Hungry for Answers:

Determining the causes and possible solutions of malnutrition among the Oltepesi nursery school children

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Executive Summary

In 2008, a Canadian charity organization called Sauti Moja Tanzania was established in Longido Town with the aim of improving and transforming the lives of the Maasai who live under the most difficult conditions within the surrounding pastoralist communities. In the village of Oltepesi a Montessori nursery school was initiated and with Sauti Moja Tanzania the children were offered health and educational support.

It has been acknowledged that the challenge of malnutrition continues to persist among many of the children and so during the month of July and August 2013, Sauti Moja Tanzania invited two UCU student interns to aid in the study of determining the continuing causes of malnutrition among the children and to work with the community in creating possible solutions to address the problem.

To achieve these objectives, various participatory methods and interviews were utilized to encourage discussion and thought among the community in order to identify the current situation of malnutrition among the children. The following report offers a complete outline of the research process and the final results of the study. Using an integrated approach the research study focuses on food security/diet, water and sanitation, health, education and consideration of the local culture. The results of this study may offer important insight in relation to the already existing projects and knowledge of Sauti Moja Tanzania, and may also provide insight into future decisions and actions of the organization.

Contents

I. Introduction - Sauti Moja Tanzania

Sauti Moja is a Canadian charity organization founded by a group of development professionals, but currently has branches located in Canada, Kenya, Tanzania and the United States. Of these, the main focus of this research lies with Sauti Moja Tanzania (SM-Tz), which was established in June 2010 in the Longido District of Northern Tanzania, an arid region predominantly populated by the pastoral Maasai who particularly face difficulties in the domains of health and education. The mission of SM-Tz is to improve and transform the lives of the indigenous peoples in East Africa, especially those of the Maasai women and children who live under the most difficult conditions in pastoralist communities. SM-Tz seeks to do this through a community-based approach, taking on and initiating projects that seek to create opportunities and improvements for those in difficult circumstances (Sauti Moja, 2012).

Within SM-Tz there are three main projects that the organization has focused its efforts into. The first is the Child Mother project which concerns the education and support of vulnerable Maasai girls who face early pregnancy and school expulsion. This program supports a Girls Centre where young girls are provided a safe place to stay, access to good medical service, health education that helps them make informed choices and possible sponsorships for private school. Another project called Community Conversations focuses on the mobilization and participation of the local community in an effort to deal with the problems of HIV/AIDS. Their vulnerability to disease combined with a lack of education has left the pastoral Maasai at high risk of contracting the disease, and therefore, also in the need for a space to discuss and deal with such issues (Sauti Moja, 2012).

The final project, and the main area of the proposed research, is concerned with the support of Early Childhood Development among the Maasai community. Since 2007, Longido Early Childhood Education (LECHE) classrooms have been implemented, one in Longido Town and the other in Oltepesi village. The LECHE schools aim to foster healthy development of the children and their subsequent achievement in the Tanzanian education system. These aims are in response to two challenges which SM-Tz has found prevalent among the Maasai children. These difficulties relate to the poor health and education situations the pastoralist Maasai communities currently face within the Longido District. In relation to their health circumstances, as poverty continues to pose a great challenge to the pastoralist community, the children have been discovered to have poor diets and health. Pastoralists rely heavily on their livestock which is shrinking and an environment which is becoming more difficult to benefit from as drought increases and their access to certain land is increasingly denied. These challenging situations reflect in the community's poor

health situation and are thought to be related to or a cause of the children who are found malnourished and underdeveloped (Sauti Moja, 2012).

Furthermore, there is also the challenge that the Maasai children face in relation to education. It has been found that when Maasai children enter the primary school system they have difficulty learning as some may never have had prior exposure to classroom-based teaching. Many will come without basic skills, like counting or writing, and without a sufficient or any handle of the Swahili language, the only legally permitted language in school other than English. Because of this many Maasai children drop-out before they complete their primary school education, also resulting in more than half not making it to their grade 7 exams which are necessary in order to continue on in secondary school. So in this sense, the Maasai community finds it does not have as many children succeeding in school as they could, and this is why SM-Tz aims to better prepare them (Sauti Moja, 2012).

In response to these challenges, SM-Tz has chosen to respond with a number of activities in the LECHE project that seek to assist the children's development, both physically and cognitively. In concern to health issues, health check-ups are provided every three months in which the children are assessed for their nutritional status by weight and height measurements. They are also provided with anti-worm medication in an effort to control some of the health issues the children face. The classrooms also participate in feeding activities, such as providing afternoon meals of *uji* (porridge) and morning snacks of peanuts in order to supplement the children's diets. When a malnourished child is found, support workers will approach their family in an attempt to understand the reasons for the child's status in order to help the family address the problem and provide support. If these children find they need to go to the hospital, SM-Tz covers all transportation and medical costs, and will then follow up with the parents in an effort to monitor the child's progress (Sauti Moja, 2012).

The classrooms promote teaching in accordance with the Montessori system, taking on children ranging between the ages of 3-7, giving children an opportunity to be exposed to a pre-school environment where they are taught skills that will prepare them for entering primary school. The Montessori system was chosen as it encourages children to learn by doing and gives them the ability to work at their own pace. In order to do so, SM-Tz has assisted in training community members as teachers and assistants to help in the LECHE classrooms. By providing scholarships, two of these people have been able to become certified in Montessori Early Childhood Education. These teachers now provide an environment where the children can learn by being active with the teacher and their fellow classmates, learning some Swahili and the basic skills they need in order to continue on in the Tanzanian education system. Also, this project creates an opportunity for the children's

families to become more supportive of formal education, giving the children an opportunity to stay in school longer and be more successful (Sauti Moja, 2012).

II. Internship Description

a. Internship topic

In the summer of 2013, SM-Tz hosted two UCU student interns, Alicia Mori and Lisanne Labuschagne, with the aim of evaluating the situation of child malnutrition among the Maasai children who attend the Oltepesi nursery school in the Longido District of Northern Tanzania. In collaboration with SM-Tz, the student researchers designed a research project that seeks to determine reasons for the continuing situation of malnutrition and to also consider with the community possible solutions that might improve the situation. In order to facilitate this study, the research was conducted through several series of focus groups with the fathers and mothers of some of the malnourished children. Furthermore, interviews were conducted with key informants that are involved with the LECHE classroom project or with the general workings of SM-Tz. The main aim of the study is to consider different aspects that impact the community, including food security, water & sanitation, health, education and cultural perspectives, in order to determine their association with malnutrition. An understanding of these situations within the Maasai community of Oltepesi will help aid the student researchers in determining what might cause malnutrition and these findings may strengthen the already existing program or offer insights into new possible solutions of the problem at hand.

b. Research aims

The specific aim of the research is to determine the following research questions:

Are the main continuing causes of malnutrition among the children at the Oltepesi nursery school only due to diet issues or should other possible factors be considered?

What are the possible solutions from the perspective of the community that may address this issue?

The main research question is addressed by researching issues in accordance to the following sub-questions:

In concern to the target group:

1) Do they have access to sustainable food security and what is the situation of their diets?
2) Do they have safe access to clean water and what is the state of their sanitation means?
3) What health problems do the children face and is their sufficient access to health services or are there barriers faced in receiving or approaching medical help?
4) Are they educated on basic notions of healthy nutrition and the importance of hygiene?
5) How does their culture influence the community's perspective on the issue of malnutrition?

III. Literature Review

In this literature review, topics concerning the issue of malnutrition among the pastoralist Maasai community in Longido will be discussed. The chosen literature focuses on a number of connected topics that will provide a theoretical background upon which the following research has been designed and which will aid in the interpretation of the final results.

The challenge of malnutrition

One of the most detrimental effects of poverty in developing countries is malnutrition. This is especially true in the case of childhood malnutrition which can lead to an increased risk of morbidity and mortality from infectious diseases, impair cognitive development and reduce educational and productive capacity in adulthood. Moreover, malnourished children are more likely to delay school enrollment, and overall, more likely to achieve lower levels of education (Beasley et al., 2000; Alderman et al., 2009). It is therefore important to discover the causes of malnutrition as they may be a key factor in improving the educational and health situations in developing countries.

According to REPOA (Research on Poverty Alleviation), "undernutrition among Tanzanians is manifested at an early age, therefore, great emphasis is placed on monitoring child nutrition to avoid or minimize the adverse consequences of malnutrition" (2009, p.2). This emphasis and concern has been fundamental to SM-Tz, which among other tasks, seeks to reduce child malnutrition by providing lunch meals and peanut snacks for the nursery students as was explained previously. Despite efforts to increase food intake, provide quarterly health check-ups and family assistance for the children, in 2008 more than half of them were still found to be malnourished; this issue leads to the main focus of this research.

Relation to poverty and food security

In Tanzania, poverty is most pervasive among rural households, and not surprisingly, child malnutrition is also most prevalent among this part of the population. Although there is a pattern of malnutrition rates declining with income growth, several analysts have pointed out that higher incomes and being able to afford more food only accounts for part of the decrease in malnutrition rates (REPOA, 2009, p.6). With this in mind, an integrated approach will be used to consider other factors that could potentially aid in the decrease of malnutrition of children. Such factors will include rural households' access to sustainable food security, education, health services and safe access to water and sanitation.

Poverty is escalating for many Maasai families as access to land has been shrinking, droughts are increasing and livestock herds are getting smaller. All of this has combined to result in changing diets, where the consumption of milk, their main item of food, is decreasing and children are getting less of the nutritional requirements that they need (Sauti Moja, 2012). One of the suggested solutions to this problem is the diversification of their pastoralist activities into farming activities, as agricultural growth has been shown to be a driver in poverty reduction and can allow for the increase in the supply of readily available food (Ecker et al., 2011, p.1).

However, compared to other Maasai-land areas, the Longido District has only limited potential for diversification into farming activities. In general, the majority of Longido households own livestock (95%) and derive 43% of their income from this means. Cultivation is limited not only by poor environmental conditions like drought, but also due to the scarcity of land and labor to work any such crops. Currently, crops generally contribute less than one quarter of overall income for Longido Maasai and households must rely on other non-farm activities for sustainable income. However, recurrent drought, a deteriorating local economy and a spread of practices from agricultural immigrants have resulted in some of the Longido Maasai adopting cultivation practices, despite the area's limited agro-ecological potential. This may provide a means of greater food security, and in turn, improved nutritional status among the children (Homewood et al., 2006, p.5).

Furthermore, in SM-Tz's 2012 Annual Report, it has been noted that inadequate food combined with lack of knowledge about disease prevention and good diet also contributes to child malnutrition and mortality. Training and provision of services that help women reduce the risk of disease and provide proper nutrition to their children are considered integral in achieving household food and nutrition security (p.2). In this sense, it is not only important that children receive adequate food, but that the community is educated on how to prevent disease and be aware of what constitutes a nutritious diet. With this in mind, the following section will include the influence of Maasai culture on their understandings of malnutrition and education.

Relation to culture and education

Culture is also related in understanding the causes of malnutrition in particular societies. The people of Otlepesi are very traditional and their society is based on patrilineal clanship in which social roles of the community members are ritually marked by an age set system and property is in control of men (Akarro, 2008, p.298). At a certain age, and after passing the relevant rituals, a person moves up in rank and earns different accompanying responsibilities in terms of labour. Overall, their culture is based on semi-nomadic herding and this limits the amount of food they can produce themselves or have access to. In this sense, their traditions largely dictate their living and eating habits in such a way that families generally only eat milk and *uji*[1], and rarely any fruits or vegetables (Sauti Moja, 2012).

It should be noted that Maasai parents do not always easily recognize when their child is malnourished and what they should or should not be eating. It might be that especially mothers do not know what is good for their child, and even if they do know they are usually not able to make decisions about how much to spend on what food, as the men are in charge of financial resources. Moreover, when a child is malnourished, this is usually also the case for the rest of the family, meaning the child is needed even more at home to help out with chores and securing food. Recognizing this issue, currently, formal education is made more appealing by offering children lunches at school. However, one consequence of this is that parents develop an attitude that feeding their children is less of their own responsibility and more so of the schools (Sauti Moja, 2012).

In addition, formal education is not seen as something that should be pursued because the traditional belief is that after colonization the Western educational system has been imposed on the Maasai community and has not proven to be beneficial nor appropriate to their culture and way of living. It is their belief that children who follow formal education are no longer prepared for their place in the Maasai community and usually parents believe that their children have more important responsibilities at home, such as looking after younger children, grazing animals and collecting firewood (Akarro, 2008, p.297). However, more recently, the Maasai are becoming more willing to send their children to benefit from the formal education system (Akarro, 2008, p.301).

Relation to sanitation, water & health services

Malnutrition is not only associated with an inadequate diet and lack of nutritional education, but also with poor health and inadequate sanitation services and care (Alderman, Hoogeveen & Rossi, 2006). For instance, frequent episodes of diarrhea and

[1] A kind of porridge made of maize flour

intestinal parasitosis or helminths[2] are significant causes of malnutrition (Bartram & Cairncross, 2010, p.2). In addition, it has been noted that malnutrition renders children more susceptible to other diseases, which are very often related to lack of hygiene, sanitation and clean water. 7% of all diseases related to hygiene, sanitation and water are directly associated with malnutrition, and according to Bartram & Cairncross (2010), "reductions in diarrhea also reduce the incidence of diseases that are the consequence of malnutrition and that account for 29% of the disease burden" (p.3).

Furthermore, lack of sanitation can lead to intestinal worm infections which cause stunting and as a consequence can lead to late entry to school and impaired cognitive functioning. There is also evidence that inadequate sanitation and water supply is related to loss of time, as people have to spend more time walking to such facilitations, and consequently, have less time to spend on securing food. Attendance and dropout rates might also be influenced by lack of water and sanitation as children are often responsible for the collection of water. In Longido District, and specifically the village of Oltepesi, most people do not have access to adequate latrines and safe drinking water (Bartram & Cairncross 2010, p.3).

In concern to health services people in poor rural households do not have the same access as those who live in urban areas and with higher incomes. Barriers to poor rural households in health service access include distances to service providers, the costs of obtaining healthcare (REPOA, 2009, p.8) and insufficient public knowledge (Agee, 2010, p.1973). In Longido town, there is a clinic which the community may access but there may be barriers that make it difficult for the Maasai communities to visit it when in need of health care (Sauti Moja, 2012).

Concerning the previously mentioned gaps in the target community's access to sustainable food security, education, water and sanitation, and health services, it becomes apparent that each concept is not mutually exclusive from the other, but instead, is rather inter-dependent and connected when considering the issue of malnutrition. In order to provide an improved and fuller understanding of the underlying reasons and causes for malnutrition all factors mentioned have been taken into account during research. And to this end, as presented in Figure 1 below, a conceptual framework has been developed which the student researchers used to carry out research in the field. Having reviewed the main conceptual areas related to malnutrition in the above sections, it becomes clear that taking an integrated approach is necessary to frame and assess the causes and possible solutions of malnutrition amongst children in the Longido District of Tanzania in a cultural-sensitive and context specific manner.

[2]Parasitic worms in the gastro-intestinal tract

Figure 1: Conceptual Framework

Source: Mori & Labuschagne, 2013

IV. Methodology

Study population

This study was conducted in Oltepesi village, Longido District in Tanzania among the children and parents of the Oltepesi School. The children were aged between 3 and 6 years and were selected because their growth rates, according to previously composed charts, were below the normal standard. In turn, both of their parents were invited to focus group discussions which were conducted separately for the men and the women. In addition, two teachers of the Oltepesi School were interviewed, one of whom is also an employee of SM-Tz (and from now on will be referred to as the 'coordinator'). Finally, an interview was conducted with the doctor from the Longido Health Center, who is involved in the health check-ups of the children every two to three months. Both parents and children were involved in the study to acquire a more coherent perspective on the situation of malnutrition, as in the past it was found that parents often lie about their children's diets. Furthermore, mothers and fathers were asked to participate in separate discussions, because it was believed that their roles within the family would result in different responses. Men, for example, are considered to be in charge of everything, such as the

cattle, the finances and the children, whereas women are more concerned with the household and depend on their husbands for other issues. Therefore, women might be more directly involved in the situation of malnutrition among their children, while the men are more in control of a change in the situation. The perspectives of both the teachers and the doctor further add to the overall understanding of the causes of malnutrition and possible solutions to the issue.

Data collection process

In total, seven focus groups and three interviews were conducted by the two interns over a period of three weeks. Three focus groups, each of which consisted of 7 to 12 participants, were used for the men and women and 16 of the school's nursery students participated in the children focus group. All focus groups were conducted in Maa and took place either within the Oltepesi school itself or outside on the grounds. The intention was to invite the same participants for each of the two groups (men and women) each week so that they would take part in all participatory methods that required their consecutive attendance and this process would also allow them to be more comfortable to share information over time. To ensure this, a key informant was asked to contact the participants that were requested and informed them about time and location of the discussions. During the focus groups and interviews, data was collected by using digital recording and note-taking by one of the interns. Furthermore, they made sure that each intern facilitated the discussions for either the group of men or women and took notes for the other. Two translators, one male and one female, were hired to help conduct the focus groups and one of the interviews that was not in English. Both of the translators were students and a member of the Maasai community, so it was expected that they might also facilitate in overcoming the cultural barrier. They were trained at the beginning of each week, which involved one or more focus groups, so that they would be sufficiently familiarized with the methods used. For each group, one of the translators would aid the facilitator and was responsible for the translation of the discussions, while the other would assist in taking notes. After each focus group, all four came together to transcribe the discussions, either on the same day that the focus group took place or a day after, in order to limit inaccuracy.

Focus groups

Each focus group was started with a brief introduction by the student researchers about the purpose of their research and an explanation of the main problem (See Appendix III). In this introduction the participants were also encouraged to share all their opinions and to speak one at the time to facilitate recording. After the introduction they were usually asked one or two opening questions that were not related to the planned discussion in order to make them feel more comfortable to speak. For all three focus groups a different method was used, which will be explained in the following sections (see Appendix I for detailed

procedure). After each discussion the participants were thanked for their participation and given a small fee as a token of appreciation.

Focus group method 1: Group profile

The group profile method, explained in Geilfus (2008, p.37), was adapted and used to acquire a perspective on the main activities of the community in relation to diet, food security, health and water. After this objective was explained to the participants, in both groups they were asked to come up with as many possible items as they could think of within each topic. For each item a picture was drawn on a card, since many participants were illiterate, and put up on a board. Once the participants could not think of any other items, they were asked to mark the ones they used or owned themselves by marking an 'x' on the respective cards. Within the topic of food security and diet, the participants were asked for their food sources, meaning the livestock they owned, the foods they produced and the foods they bought. In health, the main diseases that were present among their children were recorded, as well as the health services they used within and outside of the community. Finally, they were asked to mention their sources of water, how long it took them to get water and their means of sanitation. At the end of the discussion, the marks were observed and any interesting or surprising results were discussed with the participants.

Focus group method 2: Force field analysis

The technique called force field analysis (United Nations, 2004, p.55) was used in the second week to make the participants think about a certain problem they face in the community and define its causes. Furthermore, the objective was to make the participants think of how they can achieve the desired situation and think of solutions themselves. First, the participants were asked to describe their understanding of the problem of malnutrition among the children in Oltepesi that had been explained by the researchers. The desired situation was also already given, which was to see healthier and no longer malnourished children within the next five years. The current situation and the desired situation were labeled in Maa and put on a board and they were connected by an arrow, which represented the way the participants would have to work from the problem to the goal. In addition, several small arrows were drawn pointing in the direction of the problem to represent the challenges that are hindering the community members achieving the goal. Small arrows that were pointing towards the goal were to represent the resources the community members have that help them achieve the goal and overcome the challenges. The arrows were labeled 'constraints' and 'resources' in Maa. The participants were asked to discuss the challenges and the resources they had to overcome these, thus solving the small problems that would eventually lead to solving the problem of malnutrition.

Focus group method 3: Venn diagram and stepping stones

During the last focus group discussion, the participants were first familiarized with the framework the student researchers developed prior to arrival. They were explained the purpose of the last two discussions and how they related to this framework before the last method was introduced. This method involved a combination of the Venn diagram technique (United Nations, 2004, p.59) and the stepping stones method. The objective was to make the participants aware of their role in developing solutions and making them think of what specific steps need to be taken to implement a solution with their own involvement. The problems and solutions of the last week were repeated and the participants were asked to put the solutions they mentioned in relation to the most significant problem in the Venn diagram. This diagram was made out of three overlapping circles that represented the different levels of responsibility, which could be shared. The three levels were government and NGO's, the community and the family. The participants were asked to think which levels they thought were involved in achieving the solution and to put the solution in the place they thought represented this best. The solution they deemed most important was then taken to the stepping stones diagram. In this diagram the problem was put on one side, the solution on the other and a path was drawn to connect them. Around the path several circles were drawn which represented the steps that needed to be taken to initiate the solution. The participants were thus asked to come up with specific steps that they could apply themselves in order to reach the solution. The exercise was repeated for other problems and solutions if possible.

Interviews

Semi-structured interviews (see Appendix III) were conducted with the teachers and doctor to explore their perspectives on the issues of health, nutrition and education within the community and how these were related to the problem of malnutrition among the children. While the main focus of the research was on the community's perspectives, the interviews were used as additional information to elaborate on the issues that were mentioned.

Ethical issues

Before each discussion and interview, the participants were asked for informed consent with regards to taking notes and recording. They were ensured that especially recording was for the student researchers' benefit, as they did not understand Maa. In addition, they were told that everything that was said would only be used for the research of these students and that they would not be mentioned by name, ensuring confidentiality and anonymity. Furthermore, the participants were informed about the content of the study in detail before they consented to participation. They were told that their participation was voluntary and that although active participation was encouraged, they were not forced to

engage in the discussions. Moreover, they were compensated with a small fee to thank them for their participation and time that they put in.

V. Empirical Problems

When conducting this research several limitations were faced. One limitation was a result of the use of focus groups that were generally large (8-12 participants) and as a consequence confidentiality was decreased, not all participants felt comfortable enough to share their true opinions and usually the discussions were dominated by only a few people. Furthermore, the focus group discussions utilized some complicated methods which sometimes resulted in a lot of time spent only explaining the method to the participants and less time left for the actual activity.

Another issue was that it seemed that most of the participants were primarily motivated by the financial compensation they received at the end of the discussion and were not genuinely interested in the topic. Although the translators were encouraged to translate everything that was said during the discussions and one interview, some data may have been lost in this process. Furthermore, it also could not always be controlled which participants took part in the discussions; the key informant was supposed to contact the parents of the malnourished children only, but there were some misunderstandings about this and during the discussions it was sometimes difficult to determine whether the participants qualified to the terms set by the students.

One of the most important limitations to consider is how the student researchers may have influenced the discussions. It seemed that some participants would only say what they thought the student researchers wanted to hear and sometimes people interfered by stopping others from telling something they believed not to be interesting to them. Finally, they often expected that the student researchers would actually financially support their suggestions and it was sometimes difficult to make clear to them that this was not the case (see Cultural challenges).

VI. Results

a. Food security and diet

Composition of diet

An understanding of the children's diets was drawn from the focus group not only with the children, but also information provided by the parents in their focus groups, since they explained that the children generally eat the same things the parents do. Throughout the discussions it became apparent that one of the most important contributors to their diet is milk, as Maasai greatly depend on cattle as both a food and income source. The women explained that milk is either bought from shops, but more normally, it is milked straight from the cattle they own. Milk is drunken raw or it can also be used to make *ghee,* which is a fat made that is eaten and can be stored for a long time. *Ghee* can also be boiled into oil, which is then used for cooking purposes. Milk is generally abundant and relied on upon during rainy season when cattle have access to good pastures and according to one woman, "often we eat porridge in the morning and evening...at the time there is enough milk we drink that and do not buy many other things from shops" (FG 2, p.1).

The women mentioned that the children eat meat, usually goat, cow or sheep, but this is only when the animal dies or is slaughtered. Also, even if they themselves do not own that animal, meat will be shared among the community members. However, it was explained that they think sheep meat is too oily and this can result in some children becoming sick, for example, they may experience diarrhea or allergic reactions, like rashes or pimples. In general, it was mentioned that most people do not like or normally eat sheep because they believe they get fever from eating it. Men also mentioned that they themselves will not normally eat chicken, but will give their children eggs. There was only one man who mentioned that he eats chicken and only one woman who said that she owned chickens. When this woman mentioned that she liked chicken meat more than goat meat, the other women laughed at this comment.

Furthermore, the children's diets are generally carbohydrate-based, with little protein or fruits and vegetables. In the focus group with the children, when asked what they ate for breakfast, lunch and dinner they explained that their meals mainly include the following things: milk, *ugali* (maize flour dish), *uji* (maize flour porridge), *chai* (tea with milk and sugar), beans, rice, *chapati* (flatbread) and *mandazi* (fried bread). Only one of the sixteen children mentioned that they got cooked greens with their *ugali*. According to the doctor interviewed, the Maasai diet is not balanced. He believes that they are missing essential fats and proteins in their diet, along with vitamins (i.e. A, B, C) that they should be getting from fruits and vegetables. It was also agreed with by the coordinator that the children lack

protein in their diet. The doctor went on to explain that things in their diets, like *uji*, are not rich enough and even good things like milk are sometimes not always available.

However, in the men focus group, one man explained that the reason they buy vegetables is because it is healthy for the children. Later, it was explained by the women that they buy other foods from the shops, foods like rice, beans, potatoes, wheat, tomatoes, oil (for cooking), avocados, carrot, fruit (oranges and bananas) and eggs. For other food sources, it was discovered that both the men and women said they had farms, and more specifically a woman mentioned that "when we plant, we plant with beans and with maize" (FG 2, p.1). However, compared to all the men saying they had farms, only two women confirmed that they had farms. In general, both men and women mentioned that they have cows, donkeys (for water fetching purposes), goats, sheep and a few have chickens.

Food security challenges

In general, the most common challenge mentioned among the Oltepesi community in relation to food security and diet is the fact that they live in a situation where there is a constant lack of food. One man actually stated that "there is not enough food" (FG 4, p.4) and when asked what kind of foods he meant, he replied by saying that they do not have enough of foods like rice, beans and even maize and wheat. There were several reasons for this status, one being a general lack of resources or their general state of poverty, which was explained as situations when people have no cattle. Having no cattle means they have nothing to be used as a food source or a possible income source if they were to sell them. Lack of food has also been tied to a lack of fortune and also the problem of water, as there is little rainfall and few easily accessible water sources, making it difficult to farm or cultivate land for crop production.

Water sources are far from the Maasai *bomas* ("homes") and in dry season the only reliable one is the *orobomba* (water pipes/tap) in Longido town. The distance between the *bomas* and town is around 6 km one way and fetching water from this source can sometimes take up to six hours by the time they have travelled, waited, filled their jugs and travelled back. So in this sense, if there is no water or it is difficult to fetch large quantities, the Maasai find it inconvenient to farm or cultivate land when they are used to depending on their cattle as a food source. Even when it does rain, there is usually no place for them to store or collect the water. Also, drought results in poor pasture lands for the cattle, so Maasai have to travel far distances with the cattle to find good land. The men explained that the lack of water makes the cattle less healthy and therefore they produce less milk. However, when the cattle need to travel to find pasture, they leave the *bomas* and leave the women and children with no cattle to milk, leading to a lack of food within the community. It is believed that when children lack milk in their diet they are more prone to becoming sick.

To both the men and women, the number one challenge they face is the lack of water in their community; this issue will be further discussed in the following section on water and sanitation. Furthermore, it was mentioned that even if the families have a small farm, it becomes difficult to maintain the crops in dry season. A woman explained that even if you do plant crops while there is rainfall, the rainfall may stop before it is ready to harvest and the crops will fail and the family will have no food. So for some, farming or cultivating land is just something they do not do or have a mind to do.

In relation to difficult climate and land challenges, it became apparent throughout the focus group discussions that season has a great impact on diet. The Maasai rely heavily on their cattle and milk as a food source and during rainy season they can depend on their cattle to produce milk and might also be able to cultivate small farms of beans and maize if they wish to do so. However, during drought, cattle can die or others stop producing milk, meaning the Maasai will now have to buy milk and rely on other sources of food that they then might not be able to afford.

Another challenge this community faces in relation to food security is the fact that they depend on only one resource (cattle) and have not yet developed their skills to benefit from other resources. It was also mentioned by the women that they used to collect firewood and make charcoal to sell for money, but these activities have become illegal, leaving them with no other means of deriving income. Furthermore, many families mentioned they do not keep animals like chickens, which could provide another food source, because it can sometimes be difficult to keep them. It was told that sometimes they are eaten by wild dogs and generally they require more care than they have time for. Finally, a general lack of finances among the Maasai is a problem in securing good foods. According to one of the teachers, the Oltepesi children are not fed well, because at home they cannot get good food since their families are too poor to afford such things.

Food security, diet and malnutrition

Throughout the focus group discussions, the topic of malnutrition came up in relation to food security and diet. One woman said that "*menati* (malnutrition) is someone who does not have cattle." (FG 4, p.1) The term *menati* was often associated with terms of poverty; for example, malnutrition among children was only related to families who do not have enough cattle and therefore do not have enough food or else cannot afford proper food. It was explained that they not only used the cattle as a food source itself (i.e. milk and meat), but explained that people that do not have cattle cannot buy food, because they need to sell cattle in order to have financial resources. It was also mentioned that some people have more cattle then others, so the distribution of resources among the community may not always be equal and you may find some have food and others do not.

When asked what they thought malnutrition was, the men believed it was only an issue concerned with food. They explained that as Maasai they depend on cattle and although you might see a large flock of cattle and think they are accessible to all Maasai, really all those cattle could just belong to one Maasai. This man may only have a few children compared to another who may have many children, but no cattle. Therefore, those who lack livestock are considered to be poor as they lack the means to provide food. They also mentioned that you can find those who are wealthy have children who look healthy, and others who are poor have children who look malnourished. Finally, it was mentioned that although malnutrition looks like a disease it is not, but instead is due to a lack of good food and different foods for those who are malnourished. For example, a poor family will rely on cheap foods and will not be able to buy other foods. When they have enough cattle and good food they are able to get enough in order to be healthy; malnutrition is a result of not having these things. One man mentioned that their solutions to the problem malnutrition are to drink milk or to slaughter an animal to make soup.

One woman explained that because they are poor they have to work very hard for money and food, maybe by selling charcoal or by looking for left over maize around the machines. But if you do not work hard, you will not be able to buy food. The women also believed that the children are malnourished because during drought the cattle produce less milk and they rely on other foods bought from the shops and in this way they do not get enough milk or the foods they are used, resulting in diseases like *kwashakoo*.

b. Water & Sanitation

Water sources and access

In the Maasai community of Oltepesi there are three main sources of water that can be accessed depending on certain seasons: the *orobomba* in Longido town bring water down from the mountain, is available in all seasons, and can be accessed by the tap in the town center; water can be fetched from the Mount Longido spring which is more abundant in rainy season, but further away and less plentiful in dry season; and man-made dams that store rain water during the rainy season. Maasai communities have no piping system to carry water to their homes, so instead they rely on fetching water from this variety of sources. This task is usually done by the women and children, and can either be carried by jugs in satchels on their heads/backs or by donkey if the distance is far. All of these water sources provide free drinking water, however, if the Maasai want to water their cattle they have to pay a fee.

It should be mentioned that there is also a water tank located right next to the Oltepesi nursery school that has water pumped from the secondary school's bore hole, which is located about 6 km away. This water tank is only used for the purposes of the school and for the children; Oltepesi community members are not allowed to access this water source.

When asked whether they believed all water sources were clean, both men and women agreed that all were clean and there was no need to boil water for drinking. However, the women explained that they believe the water from the dams was not good for drinking because the animals drink from them and make the water dirty. The men also mentioned that at the bottom of the mountain spring animals also go there to drink and end up contaminating this water source as well.

Sanitation

It should be understood that the *boma*[3] has no modern means of sanitation. For toilets, people go out into the bush to do their business. It was mentioned by a local doctor that even if there are toilet facilities, the Maasai do not use them. Furthermore, the local coordinator mentioned that even to teach the children how to use a latrine at the Oltepesi School was a big lesson. She mentioned that:

> "When they had a toilet for the first time we were telling them how to use it, not to soil the floor and to go into the toilet one at a time. When you are not there, all the boys will stand around the pit and all go to the toilet at the same time. And some children you really have to persuade them, they will never go in, they fear to do anything on this pit because they cannot see the end, they are very scared" (INT3, p.6).

In concern to the water system and being able to bathe, it was mentioned by both the men and women that they do not shower often, but when they do they have to go fetch water and then either shower in the bush or inside the house.

Challenges of water

Throughout the focus groups it was expressed that water is one of main challenges and biggest problems that their community faces, especially in dry season when all water sources dry up, excluding the *orobomba* in Longido town. For one, fetching water can take a lot of time and energy which could otherwise have been used to do other activities. In the focus groups it was explained that it can take anywhere between 1 ½ - 2 hours to fetch water from the mountain spring, and up to 6 hours to get water from Longido. This is due to the long walking distance (around 12 km roundtrip) and the long wait people experience at the crowded *orobomba* lines in town. The women mentioned that they do not go to Longido often to fetch water, but when they do go they go with donkeys so they can carry back more water and only have to go every couple days.

[3] The *boma* is the traditional living unit of the Maasai. It is usually comprised of several small huts surrounded by a man-made fence of sharp tree branches and bushes, which serve to protect the people and livestock from outside dangers. In general, each hut is made of sticks and mud and a few air holes are left to ventilate the smoke that comes from cooking inside over an open fire. Each hut is generally headed by one of the several wives the head Maasai will have. There are also man-made pens within the *boma* which house the large herds of goats and cattle when they are not out grazing.

Another one of the major challenges in relation to water has to do with the difficult climate and environment that the Oltepesi community faces. Both the men and women were concerned with the issue of drought and mentioned how it constantly results in the land becoming too dry to be cultivated or used for farming to produce other foods. This situation has left them dependent on cattle as their main source of income and food, however, another challenge results from the lack of rainfall in that pastures for the cattle are not sufficient. Maasai traditionally move with the cattle to find better land to graze on, but problematically, this results in all the cattle leaving the *bomas* and leaving the women and children with no cattle to milk.

Even when it does rain, generally there is a lack of places or big dams for water to be properly stored or collected for farming or other purposes. It was mentioned that if there was more water not only would they have means to initiate other activities, like farming, but their current resources and life situation would be dramatically improved. One man said that "if I had enough water then I can do irrigation and the cattle will have enough water" (FG 3, p.6). It was also mentioned that when cattle have enough water and pasture they are healthy and can stay within the community. This then provides the people with enough milk and food to use, maintaining their own good health.

Water, health and malnutrition

Lack of food was also mentioned to be related to the problem of water; lack of water means there is no possibility of cultivating land and producing crops, and therefore contributing to a constant lack of food. Also, because women sometimes have to go far to fetch water this can sometimes mean that mothers will not return home until very late and their children will have to wait a long time before they can eat. Quoting one of the women she stated that "even if you have plenty of food in the house, it's not enough, because water is for everything" (FG7, p.2).

According to the doctor from Longido, all water fetched from the spring and dams are considered highly infected as they are contaminated by the animals that use these sources to drink from. Since this water is never boiled before drunken, he mentioned that some people can get sick, experience diarrhea and may even need to go to the hospital if their health is affected enough. He also believes that their means of sanitation impacts their health, mentioning that because they choose not to use toilet facilities and instead defecate on the open ground that the feces dry, get caught up in the wind and blown into their mouths. From this theory he determined that the Maasai have a problem of intestinal worms because they do not use latrines.

c. Health

Diseases and health issues

During the focus group discussion with the men it became clear that the most common diseases among their children are malaria, high fever, *kwashakoo* (disease related to malnutrition), pneumonia and *surua*, which are skin diseases such as rashes and chicken pox. It was explained by one of the translators that *kwashakoo* is perceived as a shameful disease that occurs to those who are very poor. According to the women, among the main diseases were high fever, chest ache, tuberculosis, *anapeti* (an extreme form of headache, i.e. migraine) and *kwashakoo*, which was, explained by one woman, related to poverty, because poor people do not have enough money to buy good food. Children with this disease have a big head, a big belly, are generally too skinny and can have swollen feet. Another disease that was mentioned was *mamboleo* which occurs when the child has become too skinny and weak, such that his skull sinks in and he experiences growth problems. In addition, the women mentioned *enang'ami*, a disease they believe can be recognized by a swelling of the stomach or diaphragm area. The final diseases that were mentioned were diarrhea and pneumonia, but interestingly none of the women mentioned malaria. Both men and women explained that the frequency and variety of diseases are a major challenge in their daily lives, including the lives of the children. The women mentioned that *oloirobi* (high fever) and malaria were especially challenging. They also explained that they get sick from the work and activities they do. For example, they mentioned that when they light charcoal, the smoke and heat from it can harm their own health and that of their children.

The prevalence of the diseases *enang'ami*, high fever, malaria, pneumonia and *anapeti* were confirmed by one of the teachers to currently affect the Oltepesi children. He also added that some children are affected with worms and have ringworm on their heads. Furthermore, currently two children were infected with tuberculosis. The coordinator explained that some children have additional health issues such as bed bugs, due to a lack of hygiene at home. She explained that these children do not sleep well at home which might impact their participation in class, although they are allowed to sleep at school during free time. She also mentioned that the children do not know how to take care of their skin and that they often have ringworm because their skin is not good or clean.

The doctor explained that the most common diseases he noticed were upper respiratory tract infections (URTIs), followed by skin infections such as scabies and fungal infections on the scalp and nails. He mentioned that half of the children have fungal infections on their scalps, which could be due to the sharing of combs. Other common diseases were eye

infections such as trachoma, which he thought was due to the large amount of flies around their house, diarrhea (although this was seldom), anemia and malaria.

Treatment

During the first focus group discussion, the men and women were asked what they would do to cure the diseases of their children. The first response of both men and women was that they would take them to the clinic. The men explained that they would also find the children local herbs, which they collected themselves from nearby. They said that they do not go to a traditional healer for herbs and one man said "when my child is sick, I go dig up the roots myself and boil them" (FG 1, p.3). The women also mentioned that they find their children local herbs themselves and they believe these work best to treat them. However, according to the women there is a traditional healer in the community and they explained that before they take the children to the clinic, they take them to him. They believe that this healer will discover what the problem is, for example, by rubbing the children's stomach, and will then give the women advice about treatment and prescribes herbs.

Both men and women also mentioned specific local treatments for the diseases they face, although the women's explanations were much more specific and diverse. One man explained that for high fever, he uses the root *ormukutan* for treating himself. One of the women explained that to treat *enang'ami* they make a cut on the stomach to get out the blood and then cover the cut with battery acid. For trachoma, the women explained they can treat it by marking/branding circles on the children's cheeks. In addition, when children have a fever, the women boil water, add salt and charcoal embers to it and give a small portion if this to their children to drink, while they spread the rest of the water out on their bodies. For *anapeti*, the women boil water and have the children steam above it until they sweat. After that, they will put sheep feces on their heads in the shape of a cross, which can only be removed when the headache is gone, which can take up to a week. This cross was also used to indicate to other people of the community that that person has a headache.

However, the community members believe that for some diseases they need to get their children to the clinic, as they believe they can only be recognized there. For example, one woman explained that when they think they have *oloirobi*, they go to the clinic for a check-up and may find out that they really have malaria. In addition, when their children have pneumonia, the women explained that they take them to the clinic, as they know it can only be treated there. For other diseases, they usually first take the children to the village doctor and afterwards to the clinic, if necessary. The women had a very strong opinion about treating *enang'ami*. They said that they never take their children to the clinic for this

disease, because they think the child will get even sicker and could possibly even die there. According to them, only they know how to treat this kind of disease.

When the children were asked whether they had ever been to the clinic, 11 of the 16 children raised their hands, while 13 mentioned they had been sick at least once. 9 children said they had taken medicine before and 11 had taken local herbs. In total, 12 children mentioned that they had been treated for *enang'ami* by being cut (see Appendix II for further results).

One of the teachers explained that children who are affected with malaria are sometimes forced to vomit by their parents as a type of treatment. Furthermore, when a child has pneumonia and the parents are not sure about this, they will first treat them for *enang'ami* in case they have that and then generally think there will no longer be any problem. When a child is malnourished, he explained, the parents know this and will take their children to the clinic but the situation usually does not improve after this. However, he believes that they do what they can, for example by slaughtering an animal for them so that they can get soup. According to the doctor, the Maasai usually give their children local medicines such as herbs and plants and confirmed that they often consult a traditional healer before coming to the clinic. One of the diseases they cure with local medicines is pneumonia and the most common local medicine he knew of is *lodua*, which is a root that is used to treat children for intestinal worms. He was not familiar with the disease *enang'ami* and did not understand the treatment either. When asked whether he thought these traditional methods were effective, he said that he did not think so.

Health service barriers

One of the barriers the community members experience is the distance to the clinic. The men said that they generally preferred the herbs over the clinic, as the herbs could be found nearby and it does not take much time to collect them, whereas the clinic is far away. Furthermore, sometimes they have to communicate with the clinic to be transported by a motorcycle or a car, but this can take a long time. During the rainy season it is even more difficult to reach the clinic, since the quality of the roads diminishes because of the sudden abundance of water. The women, however, said that the clinic was not very far, but that sometimes they also have to buy drugs from the pharmacy, which contributes to a longer amount of time spent from home. Besides distance, costs of the clinic are also a barrier the Maasai experience. During the focus groups both men and women pointed out that even when they do go to the clinic, they are told to buy medicine which they cannot afford. One man explained that when he goes to the clinic and he is told to buy medication, he has to go home again and find money by either selling something or asking others for it, because he does not have enough himself.

The doctor also mentioned that the most important barrier is bad infrastructure and added that the lack of knowledge about the importance of coming to the clinic is another. He explained that the Maasai often rely on traditional methods of treatment and think they are more effective than other kinds of treatment. He believed that when a child is sick and receives traditional means of treatment he sometimes gets even sicker and when he finally comes to the clinic he has suffered a lot. He said "because they rely so much on their traditional treatment, it delays them from coming to the hospital on time" (INT 2, p.4). Furthermore, when they do eventually come to the clinic the parents believe they have already cured the disease, while they really did not. In addition, he mentioned that the government covers the fees for health services for children under five, but when they are older their parents have to pay for it. Because the health center does not have enough sufficient services to treat all patients, the doctor explained that sometimes they will have to be transported to a hospital in Arusha, which involves additional transportation costs. Although SM-Tz usually covers all these costs for the children, it might in general be perceived as another barrier to access the health services.

Health and malnutrition

During one of the discussions with the men, it became clear that they believed that malnourished and weak children will get diseases more easily. Especially high fever was mentioned as a significant problem, as these children can have fevers every month. The men mentioned that "because high fever is all around, weak and malnourished children get sick easily, because they lack blood" (FG 3, p.3), which is most likely a reference to anemia. A man explained that to cure a sick child, he should be given enough food. "Even if the child is treated and comes home again, but there is no food, they will not recover. But if they were to have all foods [different types] it would be easier for them to recover" (FG 3, p.3). It also became clear that men relate malnutrition to lack of cattle and poverty. When a child is sick it is hard to recover if his parents do not have cattle because they either use cattle for recovery or the cattle indicates that they are rich and have access to health services. One man explained that to treat the child, he can slaughter an animal so that they can make soup, "but for those who don't have animals they cannot get better" (FG 3, p.3). However, the men explained that *kwashakoo* is not caused by malnutrition or in any way related to diet, but they believe it is caused by worms. The women also mentioned that children go through malnutrition because their parents are unable to buy food and they will get diseases more easily. One woman said that some people were not able to take their child to the clinic for treatment and when they do, the child is already really weak. The women also explained that malnourished children often suffer from *kwashakoo* and are taken to the clinic for treatment.

According to the doctor, the relation between malnutrition and health can be found using many parameters. He explained that a child's color of the hair or skin can indicate symptoms of malnutrition. For example, he mentioned that if a child is malnourished, his hair is not as black. Furthermore, he explained that he would look at the color of the eyes to check for blindness or eye diseases. Other abnormalities could be found in the tongue, the paleness of the palm and the skin texture, which can change due to lack of vitamins. He also mentioned that there are differences in the prevalence of diseases between the malnourished and healthier children. He explained that those who are malnourished generally have more attacks of diseases like pneumonia and tuberculosis. When a child is chronically ill, he explained, they sometimes do not want to eat and just drink raw milk. Because of this, they have insufficient diets and poor health and they are more prone to diseases such as tonsillitis and tuberculosis of the lymph nodes and the abdominal area. These children are also more prone to skin infections, like scabies and are more likely to suffer from eye infections or URTIs. However, he mentioned that it is difficult to know if malnutrition causes these diseases or if it is the other way around.

When the teacher was asked whether he noticed any differences in prevalence of diseases between malnourished and healthier children, he answered that "for those who are malnourished, they are the first ones to become sick and are more frequently sick compared to those who are ok" (INT 1, p.4). He also believed that these health issues are related to malnutrition, but he did not think that the parents knew. The coordinator also believed malnourished children are sick more often and "after their sickness is done, you find that they are in another" (INT 3, p.2), but she explained that when they get treatment in time they can be cured. When children are found to have worms, she explained, they usually also weigh less. According to her, malnutrition and health issues are definitely related, but the parents do not assume this and do not take their children's health problems seriously enough. She explained that "you have to remind them a lot. It's not serious until a kid is very, very sick and then they will do something" (INT 3, p.5). She also mentioned that she did not know if the diseases are the reason for malnutrition or if malnutrition is the reason for getting sick.

When asked to explain whether lack of education or the distance to the clinic is a more challenging problem, the men ensued in an intense discussion. One man said that having a hospital is more important; he said: "if you get treatment, you will be healthy and you can do other things" (FG 6, p.1). Another man disagreed and said it was education. He replied that if you have knowledge you can build a hospital or a school. Yet another man disagreed and mentioned that you cannot go to school when you're sick. This was followed by a man who said that if you do not have education, it becomes more difficult to access the hospital. As a response, another said that you always have local herbs to cure diseases, so education is more important than the hospital. Another man agreed and said that in addition if you have education, you can choose the best herbs.

d. Education

Educational challenges

Lack of education is seen as a major challenge in the Maasai community. The men explained that they feel they do not feel in control of what is done in the village when outsiders with education come to support them. They believe they miss out on help because of their lack of education and cannot be in charge of anything because the support always comes through these outsiders. If someone in the community wants to do something to improve the situation, this is difficult because they lack plans and find it difficult to start anything as they have not been educated on how to do so. The men also mentioned that there is a lack of skill of how to use their resources and develop them beneficially. One man explained:

> "You may find someone has 1000 cattle, but he keeps on depending on cattle even though the circumstances are changing and the land is getting drier. In that case, if he had skills or the ability to develop the resources, he would have sold some cattle and would have bought productive land somewhere else. So even if his cattle die, he has a farm somewhere else; he will then have access to different resources" (FG 3, p.5).

The women also agree that lack of education is a problem. One woman said that there are many ways to help them survive, but without education they cannot do anything. She explained that even if she would see someone who looked educated, she would not know how to approach him or her, because she has no education and does not expect that people who dress like Swahili will understand Maa.

Formal education is not something that is traditionally valued among the Maasai, but according to the teachers they are beginning to understand the importance of it. They believe this was partially because of the Montessori system that has shown the parents the benefits of practical education. According to the doctor, ignorance is still a problem as many of the Maasai did not go to school themselves and therefore literacy is low. He said that because of ignorance they do not understand their problems and because of their traditions they are not very willing to change easily. However, he also believed that they are starting to see that education is important for their children and that their children will be able to improve the poor situation they are in because of what they learn.

> "Tell Sauti Moja not to tire, because the children are learning and the Maasai want to learn. Maasai like school understand the importance of it and are willing to participate" (INT 1, p.6).
>
> *Oltepesi nursery school teacher*

Both the teacher and the coordinator explained that the children's attendance in school is a major issue. The teacher explained that they try to do follow-ups if a child does not show up at school and ask the family, but they are not able to find out the real reason why the children do not go. He mentioned that the parents say that they had to stay at home because their school uniforms were not washed, or that there was no one to prepare the child to go to school because during drought the mothers need to go far away to fetch water. The children may also say that they were sick, although this was not mentioned by their parents. Another issue concerned with the children's education is that when the children leave the Oltepesi School and go to primary school in Longido, they have difficulties adjusting to the new school system as it does not resemble the Montessori system they are used to.

Nutritional education of parents

According to the men, they also lack education on good foods and how to keep clean and healthy. One man used an example and said that if he had 10 L of milk, but does not know how to store it and keep it clean to use another time, then he does not have the education to keep healthy. The women explained that when they go to the clinic they are told that their children are lacking food and are told to just feed them, but when they go home they feed them the same food and the children continue suffering, so they do not know what they are doing wrong. The teacher explained that there have been three occasions where the parents were told about nutrition and what kind of foods should be provided to the children. He said that these lessons have helped to some extent, but not all parents actually go to these meetings. In addition, he said that when the parents have taken their children to bigger hospitals, they are told about certain foods that could help their children. The coordinator believed that the parents recognize the issue of malnutrition, but they lack the

knowledge of what mixture of food will be healthy for their children. She stated that, "if they have no milk, they think they have no food" (INT 3, p.4). During regular parent meetings, the parents are told that their children get *uji* with soy at school and why they do this. Furthermore, they are told that if they want to they can be shown how to prepare this, but so far no one has showed any interest in this.

The doctor explained that when a malnourished child is found during the health check-ups, the parents of the child are given advice on how to rehabilitate him and tell them to provide their children with nutritive food and supplements. They try to advise them about good diets and how to prevent malnutrition in the future. For example, they are told to get vegetables and fruit from town and to get milk and meat if they do not have enough from their own cattle. According to him, the problem of malnutrition is not because the Maasai are poor, but because of their lack of knowledge. When parents come to the clinic, those who are able to read are given leaflets on proper diets. They also find translators to help communicate to the parents what they should eat. He said that the Maasai will usually implement what is suggested to them, but only if they agree with it themselves. For example, he explained that the Maasai will not eat fish even if it is explained to them that these are healthy, because they believe fish are lizards.

Health education of parents

The men explained that for many diseases such as tuberculosis, HIV, malaria and cancer, they know no cure, because they do not have a teacher who can tell them how to treat them. One of the women mentioned that there was a lack of being able to recognize health issues in their children. For example, sometimes when a child gets sick, the mothers cannot recognize what it is until they go to the clinic. Sometimes they might think the reason of the illness is a lack of milk, but they cannot get the real answer. During the three meetings that had been arranged for the parents, the teacher explained, they had also been told that when their children are sick they should be taken to the clinic. The doctor explained that all types of health education they provide to the parents of the malnourished children are related to nutrition and diet. He believed that the Maasai often choose not to come to the clinic, but provide treatment themselves, and that a major challenge was thus to educate them about why it is important to come to the clinic. Sometimes people will stay at home and die because of a simple complication. For example, during childbirth a woman might bleed to death after delivery, which could have been easily prevented if she had come to the clinic.

Education of children: Nutrition and health

The teacher explained that in school the children of Oltepesi learn about nutrition by teaching them what they should eat. They tell them that different kinds of food provide

energy to the body, that fruits provide vitamins and teach them which foods will heat the body. The coordinator explained that they are taught about the composition of good foods and are told stories about what the food exactly does to the growing body. They also learn that their meals should contain proteins and vitamins and the teachers explain which foods contain these. According to the children questioned in the focus group, they believe the healthiest foods are chai (mentioned three times), *ugali*, rice (mentioned three times), bread, *mandazi*, carrot, banana and milk.

The children are also taught about several issues related to health. The teacher explained that they teach them how to avoid the spread of diseases to others. For example, he explains to them that worms or rashes are spread because of close contact which happens when they sleep in the same bed or use the same *kangas* (African garment). They also learn about hygiene once a week, consisting of lessons about how to wash their face, hands and nose and other parts of the body. The coordinator explained that the most important thing they learn is to wash their hands before they go into the classroom, after using the toilet and before eating. They are also taught to cut their finger nails short, to put on clean clothes regularly and how to use the toilets, which was a major challenge for most children. The teacher believed the children knew about the importance of hygiene and know how to avoid diseases, but the coordinator thought they do not always take it seriously and do not mind if they do not wash themselves for a week.

The teacher explained that the first thing a child does is tell his parents what they learned in school. He mentioned that "they are not shy to share what has been told by the teacher, so they are sharing what they learn about health" (INT 1, p.1). The coordinator explained that especially washing their hands before dinner is something all of them apply at home: "The children's parents tell the teachers that their children will not eat with them unless they have washed their hands" (INT 3, p.6). However, the teacher explained that not all parents listen to them and it is sometimes difficult for a child to apply the things he learns in school at home, because the situation is different and there is no one to teach them about hygiene. He said "one cannot tell the parents, because they do not know what was taught to the child and they sometimes ignore it" (INT 1, p.5).

The children themselves explained that they had learned how to wash their hands at school by the *mwalimu* (teacher). All children said they wash their hands before eating, but only 13 (out of 16) do this at home and 13 of them also wash their hands before they go to school (see Appendix II for further results). When they were asked who told them to do this, most of the children said that their mothers tell them and a few mentioned that their fathers do.

e. Cultural Challenges

Issue of gender

Throughout the women focus groups it became apparent that there were some explicit gender roles within their community which in turn impact household issues and may also be connected to the resulting situation their children face in concern to their health. It is important to note that Maasai women are very dependent on their husbands for everything. One woman even mentioned that as women they have no right on the animals, farm or children; everything belongs to the men. This woman also went on to explain through an example that if she has a problem she might tell her husband and his response will be to sell cattle in order to solve the problem. He might sell it for 200,000-300,000 TSH, but she will not have the right to ask how much he sold the cow for, and if the problem had been related to food he might only buy her 20 kg of flour. In other words, she will find that her husband did not solve the problem she had because that flour is not enough to solve the food problem. She also mentioned that this kind of action will not solve the problem of malnutrition.

Furthermore, in relation to their dependency on their husbands, one woman mentioned that sometimes it is not possible to provide for their children, because they do not have their own activities to provide them with money. Some women try to sell firewood, charcoal and jewelry to earn extra income, but the first two activities are considered illegal in this area, and these activities are not a reliable means of income. However, when the situation becomes too hard, the women will look for other people with money to help them or they will find another way to earn money.

Another area where gender came up was in the discussion of community meetings, committees and other issues that involved more political matters within the community. It was explained by the women that only men are considered for the selection process of committees and of those who are chosen to do certain tasks, like determining and appropriate location for the drilling of a bore hole. Meanwhile, women only participate in the initial community meeting where the issue is discussed. Interestingly though, it was mentioned that any meetings concerning the implementation of a marketplace would only be attended by women.

Finally, it should be noted that two weeks after the final data collection the student researchers planned to invite all focus group participants to a final presentation on their findings. Before the intended meeting the participants were told that they would not receive a participant fee, but rather that their attendance was voluntary. On the day of the proposed presentation around 15 women came to hear what the students had discovered.

It is interesting to consider that no men decided to attend this presentation, and the reasons for this decision are not fully understood.

Issue of expectations

In concern to certain expectations, it was recognized that throughout the men's focus groups the men were expecting to receive aid and financial support from the student researchers to fix some of problems and challenges they faced in relation to topics concerning the poor nutritional status of the Oltepesi children. For example, one man said "to solve the problem, let us find a solution for them to get water" (FG 3, p.5). "Them" was in reference to the students or the organization that had sent them. It had to be explained by the translators that the students were not there to fix the problem, but to understand and know what the problems were so that together they could discuss with the community and determine how to solve the problems with the community members. However, the expectation that the students should teach and assist in helping fix problems within the community became a dilemma throughout the focus groups.

In order to appease the participants, as mentioned before, the students recommended that at the end of the research they would offer a presentation on what they had learned and maybe possible suggestions that the community could then take with them. There was also a point when the men were challenged to think of possible means of solving certain challenges within their community and it became clear that they were expecting all financial support to be provided to them either through the students or other organizations in connection. Once it was made clear that the point of this particular exercise was to think of things they could do without outside help to solve the problem, discussion was facilitated and the exercise was successful. In concern with the women, they were less aggressive about asking the students to offer advice and aid, but they did have an expectation in relation to the function of NGOs. While discussing different income generating projects (i.e. jewelry making and keeping chickens) the women made it clear that they expected NGOs to facilitate such activities and took little responsibility in the matter.

Another challenge faced occurred in incidents with both the men and women. The students realized that some of the more outspoken participants would tell others to stop giving detailed explanations and just give a brief answer, assuming the researchers already understood what was being explained. It would then have to be communicated that all opinions were valuable and that each person should respect another's input. The students were looking to get all information possible, so it was important that discussion would not be dominated by one specific person.

The final challenge was a specific matter that occurred with the women. Traditionally, SM-Tz provides group participants with a small financial token of appreciation when they host certain group functions. In this case, during the second focus group with the women 20 participants showed up for the session. Most of these women came late to the discussion, some did not even have children who attended the school, but at the end of the session they all still expected to be given payment. The students had specifically asked for a maximum of 12 participants and stated they could not offer all the women a token. There was a heated discussion between a translator and these women. At one point the women said they would curse the translator because they believed the translator was keeping the money for herself and not giving it to the participants. In order to deal with this situation, the Oltepesi teacher had to become involved and with the translator they determined the appropriate women who were to be paid and who should attend the following week. It was also discovered afterwards, that some of these women had gone to attend a Community Conversations meeting, but it had been cancelled. On their way home some of them just joined the discussion, while others had come because they had heard that there was money involved.

f. Solutions

Several solutions were mentioned by both community members and interviewees to solve the challenges related to the four issues discussed and ultimately deal with the causes of malnutrition. As it was believed that the main underlying cause of malnutrition was a lack of food, the first section deals with solutions related to food security and diet. The most important solution that was proposed was to build farms so they could provide more food. However, in order to do this, first the problem of water needed to be addressed. The women also mentioned that they could gather to sell jewelry or initiate other activities that would provide them with money and enable them to buy more food. In addition, the women proposed to keep chickens so that they might overcome the problem of depending on one resource only. In this way they would be able to rely on more sources of food and income and they would become more independent from their husband, since taking care of chickens is something for women.

The doctor mentioned that the community members could grow *mchicha* (spinach) in small gardens, which would easily grow as they had plenty of fertilizer in the *bomas*. They would only need a few square meters and could put up a small fence that would prevent the crops from being eaten. SM-Tz could also possibly provide the community with seeds and organize projects that would demonstrate how to grow the vegetables. He also said that SM-Tz could provide the children with protein supplements at school, such as eggs, and that the community members themselves should keep chickens so that they might add eggs to their children's diets. According to him, chickens are easy to keep and they would only

need to build small huts. Furthermore, the coordinator explained that they could solve the problem of nutrition by adding a heavier meal at least 2 or 3 times a week, which could include vegetables and fruits. The big meal could be either *makande* (cooked beans and maize) or rice with beans.

For solving the lack of water issue, it was proposed that they could keep cattle for a few years and then sell them so that they could buy pipes to bring water down from the mountain. This water could then be used for irrigation and cultivation and would lead to an increase in food production and potentially income. The women also explained that they should have water from pipes to irrigate their lands, but believed that they first needed to build dams closer to the mountains. In addition, the women mentioned building bore holes. The men also mentioned that they could meet with an NGO to discuss what needed to happen.

In relation to health the men mentioned that the clinic should be brought near the school, because it was far and too hard to reach during rainy season. When they were told to think of things they could implement themselves, they proposed to construct a better road for quicker transportation to the clinic and talk to the government to make plans of a new clinic. They also mentioned that the community could collect contributions to buy a community vehicle that could be used to transport people to the clinic. According to the doctor, it was important that the community members were taught about the importance of coming to the hospital on time.

> "If you tell the Maasai, they will understand and then do the things that were recommended."
>
> *Doctor*

Education was mentioned as a solution in itself. According to one man "education is the only key for a better life" (FG 3, p.5). The men addressed the problem of lack of education and skill by mentioning that people who had the skills or were educated within the community would have to share this knowledge with others. Another solution was to explore how other people in other places deal with problems and so to learn from them. Both men and women agreed that education of their children was most important. One woman said that education is everything and although they themselves do not have education, they should send their children to school. She explained that for problems you could then just go to your children and you would not have to rely on other people. Another woman said that "when you educate a child, he or she can come home and help you to buy food and take you to the hospital. They can help you with a lot of problems that will also solve malnutrition" (FG 4, p.4).

One man explained that education would help them through their children, because when they come home they may teach them many things, including how to develop their

resources (i.e., buy farms, build houses). He explained that families with educated children in fact do have many resources and the thinks it is because of the help they get from their children. The women also believed that it was important that educated women would find a good husband with whom they could share ideas, solve their problems and develop their resources together. One of the teachers believed that not only children should be educated on the issues health and nutrition, but also more frequent seminars should be provided to the parents.

i. Stepping stones

In the third and final focus group with the men the stepping stone method was used to determine specific steps that could be taken to reach a specific goal. At the beginning of the discussion the participants were asked to name the top 3 challenges of all the problems they had mentioned the previous week. The men responded and explained that the lack of water was the most pressing challenge that they faced. After ranking the challenge the participants were retold some of the solutions they had previously come up with for this specific problem, which were to make a water storage, to sell cattle and buy pipes or to seek help from outside sources like the government or NGOs. It was later asked which of these solutions would best solve the problem of water, and the men agreed that they needed to build a water storage.

The men were then asked to think of steps to get to the solution, and it was explained that one of the men had actually already mentioned previously to start a committee and it was asked if this might be the first step. They agreed, so the card 'start committee' was taped in the first circle. They were then asked to come up with the next step, and one man mentioned that the first step should actually be to have a community meeting, the second step would be to have the committee and then the third would be to ask for help from an NGO. When asked what he expected from the NGO he replied that they would need financial aid to add in their efforts. He said that he himself would have a plan and would put it into practice, but wanted financial support from the NGO.

The men were then asked to think of a step that did not involve NGO aid and one man mentioned that they would want efforts from everyone in the community, especially youth, to help prepare for the water storage by collecting stones or fetching water. Another man mentioned that the committee should look for experts with skills who would know where to put the water storage, because it cannot just go anywhere.

At this point there were multiple ideas for the third step, so the ideas were repeated and asked to be ordered. The men agreed that first an expert should be found, and then another man mentioned that after the place is found they would gather people to help remove bushes to clear the area for the water storage. This man then continued on saying that at

this point the NGO should come because then they would be ready for support. So again, it was asked what the men would do if there was no NGO support and one replied by saying that they would have to gather the committee again to see what they contributed in money and cattle and see if it was enough to pursue building the water storage on their own. If the cattle and money were to be enough they would only have to discuss what work should be done and then they could commence with the building of the water storage, thus reaching a solution to the problem of water.

In the women's focus group a similar method was done, but in concern to the problem of depending on their husbands. They also developed steps which led to the solution of keeping chickens, which they realized would not only give them a means of income separate from their husbands, but would also solve the issue of being depend on only one resource (cattle). The steps they came up with to reach the solution were explained as such. First a community meeting with only women would be held in which a contribution of money would be taken up in order to buy beads. Then they would find twigs and branches so that they could build a marketplace and once a marketplace is in place they would ask others to bring in customers to buy the jewelry they make. Once they make income from this jewelry project they would be able to buy chickens, giving them a new means of income and food in order to provide for their children.

VII. Discussion

This research study included many topics of discussion and within each the student researchers came to analyze and draw connections among the many different situations. In regards to the first sub-question, the interns analyzed the food security and diet situation within the Oltepesi community in connection to the situation of malnutrition among the children. Results show this community does not generally have access to sustainable food security. As nomadic pastoralists they heavily rely on their livestock for food and income purposes, and when such livestock is not available they find themselves in situations of poverty where they are unable to provide good food. The participants explained that poverty was equivalent to a situation in which a person owns no cattle, because without cattle that person is not able to drink milk or sell his livestock as a means of income. In regards to their diets, throughout analysis it was emphasized that the Maasai diet is not balanced and in order for the children's health to be improved their diet needs to be adjusted. As their diets are mainly composed of milk and carbohydrates, they lack the nutritional requirements needed to help them grow and develop to their potential. As discussed in the literature review, a solution to this issue could be the diversification of exclusive pastoralist activities into farming, which was also mentioned by the participants.

It should be noted that although Longido District only has a limited potential for its communities to diversify into farming activities, some households have adopted cultivation practices (small-farming of maize, beans and greens) into their lives. However, due to the difficult environmental conditions and scarcity of good land for such activities, crops do not seem to contribute to an increase of income within Oltepesi households as they do not even seem to be sufficient enough to contribute to a good diet. So in this sense, although agricultural growth has been shown to promote growth and increase food supplies, this does not seem to be the case in Oltepesi where there is not yet a means of greater food security or a resulting improvement in nutritional status among the children. Some of the solutions offered by the community for these issues were to increase farming activities (however, this can only be done if the water problem is tackled first), or to diversify into keeping other animals like chickens which could provide other nutritional elements to the diet.

As stated previously, the issue of malnutrition is not only related to food issues, but also to poor health and inadequate sanitation services. The situation of both of these subjects can be considered to be tied to the issue of water that was discussed in depth with the study participants. In order to address the second sub-question the interns analyzed whether the Oltepesi community has safe access to clean water and adequate sanitation means. Throughout the discussions it was obvious that the most pressing challenge that the community faces is the general lack of water. Not only does it impact food security and diet (i.e. no water for farming activities), it also impacts health (most water available is dirty, resulting in health issues and poor diet). In the Oltepesi community, where there is no running water, people have to fetch water from multiple sources and of the three main ones, two were explained to be contaminated by animal use. However, the community continues to use them, since they are more conveniently located in terms of distance from the *bomas*. It was also mentioned that the water collected is not boiled before drinking. Furthermore, sanitation services are non-existent and this was explained as possible putting people in a higher risk situation where sickness and disease can spread unchecked. Even if latrines are available, the Maasai will choose not to use them; it is even difficult to teach the children how to properly use them.

In reference to the literature review, inadequate sanitation and water supply has often been related to a loss of time. This was very apparent within the study area, as fetching water generally takes a minimum of one and a half hours and upwards to six hours. Rough climate conditions, like drought, result in water sources drying up and forcing people to have to walk far distances to collect water. This can cut into time that could otherwise have been spent securing food or caring for the children. Considering all this, children are generally found with intestinal worms and other poor health situations, which can make them more susceptible to other diseases. These diseases can then in turn leave the child

weak and unable to get well, leaving them in a state of malnourishment as their diets are found lacking and their health in poor condition. The community mentioned that a positive solution to the lack of water would be to make bore holes and build water storages near Oltepesi, so that there can be a constant and cleaner supply of water for them. Although they may not be able to afford these solutions now, it was discussed that through planning and community contributions it is possible to act upon these ideas.

The results also indicate a relation between malnutrition and health. The community, doctor and teachers confirmed that malnourished children are more susceptible to diseases and are ill more frequently, which is in line with the literature. However, the teachers believed that the community does not always take this situation too seriously. The doctor and teachers explained that intestinal worms are common among the children, but the community did not mention it, nor was there any explanation of a relation to malnutrition. Also, according to the community diarrhea is not frequent issue, but the doctor explained it was present among some. In addition, only the doctor and the teachers confirmed that malnutrition is related to lack of hygiene. Although the community seemed to understand the relation between diseases and malnutrition, the men had an interesting perspective about *kwashakoo*. They related this disease more to poverty than to malnutrition, whereas in our perspective it is a most extreme form of malnutrition itself and not a disease. In the view of the community, lack of cattle is the main cause of malnutrition as cattle provides food both directly and indirectly, as it indicates welfare that enables a person to buy food and pay for treatment. According to the teachers, the performance of the children is influenced by malnutrition as malnourished children seem less active and engaged in the class, which confirms what is described in the literature.

In terms of treatment, the community seemed to prefer traditional healing over health services, such as the clinic. All barriers mentioned in the literature are confirmed by the community and doctor, which are distance to the clinic, costs of obtaining health care and insufficient public knowledge. In addition, they mentioned that sufficient infrastructure is lacking and there is extra time involved for pick-ups from the village and buying medication. However, the community seemed to understand that some diseases can only be treated at the clinic, but the doctor believed that they wait too long before they come and their children will have suffered too much before that time. In order to overcome these barriers the community proposed to improve the road and collect money for a community vehicle so that they would have better access to health services. In addition, they believed that there should be a clinic near the village and the doctor thought they should be taught about the importance of the clinic.

Although it was mentioned in the literature that education is not particularly valued by the Maasai, the results indicate that the community deems it very important. They mentioned

that they believe the lack of education among the adults is a major problem in the community, as they do not feel in control of what is done by educated outsiders and they do not think they are able to develop their own resources to their benefit. However, the doctor believed that ignorance in regards to their problems is still high among the Maasai and he thought that they do not change easily because of their traditions. It might be that these stereotypical perceptions also influence how the Maasai are treated, which only further confirms the way they are perceived. In addition, the community explained that they do not always recognize when their children are ill or what they should give them to eat, which is line with the literature. According to the teacher, the parents do not know what foods are good for their children and usually believe that milk is their most important source of food. Although the women were thought to be more aware of their children's health issues, this does not seem to be the case. However, when they do recognize that something is wrong, they are unable to make decisions because they depend on their husbands who do not always share their wives' perspectives.

It was explained that the parents of the malnourished children are advised about what foods they should get their children, especially vegetables and fruits and also in the hospital they are provided with information about good diets, but it seems that this information does not reach the whole community. The children are taught about good foods and health issues at school, including having proteins and vitamins in their diets and the importance of hygiene. However, it seems that they cannot always apply the things they learn at home, because sometimes the parents do not listen to them.

In addition, when the children were asked to name healthy foods they mostly mentioned foods that contain carbohydrates, not vitamins and proteins. It might be that they named what they received most frequently at home and therefore their knowledge from school might be dominated by what their parents do and tell them. The Maasai believed that education through their children is the most effective way to improve their situation as their children could pass on their knowledge. They also thought that it was important that they themselves got education and that educated people within the community should share their knowledge with others or people could go to other places to find out how others deal with problems. In addition, more frequent seminars about health and nutrition should be provided to the whole community, as now only a limited amount of people are informed about these issues.

One important aspect of the Maasai culture that influences malnutrition is the fact that they are semi-nomadic herders. They seem to depend primarily on their cattle and they explained that the lack of water, especially during drought, makes it difficult for them to ensure that their cattle are fed, and consequently, that they themselves have enough food. Due to their dependency on cattle, which is embedded in their cultural heritage, they also believe that milk is their most healthy food source. Their understanding of malnutrition is

thus influenced by this belief. In addition, their types of treatment usually seem to be based on traditional beliefs, and the stereotypical perspectives of other people might enhance these perceptions even more. Their traditional way of housing might also have an influence on health, since the *bomas* they live in attract many flies and they are used to means of sanitation that might not be adequate. Furthermore, the women explained that their activities, such as cooking inside, sometimes influence their health and can cause diseases such as pneumonia.

In general it seemed that the community is used to the perspective that they are provided with solutions and assistance by SM-Tz and other NGOs, and therefore the general attitude was that they are not responsible for solving their problems, including malnutrition. The women in turn seemed to be in an inferior position to men and expected that the men are the initiators of action. However, as was shown in the activity using the stepping stones method, they can be taught a sense of responsibility as long as they feel in control of what to do. This sense of control might in addition be fostered by sufficient education.

VIII. Conclusion and Recommendations

In conclusion, the results of this study have illustrated that the topics of food security and diet, water and sanitation, health, education and culture are all related to the issue of malnutrition among the children in Oltepesi and that the community shares this perspective. It can be noted that the children's diets lack necessary nutritional requirements, even with the assistance of the continuing meal program. At this point, the Oltepesi community is unable to provide a sufficient variety of food sources, as can be related to their cultural practices which inhibit them from doing so, along with the debilitating situation in which they constantly face water problems. It has been observed that the lack of water in the community is in some ways connected to all other problems faced in relation to the situation of malnutrition. For one, this community has found that they are themselves unable to further expand their farming activities which could potentially lead to increased food production. Secondly, the quality of the water influences their health and it can be said that the community lacks the skills and education to develop their resources that could allow them to expand food production. Furthermore, the influence of culture was observed in their preference to traditional healing methods over other health services, and also to the perspective that a lack of cattle is the main cause of malnutrition. However, lack of education about health and nutrition are also considered as an important influence.

Considering the current situation mentioned, it is recommended that the problem of water be addressed first and foremost, but this step should be accompanied with the provision of

sufficient education for the community on how this should be done. In addition, education on good health and nutrition should be provided to a larger community audience. The most challenging matter in this would be in convincing the community of the importance of these issues. For although they seem to be aware of the problems at hand and recognize their lack of education as a hindrance, they often expect problems to be solved for them by outside sources. If a sense of responsibility could be facilitated among the community in regards to the solutions they have already proposed through methods like stepping stones, we believe that with the cooperation of educated outsiders they would be able to develop an attitude where they find themselves addressing the challenges they face and capable of initiating solutions through their own means.

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X. Appendix I – Methods procedures

Group profile

1. The objective and the method were explained.
2. The participants were asked for their main activities related to food security and diet. Questions involved what their diet consisted of, what kinds of food they produced and what kind of livestock they had. They were asked to main as many items as they could think of.
3. All items were drawn on cards and put up on the board
4. The participants were asked to mark the items they used or owned with an 'x'. In the women's group, participants were also asked to mark what their children used with a different color.
5. In relation to health the participants were asked to name the diseases their children face and the kinds of treatment they use.
6. All items were drawn on cards and put up on the board
7. In relation to water the participants were asked for their main water sources and what kind of sanitation they used.
8. All items were drawn on cards and put up on the board
9. Participants were asked for the distance in time they needed to approach the health services and water sources mentioned.
9. Another census was conducted.
10. Any interesting results were discussed in the group.

Force field analysis

1. The given problem was defined by the participants in their own words.
2. It was ensured that the given goal was understood by the participants.
3. Both the problem and the goal were written on a board in Maa.
4. It was explained to the participants that the arrow linking the two represented the way they would have to work from the problem towards the goal.
5. Small arrows were drawn in the direction of the problem and labeled challenges.
6. Small arrows were drawn in the direction of the goal and labeled resources.
7. The participants were asked to split up into two groups to come up with approximately five challenges they face in relation to malnutrition of their children. The student researchers and translators were split up evenly between the groups in order to facilitate and take notes for both.
8. The two groups came together to discuss these challenges, which were written on cards and put on the board. Any misunderstandings of the other group were clarified to

everyone.
9. The participants were asked to think of their own resources that would overcome the constraints they mentioned and were thus encouraged to think of solutions.
10. It was explained to them that the solutions they had mentioned would be discussed more in depth during the next focus group discussion.

Venn diagram and stepping stones

1. The problems the participants had mentioned during the previous discussion were repeated.
2. The participants were asked to come up with a top three of the most challenging ones.
3. Solutions that were mentioned in relation to the most significant problem were repeated and the participants were asked to come up with additional solutions to the problem.
4. The participants were familiarized with the three circles of responsibility of the Venn diagram and asked to put the cards with the solutions in one of them. They were stimulated to focus on the community and family circles.
5. They were asked to rank the solutions mentioned as most important.
6. The most important solution was put at the right of the stepping stones diagram.
7. The participants were familiarized with the stepping stones method and the relevant problem was put at the left representing the current situation.
8. The participants were asked to come up with steps they needed to take to reach the solution. They were encouraged to think of steps that they could take themselves with or without the community.
9. The method was repeated for other solutions and other problems if possible.

Appendix II - Tables

Table 1.1 Children Focus Group Responses

Children Responses	No. of children	%
Feel hungry between meals	6	37.5
Feel hungry before they get food	4	25.0
Have been sick	13	81.3
Have been to hospital	11	68.8
Have taken medicine	9	56.3
Have taken herbs	11	68.8
Received (traditional) cut treatment	11	68.8
Wash hands	16	100.0
Wash hands before school	13	81.3
Wash hands before eating	13	81.3
Eat vegetables	8	50.0
Eat fruits	8	50.0