

NUTRITION SURVEY REPORT RABDURE DISTRICT

BAKOOL REGION SOMALIA

October 2001

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1. EXECUTIVE SUMMARY

In September/October 2001, UNICEF conducted a nutrition survey in Rabdure District, Bakool Region in South and Central Somalia in collaboration with IMC, WFP and local authorities. The survey was conducted in response to the emerging concern in the district over the drought. Assessments conducted in the area by UNICEF, FSAU and other agencies in July and August 2001 highlighted that successive crop failure due to lack of adequate rain which made the situation beyond the level of the area's coping mechanism. This forced the population to migrate from rural villages to main towns in search of food and water. 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 have been contributing to child malnutrition in the district.

Using the two-stage random cluster sampling methodology, a total of 900 children between age 6-59 months or measuring 65-110 cm were examined. Twenty five percent of the children were from households headed by females, 5% from the displaced, and 5% from returnee populations. Nutritional status assessments were based on weight for 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 on factors affecting nutrition in the district.

Nutrition

The preliminary report on anthropometric 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 19.2% of children with 2.5% severely malnourished.

Immunization

Information collected on immunisation status during the survey indicated that 66% of the children had been vaccinated against measles, out of which 36% were vaccinated within the past 6 months and 30% before the past 6 months. 34% were not vaccinated at all; 66% of the children were provided with Vitamin A supplements during the past six months; 27% of children had diarrhoea, 16% had ARI and 19% had Malaria in two weeks prior to the survey while other 3% had measles in one month prior to the survey.

Breastfeeding

A total of 52% were introduced food other than milk before four months.

Water and sanitation

Limited access to improved water, inadequate utilisation of existing health services and poor child-feeding practices seem to be contributing substantially to malnutrition in Rabdure district.

2. SUMMARY OF FINDINGS

Indicator	Number	Percentage
Under five children screened during the survey	900	100
Number of boys in the sample	472	52.4
Number of girls in the sample	428	47.6
Number of children from farming food economy group	273	30.3
Number of children from livestock and agro-pastoral food economy group	417	46.3
Number of children from urban food economy group	210	23.3
Global acute malnutrition according to Weight For Height Index in Z-Score or presence of oedema	173	19.2
Severe acute malnutrition according to Weight For Height Index in Z-Score or presence of oedema	23	2.5
Global acute malnutrition according to Weight For Height Median or presence of oedema	113	12.6
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	50	18.3
Severe acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in farming food economy group	4	1.5
Global acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in Livestock and agro-pastoral food economy group	97	23.2
Severe acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in Livestock and agro-pastoral food economy group	18	4.3
Global acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in urban food economy group	26	12.4
Severe acute malnutrition according to Weight For Height Index in Z-score or presence of oedema in urban food economy group	1	0.4
Proportion of children with diarrhoea in two weeks prior to the survey	239	27
Proportion of children with ARI in two weeks prior to the survey	140	16
Proportion of children with Malaria in two weeks prior to the survey	167	19
Proportion of children with Measles in one month prior to the survey	24	3
Proportion of children supplemented with Vitamin A in six months prior to the survey	595	66
Proportion of children immunised against Measles	594	66
Proportion of children on breastfeeding	212	24
Proportion of children breastfed less than 6 months	11	2
Proportion of children breastfed 6-11 months	136	20
Proportion of children breastfed 12-18 months	216	31
Proportion of children breastfed 18 months and more	325	47
Proportion of children introduced food before 4 months	467	52
Indicator	Number	Percentage
Proportion of children introduced food during 4-6 months	203	22.5

Proportion of children introduced food after 6 months of age	230	25.5
Proportion of children fed once a day	74	8
Proportion of children fed twice a day	221	25
Proportion of children fed 3-4 times a day	559	62
Proportion of children fed more than 4 times/day	46	5
Proportion of female-headed households.	143	25
Proportion of displaced households	61	11
Proportion of returnee/refugee households	15	3
Reason of displacement		
Drought	46	61
Lack of food	21	28
Water shortage	4	5
Lack of job	4	5
Security	1	1
Two main source of food		
Purchases	372	66
Household crop production	92	17
Two main source of income		
Casual work	281	50
Animal products from own production	136	24
Two main coping strategies during food shortage		
Wild food collection	303	54
Sale of more livestock	90	16
Two main source of drinking water		
Open hand dug well	343	61
Water pond	127	23
Main practice of human excreta disposal		
Bush/Open ground	547	97
Main source of treatment when a child is sick		
Public health facility	304	55
Traditional healer	195	35

3. INTRODUCTION

Rabdure district is located 120km Northwest of Baidoa town and 30km West of the Somali border with Ethiopia. Around 80% of the population of Rabdure town and its satellite villages are either pure pastoralists or agro-pastoralists, while 15% rely on rain fed farms and 5% on small scale business.

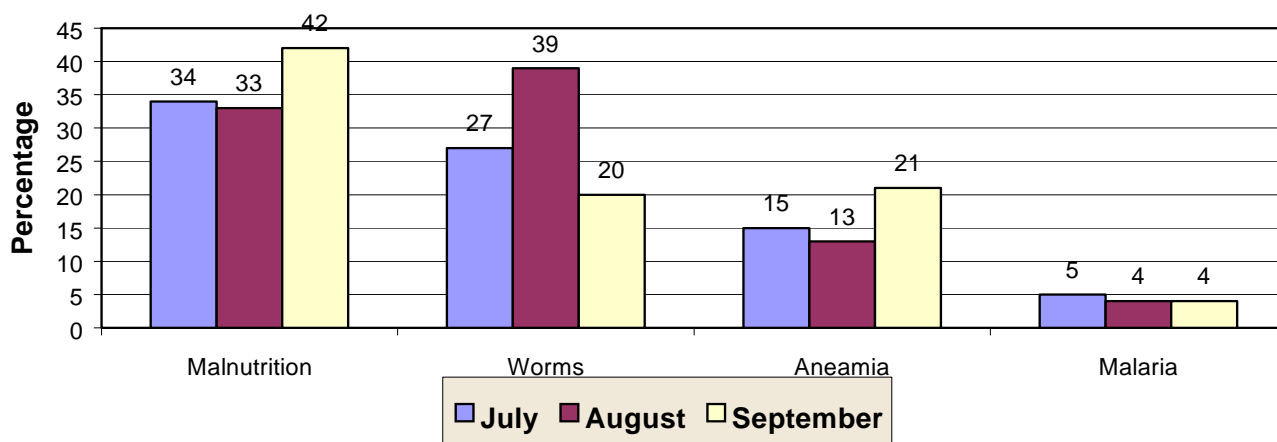
Rabdure district is one of the worst affected districts in Bakool region from the decade-old civil strifes and natural calamities. Rabdure town and some of the satellite villages were completely destroyed, and many houses were burnt during inter-clan fighting during the SNA occupation of Bay and Bakool regions. Four years of drought in Bakool region worsened an already precarious nutrition situation in Rabdure district.

3.1 Health Context

From 1999 to early 2000, UNICEF supported Rabdure Health Committee to provide health services in Rabdure district through one Maternal and Child Health Centre. Supplementary food distribution to malnourished children was also carried out in the same manner, which later was taken over by IMC. UNICEF and IMC currently support one mobile team in the district respectively.

Between the two-month period of July – September 2001, the total number of beneficiaries at the MCH increased from 665 to 898 in August but declined to 769 in September. This increase in August is suspected to be due to the population movement from rural areas in search of food and water during the period. The decline in September could be read as a result of collective intervention of UNICEF, WFP and IMC in general and supplementary food distribution in two satellite locations. As shown in the morbidity reports from the MCH below, malnutrition increased from 34% in July to 42% in September. Worms increased from 27% in July to 39% in August and declined in September to 20%. And Anaemia increased from 15% in July to 21% in September while Malaria decreased from 5% in July to 4% in September.

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3.2 Water and Environmental Sanitation Context

Extended drought foiled both basic livelihoods and coping mechanism in the district. Lack of adequate rains in the last three years caused a severe water shortage resulted in lowering of underground water level in the area. As a result, only a few remaining functioning hand-dug wells are either nearly drying up and/or have contaminated water. Water points are overcrowded by livestock, creating an increased pressure on the limited water supply.

3.3 Food Security Context

The population in Rabdure district has the following four main food economic groups: pure pastoralists engaged in livestock herding, agro-pastoral engaged in both livestock herding and farming, pure farmers engaged in and depend on farming, and urban dwellers predominantly engaged in petty trading.

The cumulative effect of drought, poor harvest in the last three years, high asset depletion, population displacement, and high transportation costs has continuously exposed communities to strains and stresses. And that seems to have undermined their coping strategies. Vulnerability risks were mostly associated with rain failures witnessed in the last three years.

Table 1: Main events affecting food security in Rabdure district

Period	Event
1997/98	El-nino floods
1999/2000	Poor Gu and Deyr rains resulting in poor harvest
2000/2001	Poor Gu and Deyr rains resulting in poor harvest
April-August 2001	Internal displacement due to food and water shortage.

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

4. JUSTIFICATION FOR THE NUTRITION SURVEY

In July and August 2001, UNICEF, FSAU, WFP and IMC reported Rabdure and Kansadere districts were in very high level of food insecurity. The cumulative effect of the El-Nino floods, inter-clan conflicts followed after three years of consecutive crop failure predisposed communities to high food insecurity risks. Market price of sorghum increased from 6,000 SSh to 8,000 SSh per "Sous" (3kg). And there was exceptional increase in consumption of wild food. The people in rural villages were displaced to main urban towns putting pressure on existing health facilities. Morbidity reports from the health facilities indicated increasing levels of malnutrition. Taking these into consideration, UNICEF and IMC decided to carry out a comprehensive/stand-alone nutrition survey to better assess and analyse the situation of child nutrition in the district.

5. SURVEY OBJECTIVES

- To determine the level of malnutrition and oedema among under five in Rabdure district

- To estimate the incidence of diarrhoea, Malaria and ARI diseases in the two weeks prior to the survey.
- To estimate the incidence of measles during the one month prior to the survey.
- To estimate the coverage of measles vaccination and Vitamin A supplementation in Rabdure district during the 6 month period prior to the survey.
- To determine the extent of household movements in Rabdure district.
- To estimate the proportion of female-headed households.
- To make comparison of the situation between different groups of families living in Rabdure town (i.e. those farming and others who are mainly farming and livestock).
- To gather background information on household food sources, income and coping mechanisms.
- To assess general feeding and weaning practices in Rabdure 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, with 30 children to be randomly selected from each of 30 clusters.

6.2 Sampling methodology

A two-stage cluster sampling methodology was used. A list of villages with population estimates for all villages in Rabdure 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 433 (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 6 clusters were from Rabdure, 1 from Yeed towns and 23 clusters were from villages.

The second stage of sampling was carried out in the cluster by selecting 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 900 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, one supervisor and a survey guide. Enumerators were selected based on their experience with previous nutrition surveys. IMC and local authority in Rabdure district assisted in the identification of qualified persons. Enumerators were given a three-day training in anthropometric 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) – This information was 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 – This information was 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 – The introduction of breastfeeding and weaning practices and times feed to children were 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 field 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 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 900 children examined during the survey, 472 (or 52%) were boys and 428 (or 48%) were girls, with a sex ratio of 1.1. There were slightly fewer females than males in the sample but the difference is insignificant indicating an unbiased sample selection.

Table 1: Distribution of sample by age and sex, Rabdure district October 2001

Age in months	Boys		Girls		Total		Sex ratio
	No.	%	No.	%	No.	%	
6 – 11	43	53	38	47	81	9	1.1
12 – 23	73	49	77	51	150	17	0.9
24– 35	87	56	69	44	156	17	1.2
36– 47	103	52	94	48	197	22	1.1
48– 59	166	52.5	150	47.5	316	35	1.1
Total	472	52	428	48	900	100	1.1

7.2 Anthropometric analysis

The results of anthropometric 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, Rabdure district October 2001

Age	6-59 months	6-36 months
Global acute malnutrition	19.3% (95% CI: 16.0% - 23.2%)	22.2% (95% CI: 17.5% - 28.1%)
Severe acute malnutrition	2.6% (95% CI: 1.7% - 3.9%)	2.9% (95% CI: 1.6% - 4.9%)

Table 4: Distribution of malnutrition as percentage of the Median, Rabdure district October 2001

Age	6-59 months	6-36 months
Global acute malnutrition	12.5% (95% CI: 10.0% -15.9%)	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%)

There was no significant difference between the prevalence of malnutrition in children 6-36 months and those aged 6-59 months. ($X^2 = 0.00$, $p = 1.0$).

Table 5: Distribution according to weight/height index in Z-score or presence of oedema by age 6-59 month old children, Rabdure district, October 2001

Age group Months	Total children Number	≥ -2 Z-score		< -2 and ≥ -3 Z-score or oedema		< -3 Z-score or oedema	
		No.	%	No.	%	No.	%
6 – 11	81	72	89	8	10	1	1
12 – 23	150	101	28	42	67	7	5
24– 35	156	125	80	27	17	4	3
36– 47	197	166	84	27	14	4	2
48– 59	316	263	83	46	15	7	2
Total	900	727	80.8	150	16.7	23	2.5

Table 6: Distribution according to weight/height index in Z-score or presence of oedema by Food Economy Group, Rabdure district, October 2001

Food Economy Group	Total children No. (%)	> -2 Z-score		< -2 and ≥ -3 Z-score		< -3 Z-score or oedema	
		No.	%	No.	%	No.	%
Farming and Livestock	417 (46.3%)	320	77	79	19	18	4
Farming	273 (30.3%)	223	81.7	46	16.8	4	1.5
Urban	210 (23.3%)	184	87.6	25	11.9	1	0.5
Total	900 (100%)	727	80.8	150	16.7	23	2.5

More than forty six percent of the child population assessed were from farming and livestock, more than 30% from farming, and more than 23% from urban food economy groups. It appears that more children are affected in agro-pastoral than in farming and urban food economy group. It is interesting to note that this percentage declines up to almost 23%,

18.3% and 12.4% among agro-pastoralist (farming + livestock), farming and urban children, respectively.

Table 7: Distribution according to incidence of Diarrhoea and ARI, measles vaccination and Vitamin A supplementation status by age, Rabdure district, October 2001

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 Supplementat ion in last 6 months	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6 – 11	80	28	35	8	1	14	18	2	3	34	43	46	50
12 – 23	150	51	34	21	14	32	21	4	3	95	63	110	73
24– 35	156	58	37	31	20	31	20	3	2	107	69	103	66
36– 47	197	48	24	35	18	42	21	8	4	149	76	137	70
48– 59	316	54	17	45	14	48	15	7	2	209	66	199	63
Total	900	239	27	140	16	167	19	24	3	595	66	595	66

The overall incidence of diarrhoea, ARI and malaria among under-fives was 27%, 16% and 19% respectively with high episodes observed in the first three years of age. A total of 32%, 17% and 25% of the malnourished children had diarrhoea, ARI and Malaria respectively. Diarrhoea and Malaria were found to be significantly associated with wasting in children ($p < 0.00$).

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 66% and 66% of children had received Vitamin A supplementation.

Table 8: Distribution of Sex of Household Head and Residential Status by Food Economy Group

Sex of Household Head	Urban	Farming	Farming + Livestock	Total
Female headed households	26 (20%)	45 (25%)	72 (28%)	143 (25%)
Male headed households	104 (80%)	133 (75%)	182 (72%)	419 (75%)
Total	130 (100%)	178 (100%)	254 (100%)	562 (100%)
Resident Status of Household Head				
Resident Status of Household Head	111 (85%)	177(99%)	198(78%)	820 (90%)
Returnees	0 (0%)	0 (0%)	15 (6%)	49 (5%)
Displaced	19 (15%)	1 (1%)	41 (16%)	41 (5%)

Total	130 (100%)	178 (100%)	254 (100%)	910 (100%)
Two main source of income				
Casual work	96 (74%)	68(38%)	118(46%)	282 (90%)
Animal products from own production	3 (2%)	31(17%)	102 (40%)	49 (5%)
Two main source of food				
Purchases	91 (70%)	89(50%)	192(76%)	372 (66%)
Crop production	5 (4%)	76 (43)	14 (6%)	95 (17%)
Two main coping strategies during food shortage				
Wild food collection	62 (48%)	86(48%)	155(61%)	303 (90%)
Sale of livestock	8 (6%)	17(10%)	65 (26%)	90 (16%)
Two main source of drinking water				
Open hand dug well	129 (99%)	18(10%)	196(77%)	343 (61%)
Water pond	1 (1%)	71(40%)	55 (22%)	127 (23%)
Two main source of treatment when a child is sick				
Public health facility	103 (80%)	70(39%)	131(53%)	304 (55%)
Traditional healer	4 (3%)	83(47%)	108 (44%)	195 (35%)

7.3 Background Information (from qualitative questionnaires)

7.3.1 Child feeding practices

The survey has depicted that 2% of children are breastfed less than 6 months, 20% are breastfed between 6-11 months, 31% are breastfed between 12-18 months while other 47% are breastfed more than 18 months. A total of 52% of children were introduced food other than milk before 4 months, 22.5% were introduced between 4-6 months while other 25.5% were introduced after 6 months of age due to lack of other food to the families. Early weaning and delay of introduction of food to babies remain a major cause to childhood infectious diseases. A total of 8% of children are fed once a day, 24% are fed twice a day while other 67% are fed three and more times a day.

Additional information collected through focussed discussions with caretakers indicates that the first thing to be given to babies is mother breast milk. And since the milk is given immediately after the birth, babies are getting cholostrum and therefore helping mother's health condition in terms of contraction and shrinking of the uterus.

Some mothers give babies water with sugar on the first day after birth. Usually mothers breastfeed 5 times between morning and night and 3 times in the night. When mother is away, elder sister or grandmother feed babies whatever is available (e.g. milk, porridge, tea with milk or sugar solution) with a cup or the like. Children are not breastfed when mother is pregnant or sick. Usually, breastfeeding continues up to 24 months unless special circumstances stop breastfeeding.

Many babies start getting food other than breast milk at the age of 6 months. Mothers and elder sister usually feed the children less than three years.

Sorghum porridge is usually prepared for infants and is given with a cup or some times with spoon. Infants are given between 1/8 - 1/4 litres of porridge at one feed with a cup 5-6

times/day. While ingredients and composition of the porridge vary and depends on the household's economic status, porridge is usually prepared by sorghum with ghee or sesame oil or vegetable oil, sugar and milk. However, currently, due to the prevailing hardship, only sorghum and milk are used (or sometime even without milk).

On a normal day, families consume three meals. But when the situation becomes stressful, they take only twice, or even once a day. In the district, sorghum, meat and milk are usual staples. However, currently, it seems that many families are not able to afford to take them all.

7.3.2 Child care practices

Additional qualitative information collected indicated that mothers do not have enough time to be with their children. This is because, in most cases, mothers are the main bread-earners of the households. Besides, they are the ones who do fetching of water, collection of fire wood and cooking. Economic hardship will certainly affect negatively on this further.

When in pregnancy, Somali women prefer some particular food with belief that if they do not get what they want, the baby will have a mark of the thing they wanted on the baby. Another belief is that if they eat good quality food such as liver and milk, the baby will grow big making delivery difficult. These may lead pregnant women to have less than optimum, if not non-proper, diet during pregnancy. In contrast, during breastfeed period, mother wants to eat more and good quality food if she can afford. In case of sickness mother will look for soft food.

Both for distribution of food and provision of health care, priority is given to the youngest child. Somalis believe that girls grow faster than boys because that girls have easier access to food and boys move and rove too much wasting energy.

Mothers have limited access to external information relating good childcare practices, while there are effective family support within the households and community for childcare and stimulation. Father and mother plan together, for instance, who go to the farm, who to look after livestock and who look after children. When additional manpower is needed, parents request from the Koranic teacher to release one or two of their children in school and assign some of the jobs in order to find at least one person for childcare.

7.3.3 Health environment

There are one MCH run by IMC and one private pharmacy in the area. All households have access to the MCH. There are six pits for rubbish disposal assisted by WFP with FFW. During rainy seasons there are lot of mosquitoes and flies in the area. Playground for children is not clean.

7.3.4 General food consumption

Sorghum, sugar, milk, meat, oil, ghee, flower, rice and beans are widely consumed in the area. And in crisis situation, sorghum, sugar and flower are given priority. Pasta is also consumed. Households in this area normally obtain their food by purchasing. While all items change their prices depending on socio-economic and climatic situation, imported food items specially sugar (which is very much valued by Somali) and pasta are the items that greatly vary in price, especially during the mansoons when sea transport become difficult and during rainy seasons when road condition limits the in-land transportation.

In times of severe food shortage they try to find food even by selling the small assets they have and/or by adults' going to other areas to find job. Households' consumption patterns depend on food availability. While normally three meals are taken by day, in case of food shortage, they eat only twice. Households which depend on farming practices or casual labour as the source of income have limited coping mechanism during food shortage.

7.3.5 Agroeconomic environment

Crop production

Major food crops grown in the area are sorghum, maize, beans and wild melon. While rubber used to be produced, El Nino has dramatically changed the ecosystem of the region and therefore most of the gum producing trees died due to salty water.

The major crop production system is rain fed production system. Depending on household size, cultivated land range varies from 1 to 5 hectares with mono-cropping mode of cultivation, though sometimes sorghum is inter-cropped with beans and crop rotation rarely practised.

Land is communal and the households have the right to use the land; the land becomes private after using. There are exceptional cases that land is used for free of charge for certain period.

Seeds and other planting materials are locally prepared while WFP started distributing hoe, shovel, "Kawawa" and seeds last year.

Households use their own families and skills/knowledge. All female and male adult members of the household participate in every activity in the family farm from land preparation to harvesting except threshing and pounding which is confined only to female members of the household.

Preservation, processing and trading

Mostly, sorghum are preserved (by the method called "Bakar") but also other crops such as maize and beans are stored in a similar manner. Sorghum is stored in underground pits while maize and beans are stored in drums if available after threshed. In a good year, one harvest normally provides each household up to 3 years' of stock for their own consumption. In a bad year, it gives only 3-month stock.

Post harvest losses are significant in the area. Around 3-5% of the post harvested crop are lost due to insects, rodents. In Rabdure, farmers process their crop only immediately before use with stones: there are no grinding machines in the area.

Trading of the crops is usually done with livestock herders both from Ethiopia and Somalia. Crops are mostly sold in dry seasons for other household purposes like clothes, sugar, medicine etc. The trade however sometime faces problems due to the low market price of crops. This usually happens when many farmers look for a "short-hand" cash immediately after harvest (which is locally called "farm gate price"), when there is an "influx" of food from WFP at harvest time, and when there is lack of adequate marketing and road accessibility due to either insecurity or some times to rains. In all these cases, pure farmers, who do not have other means of income, are the most affected, but some times agro-pastoralists are affected as well.

Both the civil war and natural disaster like El Nino of 1997/98 and draught had badly affected the crop production in the area. During the war, most of underground stored crops were looted or burnt, while during El Nino the water destroyed underground stored crops.

7.3.6 Livestock-economy environment

Animal husbandry is traditionally practised in the area and livestock and its products are critical means both for household consumption and for trade. Nomads depend on the livestock for their diet (i.e. milk and occasionally meat are taken). They slaughter animals for family consumption especially at such special occasions like festivals, wedding and other ceremonies. Most of the pastoralists' income comes from sale of livestock. Usually, camels are kept for long term survival plan since it resists the thirst and water scarcity, and some times even for prestige, but cattle and shoots are some times sold to meet the other needs of the household.

Lack of rains, disease, lack of genuine drugs and proper treatments or lack of veterinary services, and lack of marketing skills/systems are the major threat for the households who depend largely on livestock. The import ban on the Somali livestock by the Gulf countries imposed more than a year ago remains a major constraint in animal production.

Civil war and inter-clan conflicts have badly affected the animal production in the area since livestock were massively looted or slaughtered by militias and rival groups. Further, all kinds of veterinary services including prophylaxis, treatment of various diseases, licensing and certification were all stopped. As a result, Somali livestock does not meet (or cannot proven to be meeting) the international commercial standards anymore. The conflicts have also restricted the movement of livestock in search of fodder and water.

7.3.7 Other economic activities

Collection and sales of natural gums, firewood, construction materials and grass as well as provision of casual labour are practised, in addition to small businesses. Many farmers engage in these activities in their "spar" time as a part of coping mechanism. These activities are however not evenly practised in the district. And casual labour and other forms of self-employment tend to be less reliable in securing regular income.

8. ANALYSIS OF FINDINGS

The prevalence of total acute malnutrition in children in Rabdure district (19.2%) appears to be quite high. The previous surveys conducted in the area by IMC and UNICEF in August 2000 and February 2000 indicated a global malnutrition of 13.7% and 30% respectively.¹ This increase may have to be attributed to the severe drought situation prevailed in the district at the time of the survey, which has manifested both in water and food shortage, aggravated by successive crop failure in the last three years.

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

¹ However, these data could not be compared straightforwardly as the surveys in 2000 did not employ the same methodologies. UNICEF survey in February 2000 was a census in the town and the IMC's covered both Rabdure district and El-Berde, which had different situation to Rabdure.

the district. Agro-pastoral children seem to be the worst off with 23% global and 4% severe malnutrition. These percentages decline for farming and urban families up to 18.3% global and 1.4% severe malnutrition, whilst the urban population seems to be better off with 12.4% global malnutrition and 0.52% severe malnutrition.

A total of 32%, 17% and 25% of the malnourished children had diarrhoea, ARI and Malaria respectively. Diarrhoea and Malaria were found to be significantly associated with wasting in children ($p < 0.00$). Of those children with diarrhoea, Malaria and ARI, 69.5%, 63.5% and 61% were less than 36 months.

Records on under-fives cards and mother's recall were used to determine coverage of measles vaccination. Measles immunisation coverage was 66% and 66% of children had received Vitamin A supplementation. It is also encouraging that 36% of the children were vaccinated in last six 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 48% of children were introduced food other than breast milk before four months.

Apart from reducing their chances for optimal growth, feeding young children non-breast milk food prepared under unhygienic conditions exposes 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 (25%) of children were already malnourished while 34% of children less than 23 months had diarrhoea with two weeks prior to the survey.

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 75% 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. A total of 67% of children are fed more than two meals a day. Typical meals contain sorghum and milk sometimes prepared as porridge for children, whilst the diets of adults contain in varying combinations sorghum or maize, meat and cowpeas.

Coping strategies in times of food shortage were similar for both agricultural and urban with 48% and 61% of agro-pastoral in wild food collection and non-agricultural livelihoods. Dietary modifications include reduction in number of meals consumed by the entire household, reduction in the size of sorghum and milk consumed by each member irrespective of age, or dependence on wild foods. From a qualitative standpoint, these diets appear limited in calorific value and micronutrients. Some households supplement income by casual work with 74% in urban, 46% in agro-pastoral and 38% in farming.

Inadequate access to safe water and poor human excreta disposal remain a major concern in Rabdure district with 99% in urban and 77% in agro-pastoral using open hand dug wells while 84% of farming families use water pond and "Tuur" (A hand dug well in a dried water pond).

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 must 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 Rabdure district. 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 making the outreach services fully functional 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 Rabdure district.

More specifically:

- Continuation of WFP food for work to complement food shortage in the area until good harvest. Short-term outreach supplementary feeding and health services until the next harvest will prevent massive displacements in the area. UNICEF/WFP pilot project in food distribution to malnourished families is expected to promote the recovery of some of the children already malnourished.
- To expand the supplementary feeding programme and WFP family food rations to malnourished children in Rabdure district to minimise risk of internal displacement in the area.
- To strengthen and support with supportive supervisory visits to outreach feeding programme and feeding centres in Bakool region to monitor progress.
- To introduce nutrition education promotion in selected areas in Rabdure 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.

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Annex 1. RABDURE DISTRICT POPULATION CLUSTERS

NAME	Estimated Populations	Cumulative Populations	Number Clusters
Arunlei	300	300	
Lahelo	300	600	1
Imilka	700	1300	2-3
Guubey	300	1600	
Rab Dhuure	2400	4000	4-9
Quracle	400	4400	10
Maduul	200	4600	
Dhurey	300	4900	11
Yeed	400	5300	12
Riiga	200	5500	
Lawareegow	300	5800	13
Haboow	300	6100	14
Dambas / Daremaley	200	6300	
Waabgarad	300	6600	15
Raxale	300	6900	16
Caatow	400	7300	17
Dhoobaale	300	7600	
Hurre	300	7900	18
Boodaan	500	8400	19
Warsankoor/Warxajin	400	8800	20
Warshiidle	300	9100	21
Koronkoo	200	9300	
Doonfuul	300	9600	22
Isdhowrto	400	10000	23
Wartiriibka	200	10200	
Sadexbuurood	200	10400	24
Warxinshile	300	10700	
Warbarbaar	200	10900	25
Banaaneey	200	11100	
Wardhujjiley	200	11300	26
Cimilow	400	11700	27
Lagalaay	200	11900	
Bakal	300	12200	28
Biyocadoweyn	200	12400	
Iskiri	300	12700	29
Wargomoro	200	12900	30
Lowijjiley	100	13000	
Total	13000		

Samling Interval **433**
 Random selection **322**

Annex 2. TRADITIONAL CALENDAR FOR NUTRITION SURVEY

Month	Events	1996	1997	1998	1999	2000	2001
Jan.	Beginning of Jiilal		57 Soonfur	45 Soonfur	33 Soonfur	21 Soonfur	9 Soonfur
Feb.	Mid of Jiilal		56 Siditaal	44 Siditaal	32 Siditaal	20 Siditaal	8 Siditaal
Mar.	End of Jiilal		55 Arafo/Dul-Xaj	43 Arafo/Dul-Xaj	31 Arafo/Dul-Xaj	19 Arafo/Dul-Xaj	7 Arafo/Dul-Xaj
Apr.	Beginning of Gu'		54 Sako	42 Sako	30 Sako	18 Sako	6 Sako
May	Mid of Gu'		53 Safar	41 Safar	29 Safar	17 Safar	5 Safar
Jun.	End of Gu'		52 Mawliid	40 Mawliid	28 Mawliid	16 Mawliid	4 Mawliid
Jul.	Beginning of Xagaa		51 Malmadoone	39 Malmadoone	27 Malmadoone	15 Malmadoone	3 Malmadoone
Aug.	Mid of Xagaa		50 Jamadul-Awal	38 Jamadul-Awal	26 Jamadul-Awal	14 Jamadul-Awal	2 Jamadul-Awal
Sep.	End of Xagaa		49 Jamadul-Akhir	37 Jamadul-Akhir	25 Jamadul-Akhir	13 Jamadul-Akhir	1 Jamadul-Akhir
Oct.	Beginning of Deyr		48 Rajab	36 Rajab	24 Rajab	12 Rajab	
Nov.	Mid of Deyr	59 Shacbaan	47 Shacbaan	35 Shacbaan	23 Shacbaan	11 Shacbaan	
Dec.	End of Deyr	58 Ramadan	46 Ramadan	34 Ramadan	22 Ramadan	10 Ramadan	

Jiilal

GU'

Xagaa

Deyr

