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Maternal perceptions of factors contributing to severe under-nutrition among children in a rural African setting

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ABSTRACT

Introduction: In developing countries, severe undernutrition in early childhood is associated with increased mortality and morbidity, and 10–40% of hospital admissions. The current study aimed to elicit maternal perceptions of factors that contribute to severe undernutrition among children in a rural Kenyan community in order to identify appropriate and acceptable targeted interventions.

Methods: The study consisted of 10 focus group discussions (FGDs) of between eight and ten mothers each, in a rural coastal community in Kenya. A grounded theory approach was used to analyse the FGD data.

Results: In all FGDs 'financial constraints' was the main reason given for severe undernutrition of children. The mothers reported the additional factors of inadequate food intake, ill health, inadequate care of children, heavy workload for mothers, inadequate control of family resources by women and a lack of resources for generating income for the family. The mothers also reported their local cultural belief that severe malnutrition was due to witchcraft and the violation of sexual taboos.

Conclusions: The mothers in the study community recognised multiple aetiologies for severe undernutrition. A multidisciplinary approach is needed address the range of issues raised and so combat severe undernutrition. Suggested interventions include poverty

alleviation, medical education and psychosocial strategies. The content and approach of any program must address the need for variability, determined by individual and local needs, concerns, attitudes and beliefs.

Key words: Africa, aetiology, perceptions, undernutrition.

Introduction

Severe undernutrition has been associated with an increased risk of mortality and is implicated in at least 30–50% of all childhood deaths, and 10–40% hospital admissions in developing countries[1]. Among survivors, severe undernutrition increases the risk of morbidity[2] because malnourished children are susceptible to infection and other forms of ill health. Undernutrition (both non-severe and affecting growth, and severe, leading to possible hospital admission) has been associated with impaired cognitive development[3-5] , poor social and emotional functioning[6], behavioural problems[7], reduced school achievement[8], and low economic productivity[9].

Given the potentially high social and economic cost of severe undernutrition, developing and implementing interventions is a major development priority and central to the First UN Millennium Goal ('the reduction by half of children who are underweight'). Successful implementation of nutritional interventions is also an important contributor to the achievement of the Fourth Millennium Goal ('the reduction of mortality by two-thirds among children under five')[10,11]. However, despite concerted efforts, it is forecast that in sub-Saharan Africa the number of children who are undernourished will increase by the target year of 2015[1,11]. In order to reverse this trend it has been suggested that intervention programs are based on a bottom-up approach, with their foundation firmly in local culture and context[12-15].

In order to make a sustainable impact, interventions need to address direct causes and also the context of undernutrition[16]. Although the contextual factor poverty has been identified as an important determinant of severe undernutrition[5,17,18], the pathway for this is complex. Improved economic performance has not automatically led to improved nutritional status[14,19]; for while poverty increases susceptibility to poor nutritional outcomes, a significant number of children brought up in poverty thrive[14]. Therefore, adequate food is only one factor, albeit an important one. The integration of psychosocial stimulation (the exposure of a child to a variety of experiences and the encouragement to explore the environment) into nutritional programs has been found to be an important element in adequately addressing severe undernutrition[20]. This involves the development of parenting skills and promotion of change in the relationship between the mother and the child[21]. In any nutritional intervention, therefore, knowledge of the beliefs and behaviours of mothers is an important consideration.

As a first step in mobilizing resources to develop an appropriate intervention, a study was made of maternal perceptions of the causes of severe undernutrition. For, in a community where the mother is the main caregiver and generally the parent who accompanies a child to hospital for the treatment of severe undernutrition, it is the mother who is the key to overcoming the consequences of severe undernutrition.

The aim of the present research was, therefore, to answer the question: 'What are the mothers' perceptions of factors contributing to severe undernutrition among children in their community?'

By establishing this, the themes and vocabulary relevant to the local population contribute to the formulation of interventions aimed at behavioural change.

Methods

Study site

The study was undertaken in Kilifi District, on the Kenyan Coast, within a demarcated area that undergoes active, four-monthly demographic surveillance, in which the births, deaths, the movements of individuals are recorded by the Centre for Geographic Medicine Research (Coast) - KEMRI.

Undernutrition is endemic in Kilifi and 40% of children under 5 years show anthropometric signs of undernutrition, while 47% present with the biochemical markers of iron deficiency[22]. Kilifi District Hospital records indicate there are approximately 500 admissions for severe undernutrition annually. Kilifi District is the second poorest district in Kenya, with over 67% of the people living below the poverty line, indicating limited access to essential food and non-food items[23]. Most of the people in Kilifi depend on subsistence farming; however, frequent rain failure has resulted in insufficient farming produce, compromising food access for the general population.

The majority of those in Kilifi belong to the Mijikenda ethnic group. Two Bantu languages are commonly spoken: Kigiriama (the local vernacular) and Kiswahili (the lingua franca and national language). In the study area 47% of the population identify as Christians, 13% Muslim, 24% Traditionalists, 12% 'other', and 4% unknown[24]. A significant proportion of the population continues elements of traditional beliefs and practices, which sometimes guides their health-seeking behavior[24].

A typical home in Kilifi consists of a large homestead with several small huts built in the compound. Here extended families live together and share daily tasks such as cooking and fetching water. It is typical for three generations to share in childrearing duties. Once weaned (commonly between 2 and 4 months)[25], children spend less time with their mother, and more time in the company of older siblings who actively participate in child rearing. The study team observed differences in household structure and daily routine according to geographical location, and the specific cultural practices of Mijikenda sub-groups. Regional variations in soil fertility and rainfall resulted in differing time allocation, with those in areas of high rain and soil fertility spending more time farming, which affected care-giving patterns.

Study participants and sampling

A total of 10 focus group discussions (FGDs) were conducted with between eight and ten mothers each. Some study participants were drawn from a larger study of measures of early child development, as representative of the general population (recruitment details of these mothers are described elsewhere[26]). Other participants were the mothers of children admitted to Kilifi District Hospital's severe malnutrition wing, in order to represent the eventual target group for intervention.

Data collection

The current study used FGD to elicit culturally relevant themes and vocabulary for use when addressing issues related to undernutrition. The main FGD question was: 'What are the factors that contribute to severe undernutrition among children in this community?'

Mothers were asked to speak in their language of preference, therefore sessions were conducted in both Kiswahili and Kigiriama. A moderator, note taker and usher, each fluent in both languages, attended all FGDs. Sessions were audiotaped and hand-written notes were taken.

Data management and analysis

The final transcripts for analysis were based on the transcribed audiotapes and handwritten notes. These data were analyzed using a grounded theory approach[27], which begins with the careful reading and re-reading of transcribed transcripts. From this, coding schemes of responses are developed that are used to identify common themes. Two authors (AA and MM) independently developed coding

schemes, and identified themes by consensus. The themes thus identified were evaluated by a third author (PH) for consistency and redundancy.

Direct quotes arising from the discussion are presented to support identified themes. To ensure anonymity, participants are given pseudonyms.

Ethical considerations

The Kenya Medical Research Institute National Scientific and Ethical Committees approved the study. Verbal informed consent was obtained from all study participants prior to participation, which is considered adequate for the collection of non-sensitive information where personal identifiers are not required[28].

Results

Inadequate financial resources limiting access to healthy foods was identified as a cause of severe undernutrition in almost all focus groups.

> Mama Rehema: *We do lack funds. If you have money and no food in the farm you cannot buy the food the child needs.*

> Mama Mapenzi: *I was saying that if you do not have money how you will buy the good things [nutritious food] you will be forced to make wheat flour porridge.*

When probed to identify what they considered to be 'good diet' the mothers portrayed a good basic knowledge of foods and of what is needed for a nutritionally balanced diet. Specific examples of food knowledge included:

> Mama Rehema: *You need to grind bean, maize, peanuts and then use this to prepare porridge and give the child; some can be used as an additive. Also you can boil beans and give the child the soup since this energizes the child. Also bananas, avocados, energize the child. Greens are also good for the child...*

> Mama Kazungu: *...also mangos, oranges [extract the juice] and let the child drink.*

A lack of money is compounded by the inadequacy of other resources. Mothers noted a shortage of farmland, creating an inability to cultivate sufficient food on family farms. The mothers also pointed out that if they could set up small businesses this would provide an alternative income source. However they lacked access to the necessary capital to set up a business. They believed these circumstances hampered their ability to feed their children adequately and contributed to severe undernutrition.

In most of the focus groups mothers identified ill-health (including helminth infection, malaria, anaemia and 'teething') as other factors contributing to undernutrition. They noted that when children were unwell, the illness itself may lead to poor feeding habits, or an infection may directly reduce the benefits derived from the food, for instance in the case of helminth infections.

> Mama Zawadi: *Some kids you give them food but only the stomach grows, when the stomach is too big you are told that the child has worms.*

Inadequate food intake was reported by some groups to result from the personality and behaviour of the child. Some children were described as 'choosy eaters', refusing all but a few foods. Other children were said to concentrate on breast milk rather than other foods. Mothers claimed that when long-term breast feeding contributed to severe undernutrition, ceasing breastfeeding was the appropriate intervention.

> Mama Furaha: *They are two types [of children], those who would like to breastfeed only and some who breastfeed and eat properly.*

Mama Kadzo: *[For those who only breastfeed] it is important that the mother's breast milk is sufficient since when you give them porridge they will refuse.*

Moreover, the mothers observed that having a 'difficult temperament' predisposed the child to severe undernutrition. It was observed that children who were fussy and cried a lot during feeding times tired their mothers, who then did not persevere with feeding the child.

Another common theme raised as a contributing factor in the development of severe undernutrition was inadequate parenting. Mothers described instances of poor choices being made, where eggs or beans were sold in the market but available money was used to purchase biscuits of lower nutritional value. Inadequate care of children was attributed to various factors, the most important being a lack of commitment by or 'laziness' of the mothers. The FDG participants suggested that maternal 'apathy' and 'laziness' was often coupled with either 'stubbornness' or 'helplessness' that impeded the mother's willingness to follow advice about improving their child's nutritional status.

Mama Katana: *Feeling too lazy to prepare [food] for your child. You may have [food] but be unwilling to prepare it.*

Unison: *[the group agrees] ...there is laziness and 'stubbornness'. The mother may say if I do not prepare [nutritious food] so what? I was brought up this way and didn't I grow up?*

Mama Zawadi: *A person asks themselves and says, is it a must for a child to be given [nutritious food]? If they are meant to live and grow up they will. Whatever I give them they will grow up if they are meant to grow up...*

Mothers explained that sometimes they felt overwhelmed by their daily chores, which included attending to their farms and fetching water and fire wood. Fatigue and overwork contributed to neglecting the needs of their children and failing to monitor their children's feeding habits. In some FGDs the burden of household chores was a major concern. This was a particularly important issue for women from Kilifi, Chonyi, the most fertile region where farming is a major activity, but less of an issue for those from less fertile areas. The women of Kilifi outlined their daily schedule to illustrate how busy they were, identifying the burden of their work as a major contributor to being unable to monitor the nutritional intake and status of their children.

Mama Neema: *I wake up in the morning, sweep the compound, fetch water and breastfeed the child. Then I light the fire and prepare the porridge for breakfast so that the others can go to school. After that I go back to cook lunch so that you can carry some to the shamba [farm] and leave some for the children. I will be in the farm till 4 pm when I get back home remember I have had no time to attend to the chid since morning, [at that time] I try to sort the vegetables, fetch the water, cook, bath the children and prepare them to sleep. The only time I rest is when I get to bed.*

Mama Kazungu: *In January when it's dry and hot, we prepare our farms for the rain in March so that we can be ready to plant. During the planting time, since we plant the whole farm by hand you may finish planting and immediately have to start weeding from the point where you started, when you are just done with the first weeding you have to start weeding again for the second round. During this second round as you weed you plant cowpeas. After this, there is harvesting of the maize followed by the harvesting of the cowpeas. After this, the grains have to be prepared for storage; by the time you are done it is December. The whole year has been occupied by the farm activities. So you see, you may have the food, but the time to prepare it becomes the problem.*

Due to their heavy workload, mothers said they needed to leave their children with alternative caregivers, such as hired help or older siblings. They felt that these caregivers sometimes failed to provide adequate care, forgetting or neglecting to feed the children properly.

> Mama Katana: *When you leave your child with hired help, the help won't give the child food at the appropriate time. They will concentrate on performing their household chores while the child stays hungry. In fact in some cases the hired help may eat the food meant for the child while the child continues getting weak.*

The social setting in which mothers raise their children was mentioned in all FDGs as constraining their ability to provide optimal care. One frequently cited example was living in large households where everything was shared with members of the household and visitors. These living arrangements were said to contribute to severe undernutrition in several ways. A large household may restrict the mother's ability to monitor her children's feeding habits because they assume the child has been fed elsewhere. In addition, the local tradition that everyone present in the household at meal times should be fed means that limited resources are stretched to cater not only for extended family, but also unexpected visitors. One mother reported that while she prepares sufficient food for the children, if a visitor arrives the children do not get enough to eat.

> Mama Baraka: *Sometimes you may prepare food that is just sufficient for your children and then the neighbours children turn up and you are obligated to feed them too which means that your children do not get enough food.*

Women perceived their position in the family was a contributing factor to the development of severe undernutrition among the children in Kilifi. The mothers were not in control of family resources; consequently, they often lacked the power to implement knowledge of nutritional needs. The mothers said that while they received nutritional counselling at mother–child health clinics, the decision about what food should be bought and prepared was often made by others, including husbands and grandparents. Mothers specifically said that because their husbands were not directly involved in nutritional counselling sessions they may not be willing to invest in nutritious foods for the children. The women were unable to change the practices of those in their households with more power.

Maternal gravidity was also raised as a cause of severe malnutrition. The mothers noted that some mothers stopped breastfeeding when they became pregnant. In the absence of supplemental milk the child could easily become malnourished.

> Mama Kazi: *Some stop breastfeeding because they are pregnant. So they stop breastfeeding when the child is 6 months. Additionally, they lack the financial ability to buy milk for the child. ... This leads to the child getting ill. [The child] keeps getting ill until he gets kwashiorkor.*

They also noted that there were cultural beliefs regarding pregnancy and the aetiology severe malnutrition. According to Mijikenda culture, when a mother with an infant or toddler becomes pregnant, 'the heat' from the unborn child burns the toddler when the child sleeps with the mother (*kuhenderwa/hombo ra chere*), leading to severe undernutrition:

> Facilitator**:** *What is Hombo ra chere?*
>
> [People laugh as they explain] – Mama Sifa: *When you are pregnant you will notice your toddler is becoming depressed, apathetic, inactive and you immediately know they need medical attention. When you are carrying another one [pregnant] then you sleep with the toddler, the heat from the unborn child will burn the toddler they become ill and [when you*

take the child to hospital] you are told it is kwashiorkor.

Other reported cultural beliefs associated with severe undernutrition included witchcraft and the 'evil eye' (*mtiriri*).

Mama Charo: *There are also cultural factors, when you give birth then a someone with an evil eye passes by and looks at the child, the child will be constantly ill... contributing to severe undernutrition.*

Mothers also reported that some children had 'body types' *mafundo* prone to severe undernutrition. Another reported belief was that 'poor breast milk' made the child 'thin' and prone to severe undernutrition. Additionally it was said that a breach of sexual taboos (*chira*) by either parent contributed to severe undernutrition in children conceived subsequent to the transgression.

Emerging themes

A close examination of the emerging themes suggested the following potential targets for intervention: poverty alleviation; improving access to medical knowledge and resources; and supporting the development of parenting skills. These topic areas are not exclusive and contain common sub-themes, such as women's empowerment and the importance of all family members in providing a solution. Each topic also suggests the need for a curriculum that goes beyond nutrition to include addressing economic, psychological and sociological issues.

Discussion

Participating mothers observed that severe undernutrition was a multifaceted problem with a complex sequence of causation. This is consistent with the UNICEF Food-Care-Health conceptual framework for curative action against severe undernutrition, biomedical literature and evidence from other communities[14,17,29].

The themes raised by the mothers also illustrate a multilevel conceptualisation that has much in common with UNICEF Food-Care- Health conceptual framework for understanding the causes of malnutrition and its various extensions[14,17,30]. The causes of severe undernutrition given by the mothers in this study can be categorized into the three strata of the UNICEF framework. The first stratum is made up of the *immediate causes* that manifest themselves at an individual level. Immediate causes identified included ill health, inadequate food intake, child personality and behaviour. The second stratum are the *underlying causes* that manifest at the household level and impact on quality of care (eg inadequate child supervision a heavy workload, and maternal attitude and behaviours), and access to resources (eg income, food supply).The third and last stratum, *basic causes*, includes contextual factors (political, economic and cultural) and potential resources (human, natural, structural and financial). From this last stratum the mothers identified cultural norms and beliefs that impact on decision-making patterns about resource allocation and reproductive health. They also identified constraints on potential resources related to the availability of farmland and the means to develop alternative income sources. The presence of these strata suggest that the mothers recognise individual differences in needs among children, households and communities, while also acknowledging the influence of expectations at the societal level.

The authors suggest that the multiple themes raised could be reduced to three basic targets for change in the study population: (i) poverty alleviation; (ii) access to medical resources and knowledge; and (iii) parenting skills. A core sub-theme underlying each of these components was the need to address the relative imbalance described by the study mothers in the holders of power and knowledge within the household. The imbalance in power implies a need for activities to enhance the role of the mother as a decision-maker. The imbalance in knowledge implies the need to involve all household members in intervention initiatives – that is the fathers and grandmothers who control most of the decision-making; and also the house help, who share in supervision of the children[31]. Because these targets for

intervention come from the community they will have relevance, increasing the likelihood that interventions will lead to behaviour change[32,33].

All FDGs were concerned about the role of poverty. For interventions that alleviate poverty to be successful the message was that there should be direct sensitization of family members who control resources, as well as the empowerment of the women. Improving women's status to improve their children's nutrition is not a novel approach, and it has been estimated that this one change could contribute to a 25% reduction in severe undernutrition in childhood in the next 25 years[34]. Interventions should empower mothers to make choices and take decisions to improve child care, both through increased control of the allocation of resources and the management of their daily schedule.

The sentiments expressed by the mothers in the FGDs concerning the heavy burden of household and farm chores concur with findings from other parts of Africa where a heavy maternal work load (ie many household duties and long working hours outside the house) has been observed to contribute to poor nutritional outcomes[18,35]. That regional differences were observed in the importance attributed to household chores, however, suggests that interventions must be highly context specific if they are to address the needs of a variety of communities.

Some of the FGD responses showed an information gap between cultural beliefs and biomedical knowledge of the determinants of severe undernutrition. However, educational components should not just target mothers but also other household members involved in child care.

Education and access to adequate medical support should also address the mothers' concerns that children suffering from other conditions were more susceptible to severe undernutrition. Research from Africa and other parts of the world provide evidence of the contributing effects of infectious diseases to poor childhood nutritional status[36-39]. Interestingly, none of the FGDs with mothers recruited from the hospital raised the relationship of ill-health and severe undernutrition, despite a high prevalence of infectious diseases among the hospitalized children. This may reflect difficulties in addressing the problems they and their children were confronting, or a lack of awareness and knowledge.

Indeed community mothers expressed more depth of knowledge and thus seemed better informed than the mothers recruited from the hospital malnutrition wing. While some studies have reported a significant relationship between maternal knowledge and child's nutritional status, the literature is inconsistent[40,41]. The mothers recruited from the hospital may have been less willing to discuss issues related to severe undernutrition, which may have been due to a sense of guilt or personal responsibility for the illness of the child. While suggesting a potential benefit of continued education to enhance knowledge of factors contributing to severe undernutrition, mothers' responses also highlighted the need to consider interventions that affirm a positive relationship between mother and child[21], and empower the mothers of children presenting to hospital to take an active and constructive role in future decisions about their child's health. However, the cross-sectional nature of the present study design did not allow for an inferential analysis of the casual relationships among the mothers' knowledge, their emotional state, and the child's admission with severe disease. A more detailed investigation is required to accomplish this.

The importance of enhancing parenting skills as a targeted intervention was suggested by the maternal responses that implicated impaired mother-child interaction as a factor. Mothers reported that maternal 'laziness', 'lack of commitment' and 'a bad attitude' contributed to severe undernutrition. The parental apathy described may be an indicator of psychological issues not explored in detail. For instance, maternal mental health has been linked to poor physical growth[42]. Expert opinion that addressing psychosocial issues is pertinent to combating severe undernutrition and its effects[20,43,44] is provided with face validity by the opinion of these rural mothers that

psychosocial issues such as mother-child interactions during feeding are important contributors to the genesis of severe undernutrition.

Conclusion

The mothers in the study community recognised multiple aetiologies and determinants for severe undernutrition in their children, affirming the need for a multifaceted, multilevel approach to intervention. Suggested interventions include poverty alleviation, medical education and psychosocial strategies. While the UNICEF framework may provide this, in order to be successful the content and approach of any program must address the need for variability, determined by individual and local needs, concerns, attitudes and beliefs.

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