NUTRITION SURVEY REPORT
BELEDWEYNE DISTRICT

HIIRAN REGION
SOMALIA

June 2002

unicef
United Nations Children's Fund

ACKNOWLEDGEMENTS

UNICEF is grateful to IMC, FSAU and SRCS staff for facilitating and participation in planning the survey, training field staff, and supervising data collection. The contribution of local authorities in facilitating the fieldwork in Beledweyne district is much appreciated.

The data could not have been obtained without the co-operation and support of the communities surveyed especially the mothers and caregivers that had to take time off their busy schedules to respond to the interviewers.

1 EXECUTIVE SUMMARY

In May/June 2002, UNICEF conducted a nutrition survey in Beledweyne District, Hiiran Region in South and Central Somalia in collaboration with IMC, FSAU and SRCS. The survey was conducted in response to concern in the district over the drought, both water and food shortage that mitigated the coping mechanism in the district resulted from successive crop failure due to lack of adequate rain that forced to displacements in rural villages to main towns in search of food and water and good pasture for livestock. Health facilities had also reported an increase in the number of malnourished children in the area.

The main objective of the survey was to determine the level of wasting and oedematous malnutrition among children below five years, and some possible factors that may be contributing to child malnutrition in the district using the two-stage random cluster sampling methodology. A total of 905 children between age 6-59 months or measuring 65-110 cm were examined. Nutritional status assessments were based on weight and height measurements. Moreover, information relating to diarrhoea, ARI, Malaria incidence two weeks prior to the survey and Measles incidence one month prior to the survey, Vitamin A supplementation and measles vaccination status of the children were also collected. Qualitative information was also collected prior to the field work with some key informants and a group of mothers on issues relating to household food security and childcare practices in order to gain understanding of factors affecting nutrition in the district.

The preliminary report on anthropomentric analysis, background information and qualitative information provided by the key informants were examined by UNICEF. Wasting of muscle and fat tissues, a rapid response to acute nutritional deficiency caused by infections and dietary inadequacies was found in 21% of children with 2.7% severely malnourished.

Information collected on immunisation status during the survey indicated that 52.5% (453) of the children between 9-59 months had been vaccinated against measles, out of which 34% (152) were vaccinated within the past 6 months. A total of 47.5% were not vaccinated at all; *82*% of the children were provided with Vitamin A supplements during the past six months; 16% of children had diarrhoea, 19% had ARI and 11.5% had Malaria in two weeks prior to the survey while other 5.5% had measles in one month prior to the survey. A total of 94.7% were introduced food other than milk before four months. Twelve percent of the children were from households headed by females and 2% from the displaced populations.

Limited access to improved water, inadequate utilisation of existing health services and poor child-feeding practices seem to be contributing substantially to malnutrition in Beledweyne district. Resumption of supplementary food at IMC supported MCH centre and outreach immunisation services will prevent massive displacements and measles outbreak in the area. Introduction of UNICEF and WFP pilot project in food distribution to malnourished families would promote the recovery of some of the children already malnourished.

A longer-term plan to improve the nutritional status of the population needs to be developed and supported covering improvements in access to improved drinking water and strengthening the EPI outreach services with close supervision. The plan should also address the need for community based nutrition and health education activities. The main areas of focus should include promoting exclusive breastfeeding, appropriate young child feeding, diversification of diets, and improvements in household hygiene and health care practices with the active participation of pregnant mothers, fathers and other caregivers in order to sustain improvements in the nutrition situation in Beledweyne district.

2. SUMMARY FINDINGS

Indicator	Number	Percentage
Under five children screened during the survey.	905	100
Number of boys in the sample	451	49.8
Number of girls in the sample	454	50.2
Number of children from farming food economy group	181	20
Number of children from livestock and agro-pastoral food economy group	242	26.7
Number of children from urban food economy group	482	53.3
Global acute malnutrition according to Weight For Height Index in Z-Score or presence of oedema	190	21
Severe acute malnutrition according to Weight For Height Index in Z-Score or presence of oedema	24	2.7
GLOBAL ACUTE MALNUTRITION ACCORDING TO WEIGHT FOR HEIGHT MEDIAN OR PRESENCE OF OEDEMA	106	11.7
Severe acute malnutrition according to Weight For Height in % Median or presence of oedema	13	1.4
Global acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in farming food economy group.	34	18.8
Severe acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in farming food economy group.	4	2.2
Global acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in Livestock and agro-pastoral food economy group.	51	21.1
Severe acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in Livestock and agro-pastoral food economy group.	5	2.1
Global acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in urban food economy group.	103	21.4
Severe acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in urban food economy group.	13	2.7
Proportion of children with diarrhoea in two weeks prior to the survey.	148	16.4
Proportion of children with ARI in two weeks prior to the survey.	169	18.7
Proportion of children with Malaria in two weeks prior to the survey.	104	11.5
Proportion of children with Measles in one month prior to the survey.	50	5.5
Proportion of children supplemented with Vitamin A in six months prior to the survey.	739	81.7
Proportion of children immunised against Measles (^{n}=863)	453	52.5
Proportion of children on breastfeeding	322	32.7
Proportion of children breastfed less than 6 months	100	13.5
Proportion of children breastfed 6-11 months	201	27.1
Proportion of children breastfed 12-18 months	265	35.7
Proportion of children breastfed 18 months and more	176	23.7
Proportion of children introduced food before 4 months	857	94.7
Proportion of children introduced food during 4-6 months	40	4.4

Proportion of children introduced food after 6 months of age	8	0.9
Proportion of children fed once a day	22	2.4
Proportion of children fed twice a day	305	33.7
Proportion of children fed 3-4 times a day	531	58.7
Proportion of children fed more than 4 times/day	47	5.2
Proportion of female-headed households.	65	12.2
Proportion of displaced households	9	1.7
Proportion of returnee/refugee households	1	0.2
Reason of displacement		
Insecurity	8	80
Lack of jobs	1	10
Food shortage	1	10
TWO MAIN SOURCE OF FOOD		
Purchases	366	68.9
Household crop production	139	26.2
Two main source of income		
Casual work	204	38.5
Animal products from own production	121	22.8
Two main coping strategies during food shortage		
Borrowing	205	38.8
Purchases	125	23.6
Two main source of drinking water		
Open hand dug well	233	44.1
River	160	30.7
Main practice of human excreta disposal		
Pit latrine	312	59
Bush/Open ground	215	40.6
Main source of treatment when a child is sick		
Private clinic/Pharmacy	243	47
Public health facility	226	43.7

3. INTRODUCTION

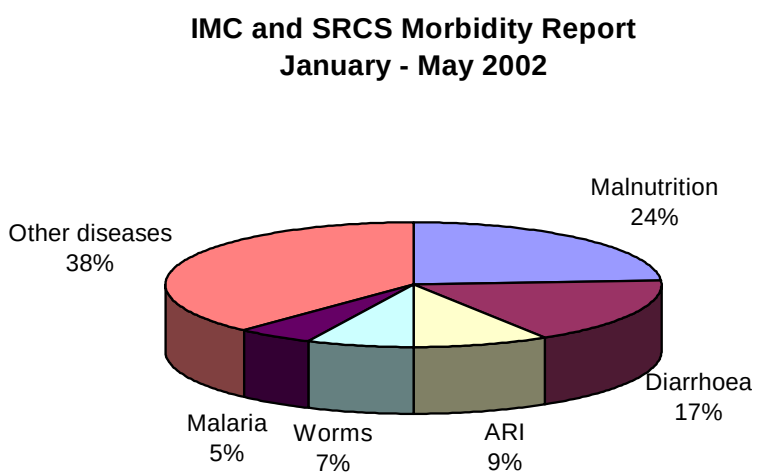
With an estimated population of 120,000 people, Beledweyne District is the main district of Hiran region. It is located along the Shabelle River, 315km Northeast of Mogadishu, with Bakool region to the West, Mudug to the North, Middle Shabelle to the South and Ethiopia to the Northeast. Beledweyne district is one of the worst affected districts in Hiran region. Among the assessed children; around 27% are either pure pastoralists or agro-pastoralists, 20% are farmers while more than 53% live in Beledweyne town.

Political environment: Beledweyne district experienced unrest with inter-clan fighting exacerbated by the occupation of SNA and between Hawadle and Gugundabe clans in mid of 1994 until the beginning of 1995 and 2000 respectively. The effects of 1997 floods hit Hiiraan region continue to compromise the production capacity of Beledweyne district. In addition, successive crop failure due to inadequate rains continuously deteriorated the already fragile situation in the district. Beledweyne town was divided by the bridge between the two rival clans of Hawadle and Gugundabe during the survey.

Health context

From 1992 to date UNICEF continued to support IMC in delivery of health services in Beledweyne district with supplementary feeding programme integrated in the MCH centre. UNCEF also supports 44 HPs in the districtn and one MCH in town run by SRCS. The supplementary food distribution has been temporarily stopped.

The below graph on IMC and SRCS morbidity reports indicates that malnutrition, diarrhoea and ARI are the major diseases seen in the MCH. Out of 5,319 children seen in IMC and SRCS MCHs in January – May 2002; 24% with malnutrition, 17% with diarrhoea, 9% with ARI, 7% with Worms, 5% with Malaria while other diseases were 38%.



3.1 Water and environmental sanitation

The main source of water are river and open hand dug wells with 44% and 30.7% respectively as revelead in the survey results. The water availability within a year varies. Drums, plastic jerrycans, and **Ashun** (Water container made of clay) are mainly used for storage.

3.2 Food Security Context

The population in Beledweyne district has the following four main food economic groups. Pure Pastoralists that are engaged in livestock herding, Agro-pastoral that are engaged in both livestock herding and farming, pure farmers that are engaged and depend on farming, and Urban dwellers predominantly engaged in petty trading.

Following the last Deyr crop harvest and flow of cereals from the Shabelle valley and Bay region through the market systems, the current food security situation for the district is stable. Though the cereal stocks are little at household level, the market prices have not varied greatly (25% higher than the base price) and relatively low and the households are earning some income, hence purchase. Farm labour is available hence the poor households can earn and purchase food. Other income opportunities for the Beledweyne population include sale of farm produce, self-employment, business activities for the urban dwellers and sale of livestock and livestock products. The daily income of an unskilled labourer is equivalent to about 7kg of cereal per day.

The seasonal (Gu) rains started in mid April but lasted up to the end of April. It was good in amount and distribution in the entire district. However, water availability improved only during that short period, particularly in the agro pastoral areas of the district. Most of the rainwater catchments are drying up. Good pastures were available between end of April and late May and seem to be on the decline, except for a few pockets like Dhoqor and Luuq Jelow areas. The pockets, with the pasture, are pastoral areas that area received better rains. Generally, the livestock conditions have improved and their milk production is normal. With the decline in pasture in some parts of the district (Booco and Cadi-Libaar areas), some households are already considering moving the livestock to the Southern districts and regions.

The crop condition seems poor and insect (stalk borer and aphids) attack is on the increase. Successive spraying of insects by the irrigating farmers, who preferred cash crop rather than food crop this season, has led to mass death of bees. This may negatively affect honey production and jeopardise this income source for the poor in the riverine area, mainly.

Table 1: Main food security events affecting food security in Beledweyne district

Period	**Major event**
April 2002	-Low Gu rains received with poor pastures and poor crop germination
Jan/Feb 2002	Very little food stocks available
July-Aug ‘01	High cereal prices; cereals in the market produced through irrigation
April-June ‘01	-Poor Gu rains -Poor pastures available leading to movement of livestock towards the South
2000	-Good Gu and Deyr rains and consequently good crop production -Low cereal prices
1999	-Poor rains (Gu) with resultant poor pastures in the agro-pastoral areas -Good localised irrigated crops; low cereal prices
1998	-Off season crop harvested by the riverine group and good pastures available -Low cereal prices due to deliveries from Ethiopia (plus little local production) -High livestock disease cases of livestock after Elnino rains leading to death of camels
1997	-Good Deyr rains -Flooding (Deyr rains) in Beledweyne town leading to population displacement -Crop failure in riverine areas but good harvest in the rain fed areas; heavy flooding along the river
1996	-Security improved with introduction of Sheria law -Heavy presence of refugees from Bay and Bakool -Low rains leading to poor crop and pasture performance
1995	-Security improved when Beledweyne was captured by Aideed forces; return of people into towns (poverty-all vulnerable)
April 1995	-Influx of refugees from Bay and Bakool

1994	-Good rains, good crop harvest and pasture-Gu
July 1994	-Beledweyne captured by Aideed making people flee to the rural area; heavy loss of assets
1993	-Relief food flooded in the local market hence low cereal prices. High supply of cereal from Ethiopia -Security improved with the coming of UNISOM troops
1992	-Starvation and famine -Insecurity -SRCS and IMC start the health programs in Beledweyne District -Influx of people to Beledweyne from the neighbouring districts seeking relief aid
Early 1992	-ICRC interventions commence (Free food distribution, feeding programmes) job opportunities created
1991	-Both pastures and crop production poor -High insecurity with the collapse of the government
1990	Normal rains with normal production of crops and pastures; Upraising of the rebels

Sources: Extracted from previous FSAU's food security assessment and UNICEF reports.

4. JUSTIFICATION FOR THE NUTRITION SURVEY

IMC and FSAU reported general food insecurity in Beledweyne district with increasing trend of malnutrition in IMC MCH. The cumulative effect of the inter-clan conflicts and successive crop failure in some areas followed after and poor Gu' season predisposed communities to higher food insecurity risks. The nutrition survey was a joint effort of UNICEF, IMC, SRCS and FSAU to better assess and analyse the nutrition situation in the district.

5. SURVEY OBJECTIVES

- To determine the level of malnutrition and oedema in Beledweyne District by screening the Weight for Height measurement of children between 6-59 months or 65-110cm.
- To measure the determinant factors causing/contributing to existence of malnutrition by recording the occurrence of diarrhoea, Malaria and ARI diseases in the two weeks prior to the survey.
- To record and document the occurrence of measles during the one month prior to the survey**.**
- To measure measles vaccination and Vitamin A supplementation coverage in Beledweyne District and monitor performance in the past 6 months.
- To measure the extent of household movements in Beledweyne, this has impacted on aid service deliveries.
- To record and document the number of female-headed households to know the extent of families with no support and care to children from fathers.
- To make comparison between families living in Beledweyne town, those farming and others who are mainly farming and livestock.
- To gather background information on household food sources, income and coping mechanisms.
- To asses feeding and weaning practices in Beledweyne district.

6. METHODOLOGY

6.1 Sample size

The target population was children 6-59 months (or heights between 65 – 110cm). In order to provide valid estimates of the prevalence of malnutrition in children with a 95% confidence, a minimum of 900 children were to be examined 30 children to be randomly selected from each of 30 clusters.

6.2 Sampling methodology

The two-stage cluster sampling methodology was used. A list of villages with population estimates for all villages in Beledweyne district was obtained from the NIDs Secretariat in SCZ. A table of cumulative population and attributed numbers was developed, and clusters selected based on population proportional to size. The sampling interval was determined by dividing the total population by 30. The calculated cluster interval was **4000**. ***(See Annex: 1).*** A random number selected within the cluster interval was used to determine the location of the first cluster. The next and subsequent clusters were determined by adding the cluster interval to the preceding random number selected. A total of 16 clusters were from Beledweyne town and 14 clusters were from villages.

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

A total of 905 children were examined for weight for height. Their caregivers were interviewed as to whether the children had received Vitamin A or Measles vaccination in the past 6 months, or had suffered from diarrhoea or ARI diseases two weeks prior to the survey.

Five teams were used to collect the data. Each team had two enumerators and one supervisor. Enumerators were selected based on their experience with previous nutrition surveys. IMC and SRCS in Beledweyne district assisted in the identification of qualified persons. They were given a three-day training in anthropomentric techniques, sampling techniques and how to complete survey questionnaires including one day of field practice in Baidoa town.

6.3 Variables examined

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

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

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

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

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

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

Malaria– collected from interviewing the mother/caregiver whether the child had malaria two weeks prior to the survey.

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

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

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

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

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

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

6.4 Indicators and cut-offs

Weight for height - expressed in Z score - is the most appropriate indicator for quantifying wasting in a population during an emergency. However, the two modes of expression in the table below were used for presentation of results.

Nutritional status	**Weight for Height in Z-score**	**Weight for Height in % of Median**
Global acute malnutrition	< -2 or oedema	< 80% or oedema
Severe acute malnutrition	< -3 or oedema	< 70% or oedema

6.5 Data preparation and analysis

During the data collection phase, each questionnaire was thoroughly checked by the filed supervisors for omissions, inappropriate responses and for unlikely weight for height measurements. Survey Co-ordinator travelled to enumeration areas making spot checks and ensuring that the methodology was standardised.

Pre-coded responses were entered into the EPI Info version 6 software programme for data analysis. Confidence intervals were used to test for significant differences between prevalence of malnutrition among different age and food economy groups.

7. PRESENTATION OF THE SURVEY RESULTS

7.1 Age and gender distribution of children surveyed

The percentage age and gender distribution of the sample is provided in Tale 1. Information on actual demographic patterns by year is not available for Somalia. Out of 905 children examined during the survey, 451 (49.8%) were boys and 454 (50.2%) were girls, with a sex ratio of 1.0. There were slightly fewer males than females in the sample but the difference is insignificant indicating an unbiased sample selection.

Table 1: Distribution of sample by age and sex, Beledweyne district June 2002

Age in months	Boys		Girls		Total		Sex ratio
	No.	%	No.	%	No.	%	
6 – 11	53	52	49	48	102	11.3	1.1
12 – 23	105	47.7	115	52.3	220	24.3	0.9
24– 35	109	51.2	104	48.8	213	23.5	1.0
36– 47	95	47.7	104	52.3	199	22	0.9
48– 59	89	52	81	48	171	18.9	1.1
Total	**451**	**49.8**	**454**	**50.2**	**905**	**100**	**1.0**

7.2 anthropomentric analysis

The results of anthropomentric analysis were obtained by using weight for height expressed in Z-score and percentage of the median of the reference population.

Table 3: Distribution of malnutrition in Z-score, Beledweyne district June 2002

Age	6-59 months	6-23 months
GLOBAL ACUTE MALNUTRITION	21% (95% CI: 18.4% - 23.8%)	23% (95% CI: 18.6% - 28%)
Severe acute malnutrition	2.7% (95% CI: 1.7% - 4%)	4.7% (95% CI:2.7% - 7.7%)

Table 4: Distribution of malnutrition as percentage of the Median, Beledweyne district June 2002

Age	6-59 months	6-23 months
Global acute malnutrition	11.7% (95% CI: 9.2% -15.0%)	15.4% (95% CI: 16.5% - 20.7%)
Severe acute malnutrition	1.4% (95% CI: 0.8% - 2.5%)	2.1% (95% CI: 1.0% - 3.9%)

Chi-square test of association indicated significant association with acute global malnutrition for children aged between 6-23 months (p=0.0413). However, the relation with malnutrition in non-linear.

Table 5: Distribution according to weight/height index in Z-score or presence of oedema by age 6-59 month old children, Beledweyne district, June 2002

Age group Months	Total children	≥ -2 Z-score		< -2 and ≥ -3 Z-score or oedema		< -3 Z-score or oedema	
	Number	No.	%	No.	%	No.	%
6 – 11	102	82	80.4	15	14.7	5	4.9
12 – 23	220	166	75.5	44	20	10	4.5
24– 35	213	164	77	46	21.6	3	1.4
36– 47	199	170	85.4	27	13.6	2	1
48– 59	171	133	77.8	34	19.9	4	2.3
Total	**905**	**715**	**79**	**166**	**18.3**	**24**	**2.7**

The above table shows that 23% of the children aged between 6-23months were malnourished while 19.9% of the children aged between 24-59months were malnourished. Analysis has shown no association between age group and global acute malnutrition (p=0.31)

Table 6: Distribution according to weight/height index in Z-score or presence of oedema by Food Economy Group, Beledweyne district, June 2002

Food Economy Group	Total children	> -2 Z-score		< -2 and ≥ -3 Z-score		< -3 Z-score or oedema	
	No. (%)	No.	%	No.	%	No.	%
Farming and Livestock	242 (26.7%)	190	78.5	46	19	6	2.5
Farming	181 (20.0%)	147	81.2	30	16.6	4	2.2
Urban	482 (53.3%)	378	78.4	90	18.7	14	2.9
Total	**905 (100%)**	**715**	**79**	**166**	**18.3**	**24**	**2.7**

More than fifty three percent of the child population assessed were from urban, Almost 27% from farming and livestock and 23% from farming food economy groups. It appears that more children are affected in urban and agro-pastoral than in farming food economy group. It is interesting to note that this percentage declines up to almost 21.6%, 21.5% and 18.8% among urban, agro-pastoralist (farming + livestock) and farming children, respectively.

Table 7: Distribution according to weight/height index in Z-score or presence of oedema by Sex, Beledweyne district, June 2002

Food Economy Group	Total children	> -2 Z-score		< -2 and ≥ -3 Z-score		< -3 Z-score or oedema	
	No. (%)	No.	%	No.	%	No.	%
Male	451 (49.8%)	350	77.6	85	18.8	16	3.5
Female	454 (50.2%)	365	80.4	81	17.8	8	1.8
Total	**905 (100%)**	**715**	**79**	**166**	**18.3**	**24**	**2.7**

A total of 22.3% of the boys and 19.6% of girls were malnourished. However, analysis has shown no association between sex and global acute malnutrition (p=0.34).

Table 8: Distribution according to incidence of Diarrhoea and ARI, measles vaccination and Vitamin A supplementation status by age, Beledweyne district, June 2002

Age group Months	Total	Diarrhoea In last two weeks		ARI in last two weeks		Malaria in last two weeks		Measles cases in last one month		Measles vaccinations		Vit A Supplementation in last 6 months	
	No.	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6 – 11	102	24	23.5	23	22.5	14	13.7	4	3.9	18	17.6	77	75.5
12 – 23	220	58	26.4	49	22.3	29	13.2	15	6.8	83	37.7	179	81.4
24– 35	213	33	15.5	39	18.3	24	11.3	11	5.2	117	54.9	172	80.8
36– 47	199	22	11	34	17	21	10.6	11	5.5	126	63.3	175	87.9
48– 59	171	11	6.4	24	14	16	9.4	9	5.3	114	66.7	136	79.5
Total	**905**	**148**	**16.4**	**169**	**18.7**	**104**	**11.5**	**50**	**5.5**	**458**	**50.6**	**739**	**81.7**

The overall incidence of diarrhoea, ARI and malaria among under-fives was 16.4%, 18.7% and 11.5% respectively with high episodes observed in the first three years of age. A total of 27%, 24% and 20% of the malnourished children had diarrhoea, ARI and Malaria respectively. Diarrhoea, ARI and Malaria were found to be significantly associated with wasting in children (p=0.000 to p=0.036).

Records on under-fives cards and mother's recall were used to determine coverage of measles vaccination. For the six-month period prior to the survey, measles immunisation coverage was 50.6% and 81.7% of children had received Vitamin A supplementation. However, a further analysis made on measles immunisation provided to children between 12-23 months has shown 37.7% while other 62.3% of the children were not provided.

Table 10: Distribution of Sex of Household Head and Residential Status

Sex of Household Head	Number	Percentage
Female headed households	466	87.8
Male headed households	65	12.2
Total	531	100
Resident Status of Household Head		
Residents	521	98.1
Displaced	9	1.7
Others	1	0.2
Total	531	100
Two main source of income		
Casual work	204	38.5
Small business	121	22.8
Two main source of food		
Purchases	366	68.9
Crop production	139	26.2
Two main coping strategies during food shortage		
Borrowing	205	38.8
Purchases	125	23.6
Two main source of drinking water		

Open hand dug well	233	44.1
River	162	30.7
Two main source of treatment when a child is sick		
Private clinic/Pharmacy	243	47
Public health facility	226	43.7

7.3 Feeding of children

The survey has depicted that 13.5% of children are breastfed less than 6 months, 27.1% are breastfed between 6-11 months, 35.7% are breastfed between 12-18 months while other 23.7% are breastfed more than 18 months. A total of 94.7% of children were introduced food other than milk before 4 months, 4.4% were introduced between 4-6 months while only 0.9% were introduced after 6 months of age due to lack of other food to the families. Early weaning of food to babies remain a major cause to childhood infectious diseases. A total of 2.4% of children are fed once a day, 33.7% are fed twice a day while other 63.9% are fed three and more times a day.

Additional information collected through focussed discussions with caretakers indicates that, most of mothers introduce babies water with sugar in the first day after birth. Cholostrum with water is also given to the baby in the first 24 hours. Usually mothers breastfed 4-8 times between morning and night, and 3-4 times in the night. In the case when the mother is away, elder sister or grand mother feed babies whatever is available (milk, porridge, tea with milk or sugar solution) with a cup or local recipient. Some mothers don't breastfeed when they are pregnant or sick. Usually, breastfeeding continues up to 24 months. Few mothers think that exclusive breastfeeding is healthier.

Most of mothers start giving food other than breast milk before the age of 2-4 months. Mothers and elder sister usually feed the children less than three years.

Sorghum or Maize and Beans porridge with liquid and semi-liquid consistence is usually prepared for infants and is given with a cup or some times with spoon. Infants are given between 1/8 - 1/4 of a litre of porridge at one feed with a cup for 5-6 times/day. The ingredients and composition of the porridge vary and depends on the household income and purchasing power.

On a normal day, families consume three meals compared to two meals in rural and agricultural villages. But when the situation becomes stressful families consume 2-1 meal a day. In the rural and agricultural villages district, sorghum and maize, meat and milk are usual staples.

7.4 Health environment

There are in the town two IMC and SRCS run MCHs and private pharmacies as sanitary facilities in the area. All households have access to the MCH. Diarrhoea, ARI, Worms, Cholera, Malaria are the major diseases that affected the population in Beledweyne. No threats of epidemics in Beledweyne and the cholera camp were closed before the survey. Economic problems, inadequate infrastructure to the hospital and absence of specialised doctors is main obstacles that people encounter in Beledweyne leading to inappropriate treatment.

During rainy seasons there are lot of mosquitoes and flies in the area. Frequency of washing hands and utensils are concentrated during the meal.

7.5 Care practices

Additional qualitative information collected indicated that, mothers have enough time to devote to their children as most of mothers are not the breadwinners of the households apart from fetching water, fire wood collection and cooking food etc although mothers do not have access to information relating to good child care.

The amount of time mothers devote to their children is determined by the economical situation of the family. The father gets priority in terms of food distribution. However, there are effective social support and stimulation that exist at household level.

Mothers have access to limited information relating good childcare practices. There are effective social support within the households for children care and stimulation.

8. ANALYSIS OF FINDINGS

The prevalence of total acute malnutrition in children in Beledweyne district has shown (21% with 2.7% SAM) which appears to be quite high. The previous surveys conducted in the area by UNICEF in April 2000 indicated a global malnutrition of 17% with 4% SAM using two stage cluster sampling methodology.

The survey result in June 2002 indicates a worsening nutritional situation in Beledweyne district in Hiran region. At present, UNICEF survey in 2002 was conducted after reports of increasing trend of malnutrition, Deyr crop failure and poor Gu' season.

Although the sample was not stratified by the food economy characteristics and the questionnaire was not structured to assess those characteristics of the population, some variations could be observed in the global malnutrition rate amongst the different groups in the district. Urban children seem to be the worst off with 21.6% global and 2.9% severe malnutrition. These percentages decline for agro-pastoral and farming families up to 21.5% global and 2.5% severe malnutrition, whilst the farming population seems to be slightly better with 18.8% global malnutrition and 2.2% severe malnutrition.

At the time of the nutrition survey, there were reports of high rate of malnutrition in MCHs and the Gu' crop establishment survey by SCF-UK suggested in reduction of area planted in Beledweyne district.

A total of 27%, 24% and 20% of the malnourished children had diarrhoea, ARI and Malaria respectively. Diarrhoea and Malaria were found to be significantly associated with wasting in children ($p=0.00$-$p=0.036$). Of those children with diarrhoea, ARI and Malaria, 78%, 66% and 64% respectively were less than 36 months.

Exclusive breastfeeding and sound complementary feeding practices are crucial for enhancing the nutritional and health status of infants and young children. A total of 94.7% of children were introduced food other than breast milk before four months.

Apart from reducing their chances for optimal growth, feeding young children thin non-breast milk food prepared under unhygienic conditions expose them to environmental contaminants resulting in frequent diarrhoea episodes and reduced resistance to other common infections. It is not surprising therefore that at age 6-23 months, a high proportion (23%) of children were already malnourished while 25% of children less than 23 months had diarrhoea with two weeks prior to the survey.

Records on under-fives cards and mother's recall were used to determine coverage of measles vaccination. For the six-month period prior to the survey, measles immunisation coverage was almost 51% and 82% of children had received Vitamin A supplementation compared to 69% measles vaccination and 79% in Vitamin A in UNICEF nutrition survey in Beledweyne district in April 2000. There is 18% decrease in measles immunisation coverage and 4% increment in Vitamin A. However, a further analysis made on measles immunisation provided to children between 12-23 months has shown 37.7% while other 62.3% of the children were not provided.

The adverse practice of holding back food when children are sick and presenting them late at the health facility when home remedies have failed has clear implications for nutrition and well being. Women have poor autonomy over their health seeking behaviour. They must seek permission from their husbands before attending or taking their children to a

health facility. With 87.8% of the households headed by males, any strategies aimed at improving utilisation of health facilities and childcare practices would be meaningless if fathers are not targeted.

The family diet consumed by children at age twelve months is usually simple and monotonous, dictated by local availability and price of foods in the market. Almost 98% of children are fed more than two meals a day. Typical meals contain sorghum or maize and milk sometimes prepared as porridge for children, whilst the diets of adults contain in varying combinations sorghum or maize, rice, meat and cowpeas.

Two main coping strategies during food shortage include borrowing and purchases with 38.8% and 23.6% respectively. Some households supplement income by casual work and production of animal products with 38.5% and 22.8% respectively.

Inadequate access to safe water and poor human excreta disposal remain a major concern in Beledweyne district with 74.8% in use of open hand dug well river and 40.6% in defecating bush/open ground respectively.

The high prevalence of malnutrition in the district is an indication of the fragility of the situation and this has certainly taken a toll at household level in all food economy groups. The problems of food availability and access faced by poor households combined with the high incidence of diseases, poor sanitary practices and limited access to safe water are factors contributing to the high malnutrition rates. These problems need to be urgently addressed to prevent the situation from deterioration.

9. RECOMMENDATIONS

Recommendations to alleviate the immediate causes of malnutrition such as diseases and inadequate dietary intake are important and urgent in the light of the high prevalence of acute malnutrition in Beledweyne district.

- Resumption of supplementary feeding programme in IMC MCH.

- To expand the supplementary feeding programme and WFP family food rations to malnourished children in Beledweyne district to minimise risk of internal displacement in the area.

- To explore possibilities of providing a complete package of EPI services and targeted supplementary feeding programme to malnourished children to prevent internal displacements.

- To strengthen and support with supportive supervisory visits to outreach services in Hiran regions to monitor progress.

- To introduce nutrition education promotion in selected areas in Beledweyne district to sensitise communities to proper feeding practices and use of locally nutrition food.

- Develop and support a longer-term plan to promote sustained improvement in the nutritional status of the population covering:

- Increasing access to improved drinking water in high-risk communities.

- Intensifying health and nutrition education activities at the household level to address care concerns, targeting mothers, fathers and other caregivers. The main areas of focus should include promoting exclusive breastfeeding, appropriate young child feeding, diet diversification, and improvements in household hygiene and health care practices.

REFERENCES

UNICEF nutrition survey report in Beledweyne district, April 2000.

IMC and SRCS Morbidity reports, January – May 2002

FSAU Monthly Food Security Report, June 2002

Maxwell, S. & Frankenberger, T. R. (1992) Household Food Security: Concepts, Indicators, Measurements New York and Rome UNICEF/IFAD

SACB/Nutrition Working Group 1999, Nutrition Survey, Recommendations for Somalia

UNICEF, 1990. Strategy for Improved Nutrition of Children and Women in Developing Countries
New York: UNICEF

UNICEF Somalia, 1998, Children and Women in Somalia, A Situation Analysis

WHO Regional Office for the Eastern Mediterranean, 1995 Field Guide on Rapid Nutritional Assessments in Emergencies.

ANNEX: 1 ON SAMPLE FRAME

Region	*District name*	*Main village name*	*Total population*	*Cumulative population*	*Cluster Number*
Hiran	Beletwein		64550	64550	1-16
		Bacaad	600	65150	17
		Deefow	900	66050	
		Jeerey	390	66440	
		Twakal	450	66890	
		Madina	220	67110	
		Kabxanlay	725	67835	
		Buulo raaxo	375	68210	
		Luuqdheere	350	68560	
		Qarsoni	575	69135	18
		Taaga	875	70010	
		Qooqane	370	70380	
		Dhiiriyow	460	70840	
		Baslawe	420	71260	
		Lafoole	280	71540	
		Grash	390	71930	
		Leebow	540	72470	
		Hiiraan	1285	73755	19
		Shiniile	375	74130	
		Hilo Kelyo	450	74580	
		Hoodley	325	74905	
		Bilisid	440	75345	
		Km115	260	75605	
		Ceel Gaal	1000	76605	
		Jawiil	625	77230	20
		Indho caad	375	77605	
		Braagta	290	77895	
		Caris	175	78070	
		Jiqey	110	78180	
		Ilkacad	550	78730	
		Quracley	640	79370	
		Cadiley	550	79920	
		Doona	240	80160	
		Bardale	105	80265	
		Waro Hubo	360	80625	
		Helo Buwo	175	80800	
		Geed Labeenaad	350	81150	21
		Dhagaya Weyn	505	81655	
		Camalow	1060	82715	
		Hilo Bacad	360	83075	
		Gal yare	190	83265	
		Sugow	420	83685	
		Dhagran	535	84220	

		Baarey	1080	85300	22
		Buulo qorax	140	85440	
		Dhoqor	850	86290	
		Elalay	240	86530	
		Bacyar	640	87170	
		Dan Caad	470	87640	
		Cada Libaax	250	87890	
		Keli Dhenle	210	88100	
		Dolo Yaabeen	530	88630	
		Booco	2240	90870	23
		Goley	240	91110	
		Daayow	470	91580	
		Erbow	470	92050	
		Garasiyani	405	92455	
		Nur Fanax	1235	93690	24
		Ceel la helay	290	93980	
		Darow	130	94110	
		Food Cadde	410	94520	
		Shabelow	250	94770	
		Gambar Lawe	300	95070	
		Bacaadlow	290	95360	
		Don Koyow	275	95635	
		Caloolacad	420	96055	
		Hoyin	370	96425	
		Xudur Bor	410	96835	
		Macan Qaal	510	97345	25
		Txey	180	97525	
		Bir jeeb	330	97855	
		Caddiley	240	98095	
		Luuq Jeelow	940	99035	
		Barey	345	99380	
		Beled Amiin	390	99770	
		Bac Yar	200	99970	
		Qurdhun	140	100110	
		Qoolow	235	100345	
		Jaadle	195	100540	
		Dolo Qoyow	1210	101750	26
		Garasaber	315	102065	
		Gumarey	475	102540	
		Jiiqley	190	102730	
		Dooli Xeyle	210	102940	
		Yucubka	475	103415	
		Caag Gabarle	170	103585	
		Cee cali	2860	106445	27
		Burdho	160	106605	
		Ceel Guley	170	106775	

		Bakalle	250	107025	
		Wabxo	340	107365	
		Sigaalow	500	107865	
		Buulo Kaahin	530	108395	
		Dharkeynta	500	108895	28
		Hardey	340	109235	
		Bacad Bulle	220	109455	
		Horjoog	335	109790	
		Qarsoni	290	110080	
		Doolo Madow	315	110395	
		Kelli Dheere	325	110720	
		Macruuf	310	111030	
		Qajaaqur	260	111290	
		Beled Salaam	340	111630	
		Doon Kudle	270	111900	
		Deefow	185	112085	
		Xamir Weyne	240	112325	
		Qoydo	445	112770	
		Beled Amiin	370	113140	29
		Yermoge	265	113405	
		Don Maleyko	230	113635	
		Owiley	190	113825	
		Bur Fiiq	400	114225	
		Samow	250	114475	
		Far Libaax	3000	117475	30
		Far xurunley	240	117715	
		Gara Muqde	175	117890	
		Sheydaan Kor	180	118070	
		Xabow	345	118415	
		Baadi keen	370	118785	
		Quracle	190	118975	
		Buq Goosaar	800	119775	
		Kirkiri	225	120000	
Hiran	B-Wein	121	120000		

Random Selection: 959
Sampling Interval: 4000

TRADITIONAL CALENDAR FOR NUTRITION SURVEY

Month	Events	1997	1998	1999	2000	2001	2002
Jan.	Beginning of Jiilal		52 Soonfur	40 Soonfur	28 Soonfur	16 Soonfur	4 Soonfur
Feb.	Mid of Jiilaal		51 Siditaal	39 Siditaal	27 Siditaal	15 Siditaal	3 Siditaal
Mar.	End of Jiilaal		50 Arafo/Dul-Xaj	38 Arafo/Dul-Xaj	26 Arafo/Dul-Xaj	14 Arafo/Dul-Xaj	2 Arafo/Dul-Xaj
Apr.	Beginning of Gu'		49 Sako	37 Sako	25 Sako	13 Sako	1 Sako
May	Mid of Gu'		48 Safar	36 Safar	24 Safar	12 Safar	
Jun.	End of Gu'	59 Mawliid	47 Mawliid	35 Mawliid	23 Mawliid	11 Mawliid	
Jul.	Beginning of Xagaa	58 Malmadoone	46 Malmadoone	34 Malmadoone	22 Malmadoone	10 Malmadoone	
Aug.	Mid of Xagaa	57 Jamadul-Awal	45 Jamadul-Awal	33 Jamadul-Awal	21 Jamadul-Awal	9 Jamadul-Awal	
Sep.	End of Xagaa	56 Jamadul-Akhir	44 Jamadul-Akhir	32 Jamadul-Akhir	20 Jamadul-Akhir	8 Jamadul-Akhir	
Oct.	Beginning of Deyr	55 Rajab	43 Rajab	31 Rajab	19 Rajab	7 Rajab	
Nov.	Mid of Deyr	54 Shacbaan	42 Shacbaan	30 Shacbaan	18 Shacbaan	6 Shacbaan	
Dec.	End of Deyr	53 Ramadan	41 Ramadan	29 Ramadan	17 Ramadan	5 Ramadan	

Jiilaal

GU'

Xagaa

Deyr