

Perceptions of usage and unintended consequences of provision of ready-to-use therapeutic food for management of severe acute child malnutrition. A qualitative study in Southern Ethiopia

Elazar Tadesse,^{1,2} Yemane Berhane,² Anders Hjern,³ Pia Olsson¹ and Eva-Charlotte Ekström^{1,*}

¹Department Women's and Children's Health, International Maternal and Child Health Uppsala University, SE-75185 Uppsala, Sweden, ²Department of Reproductive Health, Population and Nutrition, Addis Continental Institute of Public Health, Addis Ababa, Ethiopia and ³Clinical Epidemiology, Department of Medicine, Karolinska Institutet and Centre for Health Equity Studies, Stockholm, Sweden

*Corresponding author. International Maternal and Child Health (IMCH), Department of Women's and Children's Health, Uppsala University, SE-751 85 Uppsala, Sweden. E-mail: Lotta.Ekstrom@kbh.uu.se

Accepted on 16 January 2015

ABSTRACT

Background: Severe acute child malnutrition (SAM) is associated with high risk of mortality. To increase programme effectiveness in management of SAM, community-based management of acute malnutrition (CMAM) programme that treats SAM using ready-to-use-therapeutic foods (RUTF) has been scaled-up and integrated into existing government health systems. The study aimed to examine caregivers' and health workers perceptions of usages of RUTF in a chronically food insecure area in South Ethiopia.

Methods: This qualitative study recorded, transcribed and translated focus group discussions and individual interviews with caregivers of SAM children and community health workers (CHWs). Data were complemented with field notes before qualitative content analysis was applied.

Results: RUTF was perceived and used as an effective treatment of SAM; however, caregivers also see it as food to be shared and when necessary a commodity to be sold for collective benefits for the household. Caregivers expected prolonged provision of RUTF to contribute to household resources, while the programme guidelines prescribed RUTF as a short-term treatment to an acute condition in a child. To get prolonged access to RUTF caregivers altered the identities of SAM children and sought multiple admissions to CMAM programme at different health posts that lead to various control measures by the CHWs.

Conclusion: Even though health workers provide RUTF as a treatment for SAM children, their caregivers use it also for meeting broader food and economic needs of the household endangering the effectiveness of CMAM programme. In chronically food insecure contexts, interventions that also address economic and food needs of entire household are essential to ensure successful treatment of SAM children. This may need a shift to view SAM as a symptom of broader problems affecting a family rather than a disease in an individual child.

Key words: Community-based management, chronic food insecurity, Ethiopia, perceptions, RUTF, SAM

Key Messages

- Ready-to-use-therapeutic foods (RUTF) was perceived as treatment for severe acute child malnutrition (SAM), but also as food to be shared and a commodity to be sold, which may result in insufficient intake by SAM children and reduced effectiveness of the programme.
- There were differences in perspectives of RUTF use; for the individual SAM child or for other needs of the family. This created predicaments for caregivers, community health workers and the programme itself.
- Comprehensive interventions that address the food and economic needs of poor households can potentially reduce unintended use of RUTF and the risk of delayed recovery of SAM children.

Introduction

Globally, it is estimated that 20 million children below the age of 5 years are suffering from severe acute child malnutrition (SAM) (WHO *et al.* 2007). These children have more than 9-fold increased risk of death when compared with non-malnourished children (Black *et al.* 2008). Previously, the accepted approach for management of SAM was restricted to health facilities or therapeutic feeding centres (TFC) mainly because the recommended F100, a milk-based therapeutic food is intended for inpatient use only (WHO 1999). The facility based approach is inadequate as it demands children and their caregivers to be admitted for several weeks.

The development of ready-to-use therapeutic food (RUTF) in mid-90s has brought a radically new approach to management of SAM (Briend *et al.* 1999). RUTFs are high-energy, lipid-based spreads that provides appropriate energy, protein, fat, vitamins and minerals to treat SAM in children from 6 to 59 months and has similar nutritional profile as F100 therapeutic milk (Briend *et al.* 1999; UNICEF 2014). It can be eaten directly from the sachet without prior cooking, mixing or dilution; it doesn't need refrigeration and is thus safe to be used for outpatient management of SAM in the community (NUTRISET 2010; UNICEF 2014). Earlier studies revealed that RUTFs are highly accepted and can be used to treat SAM in different settings and food cultures (Manary *et al.* 2004; Sandige *et al.* 2004; Linneman *et al.* 2007; Briend and Collins 2010).

Currently, World Health Organization (WHO) and United Nations children's fund (UNICEF) recommend community-based management of acute malnutrition (CMAM), where most cases of SAM are to be managed as outpatients in their homes through provision of RUTF and essential medicines, while inpatient management remains important for treatment of complicated SAM cases (Ashworth 2006; Gatchell *et al.* 2006; WHO *et al.* 2007). In CMAM programme, children are screened for SAM in the community and referred to primary health care units where community health workers (CHWs) assesses their health and nutritional status. The SAM caregivers are provided with RUTF, medication and counselling on issues such as how to feed RUTF, after which they return home to manage the SAM child on their own. The next visit to the health unit for check-up and refill of RUTF is usually scheduled to occur after 1 week (Valid International 2006; MOH 2007). Implementation of CMAM has commonly started as small-scale externally funded non-governmental programmes aiming at management of large number of SAM cases that occurs in nutritional emergencies (Deconinck *et al.* 2008; ENN and FANTA 2008; Chamois 2009). These programmes have reduced case fatality rate and increased coverage of SAM treatment remarkably. Based on this evidence, CMAM has more recently been scaled-up and integrated into existing governmental health systems (Deconinck *et al.* 2008; ENN and FANTA 2008) to be used for the less frequently occurring SAM cases beyond the emergency situation.

It is well-documented that the context into which interventions are implemented may modify their effectiveness (Victora *et al.* 2004, 2005), but there is limited knowledge on the effectiveness of CMAM when scaled-up and integrated into an existing government health system that is currently occurring in many countries. Further, when implemented in chronically food insecure settings the needs and expectations of the community may exceed what the programme may deliver. In these contexts, RUTF may be perceived as a resource that may serve other purposes than it was intended to do (Collins and Sadler 2002; Khara *et al.* 2012; Yebyo *et al.* 2013). The aim of our study was to explore perceptions among caregivers and CHWs on the use of RUTF in a scaled-up and into government health system integrated CMAM programme.

Methodology

Setting

This study was conducted in a zone in Southern Ethiopia, which is densely populated and known for fragmentation of farm land ownership and limited income generating opportunities (Teklu 2003; Hailu and Regassa 2007). The zone has been facing recurrent droughts that resulted in crop failures and subsequent nutritional emergencies. Further, even in seasons of optimal food availability a significant number of households are food insecure and dependent on food aid for their subsistence (SNNPR 2000; Hailu and Regassa 2007).

CMAM programmes were implemented by externally funded non-governmental organizations (NGOs) (Deconinck *et al.* 2008; ENN and FANTA 2008) initially 2000–04. In 2004, the CMAM programme were scaled up and integrated into the existing government health care system (Chamois 2009). The scaling up and integration took place in partnership with NGOs for RUTF supply and technical assistance (Deconinck *et al.* 2008; Chamois 2009). After development of a simplified SAM management protocol cadres of CHWs were trained in its application. Currently, treatment for uncomplicated SAM cases should be available at all health posts (lowest level of primary health care system) in the zone. The most commonly used brand of RUTF in the area is 'Plumpy nut'. Two types of CHWs are engaged in the programme; health extension workers (HEWs) screen, manage and follow-up SAM cases aided by Community Volunteers (CVols) (Wakabi 2008). HEWs are women, who have been trained for 10 months through the national Health Extension Programme, and provide basic curative and preventive health services to rural communities for which they are given a salary (Egger and Swinburn 1997; Wakabi 2008; Wilder 2008). The CVols are members of the communities and they are selected based on willingness to assist HEWs after getting basic training. In this article, we will use the concept of CHW when referring to the HEWs and CVols collectively.

Design

This qualitative study was an initial part of a larger research project that aims to assess the effectiveness of CMAM programme focusing on role of household food security, maternal caring capacity and health systems characteristics. The conceptual framework of this study was Bronfenbrenner's socio-ecological model that conceptualizes the relation between the diverse environments surrounding children, including the physical, mental and social context to health and health interventions (Bronfenbrenner and Ceci 1994). The concepts and components of the model formed basis for development of guidelines and data collection. The topic areas in the guideline were causes of malnutrition, care of SAM children, use of RUTF and challenges in the implementation CMAM programme.

Recruitment and participants

Caregivers of SAM children as well as CHWs were purposively recruited to get varying perspectives on the topic of the study. The selection criteria for caregivers were caring for one or more children, who were treated in the CMAM programme for at least 1 month, and for CHWs it was to have at least 1 year of experience in the CMAM programme. All those invited ($n = 112$) agreed to participate (Table 1).

Data collection

Methods for data collection were focus group discussions (FGDs) with caregivers and CVols as well as individual interviews with HEWs. FGDs and individual interviews took place from June to July 2010. FGD were chosen for their documented ability to grasp perceptions in a credible way (Dahlgren *et al.* 2007). A total of 15 FGDs were conducted; 7 with caregivers and 8 with CVols. Each group consisted of 6–8 participants and the duration of the discussion varied from 24 to 66 min with an average of 43 min. The shorter discussions were held with smaller groups. The interviewer made sure all participants were given the opportunity to share their perceptions. HEWs ($n = 9$) were interviewed, because it was logistically difficult for them to gather in groups for data collection. The duration of the interview varied from 25 to 76 min with the average duration of 40 min. Additional field notes were taken during the subsequent quantitative survey from August to December 2011 based on observations during visits to health posts, markets and shops as well as informal discussions with stakeholders at the community level and district health office staff.

Qualitative data were collected using a pretested guideline whereby the broad topic areas were introduced by the interviewer, discussed among the participants with a minimum of input from the interviewer to allow the perceptions and priorities of the participants to come forward. Further probing was done when more information was deemed possible to elicit, resulting in detailed accounts of the perceptions. FGDs and interviews were conducted in privacy

at the local health posts and audio-recorded with permission from the participants. The data collection were conducted in the local language by the first author who is an Ethiopian Ph.D. student with experience as a nurse and a nutrition officer. In the FGDs a research assistant, who also is a native and speaking the local language, took notes on the overall flow of the data collection, non-verbal communication and when necessary asked participants to clarify some responses. All recordings of FGDs, interviews and field notes were transcribed in the local language and translated into English to enable other co-researchers to partake in the analysis.

Analysis

Qualitative content analysis was used to identify both the manifest and latent content of the text (Graneheim and Lundman 2004). It was initiated with repeated readings of the transcripts to gain a global understanding of the content. This was followed by an inductive analysis where meaning units, i.e. statements that indicate perceptions related to the aim of the study were identified and summarized to shorter condensed meaning units. The condensed meaning units were shortened into codes, and sub-categories and categories were developed based on similarities and differences in content. Differences and similarities of perceptions of participants were identified. Representative quotes were taken from the text and agreement between co-authors was sought to ensure trustworthiness of the findings. An example of the process of analysis is found in Table 2. The first author conducted the analysis and the co-authors read the transcripts and all authors discussed alternative interpretations until consensus was reached.

Result

Perceptions varied between individuals, but no major differences between groups of participants were found. The analysis resulted in two main categories: perceptions of use of RUTF and unintended consequences of RUTF provision and divided into six sub-categories (Table 3).

Usage of RUTFs

The participants frequently used the expression 'hunger disease' to describe SAM. The symptoms were described as oedema of feet, hands and face, abdominal distension, thinness and loss of hair. The 'hunger disease' was said to be caused by lack of food and by intestinal worms appearing in wild fruits and in uncommon foods that were eaten during periods of hunger.

RUTF was perceived to be a high quality food effective in treating symptoms of 'hunger disease' and to avert deaths related to SAM. Part of the effectiveness of RUTF was believed to be due to its ability to expel the worms by causing vomiting and/or diarrhoea with RUTF was perceived to improve children's health status to the extent that the improvement was visible even to neighbours and to the extended family.

I fed this child plumpy nut (RUTF) for one week and in one week his natural appearance returned... Even small children make fun of him. They say He glitters after enjoying plumpy nut. CG-FGD-4

It (RUTF) is like food with butter (way of describing high quality of food) that builds the body and gives strength. CVol-FGD-6

There are worms ... because of eating wild fruits. The worms eat up the child and he gets thinner and thinner and the worms get fat." CG-FGD-4

Table 1 Profile of participants ($n = 112$)

Participants	<i>n</i>	%
Caregivers of SAM children		
Biological mothers	40	87.0
Grandmothers	6	13.0
Community volunteers		
Women	16	28.1
Men	41	71.9
Health Extension workers		
Women	9	100

Table 2 Examples from the process of analysis of excerpts of transcripts from FGD

Meaning unit	Condensed meaning unit	Code	Sub-category
“They sell plumpy nut (RUTF) and then buy (other participants list things caregivers buy such as salt, oil, milk, kerosene . . .) not to enjoy themselves. . . . They sell to fill the holes in their home.” CG-FGD-1	Caregivers sell RUTF to meet family basic needs not for their own enjoyment	Plumpy nut selling to meet the basic family needs	Commodity to be sold
“Mother may say ‘Why don’t I feed all the children? They are all my children!’ The other children also want to eat plumpy nut. It is difficult (not to share).” CVol-FGD-5	Caregivers want to feed all their children and RUTF is liked	Difficult not to give to other children	Food to be shared

CG-FGD, FGD with caregivers; CVol-FGD, FGD with community volunteers

The CMAM programme was frequently referred to as the ‘food aid programme’ (in local language); hence, caregiver’s expectation was relatively long-term provision of RUTFs. In contrast, CHWs viewed it as treatment for the SAM child to be provided for a delineated period (maximum of 8 weeks). Discharge of the child from the programme was seen as temporary by the caregivers, and the child was expected to be re-admitted back to the programme and get RUTF some few weeks after discharge.

Since X (NGO) started giving us this aid (RUTF) sent from government and with the help of the God (incomplete sentence) In previous years, in the time of our mothers, children suffered a lot. But now our children are growing well and they have benefited a lot from this aid (RUTF). CG-FGD-4

It is almost two years. They (HEW) give (RUTF) continuously except few discontinuations for a week or two So I feed her (child with SAM) what they give me. That is all I have to give her. CG-FGD-6

Sharing of RUTF with other family members, mostly children, was justified by social norms favouring sharing of food, a shortage of food in the household, the good taste of RUTF and its perceived good treatment properties. Not to share RUTF with other children in the household was perceived as discriminatory. Furthermore, it was perceived that children might fall ill if food, including RUTF, was not given to them when they craved for it.

When the child likes to have some of the plumpy nut and you don’t give him then he cries a lot. The child may become sick. CG-FGD-5

Caregivers found themselves in a difficult situation, where they were supposed to adhere to the CHWs instructions on the use of RUTF that contradicted their social norm of sharing of food. In their efforts to adhere to the instructions the caregivers hide and locked the RUTF away in boxes, sent children to play outside or waited until the other children fell asleep before they fed the SAM child with RUTF. They also told the non-SAM children that someone would come and punish them if they ate RUTF.

I tell them (non-SAM children) that X (HEW) will come and cut their ears if they eat plumpy nut, to frighten them CG-FGD-4

A recurrent perception was RUTF use as a commodity that could be bartered. None of the study participants admitted that they themselves engaged in selling RUTF, but they described that it is commonly done by others in the community. The reasons stated for selling were poverty and that the weekly ration of RUTF was perceived to be more than needed for an individual SAM child. The money generated from RUTF selling was used mostly to purchase food for the family. Sometimes it was also used to purchase salt, oil, kerosene and to pay part of membership fees of community institutions such as ‘Edir’ and ‘Ekub’ (self-help system that includes rotating saving and credit systems).

Table 3 Overview of categories and sub-categories of perceptions of usage of RUTFs and unintended consequences of its provision

- | |
|--|
| 1. Usage of RUTF <ul style="list-style-type: none"> • Effective medicine in treating ‘hunger disease’. • Food aid to be continually provided under food insecure conditions. • Food to be shared. • Commodity to be sold. |
| 2. Unintended consequences of the provision of RUTF <ul style="list-style-type: none"> • Caregivers striving to maintain continuous supply of RUTF. • Asserted authoritative control measures by the health system representatives to avoid misuse of programme. |

The mothers who sell the plumpy nut (RUTF) are thinking ‘I will buy something so that everybody at home gets something to eat and survive. I think that is better’. CVol-FGD-1

If she (HEW) gives a weekly ration the mother will sell some of the RUTF thinking ‘The child won’t need all this anyway’. CG-FGD-7

Participants mentioned that children and women from household that were better off buy RUTF from market places and small shops in their area. Field site visits by the study team could also confirm that RUTF was available in small shops. RUTFs are collected by traders who usually come from nearby town to buy RUTF from caregivers and sells to small shops. The traders also take RUTF back to town and sell it to school children, teenagers, truck drivers who want a high energy easy to carry snack. Shopkeepers told that they bought RUTF from caregivers, health workers and other community members through someone who did the trading between these individuals and the shopkeepers. They stated that women, children and teenagers were customers to whom they frequently sold RUTF.

Unintended consequences of the provision of RUTF

Caregivers were perceived striving to prolong supply of RUTF by persistently demanding admission of their children to CMAM and refusing discharge at times. Caregivers were also perceived to make up different identities of SAM children, so that a child simultaneously could be admitted to CMAM at different health posts by different caregivers using different names of the child. Caregivers lend their SAM children to other women in the community to get multiple admission of their SAM children and to get a share of the RUTF obtained. In time of severe food insecurity, CHWs stated that a SAM child could be lent to 5–10 women. Further, malnutrition was perceived to be perpetuated in SAM children admitted to CMAM, especially if coming from extremely poor households, and

study participants related this to caregivers' desire to prolong access to RUTF rations.

They say 'please take my child into the program. Look at him again. Can't my child go into the program...?' If we decide not to get him in (into the program) they sometimes became upset and started to speak bad things against us. CVol-FGD-5

It is difficult to control them (caregivers)... they will go to other health posts or send their sick child to someone in search for plumpy nut. HEW-INT-6

CHWs mentioned several strategies they used to control sharing and selling of RUTF. These included instructions on proper use of RUTF, provision of RUTF rations only for a day, opening the sachet of RUTF before handing it out, making home visits to check the supply of RUTF, demand the sachets of used RUTF to be returned, raid markets for RUTF, warning caregivers of misuse, exposing caregivers who had been found to sell RUTF to the public, jailing caregivers and discontinuing the child from the CMAM programme.

We give (RUTF) to them (caregivers) after opening it.... We also give them daily ration (instead of weekly) except for the weekends. HEW-INT-2

She (caregiver) stands before the general assembly of the sub-district and we expose what she did (selling plumpy nut). So others learn from the punishment. CVol-FGD-7

Caregivers reported a variety of reactions to the methods used by the health system to control RUTF selling. Some caregivers were indifferent while others perceived the control methods to deter them from the temptation of selling. Others were upset because of the need to visit the health post daily to collect the daily ration.

It is good that they cut it (open RUTF sachets) and give. You won't be worried thinking should I sell it or not... It is safe. CG-FGD-1

I wish they (HEWs) test me for a week or two (give her weekly ration of RUTF). If my child is not improving... let them punish me, whatever! (tone of anger). CG-FGD-1

Discussion

In this study, participants perceived RUTF as an effective treatment of SAM, but also as food to be shared within the household and when necessary a commodity to be sold. Some caregivers strived to receive RUTF for an extended time period as a form of food aid to help them overcome food insecurity. However, CHWs aimed for provision of RUTF for shorter periods and applied various control measures to ensure that RUTF was used solely as intended.

RUTF is highly accepted and perceived as effective in treating SAM

RUTF acceptance among participants is of paramount importance for successful management of SAM. The most prominent perception among caregivers of SAM children was that children with 'hunger disease' consuming RUTF recovered within a short time and soon looked healthy. This is in line with results from other studies in African (Chaiken *et al.* 2006; Linneman *et al.* 2007; Eklund and Tsinuel 2008) and Indian (Guimón and Guimón 2012) contexts, where RUTF has been well accepted and perceived as an effective treatment of SAM.

Potential barriers for RUTF to be effectively used for treatment of SAM

Consumption of RUTF by SAM children may be inadequate due to sharing and/or selling. In this study, participants described that

RUTF was shared when there was no food to provide to other non-SAM children in the family. Sharing of food, especially with children, is part of the social norm and further a common perception was that a child craving for food would become sick if the food was denied. In Niger sharing of food resources, including food rations provided by emergency nutrition programmes, was so common that provision of additional food for targeted children was regarded as difficult (Hampshire *et al.* 2008). Other studies have reported that sharing of RUTF among children was one of the main reasons for delayed recovery of SAM children (Collins and Sadler 2002; Manary *et al.* 2004; Collins *et al.* 2006; Eklund and Tsinuel 2008) and potentially jeopardizing the effectiveness of CMAM. However, compared with other forms of unintended use of RUTF, sharing may, if restricted to the children in the household, be regarded as a limited problem.

A more serious problem was the use of RUTF as a commodity. The rationale for selling RUTF might be rooted in the perception that the weekly ration of RUTF provided for the SAM child was more than required for the individual child. In households facing poverty it is common that there are no or much limited food stocks. In such circumstances, a weekly ration of RUTF may be regarded as an excessive amount of food and more than required for an individual child justifying its use as a commodity.

A second justification for selling was the pressing economic needs, such as buying food, oil and salt for the family and paying membership fees in community organizations. The money obtained from selling two to three packages of RUTFs could be sufficient to provide a meal for the whole family (as it is enough to buy, e.g. 1 kg corn and 1 kg beans). It may be argued that people strive to maintain their livelihood and public face even in crisis (Hampshire *et al.* 2009). The way participants described their precarious livelihood was 'to fill the holes in their homes' that sheds light on how pressing their economic situation was. Thus, available resources, including RUTF, may be directed to meet these needs. Kerac and Seal (2014) argue that one of the limitation of programmes relying on single intervention targeting an individual in a household is use of programme inputs for other purposes than intended. Use of RUTF as a commodity and a food to be shared is not unique for our study area. Similar behaviours have been described from South Africa, where infant formula provided to babies of HIV positive mothers was sold to generate means for other household necessities (Ijumba *et al.* 2013). In NGO run CMAM programme that was part of emergency relief programme, sharing and selling of RUTF has been reported prior to scaling-up and explained to be dependent on seasonal variations in households' access to food (Collins and Sadler 2002). Most NGO run CMAM programmes not only treat SAM with RUTF, but also provide targeted supplementary feeding for moderately malnourished children, pregnant and lactating women (Manary *et al.* 2004; Chaiken *et al.* 2006). Such programmes were found to be effective in treating SAM despite unintended use of RUTF (Collins and Sadler 2002). Possibly, this may be due to making more food resources available for the household reducing the proportion of RUTF used for other purposes than managing SAM children. The scaled-up programme we studied did not include a targeted supplementary feeding programme which is supposed to be part of CMAM programme (Manary *et al.* 2004; Chaiken *et al.* 2006).

A third aspect contributing to marketing of RUTF was the high economic value attached to the product. The average weekly ration of RUTF (21 sachet) may be sold for 63 ETB (3.4 USD). The community we studied had been exposed to food aid for decades (Rahmato 1992; Hailu and Regassa 2007) and some of these food aid items had also been sold for economic purposes. However, when

compared with other food aid items such as cereals, flour and oil, RUTF had a much higher economic value on the market. Further, all attributes of RUTF that made it suitable for CMAM, such as ready-to-eat, conveniently packaged in small units, long shelf-life, high nutritional value and good taste also made it easy to sell. In households with limited economic resources the importance of RUTF's potential economic contribution soars at times of increased food insecurity. Thus, the need to use RUTF as a commodity increases at the same time as the risk increases for children in the household to develop SAM.

Potential predicaments of provision of RUTF in an integrated CMAM

Caregivers, CHWs and the CMAM programme itself may experience predicaments related to the usage of RUTF. For some caregivers, a potential dilemma may be to decide whether RUTF should be used solely for the SAM child, shared with other children or sold to meet economic and food needs of the family. Thus, whatever these caregivers chose to do they are violating a norm, either that of the programme or that of the community/cultural. If sharing RUTF they are acting against the instructions of the programme. Ultimately, caregivers may face the ethical and cultural dilemma where the good for the SAM child is in conflict with that of the family.

In this study, we found evidence that caregivers were perceived to delay the recovery of SAM children). Further, as described by Hampshire *et al.* (2009), in disadvantaged contexts the community may regard lives of sick children as precarious over which they have little control, leading to a passive favouring of household benefits over that of the individual sick child. Extra investment in sick children such as provision of RUTF may lose meaning and caregivers may therefore not be motivated to use RUTF as prescribed by the CHWs. In such situations, malnutrition in SAM children can be perpetuated not intentionally but through an inclination to make the best use of available resources. Such mechanisms may also have been at stake in a study in Brazil, where the authors concluded that there was substantial risk of perceiving conditional cash transfers as a reward for having an underweight child (Morris *et al.* 2004).

Similarly, the predicaments of the CMAM programme is stemming from the programme's focus on the wellbeing of the individual in a context where the norm is favouring the collective good.

Hampshire *et al.* (2009) also argue that programme recommendations that focus on an individual in a household are explicitly opposed by the community because of the community's perspective to use available resources, including emergency nutrition interventions, to preserve livelihood of the family. It may be speculated whether a food resource targeted to an individual with malnutrition is more prone to be regarded as a resource for the family and thus to conflicting views on its usage in comparisons to medicines obtained for treatment of individuals with a medical condition. This may be aggravated when there is no other ongoing intervention addressing food needs of the whole family as was the case in our study area. Further, the contradictory perspectives on duration of RUTF provision as well as the unintended usage of RUTF were potential sources of conflict between CHWs and caregivers. It resulted in a sort of 'hide and seek' relationship between CHWs and caregivers, where efforts of CHWs to control and ensure intended use of RUTF appeared to negatively affect the relationship between CHWs and the caregivers. Further, the control measures by the CHWs appeared to

be unethical and time consuming for the CHWs as well as being offensive to the caregivers and it may be questioned if it negatively interferes with CHW ability to perform other duties at community level (Wakabi 2008; Wilder 2008; Raine *et al.* 2010).

Methodological considerations

This qualitative study of a sensitive topic with vulnerable populations by a partly international research team involved several methodological challenges. To ensure richness of data and grasp the complexities involved, we approached different stakeholders as caregivers, CHWs and community leader. Furthermore, the study was informed by long-term observations in the field during data collection of the subsequent quantitative study. The multidisciplinary research team's composition of insiders and outsiders to the study context contributed to reflexivity throughout the analytic process, which minimized the limitations related to cross-cultural research (Liamputtong 2010). A limitation of this study was that some of the sensitive issues that arose during the FGDs may have been more appropriate to explore with individual in-depth interviews.

Conclusion

Even though health workers provide RUTF as a treatment for SAM in children, caregivers use it also for meeting broader food and economic needs of the household thus endangering the effectiveness and timely recovery of SAM children. SAM management in the community requires RUTF, but its high quality and inherent economic value also contributed to its unintended use. In such contexts, interventions that also address economic and food needs of the entire household are essential to ensure successful treatment of SAM children. This may need a shift to view SAM as a symptom of broader problems affecting a family rather than a disease in an individual child.

Acknowledgements

We like to sincerely thank the caregivers of SAM children, CHWs and district health offices in the study areas. We also extend our thanks to the study team, who collected and compiled data, and to UNICEF Addis Ababa for providing weighing scales. We are grateful to the Swedish International Development Cooperation Agency (Sida) (SWE-2010-179) and to Uppsala University for funding this study.

Funding

Swedish International Development Cooperation Agency (Sida), Department for Research (SWE-2010-179) and International Maternal and Child Health, Uppsala University funded the project.

Conflicts of interest: None declared.

Ethical approval

Our study followed the protocol of the Universal Helsinki Declaration. Ethical clearances were sought and obtained from the institutional ethical review boards of Addis Continental Institute of Public Health in Addis Ababa, Ethiopia, and the regional ethical review board in Uppsala, Sweden. The ethical clearances included the informed consent procedures as described later. Permission for the study and the consent procedures was also given from regional,

zonal and district health offices. The purpose and procedures of data collection, confidentiality and voluntary participation were explained to participants of FGDs and interviews. Because most of caregivers of SAM children and CVols who participated in FGDs were not able to read and write oral informed consent was obtained after ensuring their understanding and approval and tape recorded for documentation. For the HEWs who participated in individual interviews written informed consent was obtained. Both the FGDs and interviews were conducted in privacy at their local health posts. In order to protect confidentiality for individuals and health units we have chosen to conceal the exact location.

References

- Ashworth A. 2006. Efficacy and effectiveness of community-based treatment of severe malnutrition. *Food and Nutrition Bulletin* 27: S24–48.
- Black RE, Allen LH, Bhutta ZA *et al.* 2008. Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet* 371: 243–60.
- Briend A, Collins S. 2010. Therapeutic nutrition for children with severe acute malnutrition summary of African experience. *Indian Pediatrics* 47: 655–9.
- Briend A, Lacsala R, Prudhon C *et al.* 1999. Ready-to-use therapeutic food for treatment of marasmus. *The Lancet* 353: 1767–8.
- Bronfenbrenner U, Ceci S. 1994. Nature-nurture reconceptualized: a bio-ecological model. *Psychological Review* 101: 568–86.
- Chaiken MS, Deconinck H, Degefe T. 2006. The promise of a community-based approach to managing severe malnutrition: a case study from Ethiopia. *Food and Nutrition Bulletin* 27: 95–104.
- Chamois S. 2009. Decentralization of out-patient management of severe malnutrition in Ethiopia. *Field Exchange* [Online] 36. <http://fex.enonline.net/36/decentralisation.aspx>, accessed 5 October 2011.
- Collins S, Dent N, Binns P *et al.* 2006. Management of severe acute malnutrition in children. *The Lancet* 368: 1992–2000.
- Collins S, Sadler K. 2002. Outpatient care for severely malnourished children in emergency relief programmes: a retrospective cohort study. *The Lancet* 360: 1824–30.
- Dahlgren L, Emmelin M, Winkvist A. 2007. Data collection in qualitative research. *Qualitative Methodology for International Public Health*, 2nd edn. Umeå: Umeå University.
- Deconinck H, Swindale A, Grant F, Navarro-Colorado, C. 2008. *Review of Community-Based Management of Acute Malnutrition (CMAM) in the Post-emergency Context: Synthesis of Lessons on Integration of CMAM into National Health Systems*. <http://www.enonline.net/pool/files/ifel/fanta-cmam-synthesis-2008.pdf>, accessed 15 February 2011.
- Egger G, Swinburn B. 1997. An “ecological” approach to the obesity pandemic. *BMJ* 315: 477–80.
- Eklund M, Tsinuel G. 2008. Effectiveness of integrated outpatient care of severe acute malnutrition in Ethiopia. *Field Exchange*. <http://fex.enonline.net/34/effectiveness.aspx>, accessed 5 October 2011.
- ENN, FANTA. 2008. *International Workshop on the Integration of Community-Based Management of Acute Malnutrition*, Washington, DC. http://www.fantaproject.org/downloads/pdfs/ENN_CMAM2008.pdf, accessed 15 October 2011.
- Gatchell V, Forsythe V, Thomas PR. 2006. The sustainability of community-based therapeutic care (CTC) in non-emergency contexts. *Food and Nutrition Bulletin* 27: S90–8.
- Graneheim UH, Lundman B. 2004. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today* 24: 105–12.
- Guimón J, Guimón P. 2012. How ready-to-use therapeutic food shapes a new technological regime to treat child malnutrition. *Technological Forecasting & Social Change* 79: 1319–27.
- Hailu A, Regassa N. 2007. Correlates of household food security in densely populated areas of Southern Ethiopia: does the household structure matter? *Studies on Home and Community Science* 1: 85–91.
- Hampshire K, Casiday R, Kilpatrick K *et al.* 2008. The social context of child-care practices and child malnutrition in Niger’s recent food crisis. *Disasters* 33: 132–51.
- Hampshire KR, Panter-Brick C, Kilpatrick K *et al.* 2009. Saving lives, preserving livelihoods: understanding risk, decision-making and child health in a food crisis. *Social Science & Medicine* 68: 758–65.
- Ijumba P, Doherty T, Jackson D *et al.* 2013. Free formula milk in the prevention of mother-to-child transmission programme: voices of a peri-urban community in South Africa on policy change. *Health Policy and Planning* 28: 799–808.
- Kerac M, Seal A. 2014. Preventing acute malnutrition in young children: improving the evidence for current and future practice. *PLoS Med*, 11, e1001715.
- Khara T, Mejia Acosta A, Dolan C *et al.* 2012. Government experiences of scale-up of community-based management of acute malnutrition (CMAM). *CMAM Conference*. <http://www.cmamforum.org/Pool/Resources/CMAM-Conference-Synthesis%2c-Addis%2c-ENN-2012.pdf>, accessed 17 September 2014.
- Liamputtong P. 2010. *Performing Qualitative Cross-Cultural Research*. New York: Cambridge University Press.
- Linneman Z, Matilsky D, Ndekeha M *et al.* 2007. A large-scale operational study of home-based therapy with ready-to-use therapeutic food in childhood malnutrition in Malawi. *Maternal and Child Nutrition* 3: 206–15.
- Manary MJ, Ndekeha MJ, Ashorn P *et al.* 2004. Home based therapy for severe malnutrition with ready-to-use food. *Archives of Disease in Childhood* 89: 557–61.
- MOH. 2007. *Protocol for the Management of Severe Acute Malnutrition*. Addis Ababa: Federal Ministry of Health.
- Morris SS, Olinto P, Flores R *et al.* 2004. Conditional cash transfers are associated with a small reduction in the rate of weight gain of preschool children in northeast Brazil. *Journal of Nutrition* 134: 2336–41.
- NUTRISSET. 2010. *Plumpy’nut® Ready-to-Use Therapeutic Food (RUTF)*. <http://www.nutriset.fr/en/product-range/produit-par-produit/plumpynut-ready-to-use-therapeutic-food-rutf.html>, accessed 2 January 2011.
- Rahmato D. 1992. *The Dynamics of Rural Poverty: Case Studies from a District in Southern Ethiopia*, CODESRIA Monograph Series No. 2/92. Addis Ababa, Ethiopia: Institute of Development Research.
- Raine KD, Plotnikoff R, Nykiforuk C *et al.* 2010. Reflections on community-based population health intervention and evaluation for obesity and chronic disease prevention: the Healthy Alberta Communities project. *International Journal of Public Health* 55: 679–86.
- Sandige H, Ndekeha MJ, Briend A *et al.* 2004. Home-based treatment of malnourished Malawian children with locally produced or imported ready-to-use food. *Journal of Pediatric Gastroenterology and Nutrition* 39: 141–6.
- SNNPR. 2000. *The Socioeconomic Profile of Southern Nations, Nationalities and People Region*. Awassa, Ethiopia: Ethiopia Regional office of Population.
- Teklu T. 2003. *Environment Stress and Increased Vulnerability to Improverishment and Survival in Ethiopia: A Synthesis*, Western Michigan University. <http://homepages.wmich.edu/~asefa/Conference%20and%20Seminar/Papers/2003%20papers/Teklu,%20Tesfaye.pdf>, accessed 2 January 2011.
- UNICEF. 2014. *Supply Catalogue*. [https://supply.unicef.org/unicef_b2c/app/displayApp/layout=7.0-12_1_66_67_115&care=%24ROOT/\).do?rf=y](https://supply.unicef.org/unicef_b2c/app/displayApp/layout=7.0-12_1_66_67_115&care=%24ROOT/).do?rf=y), accessed 17 September 2014.
- Valid International. 2006. *Community-based Therapeutic Care (CTC): A Field Manual*. Oxford: Valid International.
- Victora CG, Habicht JP, Bryce J. 2004. Evidence-based public health: moving beyond randomized trials. *American Journal of Public Health* 94: 400–5.
- Victora CG, Schellenberg JA, Huicho L *et al.* 2005. Context matters: interpreting impact findings in child survival evaluations. *Health Policy and Planning* 20: i18–31.
- Wakabi W. 2008. Extension workers drive Ethiopia’s primary health care. *Lancet* 372: 880.
- WHO. 1999. *Management of Severe Acute Malnutrition: A Manual for Physicians and Senior Health Workers*. Geneva: WHO.

- WHO, WFP, UNSSCN, UNICEF. 2007. Community Based Management of Severe Acute Malnutrition: A Joint Statement by WHO, WFP, UNSSCN and UNICEF. http://www.who.int/nutrition/topics/Statement_community_based_man_sev_acute_mal_eng.pdf, accessed 5 January 2010.
- Wilder J. 2008. *Ethiopia's Health Extension Program: Pathfinder International's Support 2003-2007*. <http://www.pathfinder.org/publications-tools/pdfs/Ethiopias-Health-Extension-Program-Pathfinder-Internationals-Support-2003-2007.pdf>, accessed 15 October 2011.
- Yebyo HG, Kendall C, Nigusse D *et al.* 2013. Outpatient therapeutic feeding program outcomes and determinants in treatment of severe acute malnutrition in tigray, Northern Ethiopia: a retrospective cohort study. *PLoS One* 8: e65840.