



Protecting Milk Supply to Pastoralist Children Good Practice from the Milk Matters Project in Ethiopia

Acute malnutrition in children and seasonality of milk supply

Many pastoralist areas of the Horn of Africa are characterized by times of plenty followed by times of hardship. These patterns are due to the marked seasonal variation in rainfall in these areas, with rain leading to periods of good grazing for livestock and high milk production but then declines in pasture and milk during the dry season, even in normal years.

Infants and young children in pastoralist communities rely heavily on animal milk as a basic food, and therefore, the nutritional status of children follows a similar seasonal pattern to rainfall and milk supply. Children do well when milk supply peaks, but they are also at risk of malnutrition as milk supply falls off during the dry season. These trends help to explain why acute malnutrition (wasting) in pastoralist children is a longstanding problem. Levels of wasting in pastoralist areas often exceed the WHO emergency cut-off point of 10% for this type of malnutrition.

Table I. Acute malnutrition in children in pastoralist areasⁱ

Country/area	Global acute malnutrition GAM (wasting)	Severe acute malnutrition SAM (severe wasting)
Ethiopia ⁱⁱ – national	10%	3%
Somali Region	22.2%	8.5%
Afar Region	19.5%	6.2%
Kenya ⁱⁱⁱ – national	7%	2%
North East Province	20%	8%
Uganda ^{iv} – national	3.6%	0.5%
Moroto District ^v	22.2%	5.6%

Since the 1970s many development programs in pastoralist areas have aimed to improve food security, yet the prevalence of acute malnutrition in children remains excessively high. In terms of aid, the wasting problem has been most commonly addressed using humanitarian assistance and emergency feeding programs.

The Milk Matters Project

In mid-2008 workers from Save the Children and Tufts University in Ethiopia came together to try to better understand and address the longstanding problem of acute malnutrition in pastoralist children. With funding from the US Office for Foreign Disaster Assistance, the Milk Matters project was started and worked with Somali pastoralists in Ethiopia to design and test new approaches for preventing wasting. Central to the approach was recognition of the seasonality of food access in pastoralist areas, and the high nutritional value of animal milk. It was also known that the long dry season was the critical period in terms of the risk of acute child malnutrition, due to declining access to milk at this time.

This technical brief provides an overview of Milk Matters, how it was designed, and the results achieved. The brief summarizes the key lessons from the project and discusses the need for further testing of the approach in other countries. The brief also asks whether Milk Matters might be used to reduce chronic malnutrition or stunting.

Wasting, or acute malnutrition, is a rapid loss of bodyweight caused by very low levels of energy intake. High child mortality during drought in pastoralist areas has been associated with high levels of wasting combined with epidemics of acute diseases such as measles or cholera.



Design of Milk Matters^{vi}

At community-level, the Milk Matters project had two main components:

- Participatory analysis at community-level to understand local knowledge on child nutrition and local views on how to prevent wasting
- Joint design and implementation of pilot projects to prevent wasting, including strong monitoring and evaluation using both conventional anthropometric surveys and participatory evaluation.

The project was implemented in Liben and Shinile Zones of the Somali National Regional State in Ethiopia.

Participatory analysis

Many of the most successful aid projects have been based on the principles of participatory rural development. This approach recognizes that local people often have extensive knowledge on their environment and livelihoods, and have



much to contribute to prioritizing problems and designing projects. In pastoralist areas of East Africa, local knowledge on natural resources, water, and livestock husbandry has been widely documented, and in the case of animal diseases, forms the basis for participatory epidemiology (PE)^{vii}.

However, before Milk Matters there appeared to be no participatory analysis of child nutrition in pastoralist areas which aimed to capture what women know about children's diets, or the factors which influence dietary intake. Milk Matters adapted participatory methods from PE, including consumption calendars to measure the intake of animal milk by children by season, and matrix scoring to compare the qualities of different types of animal milk and food prepared with milk.^{viii} The work was facilitated by a nutritionist, and led to discussion on the types of project activities which women felt would help

to improve livestock milk supply to children during the dry season. These activities were combinations of veterinary care and supplementary feeding, but targeted specifically at milking animals in close proximity to women and children during the dry season.

Implementation, monitoring and evaluation

In discussion with communities, the project focused on milking goats and cows, and provided veterinary care and livestock feed, timed to provide three months of support during the long *jilaal* dry season in January to March 2011.

- Veterinary care included vaccination for preventable diseases, preventive de-worming, and treatment for diseases which occurred during the project.
- Livestock feed was purchased locally and was mainly Sudan grass or Rhodes grass. However, the dry season in early 2011 evolved into a drought that year, and further livestock feed was provided beyond the planned three-month period. In some locations, wheat bran was also fed to livestock during April and May.

Totals of 307 cows and 392 goats received this support.

The evaluation of the livestock support and its possible impact on child nutrition centred on three main questions:

- What was the impact of supplementary feed on livestock milk off-take during the dry season?
- Was any additional milk (if any) from supplemented animals fed to children?
- What was the nutritional impact on children during the dry season?

To answer these questions the project used a case-control approach which compared 2 project sites with 1 non-project site in each zone. For livestock milk off-take, the project compared off-take in early 2011 with the same period during 2010, a normal year. The specific M&E activities included:

- A baseline assessment of child nutrition, including standard nutrition indicators and information on milk consumption by children;
- Standard monitoring of child nutritional status, using mid-upper arm circumference and weighing, every month;
- Monthly data collection using a questionnaire, using a team of 32 data collectors;
- End-of-project data collation and analysis, complemented with a participatory impact assessment.

In total, 940 children aged 6 to 59 months were monitored during the project, with data used from an 11-month period of surveillance.

Results

Impact of livestock support on milk off-take

There were very substantial increases in milk off-take in livestock receiving supplementary feed in 2011 relative to un-supplemented animals in the previous year. These increases were evident during early, middle and late lactation,



indicating that not only did milk supply increase but also, the duration of milk supply was extended – the most dramatic increases relative to the 2010 baseline were evident in the late dry season.

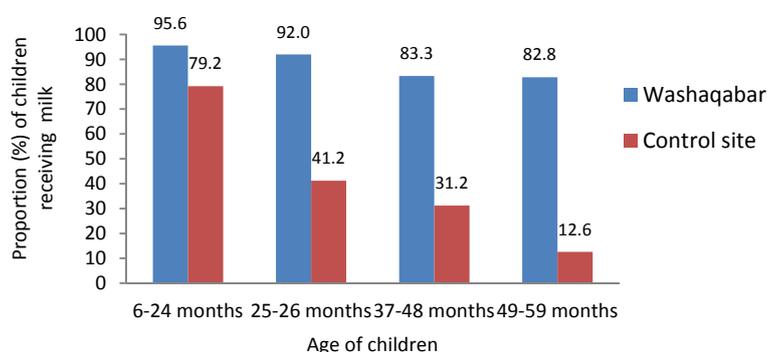
Table 2. Milk off-take in Washaqabar and Biyoley, 2010 and 2011

Livestock species, location and stage of lactation	Mean daily milk off-take (ml)		Difference in milk off-take
	Dry season 2010, no project supplementary feed	Dry season/drought, with project supplementary feed	
<i>Somali goats, Washaqabar</i>			
Early	224	628	2.8x increase
Middle	54	567	10.5x increase
Late	8	382	47.8x increase
<i>Somali cows, Biyoley</i>			
Early	638	2197	3.4x increase
Middle	293	2251	7.7x increase
Late	46	860	18.7x increase

Was any additional milk fed to children?

In general, a similar pattern of increased milk consumption by children was evident in project sites (e.g. Figure 1), indicating that the additional milk produced by livestock was actually fed to children. This finding was supported by results from the participatory impact assessment, which showed that no milk was sold during the drought of 2011 and that the project sites were some distance from market centers. Additional milk was not only consumed by children in households with project support, but also shared with other families as is the Somali custom.

Figure 1. Proportions of children receiving milk during drought, 2011

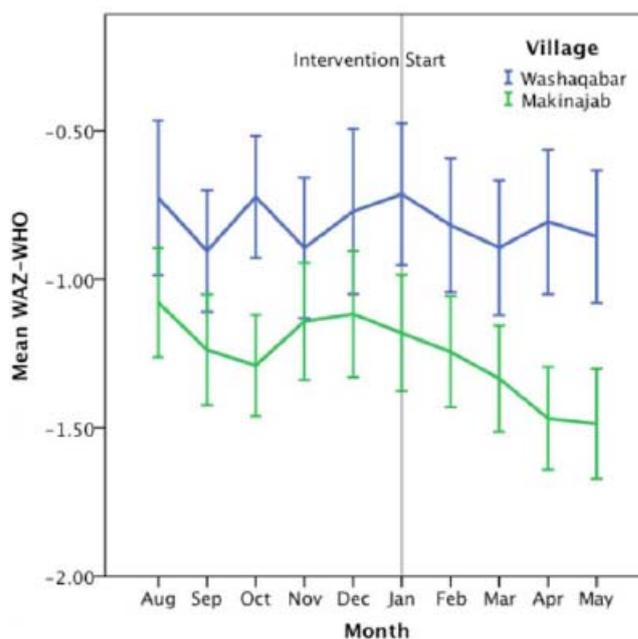


Nutritional impact on children

Average weight for age (WAZ) z-scores in children were calculated each month for project and control sites. An example of results is shown in Figure 2, with results for the project site Washaqabar representing all children in this location, not only children in households receiving project support.

The results show a stable nutritional status of children in Washaqabar, even as drought occurs during April and May. In contrast, the weight of children in the control site, Makinajab, declines at the start of the dry season in January, and this decline continues through the drought in April and May.

Figure 2. Nutritional status of children in project site/ Washaqabar v.s non-project site/Makinajab, 2011



Lessons from Milk Matters

There is now considerable interest from donors and aid organizations in Milk Matters, and how it can be used in other areas. A few lessons from the original project are summarized below, in relation to the prevention of acute malnutrition in children in pastoralist areas.

1. The combined results of increased milk off-take and duration of lactation (Table 2), more children receiving milk (Figure 1), and stable nutritional status of children (Figure 2) show that livestock support targeted at milking animals, close to women and children, can have important impacts on dry season wasting in pastoral children.
2. Milk Matters was based on **participatory analysis** with women in Somali communities, and used livestock and nutrition experts who were familiar with the skills and methods which are needed to support this way of working. Initial assessments showed that women were knowledgeable on the nutritional value of foods, especially milk, and feeding practises, and understood the causes of acute malnutrition in children. This

indicated that educational programming would have limited impact on acute malnutrition. Agency staff may need orientation and training in participatory analysis, and this requires organizational commitment, resources and time. Inherent in a participatory approach is the likelihood that specific support will need to be tailored to context – agencies will need to be flexible and avoid blanket approaches.

3. Milk Matters was designed and funded in a humanitarian context. One lesson was that private feed suppliers may have inflated their costs because the buyers were aid agencies. Together with other issues, this points to the option of **vouchers for livestock feed** as an approach to be piloted, and drawing on experiences from veterinary voucher schemes during drought in pastoralist areas. Market analysis will be an important stage of project design – local private sector suppliers will be needed for vouchers to work.
4. Conventional nutritional surveillance is expensive and in other projects, could be largely replaced by participatory monitoring and impact assessment, especially if funding is limited. Again, agency staff may need orientation and training in these approaches.
5. Milk Matters focused on the problem of acute malnutrition in pastoralist children, recognizing the seasonality of this problem and a clear link with declining milk supply during dry seasons and droughts. This raises the question over if and how Milk Matter-type programming can be used to address chronic malnutrition (stunting). However, stunting is a far more complex problem than wasting, and usually requires multiple policy and programming responses, across sectors.

Stunting is caused by long-term inadequacies in diet, and sanitation, with the latter associated with diseases, such as recurrent diarrhoea and intestinal worm infections. Stunted children are shorter than normal, and so stunting can be measured using height-for-age.

In pastoralist areas, the specific causes of stunting and the relative importance of these remains largely unknown, as are the causes of stunting in households with different livelihoods. For example, the main cause of stunting may differ in children in sedentized urban households compared to mobile pastoralist households. It seems that unless the causes of stunting in pastoralist areas are understood, programs to reduce stunting may be misdirected. The lesson from Milk Matters is that participatory analysis with local people, and especially women, is central to understanding child nutrition and needs to be more widely supported.

Acknowledgements

The Milk Matters project was funded by the US Office for Foreign Disaster Assistance and implemented by the Feinstein International Center, Friedman School of Nutrition Science and Policy, Tufts University, in partnership with Save the Children UK and Save the Children US, and communities in Liben and Shinile Zones of Ethiopia. Much of this technical brief is drawn from the full report on Milk Matters by Dr. Kate Sadler and colleagues (Sadler et al., 2012 – see Endnotes).

Further information

Please contact John Burns, USAID East Africa Resilience Learning Project; email john.burns@tufts.edu

Disclaimer

The views expressed in this technical brief do not necessarily reflect the views of USAID or the United States Government.

Endnotes

ⁱ Data for Ethiopia and Kenya are drawn for reports covering the same time period for national data and data from pastoralist areas. Data on Uganda uses national figures from 2011, and Moroto figures from 2014 as national figures for 2014 could not be located.

ⁱⁱ Central Statistical Agency [Ethiopia] and ICF International. 2012. Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ICF International

ⁱⁱⁱ Kenya National Bureau of Statistics (KNBS) and ICF Macro (2009), Kenya Demographic and Health Survey 2008-2009. KNBS and ICF Macro, Calverton, Maryland <http://dhsprogram.com/pubs/pdf/FR229/FR229.pdf> accessed March 2015

^{iv} Uganda DHS 2011

^v World Food Programme (WFP) and UNICEF (2014), Food Security and Nutrition Survey, WFP and UNICEF, Kampala <http://documents.wfp.org/stellent/groups/public/documents/ena/wfp266721.pdf> accessed March 2015

^{vi} Sadler, K., Mitchard, E., Abdullahi Abdi, Yoseph Shiferaw and Catley, A. (2012). *Milk Matters: The Impact of Dry Season Livestock Support on Milk Supply and Child Nutrition in Somali Region, Ethiopia*. Feinstein International Center, Tufts University, Addis Ababa <http://fic.tufts.edu/assets/Milk-Matters-2.pdf> accessed March 2015

^{vii} Catley, A., Alders, R.G., Wood, J.L.N. (2012). Participatory epidemiology: approaches, methods, experiences. *The Veterinary Journal* 191, 151-160

^{viii} Sadler, K. and Catley, A. (2009) *Milk Matters: The role and value of milk in the diets of Somali pastoralist children in Liben and Shinile, Ethiopia*. Feinstein International Center, Tufts University, Medford and Save the Children, Addis Ababa <http://fic.tufts.edu/assets/milk-matters2.pdf> accessed March 2015