Nutrition Survey Report
Goldogob town, Mudug Region
North East Somalia

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Executive summary

UNICEF, in collaboration with MOSA and Food Security Assessment Unit (FSAU), conducted a nutrition survey in Goldogob town on 18-25 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.

<u>Household and general population characteristics</u>

Of the 1,250 households interviewed, 64% are male-headed; the median household size is 5 (interquartile range 3-7). The population is mainly (87%) residents with minority (10%) internally displaced persons who mostly migrated from the south and central zones of Somalia because of insecurity (66%) and economic reasons (28%). The population relies on purchases (95%) and own animal products (3%) for their food source. Income is derived from small businesses (38%), casual work (29%), remittances/gifts (18%) and sale of animals (9%). Coping mechanisms revolve around borrowing (59%), remittances/gifts (16%), purchases (12%) and livestock sale (8%)

<u>Water and environmental sanitation</u>

The population draws their drinking water mainly from borehole (95%). About 65% of those interviewed relieve themselves in pit latrines/flush toilets that were observed to be used and generally clean (92%).

<u>Nutrition status, feeding practice and risk factors analysis</u>

Nutrition status analysis, using Epi-Info software, of the eligible 1,205 children, 65-110 cm, suggests severe and global acute malnutrition rates of 3.7% (CI 2.7-4.9%) and 12.5% (CI 10.7-14.6%) weight-for-height (W/H) Z-Scores respectively.

About two fifth (41%) of the 6-23 months old children had stopped breastfeeding as at the time of the survey and with majority (82%) reporting having introduced complementary feeds during the first 6-month period of recommended exclusive breastfeeding. Of those who had stopped breastfeeding, about half had done so during the first six months of life. Most (94%) of the children are fed 3-4 or more times in a day.

Analysis of potential risk factors indicate existence of significant statistical association with global acute malnutrition for: sanitary facility (cRR 0.69; p=0.035), sex of child (cRR 1.38; p=0.048), age group (cRR 2.09; p=0.00), diarrhoea (cRR 1.9; p=0.000), ARI (cRR 1.71; p=0.001) and malaria (cRR 1.78; p=0.002). Children whose families utilize pit latrines/flush toilets were significantly less likely to be acutely malnourished. Male children, young children (6-23 months), children with history of diarrhoea, ARI and malaria 2 weeks prior to the survey were at an increased risk of being acutely malnourished.

<u>Health seeking behaviour, morbidity and immunisation</u>

Almost all (99%) families seek medical assistance for their sick child(ren) at private clinic/pharmacy (77%) and public health facility (21%). *Quran* recitations (78%) appear to be an important alternative for those who do not seek medical attention. Diarrhoea (23%), ARI (22%), and malaria (14%) are an important cause of morbidity among the under fives.

Goldogob nutrition survey, December 2002

Among the 12-23 months old children, 9% had received measles immunisation based on card verification only and another 9% by card or history anytime before the survey. Of the infants eligible for measles immunisation, 82% had not yet received their jabs as at the time of survey. Survey results suggest 62.5% vitamin A supplementation coverage.

During the polio NIDs second round conducted on 1-3 October: two third of the 6-59 months children population received the polio dose (the official preliminary second round Fall polio NIDs results for Goldogob district suggests 88% coverage). Of those who missed the October 2nd round 2002 NIDs, about 45% reported that the "caretaker refused", 26% said that the polio team did not visit at all whilst 19.5% said the child was not at home.

Table 1: Summary statistics

	n	(%)
Global acute malnutrition (n=1,205)	151	(12.5)
Severe acute malnutrition	44	(3.7)
Diarrhoea past 2 weeks	273	(22.7)*
ARI past 2 weeks	264	(21.9)*
Malaria past 2 weeks	169	(14)*
Measles past 1 month	195	(16.2)
Measles immunisation – card and/or history:		
9-11 months (n=56)	10	(17.9)
12-23 months (n=240)	72	(30)
9-59 months (n=1,149)	370	(32.2)
OPV:		
Last round (1-3 October 2002, 2nd round Fall NIDs)	794	(65.9)
Received at least 3 doses (in 2002)	360	(29.9)
Vitamin A supplementation (past 6 months)	753	(62.5)
Are you breastfeeding child (n=352):		
Yes	143	(40.6)
No	202	(54.7)
Never	7	(2)
Age when child stopped breastfeeding (n=202):		
0-6 months	102	(50.5)
7-11 months	59	(29.2)
12 months or more	41	(20.3)
Weaning age (n=345):		
0-6 months	282	(81.7)
7 months or more	63	(18.3)
Feeding frequency (n=283):		
Once	2	(0.7)
2 times	9	(3.2)
3 times	108	(38.2)
4 or mores times	164	(58)

* Significant statistical association with acute malnutrition

1. Background

Goldogob district is in the North Mudug region to the west of Galcayo at the border of Ethiopia. The district has two predominant food economy groups: Haud pastoral (95%) and urban (5%). The district lies in the extreme southwest of the region, in the middle of Haud food economy zone (FEZ) a few kilometres from the Ethiopian borderline and about 120 kms to west of Galkayo. Golgodob town is one of the fast growing towns in North Mudug and has stretched out more than 4-5 times of its original size. Goldogob town is one of the most populated areas in the Haud FEZ and dominated by an estimated 20-30,000 nomadic-urban community of whom, 25-35% are mostly impoverished pastoralists who suffered most from the 1998-1999 droughts and the following poor 2001 Deyr season.

1.1 Food security context

A large number of the urban community of Goldogob depends on livestock both for food and income. As a result of the drought in 1998/1999, many pastoral households lost their animals and moved to Goldogob town. It is estimated that about 30% of the urban population are very poor wealth groups who depend on casual labour and have no permanent income sources.

In November 2002, above normal Deyr rains brought relief to the hard pressed areas of Addun, Dheeh and the Haud of North Mudug and South Nugal. Before this Deyr, in Addun FEZ, birth rates were reported to be 50% below normal due to harsh climatic conditions. There were also observations of deterioration in animal condition before the Deyr. Access to milk and income from milk sales was therefore below normal (75% of baseline). Earlier migration of pastoralists to western Haud of Burtinle and Goldogob Districts to around Golgodob town caused overgrazing in the recipient areas. The immigrants to the district increased pressure on the only functioning water borehole in Goldogob District. The price of water went up by 100% from baseline norm. There was a rise in common livestock diseases and shoats were particularly more affected as they were already weakened by the drought. Pastoralists reported inadequate drug supply and veterinary treatment. These factors affected residents of Golgodob town who either directly or indirectly depend on livestock. Whereas, vulnerable households would normally increase income from livestock sales, this was difficult because of asset losses/reduced herd sizes. However increased gifts and remittances especially to the middle and upper income bracket in Golgodob town compensated for these losses in the early days of the hardship. The urban poor and the poor pastoralists within the locality also continued with their other ways of coping e.g. through expanded self employment, collection of bush products, and opening of tea shops. Expenditure on veterinary drugs and medicines.

In December 2002, the food security situation although improving was still below normal – pasture and grazing had began recovering. However, with indications of good Deyr rains, FSAU predicted that the livestock condition could improve enough to allow animals to manage through the Jilaal of 2003 (FSAU December 2002 issue).

The following table summarizes some selected key food security events (Source: FSAU Monthly Food Security updates):

Month	Key event
June –July 2001	Rains in the Gu season were below normal and was even much lower in Goldogob and surrounding villages. The food security situation steadily declined in Golgodob District. The urban poor and poor pastoralists were more affected than others.
September 2001	Sporadic, less intensive rains were reported in some areas. Burtinle, Harfo Ba'adwan, Jerriban, Goldogob and Jalam were among of the areas that received rain. The general food security was below normal and very poor. Food inaccessibility prevailed
October 2001	Substantial rains covered most of the region in the 3rd week, and continued to fall until 25th October 2001. In the coastal areas of the Dheeh FEZ, (Gara'ad), significant rains has been reported starting from Addun (Jarriiban, Semade, Buubi, and B/busle) to the western end of Haud FEZ (Goldogob, Bursalah, L/Madow and Boran Adka).
November 2001	Food security conditions improves to normal levels in the North Mudug with the exception of about 65-75% of the poor pastoralists in the most highlighted areas of Goldogob and Galkayo whose herd size had reduced with limited access to animals for exchange with cereals. The urban poor are affected.
December 2001	Drought affected poor pastoralists in Goldogob (some of whom live in Golgodob town) suffered insufficient milk production and depended on gifts and/or migration of some of the able bodied family members in search of jobs.
February 2002	Poor pastoralists in Goldogob district had no or few livestock to exchange for cereals or to produce enough milk for exchange hence heavy reliance on relatives by these households (nearly 30-35%) of the poor pastoral households, most of whom resided in Golgodob town.
June 2002	Abnormal migration patterns began with some households from North Mudug and South Nugal moving towards Golgodob leading to increased pressure on the limited water sources in the District and further depleting water reserves and further worsening the precarious food security situation.
September 2002	Light rains fell in western parts of North Mudug, which extends from Goldogob district leading to improvement in pasture rejuvenation. Water availability improved with 70-80% of berkads and balleys getting filled. However, the price of water remained high.
October-November 2002	Whereas vulnerable households would normally increase income from livestock sales, this was difficult because of asset losses/reduced herd sizes in the district. Increased gifts and remittances compensated for these losses. Similarly, increased employment in towns and fishing areas expanded by 150-200% of baseline. Others have expanded self employment, collection of bush products, opening of tea shops. Increased number of people moves to Golgodob town Above normal rains were received although livestock condition has not improved much, animal deaths is also reported while livestock birth rates are still 50% below normal. Access to milk and income from milk

Month	Key event
	sales therefore was well below normal (75% of the baseline).

1.2 Health context

Since 2001, MSF-H has supported PHC activities in Goldogob and Bursalah MCH/OPDs. Prior to this, the 2 health facilities had not benefited from any international organization support. To revitalise and continue the essential health care services in the 2 facilities, UNICEF signed a Project Cooperation Agreement (PCA) with MSF-H for provision of basic supplies/inputs that include UNICEF (MCH and TBA) kits and EPI supplies. The agreement between UNICEF and MSF-H formed part of UNICEF's restructured approach where MSF-H, in collaboration with the District Health Boards and MOSA directly implemented the primary health care projects in the 2 health facilities. In addition to the public health facilities, Goldogob has several private clinics/pharmacies in the town (how many?).

1.3 Water and Sanitation context

Goldogob and surrounding villages draw their water from two bores drilled in the 1960s by the then Water Development Agency. The bore holes are located in the centre of town. Both humans and animals use the same water troughs that raise obvious health and hygiene concerns. There are also numerous seasonal Berkads that provide water mainly to nomads and their livestock.

Because of mismanagement and lack of accountability, these mechanized boreholes are prone to frequent breakdowns. In 2002, UNICEF rehabilitated both boreholes and provided power and pumping equipment including training of water committees on financial and general management. However, the general sanitary condition of the town is poor with a relatively ineffective municipality administration.

2. Survey objectives

- To assess the nutrition status of the Goldogob 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 immunization, measles and NIDs – and vitamin A supplementation coverage of study population

3. Survey methodology

3.1 Study population and survey design

A census survey that involved visiting all households was carried out in Goldogob District. Questionnaires (see annex 2) were administered to all the identified 1,250 household heads and nutrition status systematically assessed for 1,054 eligible 6-59 months old children in each household/family grouping.

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; suffered from measles in past one month; received vitamin A supplementation in past 6 months; Vaccinated against measles and polio immunisation status. Those with children less than 23 months were interviewed on their feeding practices.

3.2 Methods

The town was divided into 7 sections and a team assigned to a section. Starting from the edge of section, respective teams systematically visited all households. 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.

3.3 Measuring technique and recording

Weight

For weighting purposes, 25-kg salter spring scales were used. The scale was adjusted to zero with the weighting pants attached to the hook, child freed of heavy clothing, the weighing pants put on and child suspended from the weighing 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 less than 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 board and height read to the nearest 0.1 cm.

<u>Age</u>

An attempt at determination of age was based on recall using a local traditional calendar/events (see annex 1) and estimates recorded in months. However, with the choice of nutrition indicator being weight-for-height, approximate age was useful in cross tabulation analysis.

<u>Oedema</u>

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.

3.4 Training and supervision

A 3-day combined training session for 12 teams was conducted prior to the survey on 14-16, December 2002 Each team composed of 2 enumerators and 1 team leader, thus 7 teams for Goldogob and Jerriban (5 teams). 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 Galkayo 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.

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 1,250 households interviewed, 64% are male-headed; the median household size is 5 (interquartile range 3-7). The inhabitants are mainly (87%) residents with minority (10%) internally displaced persons who mostly migrated from the South and Central zones of Somalia because of insecurity (66%) and economic reasons (28%). Table 1 gives details of the household characteristics.

Table 3: Household characteristics

	n	(%)
Sex – Household head (n=1,250):		
Male	797	(63.8)
Female	453	(36.2)
Household size:	5 (3-7)	
Household residence status:		
Resident	1,087	(87)
Resident returnee	27	(2.2)
Internally displaced	129	(10.3)
Refugee	7	(0.6)
Place of origin (n=163):		
Ethiopia	16	(9.8)
Kenya	7	(4.3)
SCZ	130	(79.8)
Mudug	1	(0.6)
Bari	3	(1.8)
Somaliland	6	(3.7)
Other -	2	(1.2)
Date of arrival (n=163):		
2002	44	(27)
2001	37	(22.7)
2000	37	(22.7)
1999	25	(15.3)
1998	12	(7.4)
Before 1998	8	(4.9)
Reason for movement (n=163):		
Insecurity	108	(66.3)
Lack of jobs	45	(27.6)
Famine	9	(5.5)
Lack of shelter	1	(0.6)

5.2 Food, income sources and coping strategies

The inhabitants appear to rely mostly on purchases (95%) and on own animal products (3%) for their food source. Income is derived from small businesses (38%), casual work (29%), remittances/gifts (18%) and sale of animals (9%). Coping mechanisms revolve around borrowing (59%), remittances/gifts (16%), purchases (12%) and livestock sale (8%).

Table 4: Food, income and coping strategy

	n	(%)
Main food source (n=1,250)		
Own animal products	35	(2.8)
Household crop production	1	(0.1)
Purchases	1,187	(95)
Remittances/gifts	24	(1.9)
Begging	2	(0.3)
Hunting	1	(0.1)
Main source of income (n=1,250)		
Small business	478	(38.2)
Causal work	357	(28.6)
Salaried employment	68	(5.4)
Sale of crops	14	(1.1)
Sale of animals	108	(8.6)
Remittances/gifts	225	(18)
Coping strategy (n=1,250):		
Remittances/gifts	203	(16.2)
Livestock sale	98	(7.8)
Splitting of family	18	(1.4)
Begging	29	(2.3)
Borrowing	743	(59.4)
Food aid	9	(0.7)
Purchases	148	(11.8)

5.3 Water and Environmental sanitation

The population draws their drinking water mainly from borehole (95%). About 70% of those interviewed relieve themselves in pit latrine that were observed to be used and generally clean (92%).

Table 5: Water and sanitation

	n	(%)
Main source of drinking water (n=1,250):		
Borehole	1,188	(95)
Open wells	1	(0.1)
Berkads	33	(2.6)
Muscid	2	(0.2)
Tanker/truck	26	(2.1)
Sanitation facility (n=1,250):		
Pit latrine	880	(70.4)
Flush toilets	2	(0.2)
Bush/open grounds	368	(29.4)
Observe (n=880):		
Used and clean	807	(91.7)
Unused	16	(1.8)
Used and dirty	3	(6.5)

5.4 Analysis of nutrition data

5.4.1 Distribution

Table 6: Distribution according to age and sex

	Boys n	Boys (%)	Girls n	Girls (%)	Total n	Total (%)
6-11 months	62	(55.4)	50	(44.6)	112	(9.3)
12-23 months	129	(53.8)	111	(46.3)	240	(19.9)
24-35 months	147	(52.7)	132	(47.3)	279	(23.2)
36-47 months	133	(54.5)	111	(45.5)	244	(20.2)
48-59 months	185	(56.1)	145	(43.9)	330	(27.4)
Total	656	(54.4)	549	(45.6)	1,205	(100)

	Boys n	Boys (%)	Girls n	Girls (%)	Total n	Total (%)
6-23 months	191	(54.3)	161	(45.7)	352	(29.2)
24-59 months	465	(54.5)	388	(45.5)	853	(70.8)
Total	656	(54.4)	549	(45.6)	1,205	(100)

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

	Severe < -3 + oedema n	(%)	Moderate -3 ≤ z < -2 n	(%)	Normal >= -2 n	(%)	Oedema n	(%)
Male	31	(4.7)	63	(9.6)	562	(85.7)	11	(1.7)
Female	13	(2.4)	44	(8)	492	(89.6)	2	(0.4)
Total	44	(3.7)	107	(8.9)	1,054	(87.5)	13	(1.1)

	GAM < -2 + oedema n	(%)	Normal >= -2 n	(%)	Total n	(%)
Male	94	(14.3)	562	(85.7)	656	(54.4)
Female	57	(10.4)	492	(89.6)	549	(45.6)
Total	151	(12.5)	1,054	(87.5)	1,205	(100)

Analysis suggests an association between sex and global acute malnutrition (RR=1.38; p=0.048)

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

	Severe < -3 + oedema n	(%)	Moderate -3 ≤ z < -2 n	(%)	Normal >= -2 n	(%)	Oedema n	(%)
6-11 months	11	(9.8)	14	(12.5)	87	(77.7)	4	(3.6)
12-23 months	16	(6.7)	29	(12.1)	195	(81.3)	5	(2.1)
24-35 months	4	(1.4)	23	(8.2)	252	(90.3)	2	(0.7)
36-47 months	6	(2.5)	16	(6.6)	222	(91)	1	(0.4)
48-59 months	7	(2.1)	25	(7.6)	298	(90.3)	1	(0.3)
Total	44	(3.7)	107	(8.9)	1.054	(87.5)	13	(1.1)

	Severe < -3 + oedema n	(%)	Moderate -3 ≤ z < -2 n	(%)	Normal >= -2 n	(%)	Oedema N	(%)
6-23 months	27	(7.7)	282	(80.1)	43	(12.2)	9	(2.6)
24-59 months	17	(2)	64	(7.5)	772	(90.5)	4	(0.5)
Total	44	(3.7)	107	(8.9)	1,054	(87.5)	13	(1.1)

	GAM < -2 + oedema n	(%)	Normal >= -2 n	(%)	Total n	(%)
6-11 months	25	(22.3)	87	(77.7)	112	(9.3)
12-23 months	45	(18.8)	195	(81.3)	240	(19.9)
24-35 months	27	(9.7)	252	(90.3)	279	(23.2)
36-47 months	22	(9)	222	(91)	244	(20.2)
48-59 months	32	(9.7)	298	(90.3)	330	(27.4)
Total	151	(12.5)	1,054	(87.5)	1,205	(100)

	GAM < -2 + oedema n	(%)	Normal >= -2 n	(%)	Total n	(%)
6-23 months	70	(19.9)	282	(80.1)	352	(29.2)
24-59 months	81	(9.5)	772	(90.5)	853	(70.8)
Total	151	(12.5)	1,054	(87.5)	1,205	(100)

There exits an association between age group and global acute malnutrition (RR=2.09; p=0.000)

5.4.2 Indicators

Table 9: Indicators – proportions and confidence interval

	Proportion (%)	95% Confidence Interval (%)
Oedema	13 (1.1)	
Global acute malnutrition	151 (12.5)	(10.7 – 14.6%)
Severe acute malnutrition	44 (3.7)	(2.7 – 4.9%)

5.4.3 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	70 (19.9)	(15.9 – 24.5%)
24-59 months	81 (9.5)	(7.7 – 11.7%)

	Severe acute malnutrition	
	Proportion (%)	95% Confidence Interval (%)
6-23 months	27 (7.7)	(5.2 – 11.1%)
24-59 months	17 (2)	(1.2 – 3.2%)

5.5 Health and morbidity

Almost all (99%) families seek medical assistance for their sick child(ren) at private clinic/pharmacy (77%) and public health facility (21%). *Quran* recitations (78%) appear to be an important alternative for those who do not seek medical attention.

Table 11: Health seeking behaviour

	n	(%)
Seek assistance when child sick (n=779):		
Yes	770	(98.8)
No (n=9):	9	(1.2)
Lack of money	2	(22.2)
Reciting Koran	7	(77.8)
Where (n=770):		
Traditional healer	11	(1.4)
Private clinic/pharmacy	594	(77.1)
Public health facility	165	(21.4)

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

Table 12: Morbidity history

	n	(%)
Diarrhoea	273	(22.7)
ARI	264	(21.9)
Malaria	169	(14)
Measles in last one month	195	(16.2)

5.6 Measles immunisation and vitamin A supplementation

Among the 12-23 months old children, 9% had received measles immunisation based on card verification only and another 9% by card or history anytime before the survey. Of the infants eligible for measles immunisation, 82% had not yet received their jabs as at the time of the survey.

Table 13: Measles coverage and vitamin A supplementation

	No (%) received immunisation	No (%) received immunisation	No (%) received immunisation
	9- 11 months (n=56)	12-23 months (n=240)	9-59 months (n=1,149)
Yes – with card	5 (8.9)	40 (16.7)	160 (13.9)
Yes – with history/without card	5 (8.9)	32 (13.3)	210 (18.3)
No	46 (82.1)	168 (70)	779 (67.8)

Survey results suggest that during the 1-3 October 2002, 2nd round Fall NIDs:
- Two third of the 6-59 months children population received the polio dose (the official preliminary 2nd round Fall polio NIDs results for Goldogob suggests 88% coverage)
- No association exist between sex of child and last polio dosage (p=0.344); both boys and girls had equal opportunity of being immunised against polio
- Of the children who missed the October 2nd round NIDs, about 45% reported that the "caretaker refused", 26% said that the polio team did not visit at all whilst 19.5% said that the child was not at home.

Table 14: OPV and vitamin A supplementation coverage

	n	(%)
No of times OPV received in 2002 (n=1,205):		
Once	78	(6.5)
2 times	171	(14.2)
3 times	360	(29.9)
4 times	366	(30.4)
None	230	(19.1)
OPV received in 1-3 October 2002, 2nd round Fall NIDs (n=1,205):	794	(65.9)
Reason for missing OPV (n=411):		
Team did not come	108	(26.3)
Child not at home	80	(19.5)
Caretaker refused	186	(45.3)
Child sleeping	1	(0.2)
Child sick	9	(2.2)
Vaccine unsafe	10	(2.4)
OPV unimportant	17	(4.1)
Vitamin A supplementation coverage (n=1,205):	753	(62.5)

Survey results suggest 62.5% vitamin A supplementation coverage during the preceding 6 months to the survey.

5.7 Feeding practices

About two fifth (41%) of the 6-23 months old children had stopped breastfeeding as at the time of the survey with majority (82%) reporting having introduced complementary feeds during the first 6-month period of recommended exclusive breastfeeding. Of those who had stopped breastfeeding, about half had done so during the first six months of life. Most (94%) of the children are fed 3-4 or more times in a day.

Table 15: Feeding practice

	n	(%)
Are you breastfeeding child (n=352):		
Yes	143	(40.6)
No	202	(57.4)
Never	7	(2)
Age when child stopped breastfeeding (n=202):		
0-6 months	102	(50.5)
7-11 months	59	(29.2)
12 months or more	41	(20.3)
Weaning age (n=345):		
0-6 months	282	(81.7)
7 months or more	63	(18.3)
Feeding frequency (n=283):		
Once	2	(0.7)
2 times	9	(3.2)
3 times	108	(38.2)
4 or mores times	164	(58)

5.8 Analysis of potential risk factors

Analysis of potential risk factors (see Table 16) indicate existence of significant statistical association with global acute malnutrition for sanitary facility, sex of child, age group, diarrhoea and malaria:
- Children whose families utilise pit latrines/flush toilets were significantly less likely to be acutely malnourished
- Male children, young children (6-23 months), children with history of diarrhoea, ARI and malaria 2 weeks prior to the survey were at an increased risk of being 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
Household head sex:					
Male	113	(12.6)	1.03	0.73-1.45	0.96
Female	38	(12.3)			
Sanitary facility:					
Pit latrine/flush toilet	105	(11.4)	0.69	0.5-0.96	0.035
Bush/open ground	46	(16.4)			
Child sex:					
Male	94	(14.3)	1.38	1.01-1.88	0.048
Female	57	(10.4)			
Age group:					
6-23	70	(19.9)	2.09	1.56-2.81	0.00
24-59	81	(9.5)			
Diarrhoea:					
Yes	54	(19.8)	1.9	1.4-2.58	0.000
No	97	(10.4)			
ARI:					
Yes	49	(18.6)	1.71	1.25-2.34	0.001
No	102	(10.8)			
Malaria:					
Yes	34	(20.1)	1.78	1.26-2.52	0.002
No	117	(11.3)			
Vitamin A:					
Yes	83	(11)	0.73	0.54-0.99	0.051
No	68	(15)			
Weaning age:					
0-6 months	54	(20.2)	1.06	0.61-1.86	0.972
7 months or more	12	(19)			

- There exists no evidence of statistical association with global acute malnutrition for household head sex, vitamin A supplementation and weaning age
- Similarly, chi-square test of association shows no significant association with acute global malnutrition for age at which breastfeeding was stopped (0.162)
- Further analysis show no significant difference between means of household size of acutely malnourished and that of normal children (t-test: p=0.131).

6.0 Discussion

6.1 Food security and nutritional status

The current population in Goldogob District comprises of former pastoralists, impoverished by the 98/99 droughts and later by the poor 2001 Gu and Deyr seasons. Food the FSAU household economy baseline, between 20-30% of the population fall within the poor wealth group. As a result of the loss of their animals, the majority of the households adopted to casual work as an alternative source of livelihood. The survey was conducted in December when the Deyr rains had started having positive impact on pasture regeneration and most water points replenished. However, the consumption of animal based products had not normalized. The survey findings reveal that the majority (95 %) are currently accessing food through purchases although the sources of income are not very stable. During the time of the study the main coping strategy was borrowing (59%). This suggests poor access to food and this might have been a contributory factor to reduced food intake and subsequently to the high levels of malnutrition
I
The Deyr 2002 rainfall between October to December was relatively good and many dry water points were replenished. Milk availability and access has improved but it is still low. Recovery of pastures was taking place at the time off the survey and that created prospects for calving and kidding of the available herd. The situation is expected to contribute positively to food access during the first few months of the year 2003 but will require close monitoring.

Health issues influencing nutritional status

Morbidity

The reported disease prevalence during the two weeks prior to the survey of about 23% Diarrhoea, 22% ARI and 14% for suspected malaria were high. Although malaria is endemic in the zone, the current high prevalence was also partly attributed to the many open water points that resulted from Deyr rains. The incidence of measles at 16% was higher than what has been reported in other survey reports in Somalia. However, the results might have reflected the low measles immunisation levels for the eligible children that was reported at below 20%. Considering the emphasis of accelerated immunisation campaigns, such low levels of measles immunisation requires re-evaluation of the coverage during such campaigns. Diarrhoea, acute respiratory infection, suspected malaria and anaemia are also some of the common diseases frequently reported at the Golgodob MCH/OPD, an observation confirmed by the survey results.

According to the survey results, there was statistically significant relationship between malnutrition and malaria, ARI and diarrhoea, independently. Children with diarrhoea were 1.9 times more likely to be malnourished than children without diarrhoea and children with malaria were 1.8 times more likely to be malnourished than those without malaria while those with ARI were about 1.7 times more likely to be malnourished than those that had not suffered from ARI. This shows the extent to which disease prevalence influences nutritional status of children in the district. Measles immunisation coverage among eligible children was extremely low (20%) and thus the high prevalence of measles in the one month prior to the survey. The relationship between diarrhea, malaria and ARI with malnutrition shows that

these infections may have significantly contributed to the high levels of malnutrition at the time of the study.

Sanitation

The majority (more than two-thirds) of the households surveyed had access to means of sanitary disposal of faeces. However a significant proportion of the households (about 30%) reported use of open grounds/bush for faecal disposal – this is a particularly problematic issue for the urban and peri-urban households who are expected to access some good sanitary facility. The problem is even severer during rainy seasons where in some cases the faeces are drained to water points. Sanitation in an urban set up has huge implications on hygiene at household level. It was not surprising when it came out that sanitation had significant association with households not using toilet facilities being more likely have a malnourished child than not. The overall access to clean water was good with overwhelming majority able to access water from boreholes.

Childcare and its effects on nutritional status

Food intake and utilisation are usually enhanced by correct cooking techniques, feeding time and frequency, psycho-social state of the child, hygiene standards, combination of foods given (variety) among other factors.

A significant proportion of children surveyed are fed three or more times a day (96%), an indication of fairly adequate food intake if quality and quantity is appropriate. The survey revealed no association between frequency of child feeding and malnutrition. The results further indicate that, a high proportion of the children surveyed (82%) were introduced to foods other than breast milk while less than six months of age. This early introduction of complementary foods, although not exceptional to this survey, might have a relationship with the high incidences of diarrhoea identified in the survey and subsequent high levels of malnutrition. Interestingly a considerable number (around 50%) of the mothers stopped breastfeeding their children within the first six months of life which is extraordinarily high considering the cultural values and practice among the Somali community where breastfeeding of children continues for up to around two years. The cause of this attitude needs to be critically 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 higher rates.

Under utilisation of vegetables, which are good sources of essential micronutrients also limits accessing essential nutrients for growth. Further giving tea to children is a common practice among residents in Somalia and the tannin, contained in tea is a known inhibitor to micronutrient absorption thus reducing the bio-availability of nutrients like iron. These issues have been reported from qualitative data routinely collected by FSAU team in the area. The high illiteracy levels in the region, also makes it highly probable that mothers lack knowledge on the better feeding practices for young children.

Nutritional status

The survey results indicate high malnutrition in the town although it represents aslightly better nutritional status than reports from most urban areas in Somalia.The prevalence of total/global acute malnutrition[1] was 12.5% while severe acute malnutrition[2] was 3.7%

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[1] W/H <-2 z-scores and/or oedema

As in a number of previous studies, the data showed some overrepresentation of the older age group (36-59 months). A total of 574 children measured from this age group. The survey also reported a statistically strong association between age category and malnutrition with children aged less than 24 months being about 2.1 times more likely to be malnourished than children aged 24-59 months, but since the whole population was surveyed the possibility of any bias can be overruled. Again bearing that disease incidences were highly associated with malnutrition (a common observation especially at younger ages when children are more vulnerable to malnutrition due to varied factors like inadequate weaning practices, improper child care, close child spacing etc,) it was not surprising to find the younger increasingly more malnourished. Again, the finding shows that inadequate food intake was not major in explaining the observed malnutrition (a fact commonly associated with older children). The higher number in the older age category could therefore suggest that a number of children who qualified within the height criteria were in fact over the age of five years and most likely stunted in growth.

The high malnutrition amongst children aged less than 24 months, also seen in other surveys, can partly be explained by the fact that this is the age when most children are either introduced to weaning foods or to full family foods or stop breastfeeding. The weaning foods described are in most cases, not only inadequate in quality but also in quantity. Cessation of breastfeeding also denies the child many nutrients.

There was a significant difference in nutritional status between the sexes, contradicting findings of other studies in Somalia, which indicate that both boys and girls are treated equally when it comes to food intake at household level (FSAU food utilisation study 2002).

6. Conclusion and Recommendations

Global acute and severe malnutrition rates of 12.5% and 3.7% respectively with the population relying entirely on purchases for their food source and income, for purchases, derived from small business, casual work and remittance/gifts suggests vulnerability. Acute malnutrition is also significantly associated with morbidity (diarrhoea, ARI and malaria), sanitary facility, sex of child and age group. Proposed interventions, in collaboration with partner agency on ground, require:

- Provision of ORS (for diarrhea) and appropriate curative care
- Introduction of impregnated mosquito nets
- Intensification of health and nutrition education activities at the household level to address care concerns, targeting mothers, fathers and other caregivers is required. The main areas of focus include 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.

- Immunisation coverage as indicated by the measles coverage is low. Like in Jerriban district, the discrepancies between official preliminary October 2nd round Fall NIDs coverage (88%) and survey results (66%) need further investigation with a view of putting in place remedial actions to improve actual coverage.

- Monitoring of the trends in the food security situation will need to be undertaken during the coming Jilaal, and information disseminated for action.

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[2] W/H<-3 Z scores and/or oedema

Annexes

Annex 1: Puntland traditional calendar

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

Annex 2: 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