

Nutrition Survey Report Jerriban district, Mudug Region North East Somalia

January 2003



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Acknowledgment

UNICEF wishes to thank the Ministry of Social Affairs (MOSA), the Jerriban Mayor and the Somali Red Crescent Society (SRCS) for facilitating the survey fieldwork.

UNICEF is grateful to all enumerators and supervisors who provided invaluable inputs and participated in the survey and to the Food Security Assessment Unit (FSAU) for providing contextual information relating to food security and participating in actual nutrition survey fieldwork.

The data could not have been obtained without the cooperation and support of the communities surveyed especially the mothers and caregivers who took time off their busy schedules to respond to the interviewers.

Bossaso, 31 January 2003

Executive summary

UNICEF, in collaboration with MOSA and FSAU, conducted a nutrition survey in Jerriban district on 18-29 December 2002. Beside the main objective of assessing the nutrition status of the under five children using weight-for-height measurements, the survey also sought to determine the potential risk factors associated with malnutrition, the household characteristics and coverage of measles, Polio National Immunisation Days (NIDs) and vitamin A supplementation.

Household and general population characteristics

Of the 484 households interviewed, 78.5% are male-headed; the median household size is 5 (interquartile range 4-7). Almost all (97%) of the study population are residents who rely mostly on purchases (86%) and on own animal products for their food source. Income is derived from casual work (40%), small businesses (24%). Coping mechanisms revolve around borrowing (85.5%) and to a lesser scale on livestock sale (7%), remittances/gifts (3%) and purchases (3%)

Water and environmental sanitation

The Jerriban population draws their drinking water from open wells (39%), Berkads (35.5%) and Borehole (22%). About 65% of the population relieve themselves in the bush/open ground and for those using pit latrines/flush toilets (35%), almost all (96%) of the latter were observed to be used and generally clean.

Nutrition status, feeding practice and risk factors analysis

Nutrition status analysis, using Epi-Info software, of the eligible 907 children, 65-110 cm, suggests severe and global acute malnutrition rates of 1.7% (CI 1-2.8%) and 9.8% (CI 8-12%) weight-for-height (W/H) Z-Scores respectively.

About 60% of the 6-23 months old children had stopped breastfeeding as at the time of the survey with majority (92%) reporting having introduced complementary feeds during the first 6-month period of recommended exclusive breastfeeding. Of those who had stopped breastfeeding, 43% had done so during the first six months of life. Almost all (98%) of the children are fed 3-4 or more times in a day.

Analysis of potential risk factors indicate no existence of significant statistical association with global acute malnutrition for: diarrhoea (cRR 1.55; p=0.094), malaria (cRR 1.61; p=0.073). However there was an indication of statistical association with vitamin A supplementation (cRR 0.64; p=0.036). Children who had received vitamin A supplementation were significantly less likely to be acutely malnourished.

Health seeking behaviour, morbidity and immunisation

About 62% of families seek medical assistance for their sick child(ren) at public health facility (52%), private clinic/pharmacy (39%) and traditional healers (10%). Main reason for not seeking medical attention is lack of health facilities/workers (57%) whilst *Quran* recitation (41%) appears to be an important alternative to seeking medical attention. Diarrhoea (16%), Acute Respiratory Infection (15%) and malaria (14%) are an important cause of morbidity among the under fives.

Among the 12-23 months old children, 18.5% had received measles immunisation based on card verification only and 31% by card or history anytime before the survey. Of the infants eligible for measles immunisation, two third had not yet received their jabs as at the time of survey. Survey results suggest 56% vitamin A supplementation coverage.

During the polio NIDs second round conducted on 1-3 October 2002: 52% of the 6-59 months children population received the polio dose (the official preliminary second round Fall polio NIDs results for Jerriban district suggest 96% coverage). Of those who missed the October 2nd round 2002 NIDs, about half said that the polio team did not visit at all. Other reasons given for missing immunisation are “child was not at home” 27%, “caretaker refused” 12.5% whilst 5% thought the vaccine was unsafe/unimportant.

Table 1: Summary statistics

	<i>n</i>	<i>(%)</i>
Global acute malnutrition (n=951)	89	(9.8)
Severe acute malnutrition	15	(1.7)
Diarrhoea past 2 weeks	143	(15.8)*
ARI past 2 weeks	140	(15.4)
Malaria past 2 weeks	131	(14.4)*
Measles past 1 month	37	(4.1)
Measles immunisation – card and/or history:		
9-11 months (n=38)	13	(34.2)
12-23 months (n=189)	94	(49.7)
9-59 months (n=851)	427	(50.2)
OPV:		
Last round (1-3 October 2002, 2 nd round Fall NIDs)	468	(51.6)
Received at least 3 doses (in 2002)	281	(31)
Vitamin A supplementation (past 6 months)	508	(56)*
<i>Are you breastfeeding child (n=283):</i>		
Yes	95	(33.6)
No	169	(59.7)
Never	19	(6.7)
<i>Age when child stopped breastfeeding (n=169):</i>		
0-6 months	72	(42.6)
7-11 months	58	(34.3)
12 months or more	39	(23.1)
<i>Weaning age (n=264):</i>		
0-6 months	243	(92)
7 months or more	21	(8)
<i>Feeding frequency (n=283):</i>		
Once	1	(0.3)
2 times	5	(1.4)
3 times	34	(9.7)
4 or more times	312	(88.6)

* Significant statistical association with acute malnutrition

Jerriban nutrition survey, December 2002

1. Background

Jerriiban district is in Mudug region northeast of Galkaio and borders with Hobyo, Eil, Garowe and Burtinle districts. The district has 3 main food economy groups (FEG) namely: Addun pastoral (70-80%), coastal Dheeh (5-10%) and urban group (5%). Being part of central rangelands, Haud of Jerriiban is among those with the harshest environment in Somalia where the driest climatic patterns are complimented with infertile and low potential soils. Population density is low in the Addun. Poor infrastructural facilities in the region also limit accessibility thus resulting in poor market accessibility for livestock trade.

1.1 Food security context

Vegetation in Jerriiban dries fast after rainy season and allows no kind of any agricultural activity. Consequently, the commonest animals in this environment are the browsing species (camels and goats) for grazing is normally unsustainable even for a shorter duration. . Mobility of pastoralists within the Addun ecological system is quite extensive mainly occasioned by shortage of permanent water points as well as need to look for pastures for both the dominant browsers and grazing species. The region has limited accessibility to markets for livestock. Thus demand for consumption of camel and goat meat is mainly by the local residents. Water points are few with boreholes three main urban settlements in the District (Jerriiban, Balibusle and Semane). The security situation is normally fluid especially during the seasons of water scarcity as the different clans in the region commonly disagree on the use and access to the few water points in the area.

Towards the coastal the Dheeh Food Economy Zone (mainly keeping sheep), there is a booming income source mainly from lobster export to the Gulf States. Most of the inhabitants in the coastal stretch are involved in fishing activities.

The 2002 Dyer season was generally good with above normal rainfall in the Addun ecosystem. There was rejuvenation of pasture and replenishment of water points in the Addun areas. The livestock condition improved and although the terms of trade remain below normal when compared to the previous years, the local market had relatively good purchasing power as pastoralists were striving to restock their herds. The following table summarizes the key food security events in the district for the two years prior to the survey:

<i>Month</i>	<i>Key event</i>
January 2001	Because of its remoteness, cereal supply was very low, but with less severe food security effects due good milk production for household consumption by the pastoralists.
March 2001	In the North and South Mudug, different pastoral wealth groups in the different food economy zones acquired the power to overcome the uneven effects of the dry season, the livestock ban and the devaluation of the local currency. The latter was catalyzed by the fabricated bank notes that limited access to food – the worst being Goldogob district in the south western Haud of the region.
April – June 2001	The rains of the Gu season, started after a prolonged dry Jiilaal season, the rains were less intensive in the southwest of the region, Goldogob district, and were more in the central Burtinle district of Haud eco-zone up to the Addun covering most of Jerriiban District.
June 2001	Rains in the Gu season were not satisfactory and much more less than normal but covered most parts of the region including the Addun ecosystem, except Goldogob and surrounding villages

<i>Month</i>	<i>Key event</i>
July 2001	The food security status of the district was very poor and steadily declined, particularly in the western Haud area of Goldogob district.
September 2001	Sporadic, less intensive rains were reported in some areas. Burtinle, Harfo Ba'adwan, Jarriiban, Goldogob and Jalam were among of the areas that received rain. The general food security is below normal and very poor. The food inaccessibility prevails thoroughly and in particularly to the extreme Haud of Mudug and some villages adjacent to the drought hit areas Bayra and part of Galkaio.
October 2001	Substantial rains covered most of the region in the 3 rd week, and continued to fall until 25th, cooling down the temperature and bending down the heads, except in the coastal areas of the Dheeh FEZ, (Gara'ad). Significant rains reported starting from Addun (Jerriiban, Semane, Buubi, and B/busle) to the western end of Haud FEZ (Goldogob, Bursalah, L/Madow and Boran Adka) the worst drought hit areas.
November 2001	Food security conditions remained normal with the exception of about 65-75% of the poor pastoralists in the most highlighted areas of Goldogob and Galkaio whose herd size had reduced and had limited access to animals for exchange with cereals.
December 2001	The drought affected poor pastoralists in Goldogob suffered insufficient milk production and depended on gifts and/or migration of some of the able bodied family members to search for jobs.
February 2002	In Addun (including some parts of Jarriiban district) the Deyr rains were insufficient, and unfortunately livestock have been unable to move out of this area as they are less resistant to tick borne disease.
April 2002	The Gu rains, in the Jarriiban areas were far Below normal for the last Gu season, which devastated both pasture and water conditions. Poor pastoralists were not able to move. They were barely coping with the seasonal deficits by sending one member of the family to town in search of labour. Few families relied on gifts from and some of them were selling animals at lower prices. Those able to move have gone to Goldogob putting pressure on poorly maintained bore wells.
September 2002	Some areas in the North of Mudug received light rains. In Jerriiban district no rains has been received. Within Jerriiban, the hardly hit area was eastern Haud of Jerriiban. However, this Haud area the Deyr rains commenced on late October 2002. The pasture has been replenished in most areas. The Berkads and Balleys have been refilled and once again milk became available. Pastoralists in the areas of Jarriiban returned.
October 2002	Livestock condition improved which allow them to go through the Jiilaal 2003. The birth rate was reported to be 50% below the normal due to increased livestock sales and deaths in the previous season. This translated into below normal access to milk and income from milk sales. The income was compensated by increased gifts/remittances, increased employment and expanded fishing areas (by almost 150%). Others sources of income included self-employment, collection of bush products, opening teashops. This has been supported by reduced expenditure on water, veterinary drugs

<i>Month</i>	<i>Key event</i>
	and medicine.

1.2 Health context

There are three health public health facilities in the district. These are the Jerriban and Balibusle MCH/OPD managed by SRCS and Balanbale MCH/OPD managed by MSF-H. All these health facilities received regular UNICEF MCH kits and EPI supplies under the UNICEF/SRCS and UNICEF/MSF-H Project Cooperation Agreements. All facilities provide growth monitoring promotion, EPI, antenatal and postnatal care and outpatient services. The main health problems include diseases such as malaria, diarrhea. People also have to walk very long distances to access.

1.3 Water and Sanitation context

The population of Jerriban District depends on the three boreholes located in Jerriban town, Balibusle and Semane. In addition there are numerous though seasonal water points (open wells and berkards spread all over the district. These water points dry up in dry seasons and get replenished during the rainy seasons. During the dry period those who rely on the berkards experience serious water problems for both the human and livestock and thus spend a lot of time in search for water.

2. Survey objectives

- To assess the nutrition status of Jerriban district under five children population using weight for height measurements
- To determine potential risk factors associated with malnutrition
- To determine household characteristics of study population
- To determine immunisation – measles and NIDs – and vitamin A supplementation coverage of study population

3. Survey methodology

3.1 Study population and survey design

A cross-sectional survey using a two-stage cluster sampling methodology to randomly select 30 clusters and their corresponding households was carried out in Jerriban district. Questionnaires (see annex 3) were administered to 484 household heads and nutrition status systematically assessed for 907 eligible 6-59 months old children in all the household/family groupings visited during the survey.

Mothers and caretakers were interviewed as to whether their eligible children had suffered from diarrhoea, acute respiratory infection (ARI) and malaria in the 2 weeks prior to the survey; contracted measles in past one month; received vitamin A supplementation in past 6 months; and measles and polio immunisation status. Those with children less than 23 months were interviewed on their feeding practices.

3.2 Methods

The 22 locations of the Jerriban district were listed with their corresponding population estimates. Thirty clusters were randomly selected: cluster interval calculated using estimated population; a random number, within cluster interval range, chosen to determine first cluster; and subsequent clusters determined by adding value of cluster interval to the randomly chosen number and to successive arising cumulative figures (see Annex 1).

During second stage sampling in respective clusters, the teams guided by team leaders and supervisors identified the centre and spun a pencil to determine the direction to take. Households in determined direction were identified, given numbers (written on a piece of paper), and the first household randomly picked. From first household with child aged 6-59 months, same direction was followed to successive households, always turning to the right hand direction on reaching end of cluster, until details of at least 30 children were gathered. Where caretaker or child was absent an appointment was made for a later visit by the team.

The assessment of nutritional status was based on simple anthropometric data and limited only to eligible children. Weight-for-height was the indicator of choice. Diarrhoea was defined as watery stool passed at least three times a day; ARI defined as a child having fever and cough; whilst measles defined as a child with fever and rash and cough, running nose or red eyes.

2.2 Measuring technique and recording

Weight

For weighing purposes, 25-kg salter hanging spring scales were used. The scale was adjusted to zero with the weighting pants attached to the hook, child freed of heavy clothing, the weighting pants put on and child suspended from the weighting scales by the handles of the pants. Weight was read to the nearest 0.1 kg with scale at eye level.

Height

Children up to 2 years (23 months or 85 cm) of age were measured on a horizontal measuring board and the length read to the nearest 0.1 cm. Those over 2 years of age (or over 85 cm) were measured standing on a horizontal surface against a vertical measuring device and height read to the nearest 0.1 cm.

Age

An attempt at determination of age was based on recall using a local traditional calendar/events (see annex 2) and estimates recorded in months. However, with the choice of nutrition indicator being weight-for-height, approximate age was useful in cross tabulation analysis.

Oedema: Was diagnosed by moderate thumb pressure applied to the back of feet or ankles for about 3 seconds. This was recorded only for children who had such thumb impression signs remaining for some time on both feet.

2.3 Training and supervision

A 3-day combined training session for 12 teams— each composed of 2 enumerators and 1 team leader – for Jerriban (5 teams) and Goldogob (7 teams) surveys was conducted prior to the survey on 14–16 December 2002. Plenary session included defining the role and tasks of each member of a survey team, selection of the first and subsequent households in pre-identified clusters as in the sampling frame, interviewing techniques, completion and coding of the survey form, and carrying out anthropometric measurements.

Demonstration of and practice in using questionnaires and measuring heights and weights of children was done followed by a field practical session (in one section of Galkaio town). Here, team members organized survey activities, carried out survey procedures and field-tested the questionnaires. The teams later reconvened, after fieldwork, for feedback and standardization of procedures.

3.4 Data processing and analysis

Epi-Info 6 software was used for data processing and analysis. Data for household and child(ren) were entered in two separate files with household numbers as the unique identifier. A questionnaire (.qes) file, with dummy variables, was first created followed by data file (created out of the .qes file) and a CHECK file for interactive checking. The CHECKs set up included must-enter, legal values, range, conditional jumps and programme check.

Depending on the length of the digits anticipated, missing variable, where applicable, were coded as 9/99/999 and excluded (recode 9/99/999=.) during analysis. With the clean data set, the EPINUT programme was used to determine the W/H Z-scores. For ease of data analysis, an analysis programme (.pgm) was written that Related household and child files to produce relevant tabulations and associations with nutrition indicators and cut off points as in the table below.

Table 2: Nutrition status indicators and cut off points

Nutritional status	W/H Z-Score	W/H % of MEDIAN
Severe acute malnutrition	< -3 or oedema	< 70% or oedema
Moderate acute malnutrition	Between -3 and < -2	Between 70% and < 80%
Global acute malnutrition	< -2 or oedema	< 80% or oedema

5. Findings and interpretation of results

5.1 Description of the study population

Of the 484 households interviewed, 78.5% are male-headed; the median household size is 5 (interquartile range 4-7). Almost all (97%) of the study population are residents. Table 3 gives details of the household characteristics.

Table 3: Household characteristics

	<i>n</i>	(%)
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Jerriban nutrition survey, December 2002

<i>Sex – Household head (n=484):</i>		
Male	380	(78.5)
Female	104	(21.5)
<i>Household size:</i>	5	(4-7)
<i>Household residence status:</i>		
Resident	469	(96.9)
Resident returnee	4	(0.8)
Internally displaced	5	(1)
Refugee	5	(1)
Other – visitor	1	(0.2)
<i>Place of origin (n=15):</i>		
Ethiopia	4	(26.7)
SCZ	8	(53.3)
Mudug	2	(13.3)
Nugal	1	(6.7)
<i>Date of arrival (n=15):</i>		
2002	4	(26.7)
2001	1	(6.7)
2000	1	(6.7)
1998	1	(6.7)
Before 1998	8	(53.3)
<i>Reason for movement (n=15):</i>		
Insecurity	11	(73.3)
Lack of jobs	3	(20)
Visitor	1	(6.7)

5.2 Food, income sources and coping strategies

During normal times the Jerriban population relies on livestock and livestock products for their food. At the time of the survey results show that majority were mostly relying on purchasing (86%) and on own animal products (11%) for their food source. Income is derived from casual work (40%), small businesses (24%) and sale of animals (23%). Coping mechanisms revolve mainly around borrowing (85.5%) and to a lesser scale on livestock sale (7%), remittances/gifts (3%) and purchases (3%).

Table 4: Food, income and coping strategy

	<i>n</i>	(%)
<i>Main food source (n=484)</i>		
Own animal products	53	(11)
Household crop production	2	(0.4)
Purchases	418	(86.4)
Remittances/gifts	8	(1.7)
Begging	3	(0.6)
<i>Main source of income (n=484)</i>		
Small business	116	(24)
Causal work	193	(39.9)
Salaried employment	23	(4.8)
Sale of crops	7	(1.4)
Sale of animals	110	(22.7)
Remittances/gifts	35	(7.2)
<i>Coping strategy (n=484):</i>		
Remittances/gifts	15	(3.1)
Livestock sale	32	(6.6)
Begging	4	(0.8)
Borrowing	414	(85.5)
Food aid	4	(0.8)
Purchases	13	(2.7)
Savings	2	(0.4)

5.3 Water and Environmental sanitation

The population draws their drinking water from open wells (39%), Berkads (35.5%) and Borehole (22%). About 65% of those interviewed relieve themselves in the bush/open ground and for those using pit latrines/flush toilets (35%), almost all (96%) of these were observed to be used and generally clean.

Table 5: Water and sanitation

	<i>n</i>	(%)
<i>Main source of drinking water (n=484):</i>		
Borehole	108	(22.3)
Open wells	189	(39)
Protected wells	13	(2.7)
Berkads	172	(35.5)
Stream/river	1	(0.2)
Tap/piped water	1	(0.2)
<i>Sanitation facility (n=484):</i>		
Pit latrine	168	(34.7)
Flush toilets	3	(0.6)
Bush/open grounds	313	(64.7)
<i>Observe (n=168):</i>		
Used and clean	162	(96.4)
Unused	1	(0.6)
Used and dirty	5	(3)

5.4 Analysis of nutrition data

5.4.1 Distribution

Table 6: Distribution according to age and sex

	Boys		Girls		Total	
	n	(%)	N	(%)	n	(%)
6-11 months	48	(51.1)	46	(48.9)	94	(10.4)
12-23 months	107	(56.6)	82	(43.4)	189	(20.8)
24-35 months	89	(48.1)	96	(51.9)	185	(20.4)
36-47 months	79	(49.7)	80	(50.3)	159	(17.5)
48-59 months	127	(45.4)	153	(54.6)	280	(30.9)
Total	450	(49.6)	457	(50.4)	907	(100)

	Boys		Girls		Total	
	n	(%)	N	(%)	n	(%)
6-23 months	155	(54.8)	128	(45.2)	283	(31.2)
24-59 months	295	(47.3)	329	(52.7)	624	(68.8)
Total	450	(49.6)	457	(50.4)	907	(100)

Table 7: Distribution according to sex and nutritional status (weight/height index in Z score or oedema)

	Severe < -3 + oedema		Moderate -3 ≤ z < -2		Normal ≥ -2		Oedema	
	N	(%)	N	(%)	N	(%)	n	(%)
Male	12	(2.7)	37	(8.2)	401	(89.1)	7	(1.6)
Female	3	(0.7)	37	(8.1)	417	(91.2)	3	(0.7)
Total	15	(1.7)	74	(8.2)	818	(90.2)	10	(1.1)

	GaM < -2 + oedema		Normal ≥ -2		Total	
	N	(%)	N	(%)	N	(%)
Male	49	(10.9)	401	(89.1)	450	(49.6)
Female	40	(8.8)	417	(91.2)	457	(50.4)
Total	89	(9.8)	818	(90.2)	907	(100)

Analysis suggests no association between sex and global acute malnutrition (p=0.332)

Table 8: Distribution according to age and nutritional status (weight/height index in Z score or oedema)

	Severe < -3 + oedema		Moderate -3 ≤ z < -2		Normal ≥ -2		Oedema	
	n	(%)	N	(%)	n	(%)	n	(%)
6-11 months	5	(5.3)	5	(5.3)	84	(89.4)	4	(4.3)
12-23 months	5	(2.6)	16	(8.5)	168	(88.9)	4	(2.1)
24-35 months	1	(0.5)	12	(6.5)	172	(93)	1	(0.5)
36-47 months	2	(1.3)	13	(8.2)	144	(90.6)	0	0
48-59 months	2	(0.7)	28	(10)	250	(89.3)	1	(0.4)
Total	15	(1.7)	74	(8.2)	818	(90.2)	10	(1.1)

	Severe < -3 + oedema		Moderate -3 ≤ z < -2		Normal ≥ -2		Oedema	
	n	(%)	n	(%)	n	(%)	n	(%)
6-23 months	10	(3.5)	21	(7.4)	252	(89)	8	(2.8)
24-59 months	5	(0.8)	53	(8.5)	566	(90.7)	2	(0.3)
Total	15	(1.7)	74	(8.2)	818	(90.2)	10	(1.1)

	GaM < -2 + oedema		Normal ≥ -2		Total	
	n	(%)	N	(%)	n	(%)
6-11 months	10	(10.6)	84	(89.4)	94	(10.4)
12-23 months	21	(11.1)	168	(88.9)	189	(20.8)
24-35 months	13	(7)	172	(93)	185	(20.4)
36-47 months	15	(9.4)	144	(90.6)	159	(17.5)
48-59 months	30	(10.7)	250	(89.3)	280	(30.9)
Total	89	(9.8)	818	(90.2)	907	(100)

	GaM < -2 + oedema		Normal ≥ -2		Total	
	n	(%)	N	(%)	n	(%)
6-23 months	31	(11)	252	(89)	283	(31.2)
24-59 months	58	(9.3)	566	(90.7)	624	(68.8)
Total	89	(9.8)	818	(90.2)	907	(100)

There exits no association between age group and global acute malnutrition (p=0.510)

3.2.1 Indicators

Table 9: Indicators – proportions and confidence interval

	Proportion (%)	95% Confidence Interval (%)
Oedema	10 (1.1)	
Global acute malnutrition	89 (9.8)	(8.0 – 12.0%)
Severe acute malnutrition	15 (1.7)	(1.0 – 2.8%)

5.4.2 Interpretive analysis

Table 10: Distribution according to age and nutritional status – proportions and confidence interval

	Global acute malnutrition	
	Proportion (%)	95% Confidence Interval (%)
6-23 months	31 (11)	(7.6 – 15.2%)
24-59 months	58 (9.3)	(7.2 – 11.9%)

	Severe acute malnutrition	
	Proportion (%)	95% Confidence Interval (%)
6-23 months	10 (3.5)	(1.7 – 6.4%)
24-59 months	5 (0.8)	(0.3 – 2.0%)

5.5 Health and morbidity

About 62% of families seek medical assistance for their sick child(ren) at public health facility (52%), private clinic/pharmacy (39%) and traditional healers (10%). Main reason for not seeking medical is lack of health facilities/workers (57%) whilst *Quran* recitation (41%) appear to be an important alternative to seeking medical attention.

Table 11: Health seeking behaviour

	<i>n</i>	(%)
<i>Seek assistance when child sick (n=484):</i>		
Yes	302	(62.4)
No (<i>n=182</i>):	182	(37.6)
Lack of money	4	(2.2)
Reciting Koran	75	(41.2)
No HW, HC/P	103	(56.6)
<i>Where (n=302):</i>		
Traditional healer	30	(9.9)
Private clinic/pharmacy	116	(38.4)
Public health facility	156	(51.7)

Table 12 gives a breakdown of the prevalence of selected morbidity as determined by history – 2 weeks prior to survey for diarrhoea, ARI and malaria and one month for measles.

Table 12: Morbidity history

	<i>N</i>	(%)
Diarrhoea	143	(15.8)
ARI	140	(15.4)
Malaria	131	(14.4)
Measles in last one month	37	(4.1)

5.6 Measles immunisation and vitamin A supplementation

Among the 12-23 months old children, 21% had received measles immunisation based on card verification only and another 13% by card or history anytime before the survey. Of the infants eligible for measles immunization, two third had not yet received their jabs as at the time of the survey.

Table 13: Measles coverage and vitamin A supplementation

	No (%) received immunisation 9-11 months (n=38)	No (%) received immunisation 12-23 months (n=189)	No (%) received immunisation 9-59 months (n=851)
Yes – with card	8 (21.1)	35 (18.5)	175 (20.6)
Yes – with history/without card	5 (13.2)	59 (31.2)	252 (29.6)
No	25 (65.8)	95 (50.3)	424 (49.8)

Survey results suggest that during the 1-3 October 2002, 2nd round Fall NIDs:

- Slightly over half the children (52%) of the 6-59 months children population received the polio dose (the official preliminary 2nd round Fall polio NIDs results for Jerriban district suggest 96% coverage)
- No association exist between sex of child and last polio dosage (p=0.862); both boys and girls had equal opportunity of being immunized against polio
- Of the children who missed the October 2nd round NIDs, about half (49%) said that the polio team did not visit. Other reasons given as missing immunisation are “child not at home” 27%, “caretaker refused” 12.5% whilst 5% thought the polio vaccine was unsafe.

Table 14: OPV and vitamin A supplementation coverage

	<i>n</i>	(%)
<i>No of times OPV received in 2002 (n=907):</i>		
Once	95	(10.5)
2 times	158	(17.4)
3 times	281	(31)
4 times	141	(15.5)
None	232	(25.6)
<i>OPV received in 1-3 October 2002, 2nd round Fall NIDs (n=907):</i>	468	(51.6)
<i>Reason for missing OPV (n=439):</i>		
Team did not come	216	(49.2)
Child not at home	117	(26.7)
Caretaker refused	55	(12.5)

Child sleeping	6	(1.4)
Child sick	14	(3.2)
Vaccine unsafe	21	(4.8)
OPV unimportant	10	(2.3)
<i>Vitamin A supplementation coverage (n=951):</i>	508	(56)

Survey results suggest 56% vitamin A supplementation coverage during the preceding 6 months to the survey.

5.7 Feeding practices

About 60% of the 6-23 months old children had stopped breastfeeding as at the time of the survey with a large majority (92%) reporting having introduced complementary feeds during the first 6-month period of recommended exclusive breastfeeding. Of those who had stopped breastfeeding, 43% had done so during the first six months of life. However, almost all (98%) the children are fed 3-4 or more times in a day.

Table 15: Feeding practice

	<i>N</i>	<i>(%)</i>
<i>Are you breastfeeding child (n=283):</i>		
Yes	95	(33.6)
No	169	(59.7)
Never	19	(6.7)
<i>Age when child stopped breastfeeding (n=169):</i>		
0-6 months	72	(42.6)
7-11 months	58	(34.3)
12 months or more	39	(23.1)
<i>Weaning age (n=264):</i>		
0-6 months	243	(92)
7 months or more	21	(8)
<i>Feeding frequency (n=283):</i>		
Once	1	(0.3)
2 times	5	(1.4)
3 times	34	(9.7)
4 or more times	312	(88.6)

5.8 Analysis of potential risk factors

Analysis of potential risk factors (see Table 16) indicate existence of no association with global acute malnutrition for diarrhoea, and malaria. However it appears that there is a significant statistical association between and vitamin A supplementation:

- Children who had received vitamin A supplementation were significantly less likely (RR 0.64) to be acutely malnourished.

Table 16: Description of risk factors and results of bivariate analysis with respect to prevalence of global acute malnutrition

Exposure variable	N	(%)	Crude RR	95% CI	p-value
<i>Household head sex:</i>					
Male	72	(9.8)	0.97	0.59-1.60	0.987
Female	17	(10.1)			
<i>Sanitary facility:</i>					
Pit latrine/flush toilet	26	(8.1)	0.72	0.47-1.12	0.176
Bush/open ground	63	(11)			
<i>Child sex:</i>					
Male	49	(10.9)	1.24	0.84-1.85	0.332
Female	40	(8.8)			
<i>Age group:</i>					
6-23	31	(11)	1.18	0.78-1.78	0.511
24-59	58	(9.3)			
<i>Diarrhoea:</i>					
Yes	20	(19)	1.55	0.97-2.46	0.094
No	69	(9)			
<i>ARI:</i>					
Yes	11	(7.9)	0.77	0.42-1.41	0.489
No	78	(10.2)			
<i>Malaria:</i>					
Yes	19	(14.5)	1.61	1-2.58	0.073
No	70	(9)			
<i>Measles:</i>					
Yes	5	(13.5)	1.4	0.6-3.24	0.624
No	84	(9.7)			
<i>Vitamin A</i>					
Yes	40	(7.9)	0.64	0.43-0.95	0.036
No	49	(12.3)			

- There exists no evidence of statistical association with global acute malnutrition for household head sex, sanitary facility, child sex, age group, Diarrhoea, malaria, ARI and measles
- Similarly, chi-square test of association shows no significant association with acute global malnutrition for stratified age group ($p=0.674$) and age at which breastfeeding was stopped (0.629)
- Further analysis show no significant difference between means of household size of acutely malnourished and that of normal children (t-test: $p=0.392$).

6.0 Discussion

6.1 Introduction

Jerriban District experienced below normal rains in the 2001 Gu and Deyr seasons resulting to depletion of pasture as well as water points and ultimately threatening the food security for a significant proportion of the poor pastoral population. There was a considerable reliance on coping mechanisms mainly borrowing from the better off pastoralists as well as migration to other localities within the Addun especially towards Golgodob. However the rain for 2002, though not so good, was enough to replenish most water points within the district as well as to rejuvenate some pasture. Furthermore, there was a relatively good lobster business especially for the inhabitants along the coastal belt of the district. The subsequent 2002 Deyr was also good and pasture development and water replenishment was enhanced thereby improving food security among the pastoral households. The lobster trade also continued to flourish for the coastal residents providing a further boost in the food security situation in the district.

6.2 Food sources, income and coping mechanisms

With the Addun-pastoral food economy being dominant (estimated at 70-80%) in the district keeping mainly camels and goats, rainfall conditions greatly determines the wellbeing of the Jerriban population. Livestock and livestock products is the source of livelihood for a greater majority of Jerriban residents. Although households report purchasing (over 80%) as the main source of food and own animal products accounting for just 11%, it is still understandable that pastoral communities mainly rely on exchange of the holdings (livestock and others) for purchases of foods within the households. Other sources of food include borrowing and receiving remittances from friends and relatives.

6.3 Water and environmental sanitation

Water is not a problem at the moment in the area of Jerriban district with exception the Haud area where there might be water shortage as Jilaal progresses as the people in these areas rely predominantly to non-permanent water sources, the Berkads. Migration will be unavoidable in the eastern Haud (Balanbal, Qalanqal, Malasle etc.) if the Gu rains delays. Sanitation seems to be a challenge at the moment. Nearly two thirds of the respondents confirmed that they relieve themselves in the bush. Actually this is among the areas needs to be addressed in the future. However, the toilet facilities observed showed to be generally used and clean

6.4 Health, morbidity and nutritional status

The survey results indicate that majority of the households appreciate modern health services, this is shown by the fact that a large number seek medical assistance for their sick children at public health facilities(62%) and private clinic/pharmacy(39%) while a small number seek medical assistance from traditional; healers(10%)

Of the total children surveyed, 15 % had suffered from acute respiratory infection two weeks prior to the survey, 15% from diarrhea and 14%% from malaria. Although morbidity plays a key role in causing malnutrition among children, further analysis revealed no association between global acute malnutrition and diarrhea, or malaria. However there was significant statistical association between Vitamin A supplementation whereby children who received Vitamin A supplementation were significantly less likely to be acutely malnourished. This therefore calls for a need to increase awareness among the staff and mothers on the important role played by Vitamin A.

6.5 Childcare and its effects on nutritional status

A significant proportion of children surveyed are fed three or more times a day (98%), an indication of fairly good feeding practice among care givers if quality and quantity is appropriate. The results further indicate that, a high proportion of the children surveyed (92%) were introduced to foods other than breast milk while less than six months of age (the recommended period). This means that most

children are unable to acquire the positive effects of exclusive breastfeeding. It was also noted that a large number 43% had stopped breastfeeding during the six months of life which is quite surprising considering the cultural values and practice among the Somali community where breastfeeding of children continues for up to around two years. Exclusive breastfeeding seem unpopular with the caretakers portraying inadequate knowledge on the benefits of breast milk. This attitude has also been noted in Golgodob District and its cause may need to be examined. However, it is hypothesised that factors like close child spacing and flourishing use of artificial breast milk alternatives especially among town inhabitants could account for the high figure.

6.6 Nutritional status

The survey results indicate slightly better nutritional status than most urban areas of Somalia. The prevalence of global acute malnutrition¹ was 9.8% which is may not be threatening in emergency environment, the rate is still very high considering the negative implications of malnutrition of child growth and development

As in a number of previous studies, the data showed some overrepresentation of the older age group (48-59 months). Children between 24- 35 months were found to be less malnourished compared to the younger children less than 24 months and the older ones more than 36 months.

Conclusion and Recommendations

Global acute and severe malnutrition rates of 9.8% and 1.7% respectively are acceptable. However, there is need to intensify vitamin A supplementation because of the significant association between acute malnutrition and Vitamin A supplementation. Similarly because of the known relationship of infections such as ARI, diarrhea, malaria and malnutrition there is also need to prevention and management of these infections as well as sensitising the community on their relationship with malnutrition. Regarding malaria, possibility of introducing impregnated mosquito nets in public health facilities, in collaboration with partner agencies on ground, will be explored.

Promoting exclusive breastfeeding during the first six months of life, appropriate young child feeding, diet diversification, and improvements in household hygiene and health care practices remain a challenge. There is need to intensify health and nutrition education activities at the household level to address care concerns, targeting mothers, fathers and other caregivers.

The apparent marked discrepancies between official preliminary October 2nd round Fall NIDs coverage (96%) and survey results (52%) need further investigation with a view of putting in place remedial actions to improve actual coverage. The positive effect of vitamin A supplementation on acute malnutrition, as suggested by bivariate analysis, is further ground for need to work towards improving vitamin A coverage.

¹ W/H <-2 z-scores and/or oedema

Annexes

Annex 1: Cluster sampling/identification

<i>Location</i>	<i>Total Pop.</i>	<i>Target Pop.</i>	<i>Cum. Pop</i>	<i>Attributable No.</i>	<i>Clusters</i>
Jeriiban town	9,050	1,810	1,810	125; 325; 525; 725; 925; 1,125; 1,325; 1,525; 1,725	9
Salax	3,550	710	2,520	1,925; 2,125; 2,325	3
Bali Busle	4,550	910	3,430	2,525; 2,725; 2,925; 3,125; 3,325	5
Mayla	1,550	310	3,740	3,525; 3,725	2
Dhinawda Q.	2,050	410	4,150	3,925; 4,125	2
Garacad	1,550	310	4,460	4,325	1
Dhoobo-cantuug	1,550	310	4,770	4,525; 4,725	2
Lebi lamaane	550	110	4,880		0
Semade	750	150	5,030	4,925	1
Khuurile	450	90	5,120		0
Qalaanqal	550	110	5,230	5,125	1
Malasle	1,050	210	5,440	5,325	1
Kulub	300	60	5,500		0
Buubi	350	70	5,570	5,525	1
Gal-xagar	350	70	5,640		0
Ilfoocsha	270	54	5,694		0
Balanbale	300	60	5,754	5,725	1
Tima wayn	240	48	5,802		0
Gaarcad	180	36	5,838		0
Doomaaryo	170	34	5,872		0
Ceel dhanaan	150	30	5,902		0
Dhinawda	150	30	5,932	5,925	1
Madlooyin	100	20	5,952		0
Ceelbuq	100	20	5,972		0
Ceelxamur	100	20	5,992		0
Total	29,960	5,992			30

Sampling interval: 200

Random selection: 125

Annex 2: Puntland traditional calendar

Months	Annual Events	1998	1999	2000	2001	2002
JAN	<i>Mid of Jiilaal</i>	Soon	Soon fur 48	Soon 36	Sidataal 24	Sidataal 12
FEB	<i>End of Jiilaal</i>	Soon fur 59	Sidataal 47	Sidataal 35	Arafo lid Al Adhaa 23	Arafo (lid Al Adhaa) 11
MAR	<i>Start of Gu Season</i>	Sidataal 58	Arafo 46	Arafo 34	Sako 22	Sako 10
APR	<i>Middle Gu Season</i>	Arafo 57	Sako 45	Sako 33	21	Safar 9
MAY	<i>End of Gu Season</i>	Sako 56	Safar 44	Safar 32	Meeting in Arte Shirka Carta Safar 20	Mowliid Rabi Al Awal 8
JUNE	<i>Start of Haga Season</i>	Safar 55	Mowliid 43	Mowliid 31	Siyaaro 19	Siyaaro Rabi Al Akhir 7
JULY	<i>Middle of Haga Season</i>	Rabi Al Awal 54	Rabi Al Akhir 42	Rabi Al Akhir 30	Jamaadul Awal 18	Jamaadul Awal Dagaalkii Bossaso 6
AUG	<i>End of Haga Season</i>	Rabi Al Akhir 53	Jamaadul Awal 41	Establishment of Puntland State Jamaadul Awal 29	Jamaadul Akhir 17	Jamaadul Akhir 5
SEPT	<i>Start of Deyr Season</i>	Jamaadul Awal 52	Jamaadul Akhir 40	Jamadul Akhir 28	Sabuux (Rajab) 16	Rajab 4
OCT	<i>Middle of Deyr Season</i>	Jamaadul Akhir 51	Rajab 39	Sabuux (Rajab) 27	Soon Dheere (Shacbaan) 15	Soon Dheere (Shacbaan) 3
NOV	<i>End of Deyr</i>	Rajab Daadkii Koonfur 50	Soon Dheere (Shacbaan) 38	Soon Dheere (Shacbaan) 26	Soon (Ramadan) 14	Soon (Ramadan) 2
DEC	<i>Start of Jiilaal</i>	Soon Dheere (Shacbaan) 49	37	Soon (Ramadan) 25	Soon fur 13	Soon fur 1

Annex 3: Survey questionnaire

Household No.	Date	Team Number	Cluster Number	Name of supervisor	Section	Subsection

Name of household head	Q1 Sex 1= M 2 = F	Q2 Household size	Q3 No. of u5s

Q4 Household residence status	Q5 Place of origin (Country/region)	Q6 Date of arrival (year)	Q7 Reason for movement
1 = Resident: Go to No. 8 2 = Resident returnee 3 = Internally displaced 4 = Refugee 5 = Other – specify	1: Ethiopia 2: Kenya 3: South and Central zone 4: Mudug 5: Nugal 6: Bari 7: Somaliland 8: Other	1: 2002 2: 2001 3: 2000 4: 1999 5: 1998 6: Before 1998	1 = Insecurity 2 = Lack of jobs 3 = Food shortage 4 = Water shortage 5 = Other – specify

Q8 Household's main food source?	Q9 Household's main income source	Q10 How does this household survive during food shortages (coping strategies)?	Q11 Main source of drinking water	Q12 Sanitation Facility	Q13 When your child is sick, do you seek medical assistance?
1 = Animal products from own production 2 = Household crop production 3 = Purchases 4 = Remittances/Gifts 5 = Begging 6 = Wild foods collection 7 = Others – specify	1 = Small business 2 = Casual work 3 = Salaried employment 4 = Sale of crops 5 = Sales of animals and animal products 6 = Remittances/Gifts 7 = Others – specify	1= Remittances/Gifts 2= Sale of more livestock 3= Splitting of the family 4= Begging 5= Borrowing 6= Food aid 7= Purchases 8= Wild food collection 9= Others – specify	1 = Borehole 2 = Open wells 3 = Protected wells 4 = Berkads 5 = Catchments/pond 6 = Stream/river 7 = Muscid 8 = Tap/piped water 9 = Tanker/truck vendor 10 = Others – specify	1 = Pit latrines: Go to Q12b 2 = Flash toilets 3 = Bush/Open ground Q12b Condition of the facility (Observe) 1 = Used and clean 2 = Unused 3 = Used and dirty 4 = Others – specify	1 = Yes: Go to Q13b 2 = No: Go to Q13c Q13b Where? 1 = Traditional healer 2 = Private clinic/pharmacy 3 = Public health facility 4 = Others – specify Q13c Why? – specify

Serial No	Name	Q14 Sex 1 = M 2 = F	Q15 Age (Months)	Q16 Oedema 1 = Yes 2 = No	Q17 Height (Cm)	Q18 Weight (Kg)

For Q28-31, ask mothers with child(ren) 6-23 months old

Serial No.	Q19 Diarrhoea in last 2 weeks?	Q20 ARI in last 2 weeks?	Q21 Malaria in last 2 weeks?	Q22 Measles in last 1 month?	Q23 Vaccinated against measles?	Q24 Vitamin A provided in the last 6 months?	Q25 Number of times OPV received during 2002 NIDs?	Q26 OPV received in last NIDs round?	Q27 Reason for missing OPV dose(s)?	Q28 Are you B/F child?	Q29 If no, how old was child when you stopped B/F?	Q30 At what age was child given foods other than breast milk?	Q31 How many times in a day do you feed child?
	1 = Yes 2 = No	1 = Yes 2 = No	1 = Yes 2 = No	1 = Yes 2 = No	1 = past 6m (card) 2 = past 6m (recall) 3 = before 6m (card) 4 = before 6m (recall) 5 = None	1 = Yes 2 = No	1 = Once 2 = 2 times 3 = 3 times 4 = 4 times 5 = None	1 = Yes: Go to Q28 2 = No	1 = team didn't come 2 = child not at home Care taker refused because: 3 = child sleeping 4 = child sick 5 = vaccine unsafe 6 = OPV not important 7 = Other -specify	1 = Yes 2 = No 3 = Never: Go to Q31	1 = 0-6m 2 = 7-11m 3 = 12m or more	1 = 0-6m 2 = 7m or more	1 = Once 2 = 2 times 3 = 3 times 4 = 4 or more