Seek healthcare assistance when a member is sick (n=475):* | | |
| Yes | 365 | 76.8 (72.7-80.5) |
| No | 110 | 23.2 (19.5-27.3) |
| *Reason, if not sought (n=110)* | | |
| No health facility in near distance | 70 | 63.6 (53.9-72.6) |
| No money | 23 | 20.9 (13.7-29.7) |
| Prayers/ spiritual, instead | 17 | 15.4 (8.3-21.5) |
| *Where (n=365):* | | |
| Public health facility | 167 | 45.8 (40.6-51.0) |
| Private clinic/pharmacy | 117 | 32.1 (27.3-37.1) |
| Traditional healer | 81 | 22.2 (18.1-26.9) |

Majority (76.8%) of the households seek health care assistance when the child is sick. Less than half (45.8%) have access to public health facility. Many of them consult private health facility/ pharmacy (32.1%) while some 22.2% consult traditional healers.

Of those not seeking health care (23.2%), about 63.6% and 20.9% reported lack of health facility and money as the main hindrances respectively.  The remaining 15.4% sought spiritual interventions (prayers, scripture reading or *Sheik's* advice).

### *4.5*   **Formal and informal support**
*Table 10:  Formal and informal support*

| | N | % (CI) |
|---|---|---|
| *Informal support  (N = 475)* | | |
| Received: | | |
| Yes | 232 | 48.8 (44.3-53.4) |
| No: | 243 | 51.2 (46.6-55.7) |
| Type of support (N=232) | | |
| Loans | 37 | 15.9 (11.5-20.0) |
| Gifts | 18 | 7.8 (6.9-10.1) |
| Remittances from abroad | 13 | 5.6 (3.9-8.8) |
| Zakat from better off households | 227 | 97.8 (94.9-98.8) |
| Remittances from within Somali | 14 | 6.1 (3.8-10.5) |
| *Formal support   (N = 475)* | | |
| Received: | | |
| Yes | 281 | 59.2 (54.6-63.6) |
| No | 194 | 40.8 (36.4-45.4) |
| Type of support (N=281) | | |
| Free food | 163 | 58.0 (55.4-65.8) |
| Free cash | 27 | 9.6 (6.2-12.5) |
| Supplementary food | 8 | 2.8 (1.1-3.6) |
| Cash for work | 37 | 13.2 (8.6-16.7) |
| Food for work | 9 | 3.2 (2.4-4.7) |
| *Support Organisations/agencies (N=281* | | |
| WFP | 216 | 76.9 (74.1-78.7) |
| UNICEF | 12 | 4.3 (3.7-4.9) |
| S.V.O | 25 | 8.9 (7.4-9.3) |
| N.P.A | 15 | 5.3 (4.8-6.2) |
| UGBAAD | 13 | 4.6 (3.8-5.6) |

Social support networks within Somalia are a major source and/or supplement of livelihood undertakings. At the time of survey about a half (48.8%) of the households had received some informal (social) support, within the previous three months to the survey mainly in the form of *zakat* (offerings) from the better off households (97.8). Other forms of informal support included loans (15.9%), gifts (7.8%) and remittances within (6.1%) and without (5.6%) Somalia.

Overall, over half (59.2%) of the households had received some formal support with free food distribution being the main one as reported by 58.0% of the households.

Other formal support sources were benefited from cash for work (13.2%), cash relief (9.6%), food for work (3.2%) and supplementary feeding (2.8%) programmes by different

organizations.    Most households (76.9%) reported having benefited from WFP food distribution programmes.  Other organizations that were reported by the households to have given some form of food and cash support in the previous three months were UNICEF (4.3%), SVO (8.9%), NPA (5.3%) and UGBAAD – LNGO (4.6%).

## 4.6    Characteristics of survey children

*Table 11:  Distribution of children according to age and sex*

| Age | Boys | | Girls | | Total | |
|---|---|---|---|---|---|---|
| | n | % | n | % | N | % |
| 6-17 months | 81 | 53.3 | 71 | 46.7 | 152 | 17 |
| 18-29 months | 111 | 58.4 | 79 | 41.6 | 190 | 21.2 |
| 30-41 months | 106 | 54.9 | 87 | 45.1 | 193 | 21.6 |
| 42-53 months | 96 | 48.5 | 102 | 51.5 | 198 | 22.1 |
| 54-59 months | 78 | 48.1 | 84 | 51.9 | 162 | 18.1 |
| Total | 472 | 52.7 | 423 | 47.3 | 895 | 100 |

A total of 895 children were surveyed of whom 52.7% were boys and 47.3 % were girls.   The ratio of boys to girls was 1.1:1.0. The 895 children came from the 475 households surveyed in the two districts of Taleex and Huddun in Sool and Sanaag Regions.

## 4.7    Nutritional status of survey children using anthropometry

*Table 12: Summary of Global Acute malnutrition and Severe Acute Malnutrition*

| Malnutrition Rates | Proportion | No. |
|---|---|---|
| Global Acute Malnutrition (<-2 Z score or oedema) | 10.5% (CI: 8.6 – 12.7) | 94 |
| Severe Acute Malnutrition (<-3 Z score or oedema) | 0.7% (CI 0.3 – 1.5) | 6 |

As shown on Table 12, the global acute malnutrition using WFH Z score (<-2 z-scores or oedema) was 10.5% while severe acute malnutrition (<-3 z-score or oedema) was 0.7%. There was no oedema case reported during the survey.

*Table 13: Distribution of children by nutritional status (weight/ height z-score or oedema) and child sex*

| Nutrition status categories | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| | % (CI) | No. | % (CI) | No. | % (CI) | No. |
| Global acute malnutrition (WFH<-2 z score/oedema) | 10.8 (8.2-14.0) | 51 | 10.2 (7.5-13.5) | 43 | 10.5 ( 8.6 – 12.7) | 94 |
| Severe acute malnutrition (WFH <-3 z score/oedema) | 1.1 (0.4-2.6) | 5 | 0.2 (0.0-1.5) | 1 | 0.7% (0.3 – 1.5) | 6 |
| Oedema | 0 | 0 | 0 | | 0 | 0 |

About 10.8% boys and 10.2% girls were malnourished in Taleex and Huddun districts using weight for height <-2 Z score or presence of oedema. The level of malnutrition was however not significantly (p>0.5) different among the two sexes.

When analysed, according to age groups, statistically significant difference (p=0.01) was realised in the nutritional status of the under fives.  Children below 30 months old were more severely malnourished (p=0.01) than those aged more than 30 months while those aged 3 years or more had higher moderate and total malnutrition levels (p=0.006) than those aged below 3 years.

*Table 14: Distribution of Acute Malnutrition by Age*

| Age groups | Severe (WH<-3Z) | Moderate (WH>=-3Z< -2Z) | GAM (Total malnourished- WH<-2Z | Normal (WH>=-2Z | Total no. |
|---|---|---|---|---|---|
| 6-17 months | 3 (2.0%) | 13 (8.6%) | 16 (10.0%) | 136 (89.5%) | 152 |
| 18-29 months | 2 (1.1%) | 12 (6.3%) | 14 (7.4%) | 176 (92.6%) | 190 |
| 30-41 months | 0 | 20 (10.4%) | 20 (10.4%) | 173 (89.6%) | 193 |
| 42-53 months | 0 | 22 (11.1%) | 22 (11.1%) | 176 (88.9%) | 198 |
| 54-59 months | 1 (0.6%) | 21 (13.0%) | 22 (13.6%) | 140 (86.4%) | 162 |
| Total | 6 (0.7%) | 88 (9.8% | 94 (10.5%) | 801 (89.5) | 895 |

*Table 15: Malnutrition prevalence using WFH percentage of median categories*

| Nutrition status categories | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| | Proportion (%) | No | Proportion (%) | No | Proportion (%) | No |
| Global acute malnutrition (WFH<80% or oedema) | 5.7 (CI:3.9-8.3) | 27 | 5.9 (CI: 3.9- 8.7) | 25 | 5.8 (CI: 4.4-7.6) | 52 |
| Severe acute malnutrition (WFH<70% or oedema) | 0.2 (CI: 0.0-1.4) | 1 | 0.5 (CI: 0.1-1.9) | 2 | 0.3 (CI: 0.1-1.1) | 3 |

The global acute malnutrition among children aged 6 - 59 months using weight for height <80% of median or presence of oedema was 5.8% (CI: 4.4% -7.6%), while the severe acute malnutrition <70% of median or presence of oedema was 0.3% (CI: 0.1% – 1.1%).

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

As indicated on Table 16, the incidences of ARI (37.8%) and diarrhoea (18.9%) within two weeks prior to the survey were high but no disease outbreak was reported during the period. Malaria was similarly high (12.6%) within the same period. The incidence of measles among the under-five population one month prior to the survey was about 1.5%.

Measles vaccination coverage for eligible children was fairly good.  About two-thirds (65.5%) of the eligible children had been vaccinated against measles based on mothers recall and card verification.  About 40% of the children had received between 3 doses of polio while 22.6% had received 1-2 doses.  Over one third (37.4%) of the children had not received any polio vaccine. About 5.5% of the households reported cases of night blindness of which 34.6% were under fives. This high incidence of night blindness is an indication of widespread vitamin A deficiency problem in the districts. Only (42.9%) of the surveyed children had, however, received Vitamin A supplementation in six months prior to the survey.

*Table 16: Morbidity, measles immunisation, polio vaccination and vitamin A supplementation*

|  | No. | %(CI) |
|---|---|---|
| *Incidence of major child illnesses (N=895)* | | |
| ARI | 338 | 37.8 (34.6-41.0) |
| Diarrhoea within two weeks prior to survey | 169 | 18.9 (16.4-21.6) |
| Malaria within two weeks prior to survey | 113 | 12.6 (10.6-15.0) |
| Measles within one month prior to the survey (n=857) | 13 | 1.5 (0.8-2.5) |
| *Night Blindness (n=475)* | | |
| Reported cases of night blindness | 26 | 5.5 (3.7-8.0) |
| Segment, if member had night blindness (n=26): | | |
| Under five | 9 | 34.6 (17.2-55.7) |
| Over five | 17 | 65.4 (44.3-82.8) |
| *Immunization Coverage* | | |
| Children (9-59 months) immunised against measles (n=857) | 561 | 65.5 (62.1-68.5) |
| *Children who have ever received Polio dose (N= 895)* | | |
| One to two times | 202 | 22.6 (19.9-25.5) |
| Three times | 358 | 40.0 (36.8-43.3) |
| None | 335 | 37.4 (34.3-40.7) |
| *Vitamin A supplementation (N= 895)* | | |
| Children who received Vitamin A supplementation in past 6 months | 384 | 42.9 (39.6-46.2) |

## 4.9   Feeding practices

*Table 17: Children feeding practices*

|  | N | % (CI) |
|---|---|---|
| *Is Children aged 6-24 months breastfeeding? (N=314)* | | |
| Yes | 107 | 34.1 (28.9-39.6) |
| No | 207 | 65.9 (60.4-71.1) |
| *Age when child stopped breastfeeding (N=207):* | | |
| 0 - 5 months | 38 | 18.2 (15.5-21.2) |
| 6 - 11 months | 86 | 41.6 (38.0-45.3) |
| 12 – 18 months | 54 | 26.0 (22.9-29.4) |
| More than 18 months | 29 | 14.2 (11.1-17.3) |
| *Introduction of Complementary feeding (N=314)* | | |
| 0 - 3 months | 205 | 65.4 (62.1-68.5) |
| 4 – 6 months | 81 | 25.7 (22.9-28.7) |
| 7 months or more | 28 | 8.9 (7.2-11.0) |
| *Feeding frequency (N=895):* | | |
| Once | 32 | 3.6 (2.5-5.1) |
| 2 times | 388 | 43.4 (40.1-46.7) |
| 3 – 4 times | 402 | 44.9 (41.6-48.2) |
| 5 or mores times | 73 | 8.2 (6.5-10.2) |

About one third (34.1%) of the children aged between 6-24 months were breastfeeding at the time of the survey. Of those who had been stopped from breastfeeding, about 18.2% had stopped breastfeeding before six months, 41.6% before their first birthday and 40.2% after their first year of life.

A large proportion (65.4%) of the children aged 6-24 were introduced to foods other than breast milk early in life between the time of birth and the third month of life. About one

quarter (25.7%) were introduced to complementary feeding at 4-6 months and a few (8.9%) beyond the recommended six months.  Most children were fed at least twice a day.  Majority were fed either 3-4 times (44.9%) or 2 times (43.4%). Some (3.6%) of the children were fed only once while only 8.2% were fed more than four times a day.

## 4.10  Dietary Diversity

*Table 18: Distribution of dietary diversity among children*

| No of food groups consumed (N=475) | N | % (CI) |
|---|---|---|
| Only 1 food group | 2 | 0.4 (0.1-1.7) |
| 2-3 food groups | 363 | 76.4 (72.3-80.1) |
| 4-5 food groups | 96 | 20.2 (16.7-24.2) |
| 6 food groups (all) | 14 | 2.9 (1.7-5.0) |
| No of foods consumed (N=475) | | |
| Only one food | 5 | 1.1 (0.4-2.6) |
| 2-4 foods | 236 | 49.7 (45.1-54.3) |
| 5-7 foods | 223 | 46.9 (42.4-51.5) |
| >7 foods | 11 | 2.3 (1.2-4.2) |
| Type of food groups eaten (N=475) | | |
| Cereal staples/products | 460 | 96.8 (96.0-98.9) |
| Legumes/meat/fish/eggs | 110 | 23.2 (20.6-28.8) |
| Milk and milk products | 444 | 93.4 (90.6-95.4) |
| Vegetables/tubers | 22 | 4.6 (3.4-8.0) |
| Fruits | 37 | 7.8 (6.4-10.1) |
| Sugar/honey/oil/fats | 432 | 90.9 (87.4-93.0) |
| | | |

Variety of foods consumed was limited in the survey area. As shown on table 18, most (76.8%) of the children had consumed three or less food groups within 24 hours prior to the survey. About 0.4% had consumed only one food group and only 2.9% consumed more than five food groups within the same period. Households consumed an average of 4 foods with the number of foods consumed ranging from 1 – 9.  About 1.1% consumed only one food (milk) for the whole day. About one half (50.8%) of the households had consumed 4 or less foods within 24 hours.  Foods rich in micro-nutrients like fruits (7.8%) and vegetables (4.6%) were rarely consumed. Cereal staples (96.8%), milk (93.4%); and sugars and fats (90.3%) were the commonly consumed food groups.  Only 23.2% had consumed some legumes and/or animal meat products.  There was an association between the level of malnutrition and dietary diversity among the surveyed children, but this was not statistically significant (p=0.06).  Those who consumed less food groups were generally more malnourished than those who consumed many (diversified) food groups.

## 4.11  Child Malnutrition by MUAC
When using mid upper arm circumference (MUAC) measurements, 6.5% (CI: 5.0-8.3) of the children were malnourished (MUAC<12.5 cm).  About 1.1% (MUAC<11.0 cm or oedema) were severely malnourished while 13.1% were at risk (MUAC 12.5-<13.5 cm).  When compared to the 10.5% malnutrition rate from WFH Z scores, MUAC measurements surprisingly gave underestimation of malnutrition rates.  The rate was however, similar to the percent of median WFH value of 5.8% (CI: 4.4-7.6).

*Table 19.  Nutrition status by MUAC*

| Malnutrition | Males | | Females | | Total (N=895) | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Severe (MUAC <11 cm) | 6 | 1.3 | 4 | 0.9 | 10 | 1.1 (0.6-2.1) |
| Moderate (MUAC 11-<12.5 cm) | 25 | 5.3 | 23 | 5.4 | 48 | 5.4 (4.0-7.1) |
| At risk (MUAC 12.5- <13.5 cm) | 60 | 12.7 | 57 | 13.5 | 117 | 13.1 (11.0-15.5) |
| Normal (MUAC >=13.5 cm) | 381 | 80.7 | 339 | 80.1 | 720 | 80.4 (77.7-83.0) |
| Total | 472 | 52.7 | 423 | 47.3 | 895 | 100 |

## 4.12 Relationship between malnutrition and other factors

*Table 22: Risk factors and relation to total malnutrition (WHZ<-2)*

| Exposure variable | N | (%) | Crude RR | 95% CI | p-value |
|---|---|---|---|---|---|
| *Household head sex* | | | | | |
| Male | 68 | 9.8 | 0.76 | 0.66-1.36 | 0.26 |
| Female | 26 | 12.9 | | | |
| *Child sex:* | | | | | |
| Male | 50 | 10.8 | 1.02 | 0.69-1.49 | 0.99 |
| Female | 44 | 10.2 | | | |
| *Age group* | | | | | |
| 6-35 months | 31 | 8.2 | 0.68 | 0.45-1.02 | 0.07 |
| 36-59 months | 63 | 12.1 | | | |
| *Hygiene & sanitation* | | | | | |
| *Latrine* | | | | | |
| Pit latrine/flush toilet | 10 | 10.4 | 0.99 | 0.53-1.84 | 0.88 |
| Bush/open ground | 84 | 10.5 | | | |
| *Wash hands after defecation:* | | | | | |
| Always | 62 | 8.9 | 1.83 | 1.23-2.72 | 0.00* |
| Not always | 32 | 16.2 | | | |
| *Wash hands before handling food:* | | | | | |
| Always | 52 | 11.2 | 1.15 | 0.78-1.69 | 0.55 |
| Not always | 42 | 9.7 | | | |
| *Morbidity patterns* | | | | | |
| *ARI* | | | | | |
| Yes | 47 | 13.9 | 1.38 | 1.1-1.72 | 0.01* |
| No | 47 | 8.4 | | | |
| *Diarrhoea:* | | | | | |
| Yes | 24 | 14.2 | 1.41 | 0.97-2.05 | 0.11 |
| No | 70 | 9.6 | | | |
| *Malaria:* | | | | | |
| Yes | 17 | 15.0 | 1.51 | 0.94-2.41 | 0.13 |
| No | 77 | 9.8 | | | |
| *Measles:* | | | | | |
| Yes | 1 | 7.7 | 0.73 | 0.11-4.84 | 0.91 |
| No | 93 | 10.5 | | | |
| *Health programmes* | | | | | |
| *Vitamin A:* | | | | | |
| Yes | 41 | 10.7 | 1.03 | 0.70-1.51 | 0.97 |
| No | 53 | 10.4 | | | |
| *Measles vaccine* | | | | | |
| Yes | 59 | 10.5 | 1.0 | 0.68-1.49 | 0.90 |
| No | 35 | 10.5 | | | |
| *Polio vaccine* | | | | | |
| Yes | 55 | 9.8 | 0.84 | 0.57-1.24 | 0.40 |
| No | 39 | 11.6 | | | |
| *Dietary & feeding patterns* | | | | | |
| *Breastfeeding* | | | | | |
| Yes | 10 | 9.0 | 1.01 | 0.42-2.42 | 0.83 |
| No | 18 | 8.9 | | | |
| *Complementary feed* | | | | | |
| <= 3 months | 28 | 13.6 | 1.18 | 0.92-1.62 | 0.18 |
| >=4 months | 13 | 11.9 | | | |
| *Dietary diversity* | | | | | |
| < = 3 food groups | 74 | 10.7 | 1.07 | 0.67-1.71 | 0.87 |
| >= 4 food groups | 20 | 9.9 | | | |

Both girls and boys were equally likely (p>0.05) to be malnourished whether from male or female headed households.

Malnutrition rates were slightly higher among children aged 36 months or more (p=0.07) than those aged less than 36 months.

Children whose mothers reported not always washing their hands after defecation were almost twice more malnourished (p=0.00) than those whose caregivers maintained frequent hand washing. Hand washing also had association with diarrhoea (RR=0.64; CI: 0.44-0.95; p=0.02) and with ARI (RR=0.78; CI: 0.62-0.98; p=0.03) incidences.

Children with ARI were more likely (p=0.01) to be malnourished compared to those not suffering from ARI in two weeks prior to the survey. Other illnesses showed no significant effect on acute

malnutrition levels.

Similarly vaccination and supplementation programmes did not show any significant association with acute malnutrition.  Further analysis revealed no significant association between malnutrition and dietary and child feeding practices.

### 4.13  Mortality rates

A total of 902 households were surveyed for mortality indicator with a recall period of 90 days prior to the survey being used.  The results were as presented below:

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

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

* Mid point population = (Population at present + Population at beginning of recall)/2
  Population at beginning of recall = (population present + left + deaths) – (joined + births)

Under five population (mid point) in surveyed households   =1,090
Number of under five deaths                                =31
Under five mortality rate (deaths /10,000 children per day) =3.16 (CI: 2.07-4.25)

For the total population (Crude mortality/death rate)

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

Total population in surveyed households    = 5495.5
Total number of deaths in the households   = 48
CMR as deaths per 10,000 persons per day  =0.97 (CI: 0.70-1.24)

*Figure 3: Causes of underfive mortality*
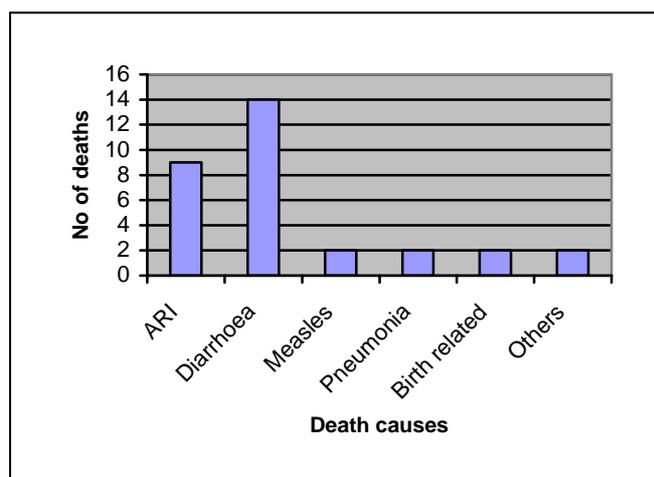


As shown on graph 3, diarrhoeal diseases and ARI were the main causes of under-five mortality. Other causes of child deaths included measles, malaria, malnutrition and poor birth outcome related complications.

Malaria and anaemia were the main causes of death among persons above five years of age. Diarrhoea, birth complications, ARI and cardiovascular diseases were also causes of death among adults and children over five years.

*Table 21: Comparison of survey results*

| | 2004 Sool/ Sanag Survey | | Taleex Huddun Survey | |
|---|---|---|---|---|
| | N | % (CI) | N | % (CI) |
| Total children surveyed | 901 | 100 | 895 | 100 |
| Global Acute Malnutrition (<-2 Z scores/oedema) | 123 | 13.7 (11.5–16.1) | 94 | 10.5 (8.6-12.70) |
| Severe Acute Malnutrition (<-3 Z scores/oedema) | 28 | 3.1 (2.1 – 4.5) | 6 | 0.7 (0.3-1.5) |
| Oedema | 12 | 1.3 (0.7 – 2.3) | 0 | 0.0 |
| Underfive death rate (deaths/10000/d) | 2.89 | | 3.16 (CI: 2.07-4.25) | |
| Crude death rate (deaths/10000/d) | 0.85 | | 0.97 (CI: 0.70-1.24) | |
| ARI within two weeks prior to survey | 206 | 22.9 | 338 | 37.8 (34.6-41.0) |
| Diarrhoea within two weeks prior to survey | 160 | 17.8 | 169 | 18.9 (16.4-21.6) |
| Malaria within two weeks prior to survey | 72 | 8.0 | 113 | 12.6 (10.6-15.0) |
| Measles one month prior to survey | 72 | 8.0 | 13 | 1.5 (0.8-2.5) |
| Measles immunisation coverage (9-59 months) | 627 | 73 | 561 | 65.5 (62.1-68.5) |
| Children receiving vitamin A supplementation six months prior to survey | 521 | 57.8 | 384 | 42.9 (39.6-46.2) |
| Feeding Frequency of children excluding breastfeeding | | | | |
| • Once | 98 | 10.9 | 32 | 3.6 (2.5-5.1) |
| • 2 times | 278 | 30.9 | 388 | 43.4 (40.1-46.7) |
| • 3 times (3-4 times) | 565 | 51.6 | 402 | 44.9 (41.6-48.2) |
| • 4 or more times (5 or more) | 60 | 6.7 | 73 | 8.2 (6.5-10.2) |
| Breastfeeding of children aged 6 – 24 months (n=321; 314) | | | | |
| • Breastfeeding | 100 | 31.2 | 107 | 34.1 (28.9-39.6) |
| • Not breastfeeding | 221 | 68.8 | 207 | 65.9 (60.4-71.1) |

## 4.14  Qualitative information

Qualitative information was collected from focus group discussions and key informants. A total of six focus group discussions were held, four with mothers and two with men.  The discussions were centred on feeding and care practices, health care, food security, and water and sanitation issues

### 4.14.1 Care and feeding practices

Breast feeding and complementary feeding was found to be sub-optimal in the two districts. Majority of the mothers give water and sugar (*fax*) within a few hours to one day after delivery and start breastfeeding later after 24 - 48 hours.  The women believe if they breastfeed immediately, the child may get diarrhoea or 'constipation' commonly referred to as *daaf.*  Other reasons given for not starting breastfeeding immediately was that the mother has no milk, that the baby lacks strength to suckle, the mother has abdominal pains and that breastfeeding increases bleeding. In addition to the *fax* and breast feeding, the infants are introduced to goat or cow milk, but preferably camel milk if available after one week while other semi solid foods such as porridge are introduced at between 2 and 3 months.  Solid foods are introduced at 6-7 months.

The most common food fed to young children is light porridge made from sorghum or maize flour with sugar and milk added. Rice with milk, sugar and ghee, oil, white tea, spaghetti and *anjera* (Somali pancake) are among other foods fed to the children. Usually children are fed four or more times a day in normal times but this is changing. At the time of the survey, it was revealed that there was reduction in the number of meals among the children from the usual 3-4 to 1-2 per day in several households, while many adults were having only meal per day. It was noted that children were always given priority in feeding during normal and crisis times. It was also noted that due to the reduced numbers of livestock majority had no access to milk, which usually is a key food for children. Camel milk for instance was totally out of the market. Hence children from poor families were being fed mainly on wheat or maize porridge and occasionally rice or *anjera.*

Qualitative data further revealed that when children were sick certain foods are withheld, for example if a child has diarrhoea, fresh milk is withheld, while fatty foods (ghee, oil, meat) were withheld for those with measles or malaria.  Pregnant women however, have no food restrictions.  Caregivers also noted changes in care practices for children in the sense that mothers spent a lot of time outside the home looking for loan, casual work or even borrowing food. Women reported having reduced breastfeeding their children since they also lacked enough food to feed themselves.

### 4.14.2 Food security

The Gu rains were adequate and enhanced kidding and milk production in shoats, but not in camels whose stock were depleted anyway.  The rains resulted in accumulation of water in the various water sources, and regeneration of pasture.  Consequently, this enabled the gradual return to pastoral life of most households. It was observed that the current milk supply from shoats will run out in the next 1-2 months, having limited stock to replenish production. The effect of the long drought in deteriorating purchasing power affected more poor pastoralists than the traders, urban livelihoods and the wealthier individuals (with pack animals) who have various strategies to adjust to the crisis including migrating or trucking their animals to other locations.

It was further indicated that the household level coping mechanisms have been stretched. Some adults from poor households have resorted to acute coping mechanisms for example, destitution and sending their children for relative help.  Remittances and social support, both

from abroad and locally, are important sources of relief for pastoral families. However, loss of assets due to the prolonged drought has made it increasingly difficult for the normal social institutions to cope with the magnitude of problems experienced in the area

### 4.14.3 Health related issues

The most common diseases among children reported at the time of the survey were ARI, diarrhoea and malaria. There were also reports of some cases of measles.  The area has insufficient health facilities and where available, the community felt that the Community Health Workers did not have adequate skills to provide quality health care.  Additionally the focus group discussions revealed that residents of some of the villages have to travel over 30 km to reach the nearest health facility. The heath facilities are unevenly distributed hence limiting their use.  Sick people are referred to LasAnod, Galkaiyo or Bossasso which are over 80 km away.  Added to poor means of transport, having lost even the pack animals used for transport, many are denied access to healthcare.  As a result there were high incidences for example of mortality from birth complications.  In some areas where there are no health posts, UNICEF has provided quarterly medical kits/packages to selected CHWs, but these can provide very limited services and the drugs are often inadequate.  More often, there is no Health Management Information System (HMIS) and records of morbidity and/or mortality are not properly taken or kept.

# 5   DISCUSSION

## 5.1   Food security situation: Livelihood means, Assets ownership and Coping mechanisms

In Sool plateau the sale of livestock and livestock products (milk, ghee and skins) provide the main income sources, out of which households purchase food and non- food items. In view that there have been significant losses of livestock (about 90% of the pastoralists have lost 50% or more if not all their camels and about 87% have lost 50% or more if not all of their shoats over the three years period) pastoralists have continued to experience difficulties in accessing food since the last survey in May 2003. Livestock production (milk) is negligible. Furthermore, minimal milk is available for household consumption which is particularly important for children. According to the interagency assessment in October 2003, camels failed to conceive during the last 2003 *Gu* season (the breeding male didn't rut and females were weak).  The next conception opportunity was expected in 2004 *Gu* which means the first offspring (if conception is successful) will be born in *Gu* 2005.  Thus there will be limited camel milk available for sale or consumption until then. Recovery from the livestock losses will take time as the majority (particularly the poor and middle level wealth groups) have depleted their assets. Similarly livestock production will take time before going back to normal even though the body condition of all species is gradually recovering. Although food is available in the market the majority reported that it was not readily accessible due to reduced purchasing power.

Pastoralism is usually the main means of livelihood for majority of the population in the plateau. The survey findings indicate a good proportion (27.6%) and a good number (6.3%) being destitute or relying on food aid. This indicates a shift in the people's way of life and can be attributed to the significant livestock losses. The forms of petty trade that the population engaged in include charcoal trade, tea shops and sale of firewood. All the surveyed households were employing at least one or more of known coping mechanisms with at least 55% or more resorting to purchasing food on credit, borrowing or relying on relatives or reducing the number of meals eaten in a day.  The fact that a high proportion was purchasing food on credit or borrowing has increased the debt burden of the people and repayment and recovery may take a little bit longer since they had already lost most of their assets. Even with a normal Deyr season the situation still requires close surveillance to warn and prevent against any relapse.

The bleak picture exhibited is, however more from the effects of the previous drought and food insecurity conditions.  The current situation depicts an increased milk production and consumption and a gradual improvement in food access by the population.  Shoat kidding has increased and camel calving is expected in the next 3-6 months.  After receiving good rains, the agro-pastoralists are also expected to reap significant harvest by October this year.

## 5.2   Interventions

Substantial interventions (both informal and formal) have been implemented in Sool and Sanaag regions including Taleex and Huddun districts since December 2003. The coverage of these interventions not only includes the plateau but also other parts like Nugal valley and Gebi valley livelihood zones as described in section 2.3. However, the nutrition survey only covered the Sool plateau livelihood zone. About half (59.2%) of the surveyed population had benefited from one or more of the formal interventions and about half (48.8%) had received some form of informal support three months prior to the survey. Social support networks have played a key role in maintaining the Sool plateau population and as more people continue recovering their assets, it will remain significantly practicable for keens to support

each other. Overall, the ongoing interventions have gone a long way in preventing deterioration of the situation in the Plateau, maintaining the malnutrition at levels, albeit high by international standards, typically observed in the region.

## 5.3   Health issues influencing nutritional status

The relationship between diseases and nutrition is well documented. Repeated attacks of diarrhoea for example are associated with poor nutrient absorption and considerable nutrient losses. The resulting nutritional deficiency causes impaired immunity and increased vulnerability to more infection resulting in a vicious cycle of infection and malnutrition.

At the time of the survey incidences of common infections among children within two weeks prior to the survey were high with diarrhoea at 18.9%, ARI 37.8% and malaria 12.6%. ARI and diarrhoea showed a relationship with malnutrition. Children with ARI were 1.82 times more likely to be malnourished than those without ARI. Diarrhoea was the leading cause (45.2%) of mortality among underfives.  Although the majority (76.8%) of households sought health care when a member was sick, mainly from agency supported and public health facilities (45.8%), many households still cannot access adequate medical care.  Availability of functional public health facilities is limited to two MCHs namely: Dhahar and El Afweyn further limiting regular access to health care services especially populations living far from these areas as well as the poor who may not afford the same from private facilities. The focus group discussions further revealed that the residents sought medical care for children only when the child got worse and home remedies had failed. Late treatment of diseases prolongs disease progression and paves way for or aggravates malnutrition.

Although mass campaigns have been undertaken by interagency operations improving vitamin A supplementation, polio and measles immunisation coverage, the results show a large percentage of the population has not been reached by these programmes. This was attributed to the constrained access to humanitarian interventions by political and security factors in the region.

## 5.4   Water and Sanitation

At the time of the survey, there was no water stress as most of the villages were still using standing rain water that collected in the various open water points.  However, this water besides being unsafe is temporary and dry up easily.  Only a small proportion of the population were relying on protected sources of water for drinking, the remaining majority were obtaining drinking water from unprotected sources (rain water from catchments/ponds or unprotected well or spring).  The high incidences of diarrhoeal diseases among children revealed in the survey are strongly attributed with the consumption of unsafe water as well as poor personal and food hygiene with a high proportion of the households not washing hands regularly before eating. Human waste disposal practices are suboptimal, use of open ground or bush for a sanitation facility is the practice which increases the risks of contaminating water in unprotected sources.  Unclean water may cause diarrhoea and other waterborne diseases and compromises food utilization in the body.

## 5.5   Childcare practices
WHO and UNICEF recommend that infants be exclusively breastfed at least for the first six months of life, and continued breastfeeding into two years and beyond. Feeding children with foods and fluids other than breast milk during this period significantly reduces breast milk supply, and increases the risks of deaths from diseases like diarrhoea.

Overall, child feeding practices were found to be sub-optimal among children aged 6-24 months. Among children of breast feeding age, only 34% were breasfeeding.  And of the

66% who had prematurely stopped breastfeeding about 20% did so before six months of age. This can be attributed to the high demand of women's time, leaving children for long hours as they engage in casual employment and search for loans to buy food.  Additionally, mothers were opting not to breastfeed their children due to lack of enough foods to feed themselves too as was noted in the focus group discussions.  In addition to inadequate food the stress being experienced by mothers as they look for food may have also affected their milk production.

A high proportion (65.4%) of the children aged between 6 and 24 months were introduced to foods other than breast milk very early in life between 0-3 months.  The results further indicate reduction of frequency of feeding children.  The proportion of children feeding few times per day (between 1-2 times) increased by more than half from 3-4 times or more during normal periods.  Low maternal nutrition knowledge, unstable resource base and inadequate care for both mothers and children remain underlying causes of malnutrition in the districts.

## 5.6   Nutritional status

The survey results indicate high malnutrition levels which according to the WHO classification depict a serious nutrition situation (GAM of 10-14.99). The chronic malnutrition levels are much higher in the region because of the previous long period of droughts and food insecurity threats.  The global acute malnutrition rate (weight for height <-2 Z score or oedema) was 10.5% (CI: 8.6-12.7), an apparent improvement from the >20 % reported in previous rapid assessment and surveillance data (FASU/UNICEF, July 2004) and severe acute malnutrition was 0.7% (CI: 0.3-1.5).  The apparent improvement could be attributed to a positive trend in the proxy indicators including continued humanitarian interventions and improved food security as a result of the recent good *Gu* rains.

The under five mortality rate was at an alert level of 3.16 deaths/10000/day suggesting that the overall well being of the population is suboptimal.

Both girls and boys were equally likely (p>0.05) to be malnourished whether from male or female headed households. Total malnutrition rates did not vary much among the different age groups of the under fives, but further analysis showed children below 2 years were more vulnerable to severe acute malnutrition.

Caregiver's personal hygiene strongly contributed to the nutritional status of the children. Children whose mothers reported not always washing their hands after defecation were almost twice more malnourished (p<0.01) than those whose caregivers maintained frequent hand washing.  Similarly children with ARI were more likely (p=0.01) to be malnourished compared to those not suffering from ARI in the last two weeks prior to the survey. Other illnesses had no significant effect on total acute malnutrition levels.

Cereals, sugar and fats/oil were the main food groups consumed. The main foods given during the ongoing free food distribution in the districts are cereals, sugar, fats/oil and pulses which are mainly distributed by WFP. It appears that the food distribution contributed to the dietary diversity, ultimately preventing deterioration in the nutritional status.  Limited consumption of other food groups like vegetables and fruits, which are good sources of essential micronutrients limits accessing essential nutrients for growth. The survey indicates that night blindness (a proxy indicator for vitamin A deficiency) is prevalent in the area among both adults and children. The levels of other micronutrient malnutrition like iron and iodine deficiency could probably be equally high or significantly higher.

# 6   CONCLUSIONS AND RECOMMENDATIONS

The findings represent an improvement in nutrition situation in the districts considering the recent crisis from previous findings.   Increased access to milk and humanitarian food distributions attribute to this positive change.   However, long period required for recovery after heavy asset losses, poor care practices and disease tend to counter the effects of humanitarian efforts.   Therefore concerted humanitarian efforts are still essential in the districts. This will prevent a deterioration or relapse of the nutrition situation. Even with a normal Deyr 2005 season, recovery of livelihood means in the districts and the plateau will take time and so strategies of helping the community regain their assets are essential.

Following these survey findings the enlisted recommendations were made:
1. Promote nutrition education through the MCH/outposts focusing on hygienic practices for caregivers, breastfeeding, complementary feeding and frequency of feeding of infants and young children as well as feeding of sick children.
2. Continuation of targeted food distribution in the highly vulnerable areas of the districts for next 2-3 months assuming proper 2005 Deyr rains.
3. Continued food-for work and cash for work activities for the physically healthy persons in targeted vulnerable villages.
4. Continuation of supplementary feeding programme for pregnant/lactating mothers and children under five years in the districts also in the next 2-3 months and treatment of the severely malnourished children assuming proper Deyr rains.
5. Continued close monitoring (surveillance) of the food security and nutrition situation in the area.
6. Intensify promotive and preventive health care interventions focusing on immunisation, hygiene, and control of water related diseases. Additionally, improve access to public health facilities.  CHWs especially need to be more capacitated to handle the frequent health incidences in their areas.  Health posts are not available, where MCHs are available mainly in Huddun and Taleex towns, there are no health staff to effectively manage them. Sick persons if must access medical care have to travel over 50 km to LasAnod, Galcaiyo or Bosaso.
7. Introduction of livestock restocking (shoats and puck camels) programmes by relevant agencies
8. Rehabilitate run-down boreholes, *berkads* and dams with an aim of ensuring water availability for both human and livestock in the long run.
9. Promote alternative income generating activities through a credit programme to reduce over-reliance on livestock sources of livelihood.

# 7   APPENDICES

**Appendix 1:   Sampling Frame for the Taleex and Huddun Survey, June 2005**

| VILLAGE/SETTLEMENT | TYPE | EST POP | CUM POP | CLUSTERS | |
|---|---|---|---|---|---|
| Huddun town | P | 6000 | 6000 | 1, 2, 3, | 2561 |
| Bohol | P | 2000 | 8000 | 4, | 4584 |
| Daryageeso | T | 300 | 8300 | | 6607 |
| Fiqishini | P | 2000 | 10300 | 5, | 8630 |
| Gaabiyo Guduud | T | 100 | 10400 | | 10653 |
| Tuur Subag | T | 150 | 10550 | | 12676 |
| Hol Hol | P | 1500 | 12050 | 6, | 14699 |
| Goroflay | P | 1000 | 13050 | 7, | 16722 |
| Qandicile | P | 200 | 13250 | | 18745 |
| Awrbogays | p | 5000 | 18250 | 8, 9, | 20768 |
| Kulaal | p | 2000 | 20250 | 10, | 22791 |
| Xabala-Camare | P | 400 | 20650 | | 24814 |
| Dhadhiin-Garad | T | 600 | 21250 | 11, | 26837 |
| Sufurweyne | T | 100 | 21350 | | 28860 |
| Dhaban | P | 100 | 21450 | | 30883 |
| Dogoble | P | 3500 | 24950 | 12, 13, | 32906 |
| Lafaweyne | P | 500 | 25450 | | 34929 |
| Jidhibaale | T | 200 | 25650 | | 36952 |
| DhubuqDhubuq | T | 100 | 25750 | | 38975 |
| Cadabur | T | 200 | 25950 | | 40998 |
| DibShabeel | P | 300 | 26250 | | 43021 |
| Shimbiralay | P | 150 | 26400 | | 45044 |
| Bancade | G | 300 | 26700 | | 47067 |
| Buur-canood | G | 50 | 26750 | | 49090 |
| Karamaan | G | 500 | 27250 | 14, | 51113 |
| Taleex town | P | 7000 | 34250 | 15, 16, 17, | 53136 |
| Baliyo | G | 300 | 34550 | | 55159 |
| Jirar | G | 1000 | 35550 | 18, | 57182 |
| Hulcaalayal | G | 400 | 35950 | | 59205 |
| Balanbalay | G | 100 | 36050 | | |
| Xaelhan | P | 300 | 36350 | | |
| Bufcabar | P | 600 | 36950 | | |
| Bufdheer | P | 300 | 37250 | 19, | |
| Lasodawaco | G | 300 | 37550 | | |
| Jadhaamo | G | 300 | 37850 | | |
| Jidhaandhiig | G | 200 | 38050 | | |
| Qowlo | G | 600 | 38650 | | |
| Dhumay | G | 150 | 38800 | | |
| Carooley | P | 4000 | 42800 | 20, 21, | |
| Kalcad | P | 2500 | 45300 | 22, 23, | |
| Doofaar-Qod | P | 800 | 46100 | | |
| Xansuufa | G | 200 | 46300 | | |
| Ganbayax | P | 100 | 46400 | | |
| Halin | P | 3000 | 49400 | 24, 25, | |
| Godaalo | P | 3000 | 52400 | 26, | |
| Sarmanyo | P | 4500 | 56900 | 27, 28, | |
| Lasourdhan | P | 1500 | 58400 | 29, | |
| Dhidar-Naexsho | G | 200 | 58600 | | |
| Dhoodiaare | G | 1000 | 59600 | 30, | |
| Dhagax-Gurguur | G | 100 | 59700 | | |
| Soolaarea | G | 1000 | **60700** | | |
| Sampling interval = 2023; Random Number = 538 | | | | | |

# Appendix 2: Taleex and Huddun Nutrition Survey Questionnaire

Date_____    Team Number _____    Cluster Number _____    Name of Supervisor_____    Name of District _____

Name of Village/Town _____    Name of section_____    Household Number _____    Name of the household head _____

**Q1-8 Characteristics of Household**
**Q1**   What is the sex of the household head?        *1=M,   2=F*
**Q2**   How many people live in this household (Household size)? _____
**Q3**   How many children are below five years in this household (Number of < 5 years)? _____
**Q4**   What is your present household residence status?        *1= residents  2=Internally displaced  3= Returnees   4= Internal migrant   5=0thers specify_____*  (If RESIDENT, skip to question 8)
**Q5**   Where did you come from before settling in this current location? (Place of origin) _____
**Q6**   How long have you lived in this current location?_____
**Q7**   What was your reason for coming to this current location? (Can select more than one option if appropriate): *1= Insecurity  2=Lack of jobs          3= Food shortage   4=Water shortage*
**Q8**   What is your main means of Livelihood?*..a). Pastoral    b) Agro-pastoral     c) Settlement self-employed   d) Irrigated agriculture/cash crops e) Others; specify _____*

*Q9 – 10  Wealth Groups:*
**Livestock and *Berkads* Ownership:**

| Household Ownership | Q9<br>Present<br><br>Number | Q10<br>Three Years Ago<br><br>Number |
|---|---|---|
| **1. Shoats** | | |
| **2. Camels** | | |
| **3. Donkeys** | | |
| **4. *Berkads*** | | |

**Q11-21 Morbidity, feeding & immunization status of children aged 6 – 59 months (or 65 – 110cm) in the household.**

| Sno | Name | Q11<br><br>Diarrhoea in last two weeks<br><br>1= Yes 2= No | Q12<br><br>ARI in the last two weeks<br><br>1=Yes 2=No | Q13<br><br>Malaria in the last two weeks<br><br>1=Yes 2=No | Q14<br><br>Measles in last one month<br><br>1=Yes 2=No | Q15<br><br>Vaccinated against measles<br><br>*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* | Q16<br><br>Vit. A provided in the last 6 months (Show Vit. A capsule)<br><br>1=Yes 2=No | Q17<br><br>Are you breast feeding the child?<br><br>1=Yes 2=No | Q18<br><br>If not breast feeding, how old was the child when you stopped breast-feeding?<br><br>1= Less than 6 months 2= 6 – 11 months 3=12 – 18 months 4=18 months or more 5= Never breastfed | Q19<br><br>At what age was child given water/ foods other than breast milk<br><br>1=0-3 months 2=4-6 months 3=7 months or more. | Q20<br><br>How many times do you feed the child in a day?<br><br>*1= Once 2= Twice 3= 3-4 times 4= 5 or more times* | Q21<br><br>How many times has the child ever been given polio vaccine orally<br><br>1=1-2 times 2=3 and above 3=Never |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |

**Q22**     When your child is sick, do you seek medical assistance?     *1= Yes  2=No*
    **Q22a**     If yes where do you seek assistance?   *1= Traditional healer   2= Private clinic/Pharmacy   3= Public health facility   4= Other specify _____*
    **Q22b**     If No, why? _____
**Q23**     Does any member of this household have difficulty seeing at night or in the evening when other people do not?   *1= Yes*                *2= No*
    **Q23a**     If yes specify member                *1= < 5 years         2 = > 5 years*

**Q24 - 30 Anthropometry for children aged 6 – 59 months (or 65 – 110cm) in the household**

| SNo | Name | Q24<br>Sex<br>*(1=M<br>2=F)* | Q25<br>Age in<br>months | Q26<br>Oedema<br>*(1=Yes<br>2=/No)* | Q27<br>Height<br>(cm) | Q28<br>Weight<br>(kg) | Q29<br>MUAC<br>(cm) | Q30<br>Received UNIMIX<br>in past 6 months<br>(1=Yes  2=No) |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |

**Q31**     What is the MUAC measurement of the childs mother _____     (or in absence, a woman of child bearing age in the household)? _____

| **Q32 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 | | | | |
| | Never<br>0*/week | Hardly at all?<br><1 */ week | Once in a while?<br>1-2 */week | Pretty often?     3-<br>6 */week | All the time?<br>Every day |
| 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 or hunt? | | | | | |
| e.     Sell livestock at give-away price to buy staples? | | | | | |
| f.     Send household members to eat elsewhere? | | | | | |
| g.     Send household members to ask for Sadaka? | | | | | |
| h.     Limit portion size at mealtimes? | | | | | |
| i.     Restrict consumption of adults in order for small children to eat? | | | | | |
| j.     Ration the money you had and buy prepared food? | | | | | |
| k.     Reduce number of meals eaten in a day? | | | | | |
| l.     Skip entire days without eating? | | | | | |
| m.     Deplete assets to get food, i.e. sell livestock, land, jewelry, etc? | | | | | |
| n.     Use assets as security to get food e.g. jewellery, *Berkads* etc? | | | | | |

**Q33: 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**<br><br>Beginning yesterday when people woke up, what foods did members (<5 yrs and >5yrs) of the household consume in the past 24 hours (morning till evening)?   Include any snacks consumed including breast milk.<br><br>Additionally, how many times was each of these foods eaten by each group? | Codes::<br>**0**=none<br>**1**= once<br>**2**= twice<br>**3**=3 times<br>**4**=4 times<br>**5**=5 or more times | Codes:<br>**1**=Animal/Crop own production<br>**2**=Purchases<br>**3**=Gifts from friends/families<br>**4**=Food aid<br>**5**=Bartered<br>**6**=Borrowed<br>**7**=Gathering<br>**8**=Others            (specify)<br>_____<br>**9**=N/A |
|---|---|---|
| **Type of food** | **Frequency (<5yrs)** | **Frequency- adults (>5 yrs)** | **Main   source   of   food consumed?** |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Q 33 b:  Consumption Diversity (FOR 24 HOUR RECALL DATA ANALYSIS ONLY)**

| **Food consumption and source of food, source of income for food purchases**<br><br>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.<br>**1=Yes  0=No** |
|---|---|
| **Type of food groups** | |
| a) Cereals/staples and cereal based products | |
| b) Legumes/meat/eggs/ fish/ nuts | |
| c) Milk/milk products | |
| d) Vegetables and roots/tubers | |
| e) Fruits | |
| f) Oil/fat/ sugar/honey | |
| | |
| | |
| Total food groups consumed | |

**Q34 - 39 Access to water for Human Consumption (quality and quantity)**
**Q34** 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*
**Q35** 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= other*
**Q36** Average household water use per day per household 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*
**Q37** Distance to the nearest water point          1= *0-500 metres  2 = 501 – 1000 metres  3= 1001 – 5000 metres  4 = more than 5000 metres*
**Q38** Water and systems are maintained such that quantities of water are available          1 = *never  2 = sometimes  3 = almost always  4= always*
**Q39** Number of clean water storage containers of 20 litres          1= *1-2 containers  2 = 3-4 containers  3 = 4-5 containers  4= more than 5 containers*

**Q40 - 44 Sanitation and Hygiene (access and quality)**
**Q40** Type of toilet used by most members of the household    1= Improved pit latrine  2=Traditional pit latrine  3=Open pit  4=Bush  5= Other (specify) _____
**Q41** 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  6= Not applicable
**Q42** Household members wash their hands after using the toilet                1= always  2= often  3=sometimes  4= hardly rarely
**Q43** Household members wash their hands before eating or food preparation  1= always  2= often  3=sometimes  4= hardly rarely
**Q44** 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

**Q45 - 46  Formal and Informal Support or Assistance in last three months (circle all options that apply)**
**Q45** Informal support received in last three months                1= *Yes  2=No*
     **Q45a** Amount and Frequency of each

| Type of support | Frequency | Amount (Where applicable) |
|---|---|---|
| 1=Zakat from better-off households | | |
| 2=Remittances from Abroad | | |
| 3=Remittances from within Somalia | | |
| 4=Gifts | | |
| 5=loans | | |
| 9=Other (Specify) _____ | | |

**Q46**  Formal international or national aid support received in last three months          1= *Yes  2=No*
     **Q46a** Amount and Frequency of each

| Type of support | Agency | Frequency | Amount (Where applicable) |
|---|---|---|---|
| 1=Free cash | | | |
| 2=Free food | | | |
| 3=Cash for work | | | |
| 4=Food for work | | | |
| 5=Supplementary food | | | |
| 6=water subsidy | | | |
| 7=Transportation of animals subsidy | | | |
| 8=Veterinary care | | | |
| 9=Other (Specify) _____ | | | |

## Appendix 3: Taleex and Huddun Mortality Questionnaire

Enumerators Name: _____   Team No: _____   Date: _____

Household No: _____   Cluster No: _____ District: _____   Village: _____

| No. | 1: Name | 2: Sex | 3: Age (yrs) | 4: Born since 1st March 2005 | 5: Arrived 1st since March 2005 | 6: Reason for leaving | 7: Cause of death |
|---|---|---|---|---|---|---|---|
| a) How many members are present in this household now?   List them. | | | | | | | |
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| b) How many members have left this household (out migrants) since 1st March 2005? List them | | | | | | | |
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| | | | | | | | |
| c) Do you have any member of the household who has died since 1st March 2005? List them | | | | | | | |
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**Summary***

| | U5 | Total |
|---|---|---|
| Current HH Members | | |
| Arrivals during the Recall period | | |
| Number who have left during Recall period | | |
| Births during recall | | |
| Deaths during recall period | | |
| Number of HH members at beginning of recall | | |

*\* For Supervisor Only*

## Appendix 4: Traditional Calendar of Events

| Month | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|
| Jan | | 54 (sidatal) | 42 (sidatal) | 30 (sidatal) | 18 (sidatal) | 6 (sidatal |
| Feb | | 53 (Arafo) **XAJ** | 41 (Arafo) **XAJ** | 29 (Arafo) **XAJ** | 17 (Arafo) **XAJ** | 5(Arafo) |
| March | | 52 (Dago) | 40 (Dago) | 28(Dago) | 16(Dago) **Dagalkii Ciraq** | 4 (Dago) |
| Apr | | 51 (Safar) | 39 (Safar) | 27 (Safar) | 15 (Safar) **Doorashadii Madaxweynaha** | 3 (Safar) |
| May | | 50 (Mawliid) | 38 (Mawliid) | 26 (Mawliid) | 14 (Mawliid) | 2 (Mawliid) |
| Jun | | 49 (Rajal-hore) | 37 (Rajal-hore) | 25 (Rajal-hore) | 13 (Rajal-hore) | 1 |
| Jul | | 48 (Rajal dhexe) | 36 (Rajal dhexe) | 24 (Rajal dhexe) | 12 (Rajal dhexe) | |
| Aug | 59 (Rajal dame) | 47 (Rajal dame) | 35 (Rajal dame) | 23 (Rajal dame) | 11 (Rajal dame) | |
| Sep | 58 (Sabuux) | 46 (Sabuux) | 34 (Sabuux) **Qaraxyadii Maraykanka** | 22 (Sabuux) | 10 (Sabuux) | |
| Oct | 57 (Soon-eri) | 45 (Soon-eri) | 33 (Soon-eri) | 21 (Soon-eri) | 9 (Soon-eri) | |
| Nov | 56 (Soon) | 44 (Soon) | 32 (Soon) | 20 (Soon) | 8 (Soon) | |
| Dec | 55(Sonfur) | 43 (Sonfur) | 31 (Sonfur) | 19 (Sonfur) | 7 (Sonfur) | |

| Jiilaal |
|---|
| IGU' |
| Xagaa |
| Deyr |

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

|  | *Males* | | *Females* | | *Total* | |
|---|---|---|---|---|---|---|
|  | *%* | *No* | *%* | *No* | *%* | *No* |
| Global chronic malnutrition (HFA<-2 z score) | 17.3 (CI: 14.0-21.1) | 81 | 14.6 (CI: 11.5-18.4) | 62 | 16.0 (CI: 13.7-18.6) | 143 |
| Severe chronic malnutrition (HFA<-3 z score) | 5.1 (CI: 3.4-7.6) | 24 | 4.0 (CI: 2.4-6.5) | 17 | 4.6 (CI: 3.4-6.2) | 41 |

The prevalence of chronic malnutrition defined as height for age <-2 Z score was 16.0 (CI: 13.7-18.6) and severe chronic malnutrition, defined as height for age <-3 Z score, was 4.6 (CI: 3.4-6.2)

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

|  | *Males* | | *Females* | | *Total* | |
|---|---|---|---|---|---|---|
|  | *%* | *No* | *%* | *No* | *%* | *No* |
| Underweight malnutrition (W/A<-2 z score) | 19.0 (CI: 15.6-22.9) | 91 | 15.7 (CI: 12.5-19.6) | 67 | 17.5 (CI: 15.1-20.1) | 158 |
| Severe underweight malnutrition (W/A<-3 z score) | 4.0 (CI: 2.5-6.2) | 19 | 3.8 (CI: 2.2-6.6) | 16 | 3.9 (CI: 2.7-5.4)) | 35 |

The prevalence of underweight malnutrition defined as weight for age <-2 Z score was 17.5 (CI: 15.1-20.1) while the prevalence of severe underweight malnutrition, defined as weight for age <-3 Z score, was 3.9 (CI: 2.7-5.4).

## Appendix 7: Survey Teams

| Team No | Enumerators** | Supervisor | Cluster No | Cluster Name |
|---|---|---|---|---|
| 1 | Abdulahi Ali<br>Abdirasak Khayre Dirir | Fuad Hassan  (**FSAU**) | 1 | Huddun |
| | | | 2 | Huddun |
| | | | 3 | Huddun |
| | | | 4 | Bohol |
| | | | 5 | Fiqishini |
| 2 | Farah Awil<br>Asha Salaad | Khalif Nuh  (**FSAU**) | 6 | Holhol |
| | | | 7 | Gorofley |
| | | | 20 | Carooley |
| | | | 21 | Carooley |
| | | | 30 | Dhoodiare |
| 3 | Abdirazak Mohammed<br>Fatuma Ali Farah | Mohammed Moalim (**FSAU**) | 15 | Taleex |
| | | | 16 | Taleex |
| | | | 17 | Taleex |
| | | | 24 | Halin |
| | | | 25 | Halin |
| 4 | Ali Hassan<br>Asha Suleiman | Haawa Ismail  (**SRCS**)<br><br>Arten Mohamed  (**FSAU**) | 10 | Kulal |
| | | | 11 | Dhadingarad |
| | | | 12 | Dogobley |
| | | | 13 | Dogobley |
| | | | 14 | Karamaan |
| 5 | Sahra Abdi<br>Ibrahim Yusuf | Osman warsame  (**FSAU**)<br><br>Halima Hassan  (**MOHL**) | 8 | Awrbogeys |
| | | | 9 | Awrbogeys |
| | | | 27 | Sarmanyo |
| | | | 28 | Sarmanyo |
| | | | 29 | Lasourdin |
| 6 | Abdirasak Saeed<br>Amina Mohamed | Ahmed Mohamoud (**SRCS**) | 18 | Jirar |
| | | | 19 | Buqudheer |
| | | | 22 | Kalcad |
| | | | 23 | Kalcad |
| | | | 26 | Godaalo |
| | Coordinators: | Sicily Matu (**FSAU**)<br>Tom Oguta (**FSAU**) | All | |

*** All enumerators are from MOHL with the exception of Abdrizak Saeed in Team 6 who is an SRCS staff member.*

## Appendix 8:   Supervisor's Record Form

Name of Supervisor: _____   Cluster Name: _____        Team No: _____        Date: ____

| Household Number | Household Questionnaire Administered? | Mortality Questionnaire Administered? | Oedema cases present? | Deaths reported? (Number) | Measles cases present? | Notes |
|---|---|---|---|---|---|---|
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General Comments:
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