Preliminary Results

Nutritional anthropometric and retrospective mortality survey of 6 to 59 month-old children in Dhusa Mareb district – Central Somalia

8th to 17th December 2007

Action Contre la Faim

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INTRODUCTION

The present survey covers the area of Dhusa Mareb and surrounding villages in radius of 35 km N/S and 75 km W/E as well as Guri Ceel and surrounding villages in radius 60 km N/S and 50 km W/E (see *Appendix 1)*[1]. The inhabitants of the region are Hawiye, from the sub-clan of Ayr. There are minority of Duduble, Suleiman and Sayiid but the assessed area is limited only in Ayr clan territory. The population figures from the last nutrition assessment have been updated but the area covered for the current survey is smaller. The estimations resume in a total of inhabitants is 53,269. It was estimated that the under-five population represents 20% of the total population.

The area is currently classified as chronically food insecure with moderate risk to worsen[2]. The poor rainfall during the two last rainy seasons (Gu' and Deyr 2007) has led to water scarcity and drastically increased the displacement of the population looking for grazing area for their cattle in North Mudug and near the Ethiopian border . Moreover, the devaluation of the Somali Shilling and the high cereal prices has resulted in the decrease of the purchasing power of the households. For instance, the price of rice has increased of 60% in Dhusa Mareb district between July and November[3].

Some NGO's have been operating in the area providing relief assistance. MSF Belgium has a hospital in Guri Ceel and is in charge of delivery and surgical units through Out-Patient Department (OPD) and In-Patient Department (IPD), Extended Program of Immunization, , as well as the management of severe acute malnourished children. They also provide medical assistance in Dhusa Mareb through their OPD. ICRC supports water trucking activities and rehabilitation of boreholes. Since mid 2005, COOPI (Cooperazione Internazionale) implements Pastoral Emergency project. Somali Red Crescent Society (SRCS) is operational in Dhusa Mareb since 10 years supported by ICRC and UNICEF (one MCH and one OPD). SRCS manages in total 5 OPDs in several big towns of Galgaduud region (Abudwaq, Galinsor, Adaado and Ceel Bur). One OPD is run by SAHCED (funded by Somali Diaspora).at Dhusa Mareb's hospital.

Since November 2007, ACF is running Supplementary Feeding Center and Out-patient Therapeutic Programme in both Guri Ceel and Dhusa Mareb towns. ACF is also expected to open a Therapeutic Feeding Center in Dhusa Mareb in March 2008.

[1] Kilometres are estimated according to the data collected from the field and from the previous nutrition assessment in May, 2007.
[2] FSAU Food Security and Nutrition: Special Brief-Focus on Risk Factors, October 12, 2007.
[3] FSAU Food Security and Nutrition: Quarterly Brief-Focus on Post Deyr season Early Warning, December 21, 2007.

OBJECTIVES

- Evaluate the prevalence of global and severe acute malnutrition amongst children of 6 to 59 months in Dhusa Mareb, Guri Ceel and surrounding villages.
- Evaluate the under-5 and the crude mortality rates since the beginning of Ramadhan (since the 5th September).
- Identify higher risk groups of malnutrition: gender, age, status.
- Assess the previous two-week morbidity among children from 6 to 59 months old in the surveyed area.
- Estimate the measles vaccination coverage among children from 9 to 59 months.

METHODOLOGY

Two-stage cluster sampling method has been used because of the lack of precise population figures. The SMART methodology and the Nutrisurvey software (last update October 2007) are used for the sample size determination and the selection of the clusters.

The first stage is the selection of 32 villages from the exhaustive list of the villages in the studied area (see *Appendix 2*). These villages are considered as the smallest geographical units and represent the first stage selection unit: the cluster. Each cluster contains a minimum of 27 children and 22 households in order to gather statistically reliable estimates of the malnutrition and mortality rates with 95% of confidence. The clusters or the sampling sites, within the total population are selected randomly according to the villages' size. The second sampling stage - the household's selection – is based on the EPI method. All children from 6 to 59 months (65 – 110 cm of height) in the selected households were included in the survey.

Data were analyzed with Nutrisurvey for SMART software. Anthropometric data are put in relation to the NCHS[4] reference population.

RESULTS

A total of 866 children from 6 to 59 months were selected for the anthropometric survey. 18 (2.0%) children have been excluded from the sample because of their absence during the survey (12), refuse (4) and disability (2). 3 other have been recorded as flags (2 for

[4] National Centre for Health Statistics, 1977.

WHZ out of range and 1 for age missing). However, those children have been kept for the mortality analysis. In total, 727 households were surveyed for the mortality survey.

Characteristics of the samples

Table 1: Characteristics of the samples (Dhusa Mareb and surroundings, Galgaduud, Somalia, December 2007).

Nutritional anthropometric survey (children, 6-59 months)		
	N	***% (95% C.I.[5])***
Sample size	866	100
Children aged 6-29 months	340	39.3 (34.7 - 43.9)
Sex ratio (m / f)	1.1	-
Retrospective mortality survey (all household members)		
	N	***% (95% C.I.)***
Sample size (number of households)	727	100
Sample size (number of individuals)	5120	100
Children below 5 years of age (U5)	1157	22.6 (21.0 - 24.2)
Average household size	7.04	-
Average N° of U5 / household	1.59	-

Malnutrition rates

Acute malnutrition or wasting is defined by the Weight-for-Height (W/H) index and the presence of bilateral oedema. The W/H index of a measured child is calculated by taking into consideration the median weight of the NCHS reference population, for the same height. Acute malnutrition is expressed either in Z-score or in the percentage of median. The nutritional status of 866 children was analyzed for the anthropometric survey. 51.6% were male and 48.4% were female. The proportion of children aged 6 to 29 months in the analysed sample was 39.3% (n=340).

The Global Acute Malnutrition (GAM) was estimated to be 12.4 % (10.1 – 14.6) (95% C.I.) which is below the cut-off point of 15% while the Severe Acute Malnutrition (SAM) rate was about 1.3% (0.4 – 2.1) (95% C.I.) (Table 2). The malnutrition rates are lower than those ones observed in the other regions of Somali.

[5] Confidence Interval.

Table 2: Malnutrition rates in children aged 6-59 (n=866) and 6-29 (n=340) months, expressed as weight for height in z-score and percentage of the median *(Dhusa Mareb and Guri Ceel and surroundings, Galgaduud, Somalia, December 2007).*

Malnutrition rates for children under five years	N	Weight for height in z-score (WHZ) and/or presence of oedema	Weight for height in percentage of median (WHM) and/or presence of oedema
Global acute malnutrition 6-59 months	107	**12.4 %** **(**10.1 - 14.6) (95% C.I.)	**6.0 %** (4.5 – 7.5) (95% C.I.)
Severe acute malnutrition 6-59 months	11	**1.3 %** (0.4 – 2.1) (95% C.I.)	**0.2 %** (-0.1 – 0.6) (95% C.I.)
Global acute malnutrition 6-29 months	42	**12.4 %** (9.0 – 15.7) (95% C.I.)	**6.5 %** (4.2 – 8.8) (95% C.I.)
Severe acute malnutrition 6-29 months	6	**1.8 %** (0.4 – 3.2) (95% C.I.)	**0.3 %** (-0.2 – 0.8) (95% C.I.)

Two cases of Kwashiorkor were found. No statistical association has been reported between the different groups in the sample (gender, age) and the nutritional status of children under-five years.

Mortality rates

A total of 727 households were surveyed for mortality indicator with a recall period of 90 days which means since the beginning of Ramadhan (since the 5th September according to the Gregorian calendar). The results generated by the Nutrisurvey software were as presented in the table below.

Table 3: Number of deaths in the population surveyed, in the 90 days prior to the survey (data reported by the families included in the survey), *(Dhusa Mareb and Guri Ceel and surroundings, Galgaduud, Somalia, December 2007).*

Sample	**Number of deaths**	**N° of population alive at the date of the survey**	**Mortality rate (deaths/10,000 people/ day)**
Children below 5 years	20	1157	1.93 (1.02 -2.85) (95% CI)
Total population	44	5120	0.95 (0.57-1.33) (95% CI)

Other Results

- Morbidity (n=866):

- Global morbidity (2-week cumulated prevalence, according to caretaker): **30.4%**

Morbidity (children 6-59 months) n=866	N	%	95% CI
Prevalence of reported illness	263	30.4%	26.1 – 34.7

30.4% of the 6-59 months old children has been sick 2 weeks prior the survey. Those children were 1.53 times more likely to have weight-for-height <-2 z-scores when compared with the healthy ones. This difference was significant[6].

- Measles vaccination 9 – 59 months (n=849):
  - Vaccination confirmed by card: **8.8%** (6.1 – 11.5) (95% CI)
  - Vaccination according caretaker: **46.3%** (41.6 – 51.0) (95% CI)
  - No vaccination: **43.4%** (38.6 – 48.0) (95% CI)
  - Unknown: **1.5%** (0.3 – 2.7) (95% CI)

The measles vaccination coverage was about 55.1% (with card and confirmed by the caretakers). The measles vaccination coverage was far lower than the SPHERE minimum standard of 90%.

- Main source of food

Main source of food n=866	N	%	95% CI
Own production	56	6.5%	(4.2 – 8.8)
Purchasing	421	48.6%	(43.9 – 53.3)
Gifts from relatives	368	42.5%	(37.8 – 47.2)
Food aid	4	0.5%	(-0.2 – 1.2)
Bartered	6	0.7%	(-0.1 – 1.5)
Other	11	1.2%	(0.2 – 2.2)

Purchasing (48.6%) followed by gifts from relatives (42.5%) were the two main sources of food. Indeed, almost all the population in this area is pastoralist and they usually sell

[6] [6] Relative risk: 1.53 (1.07 – 2.48 C.I.), chi²=5.24, p<0.025.

animals (goat, camel) to buy food; when they did not have any animal, the main source of food is the money coming from their relatives. There was a statistically significant association between the different sources of food of the household and the nutritional status among children under-five years [7].

- Resident

Resident (n=866)	N	%	95% CI
≥ 6 months	599	69.2%	(64.9 – 73.5)
< 6 months	267	30.8%	(26.5 – 35.1)

69.2% of the sample is considered as resident, and almost 31% settled for less than 6 months in the area. No statistical difference was found between the resident and the non resident population when comparing their nutritional status.

- Status

Status (n=866)	n	%	95% CI
1: Urban	536	61.9%	(57.3 – 66.5)
2: Rural	303	35.0%	(30.5 – 39.5)
3: IDP's	27	3.1%	(1.5 – 4.7)

Only 35 % of the sample was from the villages surrounding Guri Ceel and Dhusa Mareb, nearly 62% was from Guri Ceel and Dhusa Mareb towns. Only 3% was located in IDPs' camp; nevertheless, they were not really settling in the camp. Indeed, they were sleeping in their relatives' house but they used to eat their lunch in the camp.

DISCUSSION

The Global Acute Malnutrition (GAM) was estimated to be 12.4 % (10.1 – 14.6) (95% C.I.) which is below the cut-off point of 15%[8]. According to WHO classification, the nutritional situation is considered as serious. Meanwhile, the Severe Acute Malnutrition (SAM) rate was about 1.3% (0.4 – 2.1) (95% C.I.) in December 2007. According to SPHERE standards[9], the crude and the under-5 mortality rates (CMR 0.95 deaths/10000/day and U5MR 1.93 deaths/10000/day) were just below the alert level.

[7] $chi^2=6.51$, $p<0.05$, ddl=2.
[8] WHO classify the severity of *wasting* (% children with W/H <-2 Z-score) as acceptable (<5%), poor (5-9.9%), serious (10-14.9%) and critical (>=15%).
[9] SPHERE standard for U5MR – Alert level: 2/ 10,000 people/day and Emergency level: 4/10,000 people/day; CMR – Alert level: 1/ 10,000 people/ day; and Emergency level: 2/ 10,000 people/ day.

The measles vaccination coverage was low and there was a high association between the disease and malnutrition in children aged 6 to 59 months old. Even though it is not possible to clearly state that the disease was the main cause of malnutrition, there is a correlation.

The status was also related to the nutritional status which can lead to some assumptions on the possible vulnerability of rural or IDPs but still, it is important to remain cautious on the real strength of this link.

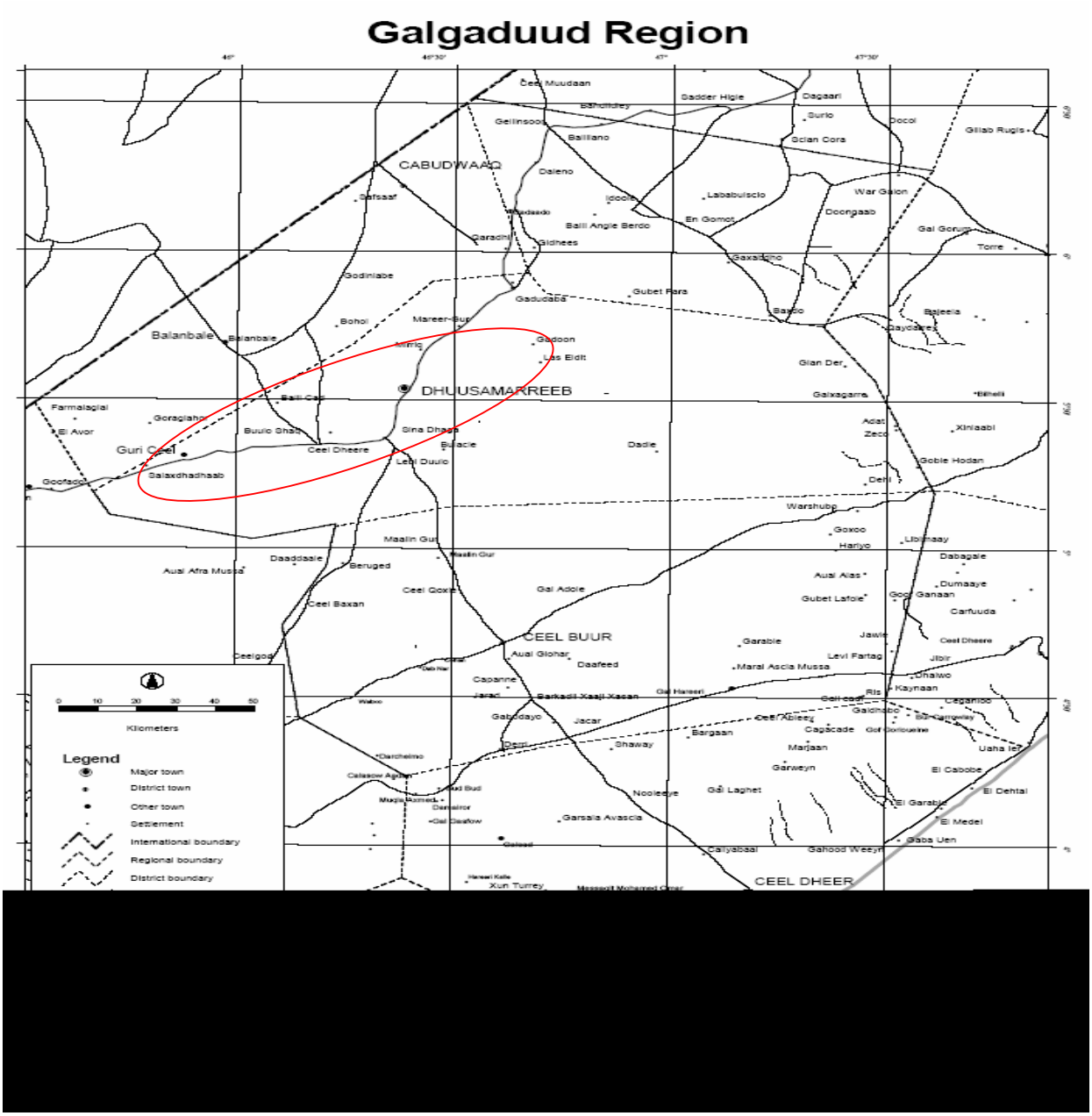
The water scarcity due to poor rainfall during the two last rainy seasons (Gu' and Deyr 2007) combined with the migration of population looking for grazing area as well as the increase of the price of staple food in the market (rice, wheat flour, sorghum) specially caused by the devaluation of the Somali Shilling, may worsen the household's food security and hence, the nutritional status of the population in the region.

RECOMMENDATIONS

Some recommendations have been drawn after the context analysis and the preliminary results from the survey. However, further recommendations could appear in the final report after the findings of this survey are discussed with other actors.

- Reinforce the treatment of severe acute malnutrition through the opening of a Therapeutic Feeding Centre in Dhusa Mareb and continue with the treatment of the moderate and severe acute malnutrition through Supplementary Feeding Centre and Out patient Therapeutic Programme.
- Implement active case finding on a regular basis.
- Conduct a nutritional and mortality survey in 2008 in order to study annual trends and to regularly monitor the nutritional situation.
- Improve the measles vaccination coverage by involving all health actors.
- Conduct a food security study to understand the needs and dynamics of the local food security context.
- Implement water and sanitation programme according to the results of the assessment carried out end of October 2007 by ACF WaSH Department.

Appendix 1: **Map of the surveyed area** (Dhusa Mareb and surroundings, Galgaduud region, Somalia, December 2007).



Appendix 2: **Clusters selection** (Dhusa Mareb and surroundings, Galgaduud region, Somalia, December 2007).

Geographical unit	Population size (under-5)	Assigned cluster
Boosney	513	1
Qootir Camp (in Xalanle)	260	2
Xalanle	484	3,4
Tuulo Gaban	513	5
Diilaxsay	342	6
Beder	456	7,8
Jaafanjef	541	9,10
Mayarcade	570	11,12
Galaal	541	13
Genjir	231	14
Gaabuun (changed to Dabare/Byo Gaduud)	83	15
Qodgod (changed to Genjir)	165	16
Waberi Village	1102	17,18,19
Horsed Village	919	20,21,22
Waheri Ade Village	367	23
Dayax Aqe Village	367	24
Beer Cabdi Farah (replaced by Inamad)	110	25
Gaadoon	550	26,27
Xanadburo	330	28
Marer Gur	550	29,30
Ceeldeere	220	31
Fargoye (replaced by one cluster in Guri Ceel town)	275	32