

Tayeglow district
Bakool region

Nutrition survey
October 23rd – 27th 2003

FSAU/UNICEF/CARE/SRCS

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ABBREVIATIONS AND ACRONYMS

ARI	Acute respiratory infections
FAO	Food and Agriculture Organization
FEG	Food economy group
FEZ	Food economy zone
FSAU	Food security assessment unit
GAM	Global acute malnutrition
GI	Glycemic index
MCH	Maternal and child health
NGO	Non governmental organization
NIDs	National Immunization days
NCHS	National centre for health statistics
UN	United Nations
SACB	Somalia Aid Coordination Body
UNICEF	United Nations Children's Fund
WFP	World Food Program
WFH	Weight for height
WHO	World Health organization
ICRC	International Committee of the Red Cross/Crescent Movement

ACKNOWLEDGEMENTS

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The contribution of SRCS field team in the provision of a training venue and community mobilization was highly appreciated.

Much gratitude goes to the mothers, caregivers and leaders in Tayeglow District whose cooperation and support enabled the survey team achieve its objective.

FSAU also expresses its sincere appreciation to the entire team for the high level of commitment and sincerity demonstrated during all stages of this survey.

EXECUTIVE SUMMARY

Tayeglow District is located in Bakool region in the South and Central Zone of Somalia and borders El Berde to the north, Beled-weyne and Buulo Burdo to the east, Buur Hakaba to the south and Baidoa and Huddur to the west. It has a total population of 38,900¹.

Somalia has got three livelihood groups: the pastoral, agro-pastoral and riverine. Tayeglow district constitutes of three food economy zones within two livelihood groups:

- the southern inland-pastoral food economy zone within the pastoral livelihood group. Their livelihoods are centred on camel, sheep and goat keeping in respective order of importance.
- the Bay-Bakool High Potential food economy zone within the agro-pastoral livelihood group. Their lives are centred on sorghum production, cattle and camel keeping in the respective order of importance.
- the southern agro-pastoral food economy zones within the agro-pastoral livelihood group. Their livelihoods are centred on camel and cattle keeping, and sorghum production, in respective order of importance.

Tayeglow district community is mainly rural. 60% of the population derives its livelihood from both crop production/livestock keeping (mainly sorghum, cowpeas, camel and cattle). Crop production (mainly sorghum and cow peas) and pastoral (mainly camel and cattle keeping) are also important livelihoods for 20% of the population each.

Baidoa district is the 'grain basket' of the Bay-Bakool region (including Tayeglow district). However since July 2003, insecurity has degenerated in Baidoa following dispute between warring factions, limiting access by the Tayeglow community to sorghum markets in Baidoa. A peace agreement was signed between the warring factions in September 2003; however incidences of insecurity are still prevalent and continue to limit access. Tayeglow district also experienced the Gu 2003 season sorghum failure following erratic rains, pest attack and diseases.

Between October 20th and 27th, a nutrition survey was conducted jointly by FSAU, UNICEF, CARE, SRCS and the Tayeglow community, using a two stage cluster sampling methodology. The survey had five objectives:

1. To determine the prevalence of acute malnutrition among children aged 6-59 months (and measuring 65-110 cm) in Tayeglow District.
2. To determine the coverage of measles, vitamin A supplementation and oral polio vaccine among children aged 6-59 months in Tayeglow District
3. To determine the incidence of diarrhoea, measles and ARI in children aged under five, two weeks prior to the survey
4. To describe the possible causes of malnutrition in Tayeglow district
5. To determine the levels of retrospective crude and under five mortality rates since the 23rd of July 2003.

This survey is also a follow up to a rapid assessment conducted by FSAU on September 22nd 2002, using Mid upper arm circumference in Bioley village in which 19% of the children screened (6-59 month category) were found to be malnourished (MUAC below 12.5cm) and 6.1% were severely malnourished (MUAC below 11.0 cm). The survey utilized the two stage cluster sampling of 30 clusters by 30 children for nutrition and 30 clusters by 30 households for mortality.

The survey results of 17.2% (CI: 14.9-19.9) for global malnutrition rate (W/H < -2 z-score or oedema) and 3.1% (2.1-4.4) for severe acute malnutrition (W/H < -3 z score or oedema) indicate a critical nutritional situation. It was notable that about 15% of the children were at risk of malnutrition (with W/H between -2 and -1.5 z scores). There were no significant statistical association between nutrition status with sex, age group and disease (ARI, diarrhoea and measles). The findings of the retrospective under five and crude mortality rates

¹ Ref: Bay and Bakool Joint food security assessment 1999, by Nisar Majid

of 1.34/10,000/day and 0.71/10,000/day respectively, meet the key indicator under the 'Humanitarian charter and minimum standards in disaster response' (Sphere project, First final edition 2000 pg. 233), however, urgency is needed to address the high levels of severe malnutrition (for example through targeted feeding programs) and minimize potential deaths.

Further survey results indicate crop production and purchase as the main sources of food, contributing 78.5% and about 20% of the food basket respectively. The main income sources were the sale of crops and casual work, which contributed to 34.4% and 32.3% households respectively. During food shortage, communities cope by selling livestock and purchasing food in larger quantities than usual. About 20% of the population depends on boreholes and protected wells for water, with the rest (80%) depending on other sources such as unprotected hand dug wells and ponds. About 61% of the population dispose of faecal matter in the bush/open ground, and about 40% use pit latrines. Whereas children ought to be fed at least three times a day due to the small capacity of their stomachs, 22% of the children receive meals once or twice a day; About 32 % of the children aged 6-23 months of age are no longer breastfeeding.

There is no significant displacement and migration (into or outside the district), but there are unusual internal livestock movements within the district in search for pasture. Milk prices are extremely high (250% higher in dollar terms) compared to normal due to low production associated with depleting pasture conditions and poor rains. Livestock prices are depreciating due to lack of markets and deteriorating body condition of animals.

Two maternal and child health (MCH) centres, located in Tayeglow town and Bioley village, serve the population of Tayeglow district. About 23 % of the population access these health facilities (MCH centres) for health care, while about 54% receive treatment at private clinics or pharmacies.

FSAU has described the overall food security situation in Tayeglow as 'alert'. The delayed deyr rains are having negative impact on crop emergence. The germinated seeds in these areas are wilting due to moisture stress as well as effects of pests. Pasture has already started to deplete and livestock are concentrating in areas where little rains were received, or with permanent water points (Heedle and Dhukubo). Livestock production is likely to decline significantly if the rains do not continue. Water scarcity is already experienced in certain areas as water catchments continue to dry up. In the event that the deyr rains fail in the coming weeks, the water situation will be critical.

Underlying causes of critical levels of malnutrition were associated with child care, access to health services and household food security. . There is limited access to health care services, with the whole of Tayeglow population of 38, 900 being served by the two MCH centres at Tayeglow and Bioley.

Gu 2003 rains were erratic and unevenly distributed, and the season characterized by unusual intensive pest damage (mainly crickets, stalk borer and birds). This resulted in sorghum crop failure in Tayeglow district (among other areas in Somalia). Apart from cowpeas which performed fairly, communities in Tayeglow currently rely on the carry over stocks from the Deyr 2002 harvest (which are now almost depleted) and on purchase to access food. Most of the income is derived from the sale of more livestock than normal. Unfortunately, this coping mechanism does not seem sustainable as the demand (and prices) for livestock by traders has begun to reduce due to lack of fodder. The result is a gradual decrease in the purchasing power of the poor and middle households, this eventually contributing to malnutrition. Amidst this food shortage, the Tayeglow community habitually sifts sorghum flour by eliminating the husks, during the grinding process. This process results in loss of fibre and some of the vitamin B complex (pantothenic and niacin) that are difficult to replace presently, and pre-disposes them to micro-nutrient deficiency.

Milk prices are extremely high (250% higher in dollar terms) compared to normal due low production associated with depleting pasture conditions and poor rains. To cope, there are unusual internal human and livestock movements within the district in search for pasture. Lack of pasture and water has decreased access to milk consumption by most of the poor and middle wealth groups, subsequently contributing to high malnutrition rates.

Water scarcity is already experienced in certain areas as water catchments continue to dry up. With the main source of water being open hand dug wells (54.8% of the population), diarrhoea incidences are high (20.5%), contributing to the critical levels of malnutrition.

The survey team and community members made the following recommendations to address the high malnutrition rates in Tayeglow district:

- According to the local community in Tayeglow, the on-going civil war and political instability since the collapse of the central government in 1991 is the underlying cause of high malnutrition rates in Tayeglow district as it limits investment into infrastructure (e.g. roads that would enhance access and referral hospital). Any intervention geared towards peace building in Somalia as a whole will greatly address this problem.
- The food security situation in Tayeglow district needs to be monitored closely, possibly using the household economy approach (HEA), to determine the magnitude of the problem and the most appropriate way and time to respond. Injecting more food into the district (for example through food for work intervention) will reduce prices and possibly increase access to cereal. However, this may need to be verified through a food security assessment.
- Establishment of a referral health facility (a primary health care centre or hospital) is necessary for treatment of diseases that cannot be handled by the two MCH centres in the district. These include cases of tuberculosis, whooping cough, oedema and severe acute malnutrition. International agencies that have expressed interest are highly welcome to take up this intervention.
- At this time, the livelihoods of the agro-pastoral and pastoral communities in Tayeglow are centred on the 'sale of more animals' for income. Projects geared towards de-stocking (i.e. that will facilitate disposal of these assets by the community at favourable prices) are highly recommended².
- The team recommends supplementary feeding for the vulnerable groups due to the high prevalence rate of acute malnutrition.
- Agencies that address water access issues (CARE and ORDA for example) in the district, may need to intensify protection of wells to facilitate consumption of safe water. There is also a need to mobilize local agencies and the community on appropriate sanitary practices that will minimize contamination of water for consumption in the town or permanent settlement areas.
- Measles vaccination campaigns need to intensify in villages not accessing services at Bioley and Tayeglow MCH. SRCS is managing these MCH centres but does not have the capacity to undertake outreach programs. Efforts by an international organization to fill this gap are highly appreciated.
- GTZ is scheduled to conduct a baseline survey on household systems and management and thereafter undertake home economics interventions in selected areas in the district, among others. GTZ, in collaboration with local agencies on the ground, could also consider incorporating the creation of awareness of the importance of consumption of whole (rather than sifted) cereal in their scope of work. Community sensitisation on the health implications of chronic consumption of high sugar concentrates could be undertaken simultaneously.
- This survey identified nutrition information gaps for improved nutritional programming and advocacy in Tayeglow district. These could be addressed through research on the following subjects. (In the event that such information is already available, this recommendation becomes obsolete).
 - i). A comparative study of the impact of chronic consumption of high sugar concentrates (and foods with high glycemic index eg. Somali tea) on the health and nutrition status of (a) the sedentary population based in Tayeglow town and (b) the nomadic rural community.
 - ii). The linkage between consumption of high sugar concentrates (mainly teas) and calcium related disorders within the population in Tayeglow district.

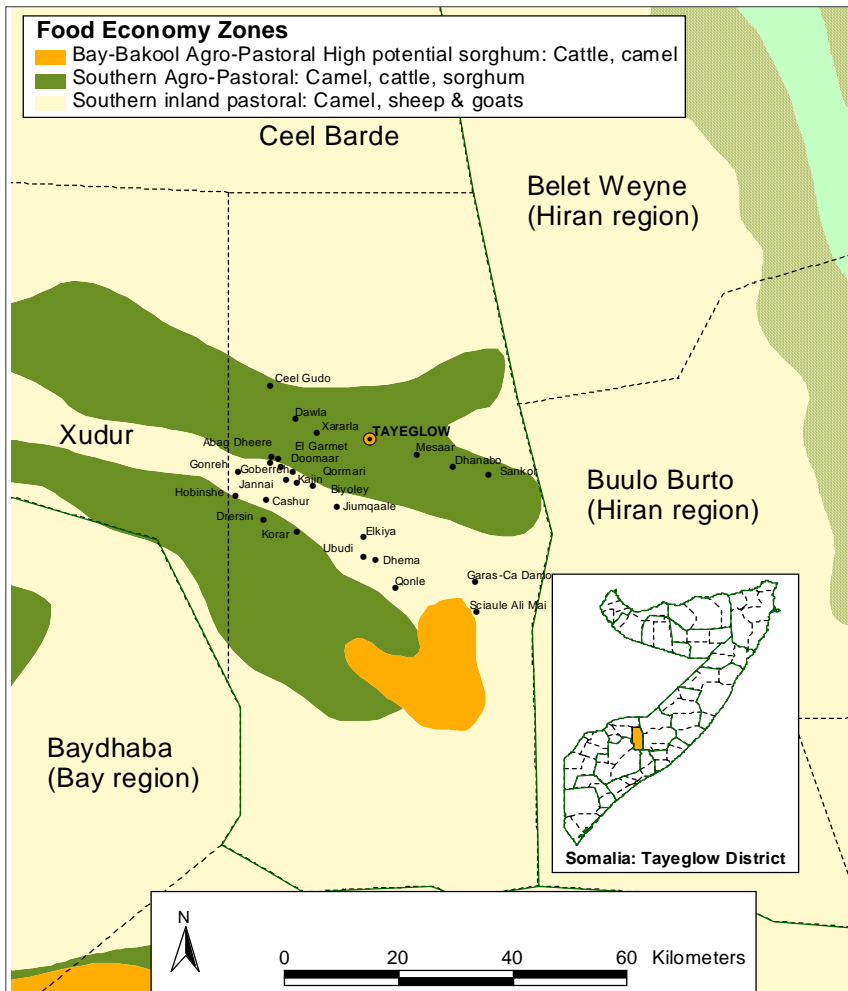
² Oxfam GB has the experience of undertaking such a project in Wajir Kenya

SUMMARY OF FINDINGS

Indicator	Number	Percentage
Under five children screened during the survey	916	100
Number of boys in the sample	462	50.4
Number of girls in the sample	454	49.6
Global acute malnutrition according to weight for height index in Z score or presence of oedema	158	17.2 CI: 14.9-19.9
Severe acute malnutrition according to weight for height index in Z score or presence of oedema	28	3.1 CI: 2.1-4.4
Global acute malnutrition according to weight for height % of the median or presence of oedema	89	9.7 CI: 7.9-11.9
Severe acute malnutrition according to weight for height in % median or presence of oedema	15	1.6 CI: 1.0-2.8
Proportion of children with diarrhoea in two weeks prior to the survey	188	20.5
Proportion of children with ARI in two weeks prior to the survey	128	14
Proportion of children with measles in the last two weeks prior to the survey	10	1.1
Proportion of children immunized for measles (n=860)	406	47.2
Proportion supplemented with Vitamin A in the last month prior to the survey	741	80.9
Proportion of children exclusively breastfed up to 3 months (n=916)	894	97.6
Proportion of children breastfed 18 months and more (n=695 – currently not breastfeeding)	299	43
Proportion of children fed 3 times a day and above	716	88.2
Under 5 mortality rate	14	1.3/10,000/day
Crude mortality rate	30	0.7/10,000/day
Main source of food: Household crop production	719	78.5
Other source of food: Purchase of food	184	20.1
Main source of income: Sale of crops	315	34.4
Other source of income: Casual work	296	32.3
Coping strategy: Sale of more livestock	353	38.5
Other coping strategy: Purchase of food	225	24.6
Source of water: open hand dug well	502	54.8
Faecal disposal: pit latrine	362	39.5
Bush/open ground	554	60.5
Access to health services: private clinic/pharmacy (n= 853)	458	53.7
Public health facility (n=853)	197	23.1

1. INTRODUCTION

Somalia is divided into the North East, North West and the South and Central zones which are further divided into regions. Bakool is one of the seven regions³ in South and Central Zone, and comprises of five districts: Wajid, Huddur, El berde, Rabdure and Tayeglow. Tayeglow district borders El Berde to the north, Belet-weyn and Buulo Burdo to the east, Buur Xakaba to the south and Baidoa and Huddur to the west. The total population for Bakool region is 140,600, with 38,900 people residing in Tayeglow⁴ district.



The central government of Somalia collapsed in 1991, resulting in a volatile political situation in the whole country. The situation has generally stabilized in Somaliland, within in the North West Zone which declared self independence and established a central government the same year; and also in Puntland in the North East which established regional autonomy administration in 1996. In other parts of Somalia, power control mainly lies in the hands of warlords and clan elders.

In Tayeglow district, security has generally been normal for the last one year through Gu

season, however from Hagaa/July 2003, insecurity in Baidoa district to the south west of Tayeglow has created tension in the southern parts of Tayeglow.

1.1. Survey Justification

FSAU Nutrition surveillance project conducted a rapid nutrition assessment in Bioley village, Tayeglow district, using mid upper arm circumference (MUAC) in September 2002 to determine the nutrition status of children aged 6-59 months. The results of the global and severe acute malnutrition rates were found to be 19% (MUAC < 12.5%) and 6.1% respectively. This survey is a follow up of the rapid assessment and aims to determine the nutrition situation since no other survey has been undertaken.

The short and erratic Gu rains resulted in poor harvests of sorghum in Tayeglow district. Apart from cowpeas which performed fairly, communities in Tayeglow have relied on purchase and the carry over stocks from the Deyr 2002 harvest which are now almost depleted.

³ Somalia has a total of 18 regions

⁴ Ref: Bay and Bakool Joint food security assessment Assessment 1999, by Nisar Majid

FSAU, in collaboration with partners (UNICEF, CARE and SRCS) undertook this survey to determine the levels of acute malnutrition in Tayeglow district in the light of the impact of the Gu sorghum crop failure and reduced access to grain markets in Baidoa.

1.2. Survey Objectives

1. To determine the prevalence of acute malnutrition among children aged 6-59 months (and measuring 65-110 cm) in Tayeglow District.
2. To determine the coverage of measles, vitamin A supplementation and oral polio vaccine among children aged 6-59 months in Tayeglow District
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2. BACKGROUND INFORMATION

2.1. The Socio-political environment and security implications

The central government of Somalia collapsed in 1991, resulting, in a volatile political situation in the whole country. The situation has stabilized in Somaliland which declared self independence and established a central government the same year; and also in Puntland which established regional autonomy administration in 1996. In Tayeglow and the other parts of Somalia, power control mainly lies in the hands of warlords and clan elders.

In Tayeglow district, security has generally been normal for the last one year through Gu season, however from Haggaa/July 2003, insecurity in Baidoa district to the south west of Tayeglow has created some tension in the southern parts of Tayeglow. A peace agreement signed between the warring factions in September has resulted in improved access, but not completely improved security in Baidoa. Tayeglow district also experienced the Gu 2003 season crop failure due to rains that ended earlier than expected, pest attack and diseases.

2.2. Seasons in Tayeglow District and Somalia Generally

Jilaal season occurs from January through March, and represents the dry period of a normal year. Harvesting of the deyr crop is completed in the early part of Jilaal. Most livestock migrate in search of water and pasture during the period. Jilaal represents the hungry season for the pastoral based livelihoods.

Gu season, normally occurs from April through June, and represents the main rainy period. Gu rains are the heaviest and most reliable rains in Somalia and not only supporting livestock production but also about 70% of the annual crop. The Gu harvest is normally expected between July and August. The hungry season of the crop reliant food economy groups is experienced from June to early July when the deyr food stocks are depleted but the Gu crop has not been harvested. Livestock based food economy groups benefit from improved livestock production due to increased pasture and water availability at this time.

Haggaa season, normally occurs from July through September, and represents the cool, dry period. Harvesting of the Gu crop (sorghum, cowpeas and peanuts) and building and renovation of underground storage for food are the main activities undertaken. During Haggaa, production of milk improves due to increased access of livestock to farm stalks and fodder. The sale of cereal crop decreases due to decreased demand. There is also increased production of honey.

The deyr season, normally occurs from October through December. Compared to Gu, deyr rains are localized and less reliable. The deyr harvest is normally expected between December and January and provides key food requirement to take households through the Jilaal season. The harvest, however, is insignificant compared to the primary/main harvest of the year.

2.3. Food security context since Deyr 2002

Tayeglow district, like Bakool region, comprises of three food economy zones (FEZ):

- i. Southern Inland Pastoral: camel, sheep and goats.
- ii. Bay-Bakool Agro-pastoral High Potential: sorghum, cattle and camel
- iii. Southern Agro-pastorals: camel, cattle and sorghum

In a normal year, Bakool region depends on crop production for 55-70% of its food basket. Tayeglow district mainly falls within the Southern inland pastoral food economy zone (FEZ), with pockets of the Southern agro-pastoral and Bay-Bakool agro-pastoral high potential food economy zones at the centre of the district.

The population of Tayeglow is mainly rural and relies on the following livelihoods:

- 20% depends on crop production (sorghum and cow peas),
- 20% are pastoralism (camel and cattle),
- 60% undertake both crop production and livestock keeping (sorghum, cowpeas, camel and cattle).

The Deyr 2002 season was characterized by late showers that came in November and December which resulted in substantial loss of crop harvested in December 2002-February 2003. Nevertheless, the food security situation was classified as 'relatively normal' as it did not deviate significantly from the seasonal norm.

The Deyr harvest, coupled with continuing food for work (FFW) and social support programs by CARE resulted in a drop in the cereal price in January (Jilaal season) by 35-45% compared to November and December of 2002. The food security situation (market prices for staples and non-staples, demand, supply, access and general terms of trade) in the whole Bakool region remained fairly good and normal for the time of the year. Livestock conditions in terms of production and meat supply was normal. Both availability and access of livestock to pasture was normal. Milk prices were high and increased by 100% due to inadequate pasture, though there were no reported cases of livestock diseases

Land was cultivated and crops planted in Jilaal, ahead of the Gu rains. Germination was reported to be normal. In April, FAO, in collaboration with ORDA (Organization for rural development action – a local organization) cleared over 170 ha of new land for poor agro-pastoral groups in Medaa village before the onset of rains, in an imitative to open 200 ha and support food security for more than 200 families in the area. FAO also provided a variety of seeds of 7.8 mt, (sorghum, cow pea, green bean, sesame, sunflower and groundnuts) to 700 families in four villages: Medaa, Harun, Bioley, Waranyay, and Hubudho. ICRS also provided sorghum, cowpea and sunflower seeds to a number of farmers in the district.

Gu 2003 rains were erratic, unevenly distributed and ended earlier than usual. Additionally, there was high prevalence of pests and diseases which destroyed the sorghum crop. In Tayeglow and the whole Bakool region, crop harvesting begun in July and was completed in August,03. The overall sorghum production in the region was considered a failure due to pests (such as the stalk-borer infestation), excessive wind and heavy bird damages, which was not a normal occurrence for the season. Household food stocks for the poor wealth groups generally declined during the Jilaal season and expenditure on cereal increased.

Following the crop failure, abnormal livestock (camel and goats) movement for agro-pastoral economies to grazing areas of Burhakaba of Bay region, were reported, as livestock especially camel generally lost access to fodder. In southern parts of Tayeglow and Huddur, (sorghum failed areas) however, above average cowpea harvests (Gu) enabled food diversification at HH levels. The terms of trade (livestock/cereal) were favourable for both pastorals and agro-pastorals and compared relatively well with those of a similar season of a normal year:

- Normal year, same season: 1:1 for Shoat/sorghum & 1:3 for Milk/sorghum
- This year, same season: 1:2 for shoat/sorghum and 1:3 for milk/sorghum.

Land preparation for the Deyr 2003 crop season begun in September, though in some areas, agro-pastorals also began early sowing. Pasture depleted slightly, causing low production of milk and subsequent increase in prices in the pastoral and agro-pastoral zones. The overall water situation was normal.

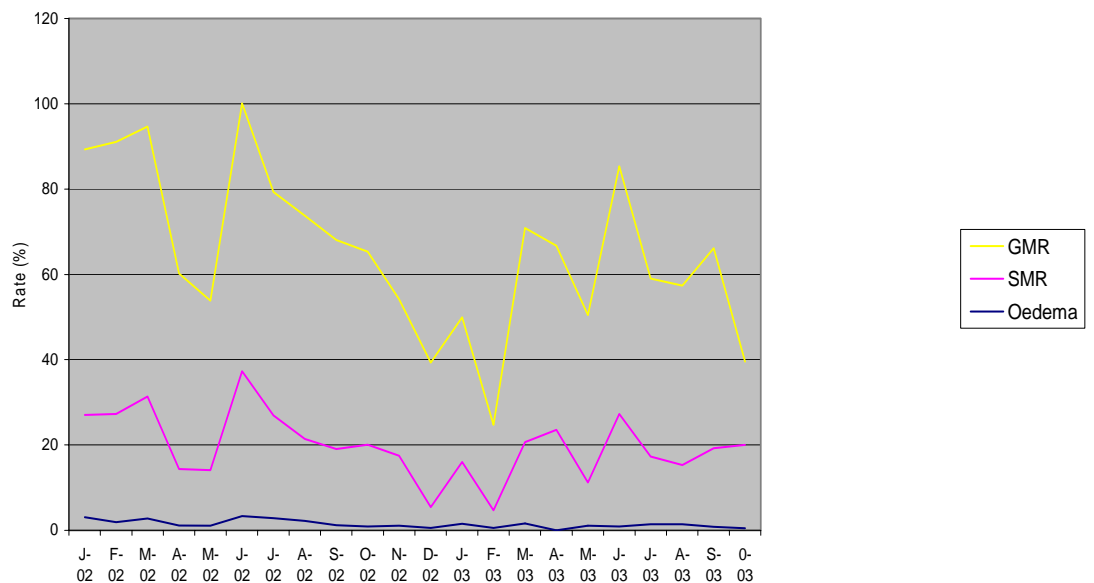
2.4. Health Context

Two Maternal and child health (MCH) centres cater for the health of the population of the whole of Tayeglow district: Tayeglow MCH centre is based in Tayeglow 'town' while Bioley MCH centre is based in Bioley village. Both are funded by UNICEF and managed by Somalia Red Crescent Society (SRCS).

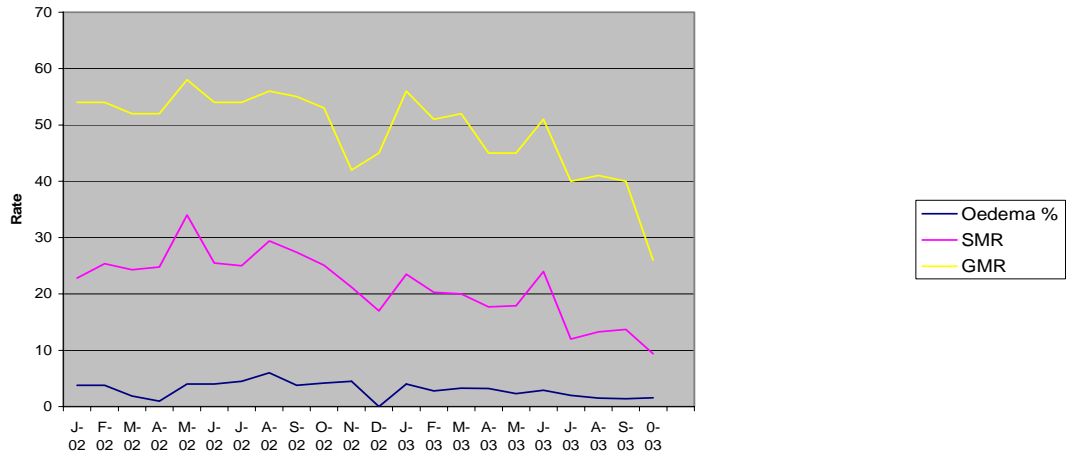
Malaria, acute respiratory infection, skin infections and intestinal parasites were the five most prevalent ailments that presented at the MCH centres in the past one year. The total number of patients with these ailments, attended to at these centres in the past one year, together with graphical presentation of the trends are indicated in appendix 5. The levels of acute malnutrition presenting at these centres since January 2002 are presented below.

Trends in Malnutrition Rates in the MCH centres in Tayeglow District in 2002-2003

SRCS Tiyeeglow MCH Nutrition Summary 2002-2003



SRCS Bioley MCH Nutrition Summary Report for 2002-2003



MSF Belgium, based in Huddur district also provides outreach services to Elgaras town which is closer to the Huddur border.

2.5. Water availability and access

Bakool experienced an early Jillal (long dry spell with no rainfall in January-March 2003). This had negative impact on water availability on water catchments and shallow wells in the south east parts of Bakool region (Dondardiir, Qeydar, Adde and Dhoobay) which started to dry up. Whereas there was no out-migration of livestock from the region, almost 40% of livestock moved from Tayeglow to Burhakaba area of Bay region, returning during the Gu season.

The Gu 2003 rains (April-June) were erratic, unevenly distributed and ended early. However, the short term benefits of the rains included normalizing of the prices of water for human and livestock consumption in April-May. The rains ended early and resulted in exhaustion of pasture and water for livestock during the Hagaa and deyr season. Subsequently, by September- October period, children, women and their livestock had moved away from their usual villages to areas where pasture and water can be accessed.

2.6. The Humanitarian Situation in Tayeglow

- FAO in collaboration with a local organization in Tayeglow ORDA (Organization for Rural Development agency) is involved in direct implementation of food security and promotion of kitchen gardening and income generating activities (such as donkey carts and bee keeping).
- CARE is involved with re-establishing the school education program. Construction of schools by contractors is on-going currently, with casual labour requirements being met through the food for work (FFW) program. Road rehabilitation and construction of schools are the main projects undertaken with FFW intervention.
- SRCS (Somali Red Crescent Society), provides health services, with funding from UNICEF. SRCS runs two Maternal and child health centres (MCH). In addition, SRCS office based in Huddur town conducts HIV/Aids awareness campaigns and family re-

union exercises in three districts of Bakool region (Elberde, Huddur and Tayeglow). Tayeglow district is visited one week of every month for this purpose.

- MSF Belgium, based in Huddur also undertakes immunization campaigns in the villages that border Huddur district, such as Elgaras.
- GTZ is currently operating in Huddur, but plans are underway to begin a Household systems and micro enterprise project in Tayeglow. This will incorporate a 'household systems' study that will utilize rapid rural appraisal techniques to appraise the community.
- ORDA (Organization for rural development agency) is a local partner with CARE on the food security and FFW project
- ADRO (Awmos Development and rehabilitation organization) is a local partner with CARE on their Food security and FFW project
- ARDO (Al Amin Rehabilitation and development organization) is also a partner with CARE on their Food security and FFW project
- GSA (General Service Agency) is a local partner with CARE on their food security and FFW project.

The national immunization day (NIDs) program of the WHO is also normally conducted in Tayeglow District.

2.7. Survey Justification

FSAU Nutrition surveillance project conducted a rapid nutrition assessment in Bioley village, Tayeglow district, using mid upper arm circumference (MUAC) in September 2002 to determine the nutrition status of children aged 6-59 months. The results of the global and severe malnutrition rates were found to be 19% (MUAC < 12.5%) and 6.1% respectively. This survey is a follow up of the rapid assessment and aims to determine the nutrition situation since no other survey has been undertaken since then.

The short and erratic Gu rains resulted in poor harvests of sorghum in Tayeglow district. And apart from cowpeas which performed fairly, communities in Tayeglow have relied on purchase and the carry over stocks from the Deyr 2002 harvest which are now almost depleted.

FSAU, in collaboration with partners (UNICEF, CARE and SRCS) undertook this survey to determine the current nutrition status. This survey also coincides with the on-going insecurity in Baidoa which has limited the access to grain in Baidoa markets, possibly impacting on nutrition status.

This survey aimed to provide information to decision makers on the current nutrition situation and underlying causes, in Tayeglow district.

2.8. Survey Objectives

1. To determine the prevalence of acute malnutrition among children aged 6-59 months (and measuring 65-110 cm) in Tayeglow District.
2. To determine the coverage of measles, vitamin A supplementation and oral polio vaccine among children aged 6-59 months in Tayeglow District
3. To determine the incidence of diarrhoea, measles and ARI in children aged under five, two weeks prior to the survey
4. To describe the possible causes of malnutrition in Tayeglow district
5. To determine the levels of retrospective crude and under five mortality rates since the 23rd of July 2003.

3. METHODOLOGY

3.1. Study Design

The study was both descriptive and analytical in nature. Cross-sectional data was collected through a standard questionnaire for nutrition (appendix 2) and mortality (appendix 3). In addition, qualitative information was collected by survey supervisors through discussions with key informants in the selected clusters, to provide further understanding of the underlying causes of malnutrition.

3.1.1. Study population and sampling criteria

For the nutrition survey, the study population consisted of people living in the district and comprised of children aged 6-59 months (of heights between 65-110 cm). A minimum of 900 children (30 children being randomly selected from each of the 30 clusters) were examined to provide valid estimates of the prevalence of malnutrition in children with a 95% confidence.

With regard to mortality, 916 households (30 randomly selected households from 30 clusters) were studied.

The survey supervisor conducted key informant discussion with the elders of the village/cluster, to determine the causal analysis of malnutrition.

3.1.2. Sampling methodology

The two stage cluster sampling methodology was used to identify 30 clusters on population proportional basis, for Tayeglow District. A list of villages with population estimates for Tayeglow District for August/September 2003 was obtained from the National Immunisation Days (NIDs) Secretariat in Huddur. The population figures for the villages were reviewed and adjusted by the survey team from 57,000 to 36,970, which was accepted as a closer population estimate. This figure is consistent with FSAU estimate of 38,900.

A table of cumulative population and attributed numbers was developed and clusters selected based on population proportional to size. The sampling interval (727) was determined by dividing the total population of 36,970 by 30. A random number, 1232, was selected within the cluster interval was used to determine the location of the first cluster. The next and subsequent clusters were determined by adding the cluster interval to the preceding random number selected. A total of eight clusters were from Tayeglow town while 22 clusters were from villages. Appendix 1 provides the sampling frame for the survey. The identified clusters were used both in the nutrition and mortality surveys.

The second stage of sampling was carried out in the cluster to select the first and subsequent households. Each survey team went to the middle of the cluster assigned guided by a survey guide/an elder from the selected community, and determined a random direction by spinning a pen. All households along the direction selected to the border of the cluster were counted and assigned numbers on a piece of paper. The survey guide randomly selected the first household to be visited from among those numbers. Subsequent households were selected on the basis of proximity, following a clockwise direction. All eligible children in each household visited were measured and weighed, and the mortality questionnaire administered.

The mortality questionnaire (refer to appendix 3) was administered in all randomly selected households, including those that did not have an under five qualifying for the nutritional anthropometric survey.

A total of 916 children were examined for weight for height and their caregivers interviewed as to whether the child had received vitamin A, measles or polio vaccination in the previous six months, or had suffered from any episode of diarrhoea, ARI within two weeks prior to the survey. A total of 916 households responded to the questions on mortality.

Challenges faced:

All the selected clusters were visited, and there was no reported case of insecurity. However, in four clusters, children and women could not be found as they had moved with their livestock for an average of five kilometres away from the high temperatures and lack of pasture. Where access was possible, these families/village communities were followed and assessed by the survey teams. However, when access was not possible, alternative villages with similar livelihood and ecological set up were assessed instead.

In three of the clusters the population was inadequate. The next nearby village/s were therefore assimilated to access sufficient number of children and households for the survey.

3.1.3. Child age determination

To overcome the difficulties encountered in determining the exact ages of children, useful documents such as growth monitoring/clinic attendance cards, other formal cards and calendars of events (see the appendix 4) were used as proxies to accurate age determination of children. Children ages were still regarded as important indicators though not used for anthropometric analysis and were approximate /average pointers. Weight for height indicator was utilized as the interest was in wasting status (acute malnutrition).

3.2. DATA COLLECTION

3.2.1. Variables examined:

- Age – Only children between 6-59 months were selected for examination. The proxy for the age of the child was the caregiver's recall, with further confirmation from either the under five's growth monitoring card or from a local events calendar (see appendix 4) when the birth date was not stated.
- Weight – UNICEF's Salter scales were used to weigh children to the nearest 0.1 kg or 100 g.
- Height: Children were measured barefooted and bareheaded using height measuring boards graduated to the nearest 0.5 cm. Children with height < 85 cm were measured lying down, while those equal to or above 85 cm were measured in standing position.
- Oedema: children were examined for the presence of bilateral pedal oedema. The occurrence of pitting as a result of thumb pressure on the foot or leg for 3 seconds was indicative of nutritional oedema.
- Diarrhoea: mothers/caregivers were interviewed regarding any episode of three or more loose, watery stools in a day, within the preceding two weeks.
- Acute respiratory infections (ARI): This was collected by asking mothers/caregivers whether the child had '*oof wareen or wareento*', a local term for pneumonia, two weeks prior to the survey. This term was validated, by the health worker within the team, if the child had cough, rapid breathing, pneumonia, bronchitis and fever or any other respiratory illness.
- Suspected Malaria: This was collected from interviewing the mother/caregiver whether the child had experienced at least three of the signs of malaria (periodic chills, fever, sweating and sometimes a coma, headache, joint pains, vomiting) two weeks prior to the survey, followed by some probing by the health worker in the team to exclude other infections.
- Measles: This was collected by asking the mother/caregiver whether the child experienced more than three signs of the following: fever, and skin rash, runny nose or red eyes, and/or mouth infection, or chest infection in the previous two weeks, followed by some probing by the health worker in the team to exclude other infections.
- Measles immunization status: The information was either provided by the mother (recall) or recorded from the child's growth monitoring/vaccination card

- Vitamin A supplementation: The information was collected from interviewing the mother or recorded from the child's vaccination card.
- Residential status: In all households visited, the mother/caregiver was asked whether they were originally resident from the village/town, or if they were displaced from elsewhere.
- Sex of household head: The caregiver was asked to state the sex of the person who takes decisions regarding the welfare of all household members.
- Feeding: Introduction of breastfeeding and weaning practices and times feeding to children assessed by interviewing mother/caregiver to all children.
- Mortality: a household was defined as a group of people living together and sharing food from the same pot. Being a polygamous community, unless in exceptional situations, the respondent was the female.

A proxy indication of mortality was taken retrospectively to provide an idea on the health situation of the population. The mortality assessment was done concurrently with the nutrition survey in which a 30 by 30 cluster sampling methodology was used. The survey methodology and clusters used for the nutrition survey was adopted with the exception that households were selected as the second sampling unit. The selection of clusters and households were the same as for nutrition survey.

Thus, the team went to the household, assessed all eligible under fives and administered the questionnaire on mortality. The questionnaire on the nutrition survey was not administered in the households that lacked an under five. However, the questionnaire on mortality was administered irrespective of whether or not there was an eligible under five for anthropometric measurements, until a total of 30 households had been covered.

3.2.2. Quality control procedures

The supervisors and enumerators underwent a three-day comprehensive training, which covered: interview techniques, sampling procedure, inclusion and exclusion criteria, taking weight and height measurements (including levels of precision required in measurements), standardizing the questions, diagnosis of oedema, verification of deaths within households and handling of equipment.

Pre-testing of the questionnaire and equipment was carried out Dhuji village which had not been selected for data collection. It involved familiarization of the survey teams with village/cluster entry, administering of the questionnaire, sampling procedure, correct taking measurements and documentation. After the field exercise, views were exchanged to address the identified difficulties and appropriateness of the questions.

The FSAU team of two nutritionists, reviewed data collection quality by closely monitoring field work; cross checking the filled questionnaires for all the teams on daily basis; daily review undertaken with the supervisors to address any difficulties encountered. Progress evaluation was carried out according to the time schedule and progress reports shared with partners on regular basis.

3.3. DATA ANALYSIS

3.3.1 Data entry, cleaning, processing and analysis

Data was entered and analyzed using Epi Info 6.04d computer based package. Running and tabulating all variable frequencies was carried out as part of data cleaning. The EPINUT program was used to convert the measurements (weight and height) into nutritional indicators and comparison made with the National Centre for Health Statistics (NCHS) references as designed by WHO (1983).

3.7.2. General characteristics of study population

Frequency and cross-tabulations were used to give percentages, means and standard deviations in the descriptive analysis and presentation of general household and child characteristics.

3.7.3 Creation of nutritional status indices

The anthropometric measurement of weight and height were used to compute the W/H nutritional status indicators of the studied children. Weight for height (WFH) expressed the weight of the child as a percentage of the expected weight for the standard child of that height as given by NCHS. WFH measures acute malnutrition or wasting. Using EPINUT z-scores were generated and the anthropometric indicator, WFH was used to classify children into categories of nutritional status as follows:

- < -3 z scores or oedema = severe acute malnutrition
- -3 z scores \leq WFH < -2 z scores = moderate acute malnutrition
- < -2 z score or oedema = Global /total acute malnutrition

3.4. Mortality

Using the formula for calculating mortality (below), the under-five mortality rates were calculated.

Formula (steps):

- Total the deaths for a given number of days (n)
- Divide the total deaths (n) by the mid period population size $[(n+N+N)/2]$
- Divide the outcome with recall period (p)
- Multiply by 10,000 for a daily under-five mortality rate

The formula summary:

Under-five mortality rate = $\{[n/(n+N+N)/2]/p\} * 10,000$

The same formula was applied in the calculation for crude mortality rate.

3.5. Chronology of activities for the Tayeglow nutrition survey

Major Activity	Dates. 2004
Preparation of tools, methodology & review of secondary data (Nairobi),	October 11-19
Community sensitization by SRCS, the counterpart	October 11-19
Training of enumerators and pre-testing (Dhuji), cluster mapping	October 20-22
Collection of data	October 23-27
Data entry and preliminary analysis	October 28-November 1
Presentation of preliminary results	November 2
Data cleaning and analysis	November 4-7
Report writing	November 10-28
Circulation of the draft report for comments	December 1, 2003
Circulation of the final report	December 10, 2003

The survey was conducted by six teams consisting of one supervisor and two enumerators, with each team handling one cluster in a day. The supervisors were seconded from the participating partners namely: UNICEF, SRCS and FSAU. An elder from a particular village/cluster assisted the teams in the identification of the cluster and its centre. Overall support, supervision and coordination were done by two FSAU nutritionists. SRCS, together with Tayeglow district administration assisted in the identification of the qualified enumerators who were selected on the basis of their experience with previous nutrition surveys and/or having a health/nutrition background.

4. SURVEY RESULTS

4.1 Characteristics of the Study Population

Out of the 916 children surveyed, 50.4% were boys and 49.6%, girls. Most of the children surveyed (67.8%) were from the 24-59 months age category with 32.2% aged 6-23. The table below provides a summary of the sample population by age group and sex.

Table 1: Distribution of the sample population by sex and age groups

Age category	Boys		Girls		Total	
	N	%	N	%	N	%
6-11	51	11.0	52	11.5	103	11.2
12-23	102	22.1	90	19.8	192	21.0
24-35	106	22.9	105	23.1	211	23.0
36-47	106	22.9	102	22.5	208	22.7
48-59	97	21.0	105	23.1	202	22.1
<i>Total</i>	<i>462</i>	<i>50.4</i>	<i>454</i>	<i>49.6</i>	<i>916</i>	<i>100</i>
6-23	153	33.1	142	31.3	295	32.2
24-59	309	33.7	312	34.1	621	67.8
<i>Total</i>	<i>462</i>	<i>50.4</i>	<i>454</i>	<i>49.6</i>	<i>916</i>	<i>100</i>

The ration of male to female is 1:01 which indicates no bias in the data collected.

4.2 Household characteristics of study population

Table 2: Household characteristics of study population

<i>Household Characteristics</i>	<i>N</i>	<i>%</i>
Sex of household head from which child came(n=916)		
No. of children from Male headed households	775	84.6
No. of children from Female headed households	141	15.5
Household residence status (n=916)		
Those in their usual residential areas	912	99.6
Internally displaced (IDPs) from outside Tayeglow	4	0.4
Origin of IDPs (n= 4)		
Outside the food economy district	4	100
Date of arrival		
4 – 20 months	2	0.2
> 84 months	2	0.2
Reason for movement of IDP		
Insecurity only	4	0.4

Out of the 916 children surveyed from the 530 households, 775 (84.6%) came from male headed and 15.4% (n=141) came from female headed households. About 99.6% of the children (912) were residing in their usual residential areas at the time of the survey, while only 4 %0.4%) were internally displaced (IDPs) from outside Tayeglow district having arrived in the previous 4-20 months (2 people) and over 7 years (2 people). The reason for the movement was attributed to insecurity.

4.3 Food sources, income sources and survival strategies

About 79% (n=719) of the surveyed children came from households in which household crop production was the most important food source. The other important source of food at the time of the survey was reported to be purchase (for 20.1% or n=184). Other sources of food were wild food collection (1.1%), begging (0.2%) and animal products from own livestock (0.1%).

The sale of crops (34.4%), casual work (32.3%) and small business/petty trade were the most important sources of income in Tayeglow district. Other sources of income were: salaried employment, remittances and sale of products from own livestock.

Most children came from households undertaking sale of more livestock (38.5%), purchase of food (24.6%), borrowing (13.6%) and collection of wild food (13.6%) as their main coping strategies in times of food shortage. Other coping strategies were: reliance on food aid (2.5%), begging and movement from place to place of the entire household, popularly known as 'kenanto'.

4.4 Water, sanitation and health seeking behaviour

Table 3: Food sources, income sources and survival strategies

Food Source	N	%
Crop production	719	78.5
Purchase	184	20.1
Wild foods collection	10	1.1
Begging	2	0.2
Animal products from own livestock	1	0.1
Income source		
Sale of crops	315	34.4
Casual work	296	32.3
Small business	197	21.5
Sale of animals and animal products	82	9.0
Salaried employment	18	2.2
Remittances	8	0.9
Coping strategy during food shortages		
Sale of more livestock	353	38.5
Purchases	225	24.6
Borrowing	125	13.6
Begging	31	3.4
Food aid	23	2.5
Remittances/Gifts	13	1.4
Splitting of the family	12	1.3
Other (movement from place to place of entire family)	9	1.0
Household characteristics		
Main source of drinking water for the survey child (n=916)	n	%
Unprotected open wells	502	54.8
Protected wells	173	18.9
Muscid	174	19
Catchments/pond	61	6.7
Borehole	6	0.7
Sanitation facility for the survey child (n=916)		
Bush/open ground	554	60.5
Pit latrine	362	39.5
Pit latrine observed (n=362)		
Used and clean	192	53
Used and dirty	161	44.5
Unused	2.5	2.5
Health seeking behaviour for the survey child		
Seek health assistance if child is sick (n=916)		
Yes	853	93.1
No	63	6.9
Reason (n=63)		
Reciting the Quran	63	6.9
Where health assistance is sought (n=853)		
Private clinic/pharmacy	458	53.7
Traditional healer	198	23.2
Public health facility	197	23.1

Unprotected wells are the main source of water source, used by 54.8% of the surveyed children in Tayeglow. Muscids and protected wells are also important sources of water, serving 19% and 18.9% of the surveyed children respectively. Other sources of water are: boreholes and catchments/ponds.

With regard to sanitation, about 61% and 40% of the population utilize the bush/open ground and pit latrines for faecal disposal, respectively. About 53% of the pit latrines were observed to be used and clean, while 44.5% were used but dirty. About 2.5% of the latrines were not in use.

Households with about 93.1% of the surveyed children seek health assistance when a member is sick; while 6.3% do not. Private clinics/pharmacies (53.7%), traditional healers (23.2%) and public health facilities such as the MCH centres, are the places where health assistance is sought.

4.5 Nutritional Status

Table 4: Prevalence of malnutrition based on W/H Z score and/or categories

Nutrition status categories	Males		Females		Total	
	%	N	%	N	%	N
Global acute malnutrition (WFH < -2 z score or oedema)	18.0 CI: 14.6-21.8	83	16.5 CI:13.3-20.3	75	17.2 14.9-19.9	158
Severe malnutrition WFH < -3 z scores r oedema	4.1 CI: 2.6-6.6	19	2.0 CI: 1.0-3.9	9	3.1 CI: 2.1-4.4	28

The prevalence of global acute malnutrition defined as W/H<-2 Z score and/or oedema was 17.2% (95% C.I. 14.9 -19.9). The prevalence of severe acute malnutrition, defined as W/H <- 3 Z score or oedema, was 3.1 (95% C.I. 2.1 – 4.4)

Table 5: Prevalence of malnutrition based on W/H percentage of median and/or oedema categories

Nutrition status categories	Males		Females		Total	
	%	N	%	N	%	N
Global acute malnutrition (WFH < 80% of the median)	9.1% CI: 6.7-2.2	42	10.4 CI: 7.8 – 13.6	47	9.7 CI: 7.9-11.9	89
Severe malnutrition WFH < 70% of the median	2.4 CI:1.3-4.3	11	0.9 CI: 0.3-2.4	4	1.6 CI: 1.0-2.5	15
Oedema	0	0	0	0	0	0

The prevalence of global acute malnutrition (GAM) defined as W/H<80% and/or oedema was 9.7% (95% C.I. 7.9 – 11.9) while the prevalence of severe acute malnutrition, defined as W/H<70% or oedema, was 1.6% (95% C.I. 1.0 – 2.5).

Table 6: Distribution of nutritional status (based on W/H z score) by sex

	Severe (-3z score + oed.)		Moderate (-3 z sco. ≤ < -2 z sc.)		GAM (W/H<-2 z sc. + oed.)		Normal (W/H > -2z scores)		Total	
	N	%	N	%	N	%	N	%	N	%
Males	19	4.1	64	13.9	83	18.0	379	82.0	462	50.4
Females	9	2.0	66	14.5	75	16.5	379	83.5	454	49.6
Total	28	3.1	130	14.2	158	17.2	758	82.8	916	100

There was no statistical significance between malnutrition and sexes.

4.6 Comparison of the Tayegow population's nutrition status and the reference population

On comparison with the reference population, the Tayeglow population status was relatively poorer. The population had an aggregate mean score of -1.11 and a median of -1.15. These measures of the central tendency reflect a major shift to the left of the population nutrition status. The mean and median z-score values of the reference population equals to zero.

Table 7: Nutritional status (based on W/H z scores or oedema) by specific age groups

Age groups (months)	Severe (<-3z scores + oed.)		Moderate (>= 3z/<-2z scores + oed.)		Normal (W/H ≥ -2 z sc.)		Total		GAM	
	n	%	N	%	N	%	n	%	N	%
6-11	11	1.9	9	6.9	92	12.1	103	11.2	11	10.7
12-23	45	5.7	34	17.7	147	19.4	192	21.0	45	23.4
24-35	26	2.4	21	10.0	185	24.4	211	23.0	26	12.3
36-47	30	1.9	26	12.5	178	23.5	208	22.7	30	14.4
48-59	46	3.0	40	19.8	156	20.6	202	22.1	46	22.8
Total	28	3.1	130	14.2	758	82.8	916	100	158	17.2

Table 8: Nutrition status summary

Age group	Malnourished		Normal		Total	
	n	%	N	%	n	%
6-23	56	6.1	239	26.1	295	32.2
24-59	102	11.1	519	56.6	621	67.8
Total	158	17.2	758	82.8%	916	100%

The relationship between malnutrition and age categories was not statistically significant. However, the 12-23 age category had the highest proportion of children malnourished, followed by the 48-59 age category. This finding is similar to those of the Dinsor survey in September 2003, and further research may be needed to explain the reason...

4.7 Mortality rates

A total of 916 households were surveyed for retrospective mortality indicator for a period of 92 days prior to the assessment. The results are presented below:

4.7.1. Under five mortality Rate

Under 5 population in the surveyed households = 1150
 Number of under 5 deaths = 14
 Survey period = 92 days
 Under five mortality = 1.3/10,000/days

The 14 under five deaths were attributed to the following:

- i. Malaria: =35.7%
- ii. Sudden death =14.3%
- iii. Whooping cough =14.3%
- iv. Unknown disease =14.3%
- v. Fever =14.3%
- vi. Diarrhoea and vomiting = 7.1%

4.7.2. Crude Mortality Rate

Population in all the surveyed households = 4711
 Total number of deaths in the households = 30
 Survey period = 92 days
 Crude mortality rate = 0.7/10,000/day

Main cause of death in whole surveyed population was:

- i. Fever = 20%
- ii. Malaria = 33.3%
- iii. Diarrhoea = 3.3%
- iv. Sudden death = 6.7%
- v. TB and liver disease = 23.3%
- vi. Whooping cough = 6.7%
- vii. Unknown = 6.7%

4.8 Health, feeding practices and immunization coverage for survey children

Table 9: Disease prevalence, immunization and child care in Tayeglow District

Characteristics	N	%
Incidence of major child illnesses (n=916)		
Diarrhoea within two weeks prior to survey	188	20.5
ARI within two weeks prior to the survey	128	14.0
Malaria within two weeks prior to the survey	123	13.4
Measles cases in the past one month prior to the survey	10	1.1
Measles immunization for children 9-59 months (n=860)		
Children who received measles vaccination		
in the past six months (by card)	263	30.6
in the past six months (Recall)	85	9.9
Before six months (by card)	30	3.5
Before six months (Recall)	28	3.2
None	454	52.8
Total measles coverage	406	47.2
Oral polio vaccinations		
Received 1-2 times	171	18.7
Received 3 and above	628	68.6
Never received	117	12.8
Vitamin A supplementation N=916		
Children who received vit. A capsules in the past 6 Months	741	80.9
Children who did not receive vit. A capsules in the past 6 months	175	18.1
	n	%
Are you breastfeeding child (age 6-23 months) N=295		
Yes	201	68.1
No	94	31.9
Age when child stopped breastfeeding (n=695)		
0-5 months	38	5.5
6-11 months	117	16.8
12-18months	227	32.7
18 months or more	299	43.0
Never breastfed	14	2
Weaning age (n=916)		
0-3 months	894	97.6
4-6 months	17	1.9
7 months and above	5	5
Feeding frequency (n=916)		
Once	3	0.3
2 times	197	21.5
3-4 times	500	54.6
5 times or more	216	23.6

The prevalence rates of common ailments within two weeks prior to the survey were about 21% for diarrhoea, 14.0% for ARI and 13% for malaria. The prevalence of measles cases one within the one month period prior to the survey was about 1%. About 47% of the children had received measles vaccination. Whereas 69 % had received a minimum of 3 oral polio vaccines, about 87% had received at least one or more of the polio vaccine.

There was no statistical association between nutrition status with disease, immunization (measles and polio), breastfeeding, feeding practices, source of drinking water nor toilet facilities.

5. QUALITATIVE INFORMATION

This information was collected from key informants by the resident FSAU's food security monitor and nutrition survey team.

5.1. The food security situation

- The overall food security situation for all food economy groups in Tayeglow district can be defined as 'alert'. The deyr 2003 rains expected from October seem to be failing and this already has a negative impact on crop emergence. Pasture has begun to deplete and livestock are concentrating in areas where little rains were received. Livestock production is likely to decline significantly if the rains do not continue. Water scarcity is already experienced in certain areas as water catchments have either dried or continue to dry up.
- Cereal stocks at household level continue to be poor especially for poor and lower-middle wealth groups as a result of the poor Gu harvest. The richer wealth groups have cereal stocks carried over from the last harvest.
- Market conditions are considered normal. Both staple and non-staple food is available in the market. However cereal prices are higher by 127% in USD terms, compared to normal prices. One kilogram of local sorghum fetches around 2125 (equivalent of \$ 0.10) while the normal equivalent at this time of year is about 800 (equivalent of \$ 0.04). 180 MT of cereal was 'injected' into the district through the FFW intervention by CARE in September 2003. However, this did not have significant effect in the market in terms of prices reduction.
- Milk prices of 9000 – 10,000 Sosh. are 250% higher (in dollar terms) compared to normal. This is attributed to poor rain and depleting pasture conditions, leading to low milk production. Livestock markets are deteriorating with the demand from traders having declined due to lack of pastures.
- FSAU survey coordination team noted that, during grinding of sorghum into flour, the husks are removed and served to livestock as fodder. This lost source of the vitamin B complex and dietary fibre was difficult to replace from the rest of the diet due to limited access to fruits and vegetables.

5.2. Rainfall performance and water situation

- The overall rainfall performance is critical, and all economies in the district are showing concern for this Deyr rainy season. Although the rains were timely, having come in the 2nd dekad of October, it is poorly distributed and the intensity considered below normal in both pastoral and agro-pastoral zones. Only one rainy day was reported in Tayeglow town and very few rain days reported in the rural areas. There is no major cloud cover in and around the district.
- Water for human and livestock consumption (including price and availability) is generally not a major concern at this time in all economy zones. However, the situation in the high potential agro-pastoral area (including villages of Horwanle, Dheemo, Aadan Yare and Hubudho) is critical as people and livestock move to remote areas as far as Heedle and Dhukubo (permanent water points) for water.
- If the Deyr rains prove inadequate in the coming weeks, the water situation for many other agro-pastorals and pastorals (in the south and southwest of the district) will also become critical.
- Rehabilitation activities on water catchments and feeder roads were implemented by CARE, from September to October 2003 in different areas in the district.

5.3. Pastures and livestock condition

- Pasture and grazing conditions in the district are very poor as the current deyr rains are performing poorly. The little pasture available from poorly distributed rains in localised areas is highly congested with livestock. This has affected grazing and subsequently milk production, resulting in over 250 % (Sosh. 10,000 per litre) increase of the market price. Nevertheless, the milk situation is considered to be 'close to normal' for the time of the year.
- Cattle within the town and the district are currently mostly hand fed and are very vulnerable. Generally, they have begun to waste away, a situation that might be exacerbated if the rains fail to continue.
- The overall livestock condition (and the few livestock diseases reported) is normal for the time of the year.

5.4. Crop production

- The traditional method of intercropping cereals with cowpea continued in the first dekad⁵ of October 2003. Increasing cultivation of oil crops (sesame and sunflower) was noticeable in almost all the agro-pastoral areas. Farmers have been reportedly switching to cultivation of these crops for the last 2-3 years.
- Rainfall performance remained poor up to the last dekad of October. Crop emergence was reported from few areas including farmlands around the town, Medaa village and other small agro-pastoral areas within the district. The germinated seeds in these areas have wilted or wilting due to moisture stress as well as effects of pests.
- Hunting, especially of the dik dik is on-going and boosts the income of many poor pastoral and agro-pastorals in the district. Wild fruits and vegetables are not available due to lack of rains.

5.5. Coping Mechanisms

Coping mechanisms are relatively normal. Sale of livestock & livestock products, bush products (construction sticks and grass, poles, firewood, etc) and fodder (small residues from last harvest) are most important. Consumption of highly concentrated drinks with sugar is a normal on-going practice.

5.6. Displacement and Migration (origin, destination, causes)

There is no significant displacement and migration into or outside the district, but there are unusual internal livestock movements in search of pasture and water.

5.7. Security

Security in the district in relation to food security is relatively normal. The peace agreement signed between warring factions has slightly improved cereal movement from Baidoa to other areas including Tayeglow in Bakool region.

⁵ Dekad refers to a block of 10 days. One month has a total of three dekads

6. DISCUSSIONS

6.1. Wasting

Tayeglow District's nutrition status is critical with global and severe acute malnutrition rates (W/H z scores) of 17.2 (95% CI. 14.9 – 19.9) and 3.1% (95% CI. 2.1 – 4.4). In spite of the different methodologies used which prevent comparison with the Sept. 2002 rapid assessment (using MUAC), both results depict very high severe malnutrition and critical global rates. The factors associated with malnutrition are cross-cutting between food security, coping strategies, child care and prevailing diseases. Retrospective crude and under five mortality rates of 0.7/10,000/day and 1.3/10,000/day respectively however, are within the required standard outlined in the Sphere project handbook.

6.1.1. Food sources, income and coping strategies

Tayeglow district has the potential to be stable in food security, however, the recent deterioration in food security indicators particularly, water, pastures and reduced food stocks raises concern to the population already recording critical nutrition status.

Deyr 2002 season was characterized by late showers that came in November and December which resulted in substantial loss of crop harvested in December 2002-February 2003. FSAU classified this situation as 'relatively normal' as it did not deviate significantly from the seasonal norm. Nevertheless the poor deyr harvest minimized the food stocks carried forward into 2003 and pre-disposed the poor and middle wealth groups to hunger, when the Gu crop failed. The Gu crop failed as a result of erratic and unevenly distributed rainfall that ended earlier than usual. In addition, the season was characterized by high prevalence of pests, excessive wind and heavy bird damage which exacerbated crop damage. The deyr 2002 food stocks, together with cowpea harvest that performed well during the Gu season, have been the main food basket for the Tayeglow population. These however, are depleting and pre-disposing the community to hunger and malnutrition.

Since July 2003, insecurity in Baidoa district, the 'grain basket' of the Bay-Bakool region has resulted in limited access of Tayeglow community to grain markets. Although a peace agreement was signed between the warring factions in the last dekad of September 2003, security has not improved significantly and access to the grain markets remains difficult. Cereal prices have therefore remained high, limiting access of the poor and middle to grain, resulting in household food insecurity, a major cause of malnutrition. Both staple and non-staple food is currently available in Tayeglow market however, cereal prices are higher by 127% in USD terms, compared to normal prices, further limiting access and predisposing the poor communities to malnutrition. The richer wealth groups however have cereal stocks carried over from the Gu and deyr 2002 harvest which is depleting significantly as it is borrowed or shared with the needy.

Livestock markets are deteriorating. The demand from traders is declining due to lack of pastures. Thus, whereas the 'sale of more animals' is the main coping mechanism for the pastoral group, the returns (prices) are lower than normal, limiting access to income. This subsequently limits the amount of food that can be accessed through purchase, further predisposing the community to malnutrition.

Access to milk is poor due to extremely high prices of 9000 – 10,000 Sosh which are 250% higher in dollar terms compared to normal. This is attributed to poor rain and depleting pasture conditions, leading to low milk production and consumption, further contributing to high malnutrition rates.

6.1.2. Health, water and sanitation

SRCS, with support from UNICEF operates two MCH centres, one based in Tayeglow and the other in Bioley. There is no referral hospital in the district.

The prevalence rates for diarrhoea (20%), ARI (14%) and malaria (13.4%) seem to be normal for this time of the year. A total average of 197 and 112 cases of Malaria, diarrhoea, acute respiratory disease, intestinal parasites and skin infections have been treated at the MCH centres in Bioley and Tayeglow respectively in the last 14 months. However, most of the under five and total deaths are associated with malaria (35.7% and 33.3% respectively). This may imply either inadequate access to medical care or, poor management of disease once medicine has been accessed (since malaria is treatable). In addition, whooping cough which is preventable through immunization is associated with under five deaths, further indicating inadequate access to immunization services. Measles immunization coverage of 47% is way below the key indicator of 95% outlined in the 'Humanitarian charter and minimum standards in disaster response' (Sphere Project, First final edition, 2000pg. 238). With 10 cases (1.1%) of measles recorded during this survey, coupled with declining immunity due to poor food security, it is likely that the cases may increase and exacerbate the levels of malnutrition further. Inadequate access to quality health care may therefore have exacerbated the poor nutrition situation.

Oral polio vaccination coverage is 68.2% (for three and above dozes) and 87% (at least one doze) and vitamin A supplementation coverage in the past six months about 81%. There is no significant association between malnutrition and vitamin A supplementation however, the role played by vitamin A supplements in boosting immunity may have contributed to the relatively low morbidity and measles prevalence levels and subsequently, controlled the malnutrition.

According to Unicef Kenya Program/MOH's 'Vitamin A – for child survival and protection from illnesses, June 17-23, 2002,

“Vitamin A is extremely important for the growth and development of the child; it strengthens the body resistance to infection and disease. For example if the child has vitamin A deficiency, then she/he is more likely to have frequent illnesses and die as a result of common childhood diseases like diarrhoea, pneumonia, measles and malaria, because the body does not have the power to fight disease. Vitamin A contributes to reduction of anaemia and also helps prevent blindness in children.”

6.1.3 Child care practices

Although 77% of the children were breastfed for a year and above, 98% of the surveyed children were introduced to foods other than breast milk in their first three months of life. About 78% of the surveyed children were fed three or more times with the food ranging from breast milk to family diet. Reduced breastfeeding among infants and toddlers, and the subsequent shift to cereal based diet and black tea (with high sugar concentration) has compromised the quality of food normally consumed by children and contributed to critical levels of malnutrition.

6.1.4. Water

Water for human and livestock consumption is available and accessible (as prices are normal) in all economy zones. However, the situation is critical in the high potential agro-pastoral villages (of Horwanle, Dheemo, Aadan Yare and Hubudho) necessitating movement of people and livestock to permanent water points in Heedle and Dhukubo. Open ponds and wells constitute the main sources of water in these locations and may attribute to the prevalence of diarrhoea (20.5%) which is a key contributor to malnutrition.

6.1.5. Lack of a central government

Among the basic causes of malnutrition in Tayeglow is the breakdown in the central government since 1991. This has resulted in general insecurity, minimizing access to food among other resources, and limiting investment in infrastructure (such as a hospital). The local administration of Tayeglow ranked this problem as the most important cause of malnutrition.

6.2. Micro-Nutrient Deficiencies

Micro-nutrient deficiencies assessment was beyond the scope of this survey; however, observation was made on the following factors that impact significantly on the adequacy of certain micro-nutrients:

- Consumption of gruel from sifted sorghum flour. During the process of grinding sorghum into flour, sorghum husks are removed and served to livestock as fodder. This process not only eliminates nutrients (such as pantothenic acid) found in the husks, but also dietary fibre which is essential for the egestion process. Unfortunately, it may be difficult to replace the lost vitamins and dietary fibre as most of the villages are not able to access fruits and vegetables.

According to 'Perspectives in Nutrition' 5th edition 2002' by Gordon M Wardlaw and Margaret Kessel,

'Dietary fibre forms a vital part of the diet by adding mass to the stool, which eases elimination. It also helps in weight control and reduces the risk of developing obesity and cardiovascular disease. Soluble fibres can also be useful for controlling blood glucose in patients with diabetes and in lowering blood cholesterol. Whole grains, vegetables, beans and fruits are excellent sources of dietary fibre'.

- Consumption of teas with high concentration of sugar
Whereas this may have begun as a coping strategy in times of food crises, it is now normal practice to consume tea with high sugar concentrate. Consumption of high sugar syrups poses the normal problems of dental caries and compromised quality of diet - as preference is not accorded to the important nutrient dense foods. Of more significance however are: the high glycemic index of sugar and its association with Type 2 diabetes:

'Many foods high in sugar produce a high glycemic index (GI) in the body. Glycemic index is defined as the blood glucose response to a given food compared to a standard (typically glucose or white bread) and is influenced by starch structure, fibre content, food processing and the macronutrients in the meal such as fat.'

"Nutritionists are concerned about the effect of high GI carbohydrates on blood glucose because these carbohydrates especially increase insulin output from the pancreas. Chronically high insulin output leads to many deleterious effects on the body: high blood triglycerides, smaller Low density lipoprotein (LDL) particles which are more prone to lead to atherosclerosis (hardening of the arteries) and thus cardiovascular disease....'. Over time, this increase in insulin output may actually cause the muscles to become resistant to the action of insulin, creating a state of insulin resistance and eventually, Type 2 diabetes in some people'... Medical nutrition therapy, Nutrition reviews 58:154. 2000. Roberts K and others.

And the association between sugar and excessive excretion of magnesium in urine.

According to 'Magnesium: A key to Calcium Absorption', Dr. Nan Kathryn Fuschs, PhD. 2002 , a nutrition consultant indicates:

'One of the most popular minerals in the news today is calcium, needed for strong bones and teeth. We are told to take increased amounts in our diet as a supplement to prevent osteoporosis and eliminate muscle cramping during menstruation or from over-exercising. Yet, calcium alone is often not enough. Without magnesium, calcium may not be fully utilized, and under-absorption problems may occur leading to arthritis, osteoporosis, menstrual cramps, and some premenstrual problems. At the same time, refined sugar and alcohol should be reduced, and eliminated when possible to prevent magnesium from being excreted in large quantities in the urine.'

7. CONCLUSION

Global malnutrition rate of 17.2% (14.9-19.9) and severe malnutrition rate of 3.1 (CI: 2.1 – 4.4) among the 6-59 months age category define a critical nutrition situation in Tayeglow district. As there is no baseline survey conducted earlier on in the district, it is not possible to review the seasonal trend. The findings of the Dinsor district nutrition survey undertaken by IMC/UNICEF/FSAU/Dinsor Community in the same zone in September 2003 portrayed a serious situation with global and severe acute malnutrition of 13.3% (CI: 11.2 – 15.8) and 1.8% (CI: 1.0 -2.9) respectively. Nevertheless, the Tayeglow nutrition survey findings compare well with Burao IDP settlements nutrition survey (both of which were conducted during the first month of deyr 2003 season) with global and severe malnutrition rates of 15.3% (CI: 11.8 – 19.6) and 1.9% (CI: 0.9 – 4.2) respectively. Besides wasting, communities in Tayeglow district pre-dispose themselves to lack of dietary fiber and micro-nutrient deficiencies by consuming gruel from sifted, rather than whole sorghum flour. There is further risk faced by the community through consumption of teas that are highly concentrated with sugar, which pose a risk of dental carries, compromised diet quality and excessive loss of magnesium (a key mineral in calcium absorption) through urine; and could gradually lead to type 2 diabetes.

Tayeglow district has a measles vaccination coverage of about 47%, vitamin A supplementation coverage in the last six months, of about 81% and oral polio vaccination coverage of about 87% (1 or more doze) and 68.6% (for three or more dozes)for children aged 6-59 months. Measles coverage is low and does not meet the Sphere project minimum requirement of 95%.

The prevalence of diseases in Tayeglow district in the previous two weeks prior to the survey is as follows: diarrhoea – about 21%, ARI 14%, malaria about 13%. Measles prevalence within one month prior to the survey was 1.1%.

The critical levels of wasting were attributed to deteriorating food security situation which has resulted from a crop failure during the Gu season; delayed deyr 2003 rains (expected in October, which have resulted in lack of water and pasture for human and livestock) and a collapsing coping strategy of the 'sale of more livestock'. The returns from this coping strategy are beginning to decrease due to decreasing demand of livestock, emanating from lack of pastures. As a result, the purchasing power for the pastoral group is deteriorating.

The levels of retrospective crude and under five mortality rates in Tayeglow since the 23rd of July 2003 are 0.7/10,000/day and 1.3/10,000/day. Whereas these results indicate an emergency under control are consistent with Sphere project requirement and could be attributed to the coping strategies undertaken in the current 'alert' stage of the food security. The critical level of severe malnutrition of 3.1% (CI. 2.1 – 4.4) coupled with a lack of secondary health referral system and/or a targeted feeding program however, are worrying as it could result in exacerbated mortality figures in Tayeglow district in the near future.

8. RECOMMENDATIONS

The survey team and community members made the following recommendations to address the high malnutrition rates in Tayeglow district:

- The on-going civil war and political instability since the collapse of the central government in 1991 remains the underlying cause of high malnutrition rates in Tayeglow district as it limits investment into infrastructure (e.g. roads that would enhance access and referral hospital). Any intervention geared towards peace building in Somalia as a whole will greatly address this problem.
- The food security situation in Tayeglow district needs to be monitored closely, possibly using the household economy approach (HEA), to determine the magnitude of the problem and the most appropriate way and time to respond. Injecting more food into the district (for example through food for work intervention) will reduce prices and possibly increase access to cereal. However, this may need to be verified through an intense monitoring of the situation.

- Establishment of a referral health facility (a primary health care centre or hospital) is necessary for treatment of diseases that cannot be handled by the two MCH centres in the district. These include cases of tuberculosis, whooping cough, oedema and severe acute malnutrition. International agencies that have expressed interest are highly welcome to take up this intervention.
- At this time, the livelihoods of the agro-pastoral and pastoral communities in Tayeglow are centred on disposal of 'more animals' for income. Projects geared towards de-stocking (i.e. that will facilitate disposal of these assets by the community at favourable prices) are highly recommended⁶.
- The team recommends supplementary feeding for the vulnerable groups due to the high prevalence rate of malnutrition.
- Agencies that address water access issues (CARE and ORDA for example) in the district may need to intensify protection of wells to facilitate consumption of safe water. The need to mobilize the local agencies and community on appropriate sanitary practices that will minimize contamination of water for consumption in the town or permanent settlement areas was also identified.
- Measles vaccination campaigns need to intensify in villages not accessing services at Bioley and Tayeglow MCH. SRCS is managing these MCH centres but does not have the capacity to undertake outreach programs. Efforts by an international organization to fill this gap are highly appreciated.
- GTZ is scheduled to conduct a baseline survey on household systems and management and thereafter undertake home economics interventions in selected areas in the district, among others. GTZ may wish to incorporate awareness creation of the importance of consumption of whole (rather than sifted) cereal in their scope of work. GTZ may also prefer to sensitize communities on health implications of chronic consumption of high sugar concentrates.
- This survey identified nutrition information gaps for improved nutritional programming and advocacy in Tayeglow district. These could be addressed through research on the following subjects. (In the event that such information is already available, this recommendation becomes obsolete).
 - i). A comparative study of the impact of chronic consumption of high sugar concentrates (and foods with high glycemic index eg. Somali tea) on the health and nutrition status of (i) the sedentary population based in Tayeglow town and (ii) the nomadic rural community.
 - ii). The linkage between consumption of high sugar concentrates (mainly teas) and calcium related disorders within the population in Tayeglow district.

⁶ Oxfam GB has the experience of undertaking such a project in Wajir Kenya, and distributing the meat to members of the vulnerable groups.

APPENDICES

Appendix 1: Sampling frame for Tayeglow Nutrition Survey in October 2003

NIDs Population figures for August & Sept. 2003				Population figures reviewed and used by the Nutrition survey team		
Fixed	MAIN	Pop.	Cumm.	Pop.	Cumm.	Cluster
Settlements	VILLAGE	Est	Pop	Est.	Pop.	
TIEGLOW	TOWN	11470	11470	10,000	10000	1-8
DANAWE	yes	3610	12470	3500	13500	9-11
MEDA	NO	2450	16580	1500	15000	12
SANKOR	NO	200	17730	150	15150	
Edkiyal/wanshole	NO	600	18330	200	15350	
Harrun/Aliodaahir	NO	600	18930	300	15650	13
NEBEDEY	NO	600	19530	100	15750	
MISIR	NO	750	20280	300	16050	
WARANNYAY	NO	1000	21280	450	16500	
GASLOW/Aboyabwle	NO	550	21830	200	16700	
BURDO	NO	600	22430	150	16850	14
BIOLEY	YES	2500	23180	2000	18850	15
HAWALKARE	NO	500	25430	150	19000	
JANNAY	NO	500	25930	200	19200	
KORMARI	NO	650	26580	100	19300	16
HUGEY	yes	1000	27580	500	19800	
HAWALKULE	NO	400	27980	200	20000	
JIMAALA	NO	325	28305	200	20200	
KAL	NO	500	28805	150	20350	
HAMINOW	NO	400	29205	150	20500	17
KOWRAAR	NO	550	29755	350	20850	
GOWKA	NO	400	30155	80	20930	
RUQA	NO	300	30455	200	21130	
HUBDA*	NO	450	30905	300	21430	
DEEMO	NO	1500	32405	500	21930	18
WAKA	NO	300	32705	200	22130	
ABOORE*	NO	550	33255	150	22280	
ADENYERE	NO	700	33955	200	22480	
HURWANLA	NO	140	34095	200	22680	
DONKUS	NO	200	34295	150	22830	
WASILO	NO	1250	35045	800	23630	19
MUBARAK	NO	450	35995	250	23880	
ANSHUUR	NO	400	36395	150	24030	
Godle	NO	500	36895	500	24530	20
Barkhadle	NO	200	37095	100	24630	

Kaayane	NO	400	37495	300	24930	
Hubta	NO	350	37845	250	25180	
Gunre	NO	400	38245	200	25380	21
Hoobasho	NO	430	38675	250	25630	
Dareersan.	NO	750	39425	400	26030	
Oraar	NO	500	39925	500	26530	
Eelqarmeed	NO	300	40225	250	26780	22
EEDkiyaal	NO	500	40725	200	26980	
Doomar	NO	560	41285	400	27380	
Dawle	NO	450	41735	200	27580	
DEYMASAMO	NO	400	42135	200	27780	
HARARTA	NO	400	42535	200	27980	23
DONGARASLA	NO	600	43135	150	28130	
Elhawey	NO	1300	44435	400	28530	
HARERIDEROW	NO	200	44635	100	28630	
Abaqdheere	NO	650	44985	500	29130	24
Gobare	NO	500	45785	200	29330	
ELGARAS	NO	3500	46785	3500	32830	25-27
Iskashato	NO	300	49585	100	32930	
Number 4	NO	300	49885	100	33030	
AFGOOYE	NO	300	50185	150	33180	
ELADDOW	NO	200	50385	80	33260	
DARBAAS	NO	200	50585	300	33560	
LAMAWAROOD*	NO	400	50985	150	33710	
HIGLE	NO	300	51285	60	33770	
Hiirey	NO	450	51735	280	34050	28
UKUNLE	NO	300	52035	150	34200	
Ela-duug	yes	750	52785	200	34400	
Luqun-Ela	NO	300	53085	150	34550	
Warkula	NO	650	53735	250	34800	
Elgudo	NO	1000	54735	400	35200	
Ali-Makino	NO	200	54935	50	35250	29
Dawle weyne	NO	200	55135	400	35650	
Tubaney	NO	400	55535	250	35900	
SHIlow/Tumalka	NO	400	55935	250	36150	
Misqaaley	NO	200	56135	100	36250	
Dhuji		500	56635	200	36450	
Shimo		690	57325	450	36900	30
Buuley		200	57525	70	36970	
*Temporary settlement						
Total population		57525	57525	36970	36970	
						Nut. Sampling interval: 727

Appendix 2: Tayeglow District Nutrition Survey Questionnaire

Date _____ Team Number _____ Cluster Number _____ Name _____ of
Supervisor _____

Name of Village/Town _____ Name of section _____

Household Number _____ Name of the household head _____

Q1 Sex of the household head? 1=M, 2=F

Q2 Household size _____

Q3 Number of < 5 years _____

Q4. Household residence status: 1= Residents 2= Internally displaced 3=Returnees 4=Other
(specify) _____

If answer to the above is 1, then move to Question 8.

Q5 Place of origin _____

Q6 Duration of stay _____

Q7 Reason for movement: 1= Insecurity 2=Lack of jobs 3= Food shortage 4=Water shortage 5=Others;
specify _____

Q8-12 Household background information

<p>Q8 Households main food source?</p> <p>1=Animal products from own production</p> <p>2=Household crop production</p> <p>3=Purchases</p> <p>4=Remittances/Gifts</p> <p>5=Begging</p> <p>6=Wild foods collection</p> <p>7= Others Specify _____</p>	<p>Q9 Households main income source</p> <p>1=Small business</p> <p>2=Casual work</p> <p>3=Salaried employment</p> <p>4= Sale of crops</p> <p>5=Sales of animals and animal products</p> <p>6=Remittances/Gifts</p> <p>7=Others specify _____</p>	<p>Q10 How does this household survive during food shortages (coping strategies)?</p> <p>1=Remittances/Gifts</p> <p>2=Sale of more livestock</p> <p>3=Splitting of the family</p> <p>4=Begging</p> <p>5=Borrowing</p> <p>6=Food aid</p> <p>7=Purchases</p> <p>8=Wild food collection</p> <p>9=Others specify _____</p>	<p>Q11 Source of drinking water</p> <p>1=Borehole</p> <p>2=Open wells</p> <p>3=Protected wells</p> <p>4=Berkads</p> <p>5=Catchments/pond</p> <p>6=Stream/river</p> <p>7=Muscid</p> <p>8=Tap/piped water</p> <p>9=Tanker/truck vendor</p> <p>10=Others specify _____</p>
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Q14-18 Anthropometry for children aged 6 – 59 months (or 65 – 110cm) in the household.

Serial No	Name	Q14 Sex (F/M)	Q15 Age in months	Q16 Oedema (Yes/No)	Q17 Height (cm)	Q18 Weight (kg)
1						
2						
3						

Q19-29 Morbidity, feeding and immunization status of children aged 6 – 59 months (or 65 – 110cm) in the household.

Sno	Name	Q19 Diarrhoea in last two weeks 1= Yes 2= No	Q20 ARI in the last two weeks 1=Yes 2=No	Q21 Malaria in the last two weeks 1=Yes 2=No	Q22 Measles in last one month 1=Yes 2=No	Q23 Vaccinated against measles <i>1=In past six months (by card) 2=In past six months (Recall) 3=Before six months (by card) 4=Before six months (Recall) 5= None</i>	Q24 Vitamin A provided in the last 6 months 1=Yes 2=No	Q25. Are you breast feeding the child? 1=Yes 2=No	Q26 If not breast feeding, how old was the child when you stopped breast-feeding? 1= Less than 6 months 2= 6 – 11 months 3=12 – 18 months 4=18 months or more 5= Never breastfed
1									
2									
3									

FOOMKA SAHANKA NAFAQADA-Tayeglow

Taariikh _____ Nambarka kooxda _____ Nambarka goobta _____ Magaca
Kormeeraha _____

Magaca tuulada/magaalada _____ Magaca xaafadda _____

Nambarka qoyska _____ Magaca madaxa qoyska _____

S1 Jinsiga madaxa qoyska 1= Lab 2= Dhedig

S2 Tirada Qoyska _____

S3 Tirada caruurta ka yar shan sano _____

S4 Xaalada deegaan ee qoyska (Goobo geli Jawaab keliya) 1= Deegaan 2 = Soo Barakacay 3 =Dib u soo noqday 4 = Jawaab kale _____

Haddii Jawaabta su'aasha 4aad ay noqoto (1), u gudub su'aasha 8aad.

S5 Meesha uu markii hore ka yimid _____

S6 Mudada uu halkan Joogay (Bil ahaan u qor) _____

S7 Sababta uu u soo guuray 1= Nabadgelyo xumo 2 = Shaqo la'aan 3 = Cunto yaraan 4 = Biyo yaraan 5 = Jawaab kale _____

S8 – 13 Xogta taariikh nololeedka qoyska (Fadlan, goob geli Jawaabta ugu muhiimsan)

<p>S8 Halkee buu qoyskiinu inta badan ka helaa cuntada?</p> <p>1 = Nacfiga xoolaha ka soo baxa 2 = Dalaga beeraha ee qoyska 3 = Iibsasho 4 = Xawilaad/sadaqo 5 = Tuugsi 6 = Qaraabsi/Ugaarsi 7 = Jawaab kale (Caddee)</p> <p>_____</p>	<p>S9 Halkee buu qoyskiinu inta badan ka helaa dhaqaalaha?</p> <p>1 = Ganacsi yaryar 2 = Joornaati 3 = Mushaar 4 = libka dalagga 5 = libka xoolaha iyo nacfiga ka soo baxa 6 = Xawilaad/Sadaqo 7=Jawaab kale (Caddee)</p> <p>_____</p>	<p>S10 Sidee qoyskan nolosha ku maareeyaa Xilliga cunto yaraanta jirto?</p> <p>1 = Xawilaad/Sadaqo 2 = libinta xoolaha qoyska 3 = Qoyska oo is kala qeybiyo 4 = Tuugsi (Shaxaad) 5 = Deyn qaadasho 6 = Cunto gargaar ah 7 = Soo iibsasho 8 = Qaraabsi 9 = Jawaab kale (Caddee)</p> <p>_____</p>	<p>S11 Halkee buu qoyskiinu inta badan ka helaa biyaha la cabo?</p> <p>1 = Ceel Riig ah 2 = Ceel Af furan leh 3 = Ceel daboolan 4 = Berkad 5 = War 6 = Webi/ Durdur 7 = Mugsid 8 = Tuubo 9 = Booyad 10 = Jawaab kale (Caddee)</p> <p>_____</p>	<p>S12 qoy 1 = 2 = leh 3 = Ind S12 jawa 1=L 2=A 3=L 4 = _____</p>
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NAMBARKA QOYSKA _____ **NAMBARKA GOOBTA:** _____ **(KA GUURI BOGGA 1aad)**

S14 – 18 Miisaamidda iyo dhererinta ilmaha da'dooda u dhexeyso 6 – 59 bilood (ama 65 – 110cm) ee qoyska

Nam.	Magaca	S14 Jinsiga 1=L 2= DH	S15 Da'da ilmaha oo bilo ah	S16 Barar 1= Haa 2= Maya	S17 Dhererka (cm)	S18 Culeyska (Kg)
1						
2						
3						

S19 – 29 Xaaladda cudurada, quudinta iyo Tallaalka ee caruurta 6 – 59 bilood (ama 65 – 110cm)

NR	Magaca	S19	S20	S21	S22	S23	S24	S25.	S26.
		Shuban labadii sitimaan	Oofwareen (burukiito) labadii	Duumo labadii sitimaan	Jadeeco Bishii la soo dhaafay	Laga tallaalay jadeecada 1=lixdii bilood ee	La siiyay Vitamin A Lixdii bilood	Cunuga ma nuujineysaa	Haddii hado aadan naas nuujin, imis

	ee la soo dhaafay 1= Haa 2= Maya	sitimaan ee la soo dhaafay 1= Haa 2= Maya	e la soo dhaafay 1=Haa 2=Maya	1= Haa 2= Maya	la soo dhaafay gudahood (Kaar) 2=lixdii bilood ee la soo dhaafay gudahood (Xusuus) 3=Lix bilood ka hor (Kaar) 4=Lix bilood ka hor (Xusuus) 5=Lama tallaalin	ee la soo dhaafay gudahood 1= Haa 2= Maya	hadda 1= Haa 2= Maya	ahaa marka joojisay 1=lix bilood 2= 6 – 11 b 3= 12 – 18 4= 18 bilood ka badan 5= Lama naasnuujin
1								
2								
3								

Appendix 3: Tayeglow District Mortality Survey Questionnaire

Taariikhda _____ Lambarka Kooxda _____ Lambarka Goobta _____ Magaca wareystaha _____
 _____ Magaca tuulada/Magaalada _____ Magaca Xaafadda _____
 _____ Lambarka Qosyka _____ Magaca Madaxa Qoyska _____

Caruurta: (Waxaa haboon in laga buuxiyo foomkani haweenka qoyska ka tirsan).	
1. Waligaa ma dhashay? (Dhalasho- Cunug neefsadey, ooyay, ama muujiyey calaamad nolol daqiiqadaba ha ahaatee.	Haa..... Maya.....
2. Guriga ma kula noolyahay cunug aadan dhalin?	Haa Maya.....
3. Haddii S1 & S2 ay tahay Haa, waa imisaa? Haddii S1 & S2 ay tahay Maya, ugudub S11	Tirada ka yar 5 sano Tirada ka weyn 5 sano
4. Majiraan caruur aad nolol ku dhashey laga soo bilaabol 20th July 2003 ilaa iyo Hadda?	Haa..... Maya..... Haddii ay Haa tahay, waa imisaa?.....
5. Majiraa caruur ka yar 5 sano oo aadan dhalin oo ka tirsan qoyskiina laga soo bilaabo 20 th July 2003.	Haa..... Maya..... Haddii ay Haa tahay, waa imisaa?.....
6. Imisaa carruur oo 5 sano ka yar ayaa ku nooleyd qoyskiina laga soo bilaabo 20 th July 2003?	Tirada ku nool guriga.....
7. Imisaa caruur oo k v yar 5 sano ayaa kula nool?	Tirada Wiilasha la nool Tirada Gabdhaha la nool
8. Majiraan Caruur 5 sano ka yar oo aad nolol ku dhashey oo aan kula nooleyn hadda?	HaaMaya..... Haddii ay Haa tahay, waa imisaa?..... Tirada wiilashaTirada Gabdhaha
9. Majiraan caruur 5 sano ka yar oo kaa dhimatay laga soo bilaabo 20 th July 2003?	HaaMaya.....Haddii ay haa tahay, waa imisaa ... Tirada wiilasha dhimatey..... Tirada Gabdhaha dhimatey.....
10. Haddii ay caruur 5 sano ka yar qosyka ka dhinteen, maxay ahaayeen calaamadahii ama sababihii dhimashada?	Canuga 1.....

	Cunuga 2.....
	Cunuga 3.....
	Cunuga 4
INTA 5 SANO KA WEYN EE QOYSKA KA TIRSAN	
11. Imisaa 5 sano ka weyn ayaa ku nooleyd qoyskani laga soo bilaabo 15 ^{kii} June 2003?	Tirada 5 sano ka weyn.....
12. Majiraan dad 5 sano ka weyn oo qosykan ku soo biiray laga soo bilaabo 20 th July 2003.	Haa Maya..... Haddii ay haa tahay, waa imisaa
13. Majiraan qof 5 sano ka weyn oo ka tagey qoyskan laga soo bilaabo 20 th July 2003.	Haa Maya..... Haddii ay haa tahay, waa imisaa
14. Imisaa ka weyn 5 sano oo ku nool qosykan hadda?	Tirada ka weyn 5 sano.....
15. Majiraa qof 5 sano ka weyn oo qoyskan ka tirsan oo dhintay laga soo bilaabo 20 th July 2003?	Haa Maya..... Haddii ay haa tahay, waa imisaa
10. Haddii ay qof 5 sano ka weyn ay qosyka ka dhinteen, maxay ahaayeen calaamadahii ama sababihii dhimashada?	Qofka 1..... Qofka 2..... Qofka 3..... Qofka 4

Tayeglow- Mortality Questionnaire

Date _____ Team Number _____ Cluster Number _____
 Name of Interviewer _____ Name of Village/Town _____
 Name of section _____ Household Number _____
 Name of the household head _____

CHILD: <i>(This questionnaire should be preferably administered to all women in the household)</i>	
1. Have you ever given birth?	Yes.....
<i>(Birth- a child who ever breathed or cried or showed signs of live even if he/she lived only a few minutes or hours)</i>	No.....
2. Have you any other child in this household who is not your biological child?	Yes.....
	No.....
3. If yes to Q1 and/or Q2, then how many?	No. below 5 years
If No to both Q1 & 2, then go to Q11	No. above 5 years
4. Have you any live birth between the first day of June and now?	Yes..... No..... If yes, how many?.....
5. Have you any under five child other than your own in your household coming in since the 23rd July,2003.	Yes..... No.....
	If yes, how many?.....
6. How many Under 5yrs children were living in this household as on the 23rd July,2003?	Number.....
7. How many Under 5yrs children live with you now?	Sons at home..... Daughters at home
8. Have you any Under 5yrs children born alive but do not live with you now?	Yes.....No..... If yes then, how many? No. of sons
	No. of daughters
9. Do you have any Under 5yrs child who has died since 23 rd July,2003?	Yes.....No.....If yes, then Sons dead
	Daughters dead.....
10. If there has been death of an Under 5yrs child in this household, then what were the signs and symptoms of death?/suspected cause of death?	Child1.....
	Child2.....
	Child3.....
	Child4
ABOVE FIVE YEARS OLD IN THE HOUSEHOLD	
11. How many above five years old were living in this household as on 23 rd July, 2003?	Number >5yrs.....
12. Has there been any above 5yrs old who has come to the household since the 23rd July,2003?	Yes..... No..... If yes, then how many.....
13. Has there been any above 5yrs old who has left the household since the 23rd July,2003?	Yes..... No..... If yes, then how many.....
14. How many above 5 yrs live in this household now?	Number.....
15. Do you have any over 5 years old person in this household who has died since the 23 rd July,2003?	Yes.... No.....
	If yes, no. >5yrs.....
16. If there has been death of >5yrs person in this household, then what were the signs and symptoms of death?	Person1.....
	Person2.....
	Person3.....
	Person4

Appendix 4: Traditional Calendar For Tayeglow District Nutrition Survey

Month	Events	1998	1999	2000	2001	2002	2003
Jan.	Beginning of Jiilal		57 Soonfur	45 Soonfur	33 Soonfur RRA attack in Tayeglow	21 Soonfur	9 Soonfur
Feb.	Mid of Jiilaal		56 Siditaal	44 Siditaal	32 Siditaal	20 Siditaal 1 st Baidoa fight	8 Siditaal
Mar.	End of Jiilaal		55 Arafo/Dul- Xaj	43 Arafo/Dul-Xaj	31 Arafo/Dul-Xaj	19 Arafo/Dul-Xaj	7 Arafo/ Dul-Xaj
Apr.	Beginning of Gu'		54 Sako	42 Sako	30 Sako	18 Sako	6 Sako
May	Mid of Gu'		53 Safar	41 Safar	29 Safar	17 Safar	5 Safar
Jun.	End of Gu'		52 Mawliid Baidoa captured by RRA	40 Mawliid	28 Mawliid	16 Mawliid	4 Mawliid
July	Beginning of Xagaa		51 Malmadoone	39 Malmadoone	27 Malmadoone	15 Malmadoone 2 nd Baidoa fight	3 Malmadoo ne
Aug.	Mid of Xagaa		50 Jamadul- Awal Milihoare	38 Jamadul-Awal - Carta meeting/electio n in Djibouti	26 Jamadul-Awal	14 Jamadul-Awal	2 Jamadul- Awal
Sep.	End of Xagaa		49 Jamadul- Aakhir	37 Jamadul-Aakhir	25 Jamadul-Aakhir	13 Jamadul-Aakhir	1 Jamadul- Aakhir
Oct.	Beginning of Deyr	Rajab	48 Rajab Milidabe	36 Rajab	24 Rajab	12 Rajab Start of Edoret reconciliation meeting, Kenya	
Nov.	Mid of Deyr	59 Shacaban	47 Shacaban	35 Shacaban	23 Shacaban	11 Shacaban	
Dec.	End of Deyr	58 Ramadan	46 Ramadan	34 Ramadan	22 Ramadan	10 Ramadan	

Jiilaal

GU'

Xagaa

Deyr

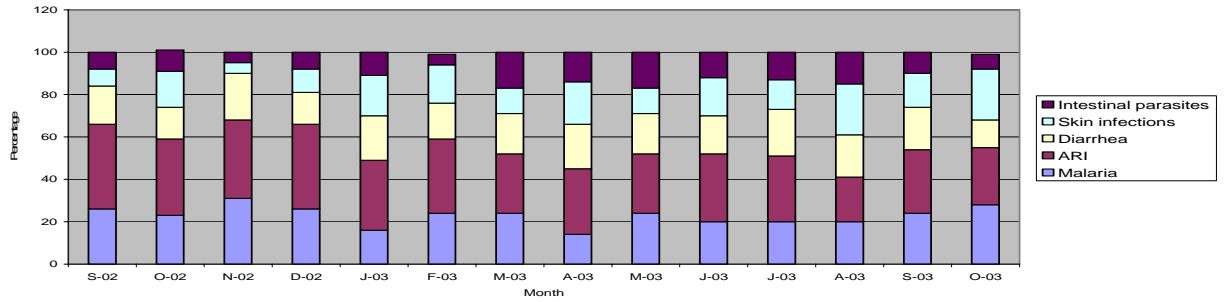
* Carta meeting – The Djibouti meeting which culminated to the election of TNG
Baidoa fights caused influx of people into Dinsor

Appendix 5

Bioley MCH center

Month	Sept 02	Oct 02	Nov 02	Dec 02	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jun 03	Jul 03	Aug 03	Sep 03	Oct 03
No. of cases	204	155	168	192	135	156	178	155	178	152	152	152	177	95

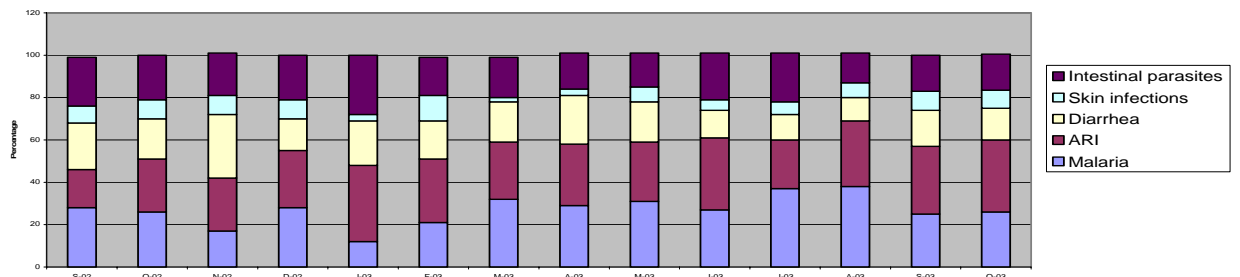
Prevalence Rates for Cases Presenting at Bioley MCH in 09-02 to 10-03



Tayeglow MCH center

Month/Year	S-02	O-02	N-02	D-02	J-03	F-03	M-03	J-03	J-03	A-03	M-03	A-03	S-03	O-03
No. of cases	169	151	230	110	117	76	62	70	90	64	52	74	92	82

Prevalence Rates of common ailments at Tiyeglow MCH center on Sept 02 - Oct 03



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