Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

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Master of Science in International Health
2025

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FEASIBILITY OF A TRAINING COMBINING MULTIPLE NUTRITION INTERVENTIONS TO IMPROVE THE DIET IN FAMILIES WITH MALNOURISHED CHILDREN IN RURAL TANZANIA: A MIXED-METHOD PILOT STUDY

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in International Health

by

Nathan Beijneveld

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The thesis [*Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study*] is my own work.

Master of Science in International Health

09 March 2020 – 29 August 2025
KIT Institute/Vrije Universiteit Amsterdam
Amsterdam, The Netherlands

August 2025

Organised by:

KIT Institute
Amsterdam, The Netherlands

In cooperation with:

Vrije Universiteit Amsterdam (VU)
Amsterdam the Netherlands

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Abbreviations

AM – Acute Malnutrition

CMAM – Community-based Management of Acute Malnutrition

DDS – Diet Diversity Score

HCW – Health Care Worker

NSA – Nutrition Sensitive Agriculture

NMNAP – National Multisectoral Nutrition Action Plan

RUTF – Ready-to-Use Therapeutic Food

SAM – Severe Acute Malnutrition

SDG – Sustainable Development Goal

SSA – Sub Saharan Africa

UNICEF – United Nations Children's Fund

WHO – World Health Organization

Acknowledgements

With special thanks to Dr. Bwire Chirangi - his unwavering support, dedication, and sense of humour were instrumental to the success of this work. I am extremely grateful to the staff of the nutrition unit, Stichting Shirati and Shirati KMT Hospital for their invaluable collaboration, logistical support, and shared commitment to improving nutrition. My heartfelt appreciation goes to the community members of Rorya District, whose openness, participation, and trust formed the foundation of this research. I also extend thanks to the Emanuel Snatager Fonds, whose generous funding made this work possible.

Abstract

Introduction
Childhood malnutrition in Tanzania remains a pressing public health concern, with high relapse rates following initial treatment for severe acute malnutrition (SAM). There is an urgent need for Community-based strategies that go beyond hospital-based care to prevent recurrence and support sustained recovery.

Methods
This mixed-methods pilot study assessed the feasibility of a combined training intervention on soybean consumption and sack gardening among caretakers of malnourished children in Shirati, Rorya District. The intervention included cooking demonstrations, an instruction video on soybean preparation, and practical sack gardening sessions. Data was collected through surveys, focus group discussions, in-depth interviews and observations during home visits.

Results
A total of 51 caretakers participated in this study; follow-up visits were completed for 47 households. At follow-up, 46.8% of households had soybeans or soybean products present, and 59.6% maintained an active sack garden. Participants expressed high satisfaction and found the interventions culturally appropriate. Key facilitators included the instructional video, cooking demonstrations, and the provision of gardening materials (seeds and sacks). Barriers included limited availability and affordability of soybeans, long preparation time, and challenges maintaining sack gardens. Cultural beliefs, gender dynamics, and seasonal factors also influenced dietary behaviour and intervention uptake.

Conclusion
The combined intervention was found to be potentially feasible in terms of acceptability and demand. Despite challenges, this pilot demonstrates the relevance of integrated nutrition interventions to improve household diets and reduce malnutrition relapse. Long-term follow-up and broader policy support are recommended to ensure sustainability and scalability.

Key words
Malnutrition
Soybeans
Sack gardening
Tanzania
Nutrition Sensitive Intervention

Word count: 8390

Introduction

January 2021. A yellow sun is already pouring in through the windows of the paediatric ward, as I start the morning rounds. It has been almost six months since I began my residency as a Global Health Doctor in Shirati KMT Hospital, located in rural Tanzania. As I move from bed to bed, the wheel of my trolley - laden with stacks of patient files - screeches with every turn. The ward is filled with children suffering from malaria, sickle cell disease, and malnutrition. I can prescribe blood transfusions, fluids, and medication, but for the malnourished children, the most crucial treatment is food - therapeutic food. Without it, my efforts are futile. My Tanzanian colleagues recall a time when these protein- and micronutrient-rich products were readily available. Now, it is extremely difficult to get your hands on these products. As a result, almost every severely malnourished child we admit does not survive. I often feel powerless.

That changed when we decided to start producing therapeutic food ourselves, right on the hospital grounds. This initiative became the Shirati Peanut Project. Over time, the project grew: a dedicated nutrition unit was established, continuous funding was secured, and, most importantly, many malnourished children were treated successfully and recovered.

Yet, despite this progress, we began to notice a troubling pattern - some of the children who had recovered from malnutrition relapsed after returning home. We suspected that their diets at home had not improved. My Tanzanian colleagues shared many ideas about how we could address this issue, particularly by promoting home gardening with repurposed sacks and encouraging the use of soybean porridge. This inspired me to explore the scientific literature on these topics, which ultimately guided the development of my research proposal – and in turn this thesis.

Through this thesis, we aim to assess if the proposed interventions are suitable for rural Tanzania (this setting), and whether they could help to reduce relapse of malnutrition in the future.

Background

Burden of malnutrition

Different types of malnutrition: overnutrition, undernutrition and micronutrient deficiencies co-exist in the same population. This triple burden of malnutrition is increasingly threatening health worldwide. By 2035, more than half of the global population over the age of five is projected to be overweight [1]. Meanwhile, an estimated 148 million children under five years are stunted (low height-for-age), while 45 million experience wasting (low weight-for-height), both of which are critical forms of undernutrition. Undernutrition is associated with nearly half of all deaths among children under five [2]. Other consequences of malnutrition include impaired cognitive development, a lower education level and an increased risk of cardiovascular disease later in life [3,4]. In Tanzania, nearly one-third (30%) of children under five are stunted, a rate comparable to the 29.3% stunting prevalence in the Mara region, [5,6]. Similarly, the national wasting rate (3,3%) is comparable to that in Mara region (3,4%). The study took place in Shirati, the largest village in Rorya District, which is among the nine administrative districts comprising the Mara Region in northern Tanzania.

In the context of persistently high malnutrition rates among children in the Mara region, particularly in rural areas like Shirati, there is a critical need to explore sustainable, community-based solutions to prevent relapse of malnutrition or new cases of malnutrition in the future. This study investigates whether a combined intervention - targeting household-level dietary practices through soybean promotion, sack gardening, and nutrition education, could be a feasible strategy to improve the diet in families with malnourished children.

Acute malnutrition and its treatment

Acute malnutrition (AM) is a state in which deficiency of energy, protein and other nutrients leads to adverse effects on tissue and body functions, and growth retardation [7].Children with AM commonly overconsume carbohydrate rich staple foods like rice, cassava, maize and wheat, while consuming only small amounts of protein and micronutrients. This inadequate food supply is caused by many factors, including poverty, food insecurity, poor nutrition of pregnant women, poor breastfeeding, infectious diseases, bad hygiene, poor water quality and inadequate complimentary feeding [8].

Treatment of severe acute malnutrition (SAM), the most severe form of undernutrition, consists of ready-to-use-therapeutic-food (RUTF), a type of food specifically composed to fit the nutritional needs of malnourished children [8]. The most common form is a paste made from peanuts, but all products are rich in protein, micronutrients (i.e. vitamins and minerals) and calories. Community-based management of acute malnutrition (CMAM), using RUTF, has been the standard treatment for children with SAM in low resource settings, and demonstrated effectiveness in temporarily improving nutritional status [9]. A recent large-scale study in Sub Saharan Africa (SSA) confirmed long-standing concerns regarding suboptimal long-term treatment outcomes for children recovering from SAM, with 31% relapsing into AM and 5% dying within six months post-treatment [10]. Other studies have reported one-year mortality rates as high as 42%, emphasizing the vulnerability of children post-discharge [11,12]. Reasons for relapse are multifaceted and differ per context [13]. The strongest and most consistent predictor of relapse is low anthropometric measurements during treatment and discharge [10]. Also fever and diarrhoea in the first six months after

discharge increases the risk of relapse [14]. Children who return to the same environment that initially contributed to their malnourished state are at a high risk of relapse, making recurrence a predictable outcome. One reason for relapse could be that dietary habits revert to carbohydrate-rich staples when children return home.

Nutrition sensitive agriculture interventions

Nutrition sensitive agriculture (NSA) interventions aim to improve nutrition by addressing food security, caregiving, healthcare access and hygiene at the household and community level, while integrating specific nutrition goals [15]. There is wide variety of interventions, including community garden programs, nutrition education and the promotion of consuming particularly nutritious foods. NSA interventions can support livelihoods by increasing access to diverse diets in low resource settings and improve women's empowerment [15]. Introducing NSA interventions in households with limited resources, can be challenging. Mothers of malnourished children are more likely to be unmarried, to have a low income and to have HIV or another chronic disease [16]. Changing nutritional customs under these circumstances is difficult. To address this, several factors such as financial means, food preferences, local beliefs, gender-household dynamics, poor maternal knowledge and education, low rate of women's empowerment and low availability of quality food should be taken into account when designing NSA interventions [17,18]. Previous research in Tanzania shows that both income growth in the population and the presence of NSA programs separately contribute to the reduction of malnutrition in the community [19].

Sack gardening

The National Multisectoral Nutrition Action Plan (NMNAP II, 2021-2026) of Tanzania promotes adopting NSA to increase availability of nutritious food, including the use of sack gardens [20]. Sack gardens offer a key advantage over traditional gardens due to reduced irrigation requirements, making vegetable cultivation feasible even during the dry season [21]. An additional advantage of having a home garden is the potential for generating extra income by selling surplus produce. Literature on sack gardening in Tanzania is scarce, although some positive effects on the diet diversity score (DDS) have been described [22]. Community gardening programs have been effective in addressing micronutrient deficiencies, such as vitamin A deficiency, which is prevalent among malnourished children in Tanzania [23,24]. Key elements contributing to the success of these programs include the integration within primary healthcare activities and the provision of nutrition education [25].

Soybeans

The Tanzanian dietary guidelines recommend to obtain a substantial portion of nutrients from legumes [26]. The soybean is a particular nutritious legume and the only one that contains complete protein. Additionally, it contains all essential macronutrients, protein (38%), fat (18%) and carbohydrates (30%) [27]. Worldwide the majority of the soybeans (77%) is consumed by livestock, rather than humans [28]. However, in certain countries - particularly in Asia - human consumption of soybeans is common practice [29]. Soybeans are locally available and have been previously suggested as a viable option for improving the nutritional landscape in Tanzania [30]. Despite its potential, soybeans are not widely incorporated into Tanzanian diets, a phenomenon that can be attributed to a lack of

awareness regarding balanced nutrition, unfamiliarity with soybeans, limited availability and costs [31]. In South-Africa, soybeans have been successfully introduced into a community that previously did not use soybeans for human consumption [32]. In Tanzania, we have not identified research that looks at the feasibility or health outcomes of the promotion of soybeans.

Rationale for the intervention

Relapse rates for children that previously have been treated for SAM are high and there is a need to further explore strategies to improve current CMAM guidelines [10]. With this study we aim to explore if a training combining multiple nutrition interventions can be a feasible strategy to improve nutrition in households of malnourished children in the catchment area of the Shirati KMT Hospital, in rural Northern Tanzania. The training combines education on a balanced diet, instructions on the preparation of soybean porridge and a hands-on training on sack gardening.

Problem statement & justification

In Tanzania, there has been a persistent shortage of RUTF in recent years [33]. Most RUTF is produced industrially, UNICEF purchases about 80% of these products and distributes these throughout the world. However, this satisfies only 25% of the global demand and focusses primarily on humanitarian settings [34]. Funding shortages are the primary driver of this issue [35]. Consequently, in 2021, the production of locally produced RUTF was initiated as part of the nutrition program at Shirati KMT Hospital in the Mara Region. A nutritious paste is produced using peanuts, milk powder, sugar, oil, vitamins and micronutrients. As for the initial refeeding phase, a therapeutic milk is made using soybeans, maize and micronutrients, based on WHO guidelines [36]. Industrial alternatives, such as F75 and F100 produced by Nutriset, are not available in rural Tanzania. Short term treatment results with these products in Shirati are comparable to other similar settings, but a relatively high loss to follow-up and a high relapse rate were observed [37].

Current CMAM treatment strategies fail to address relapse and death in malnourished children. Therefore, there is a need to further explore approaches that address the underlying factors that contribute to childhood malnutrition. One potential strategy involves enhancing the nutritional intake of children following discharge. The Mara region demonstrates the lowest percentage of individuals adhering to a balanced diet compared to all other regions in Tanzania [38]. The specific reason for the Mara region's comparatively poorer performance remains unclear. Possible explanations may include low agricultural diversity, limited access to diverse foods, poverty, cultural beliefs and food preferences. Enhancing diet diversity in this setting could yield significant potential health benefits.

Introducing soybeans to households previously unfamiliar with them, along with promoting sack gardening, has proven to be a successful way to improve diets in similar settings [22,32]. However, there is currently no research conducted on the feasibility of such interventions in rural Tanzania.

By addressing critical gaps in child nutrition through a structured training program, this study contributes to the achievement of SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being), reinforcing the importance of targeted interventions in addressing malnutrition in Tanzania.

Objectives

General objective

Studying the feasibility - in terms of acceptability and demand - of the implementation of a training combining multiple nutrition interventions to improve the diet in families of malnourished children under 5 years in Shirati, Tanzania.

Specific objectives

1. Explore the feasibility of the implementation of the proposed interventions from the perspective of health care workers and caretakers of malnourished children.
2. Identify facilitators and barriers regarding the adoption of sack gardening and the consumption of soybeans in caretakers' households.
3. Describe preliminary results on the uptake of the consumption of soybeans and the use of sack gardens in the participating households of caretakers.
4. Explore the factors influencing health care seeking behaviour in malnutrition and food choices in caretakers' households.
5. Provide recommendations to multi-level stakeholders for designing household-level nutrition interventions targeting families with malnourished children.

Methods and analytical framework

For this study a mixed methods approach was adopted. To look at different aspects of the feasibility of an intervention, both qualitative and quantitative methods are recommended [39].

Setting

The study took place in the Rorya District of the Mara region in northern Tanzania. The training took place at Shirati KMT Hospital, a 150-bed health facility serving as the designated district hospital of Rorya. The nutrition unit, a separate building within the hospital grounds, is responsible for the production of RUTF and the follow-up care for malnourished children. Annually, around 100 children are admitted to the pediatric ward for treatment of malnutrition, while about 300 children are managed at the out-patient department (OPD). Nutritionists monitor the progress of these children both in the ward and at the OPD after discharge. Follow-up visits are scheduled every one or two weeks, depending on the condition of the child. During these visits, anthropometric measures are taken, caretakers receive RUTF for at-home use and counselling on appropriate dietary practices, for example on how to make 'uji lishe', a nutritious porridge made from soybeans and maize. The porridge is similar to the one given as F75 and F100 in the ward, but in a different ratio.

Study design

This study employs a mixed-method triangulation design. As part of the intervention, training sessions were integrated into the routine follow-up days, which take place on Mondays and Thursdays. Each training sessions consisted of three education components: (1) an instructional video on how to prepare soybean porridge, (2) a training on how to start a sack garden at home and (3) a cooking demonstration combined with nutrition education. Members of the nutrition team, including several nutritionists, were the trainers. The training was primarily designed and delivered by Tanzanian nutritionists, whose understanding of local cultural traditions related to disease and food helped to ensure cultural appropriateness. We collaborated with a professional filmmaker who made an instructional video detailing the step-by-step process of the preparation of soybeans including the making of 'uji lishe' (appendix A). The video was shown on a large screen, in the two local languages, Luo and Swahili, ensuring that all viewers were able to understand the explanations. For the second part of the training, participants moved to the back of the nutrition unit, where the model sack garden is located. Here, instructions were given on how to start a home garden using sacks; preparing soil with manure, planting seeds, watering, and nurturing the vegetables. Lastly, education on a balanced meal, highlighting the importance of consuming locally available protein- and micronutrient-rich foods, was combined with a cooking demonstration of a meal including cooked soybeans, which was then enjoyed by both caretakers and trainers. At the end of the training, each caretaker received four repurposed cement sacks, four plastic bags containing seeds of commonly consumed vegetables that grow quickly (i.e. okra, chinese cabbage, kale leaves and amaranth leaves), a laminated flyer (appendix B) with a reminder of all the steps in the preparation of soybean porridge and a sack garden. In case caretakers encountered any issues, the nutrition team offered guidance via the central phone number of the nutrition unit. At the end of the training, and during following visits at the nutrition unit, caretakers

were given the option to purchase soybeans directly from the nutrition unit at wholesale price (i.e. 1800 Tsh or $0,69/kg), mitigating potential challenges in the supply chain. Given that soybeans are marginally pricier than typical carbohydrate-rich foods (appendix C), our priority during the study was to enhance accessibility to soybeans.

Inclusion criteria

Caretakers of children under the age of five years, with any form of malnutrition, who received treatment at the nutrition unit in Shirati, either currently or in the past, were included prior to the training. This means caretakers of both inpatients and outpatients were able to participate in the training sessions. Some children were not malnourished at baseline because they already graduated by the time of inclusion. Similarly, twin siblings who were screened and included were not always malnourished. The inclusion period lasted from 12 August – 30 September 2024. During this period, several training days were organized. To ensure a representative sample we aimed to include at least 50 participants. Caretakers of children who had been lost to follow up, were also asked to join the training day. To increase involvement and sustainability of the interventions, male household members were also invited to join the training day.

Data collection & sampling

Prior to the start of the inclusion period, on the 9th of August, a focus group discussion (FGD) was conducted with health care workers from the nutrition unit, the paediatric ward and the general OPD department to explore feasibility of the implementation of the proposed interventions. The focus group was conducted in Swahili at the nutrition unit and lasted approximately two hours. A member of the research team was present during the interview as an observer.

After the FGD was conducted, inclusion of caretakers started. Caretakers were invited to attend the training sessions at the nutrition unit at the hospital ground. Upon inclusion, a questionnaire was administered to gather demographic data from all participants. Furthermore, anthropometric data was assessed of the children from the respective caretakers.

Following their initial inclusion, home visits were conducted approximately one to three months after the training session. Home-visits were undertaken between 7 October and 28 November 2024. On each home-visit day, approximately three households were visited based on their location. Caretakers were informed in advance that an interviewer and a driver would pass by their homes. These visits also functioned as mentoring opportunities, allowing participants to ask questions and seek support as needed. During the home-visits participants were asked about the consumption of soybeans and their experiences with sack gardening, using a questionnaire with closed-ended questions on a mobile phone (SurveyCTO v2.80). The presence of a sack garden and soybeans were verified by taking a picture with an iPhone 11.

During the home-visits, both caretakers who joined the training and other household members were invited for an in-depth interview using semi-structured interview guide to explore facilitators and barriers on the adoption of soybeans and sack gardening. Interviewees were selected using stratified, purposeful sampling, to capture a diverse range

of perspectives on the topic. Fathers, mothers, grandmothers and grandfathers were interviewed until data saturation was reached. Interviews lasted between 17 and 47 minutes.

The interviews were conducted in Swahili or Luo, depending on the participant's preference. All interviews and FGD were conducted by one experienced female research assistant, who is from Shirati and speaks both Swahili and Luo fluently. Before the start of the study, all data collection tools were piloted. Weekly debriefings with the research team were performed to obtain an impression of the quality of collected data and in order to identify any logistical challenges. All data collection tools used, are found in appendix D.

Data analysis & framework

When designing feasibility intervention studies, Bowen et al. [39] recommends to focus not on all domains of feasibility, but select main domains of concern. For the design of this study, we have used the article from Bowen et al. 'How we design feasibility studies' as a guideline and identified two domains of focus: *acceptability* and *demand* [39]. *Acceptability* relates to the extent to which a new program is perceived as suitable, satisfying, or appealing by both program deliverers and recipients. We have looked at (1) perceived appropriateness (i.e. cultural acceptability and the suitability or usefulness to daily lives of participants), (2) satisfaction, (3) intent to continue use, (4) fit within organizational culture and perceived effects on the organization. *Demand* answers the question to what extent a new program is likely to be used. We have assessed (1) the actual use and (2) the facilitators & barriers of the interventions on soybeans and sack gardening.

For the thematic analysis, a mixed coding approach was applied: deductive coding was used to identify factors related to acceptability and demand (as described above), while inductive coding was employed to find additional contextual themes. Two researchers independently coded the transcripts using the software of MAXQDA (V.24). First, two codebooks were created through open coding. Later consensus was reached on a final codebook. Indexing was performed on the generated codes to create a code system: identifying the following main themes:

1. Challenges in addressing malnutrition
2. Food and cooking practices at home

These themes and their subthemes are described in more detail in the results section.
All interviews were recorded and transcribed verbatim by a local member of the research team. After the transcription, interviews were translated into English and analysed accordingly. Quantitative and qualitative data was triangulated in order to investigate barriers and facilitators of the proposed interventions among health care workers and the target population and how this related to the adoption rate. Descriptive statistics were calculated using SPSS (IBM SPSS Inc, V.29). Other outcome measures include the uptake rates (%) of soybean consumption and sack gardening.

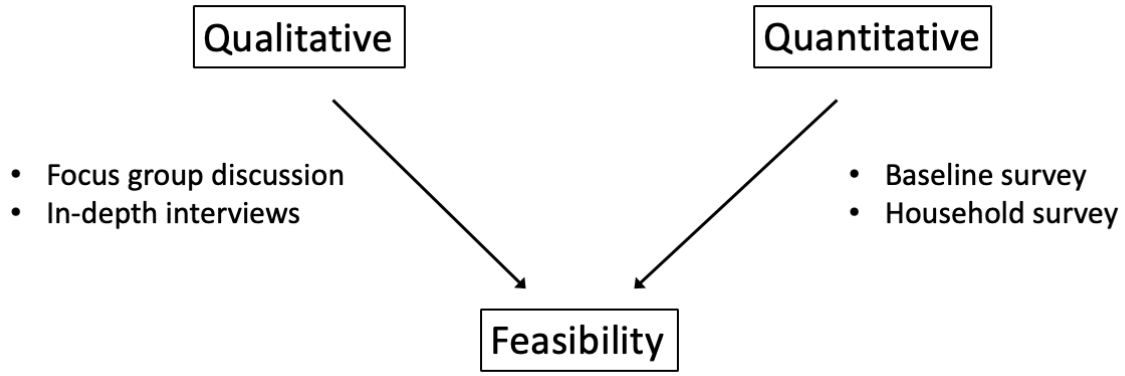

Figure 1: Mixed methods design: Triangulation

Ethical considerations

For the design of the proposed interventions, we have extensively consulted the three Tanzanian nutritionists working at the nutrition unit in Shirati. Therefore, we think the interventions are culturally appropriate and potentially feasible. Ethical approval from the Royal Tropical Institute in Amsterdam (KIT) and the National Institute for Medical Research (NIMR number: NATHREC-NEW-2024_189), the Tanzanian ethical committee, was granted. Both caretakers and health care workers signed a consent form prior to inclusion (appendix E). There were minimal risks associated with participating in this study. However, participants may have experienced inconvenience or discomfort during the interview questions. Therefore, we always provided the option not to answer a question. The chance of financial hardship due to the purchase of soybeans was low, since we provided the option to buy the soybeans at our facility at wholesale price (i.e. 1800 Tsh or $0,67/kg), which is the same price for other staple foods like rice, cassava and maize (appendix C). In case malnourished children were deteriorating during the study period, we recommended hospitalization and offered the standard treatment regimens.

Stichting Shirati

This study was rolled out within the nutrition unit at the Shirati KMT Hospital. The nutritional services are mostly funded by Stichting Shirati, a non-profit organisation (NGO) registered in the Netherlands. The author of this thesis is the co-founder of this foundation.

Results

Household and caretaker characteristics at baseline

The study enrolled 51 households; each represented by one caretaker (table 1). Most caretakers who joined the training day at the nutrition unit were mothers (72,5%, n = 37), followed by grandmothers (21,6%, n = 11), fathers (3,9%, n = 2) and one aunt (2,0%). The majority of caretakers worked as farmers (72,5%, n = 37) and 84,3% (n = 43) had finished primary or secondary school. Average costs to travel (return) to the hospital was 6.569 Tsh ($2,43). About half of household heads were fathers (51,0%, n = 26), followed by grandfathers (21,6%, n = 11), in the remaining households a woman was household head (27,4%, n = 14). Households consisted on average of 7 members, of which 4 were children. Most households (74,5%, n = 38) had some livestock at home. Average household daily spending was 10.908 Tsh ($4,03).). In 11 households (21,6%) the mother was not living at home and in one case the mother had died (2,0%). Thirty-nine mothers had finished primary school (76,5%), and five also finished secondary school (9,8%). At baseline very few (11,8%, n = 6) had ever eaten soybeans before and only 5,9% (n = 3) previous experience with gardening using sacks.

Table 1: Baseline demographics caretakers

		Count (n)	%	Mean	SD
Total participants		51	100.0%		
Relation to child	mother	37	72.5%		
	grandmother	11	21.6%		
	father	2	3.9%		
	aunt	1	2.0%		
Caretakers' job	farmer	37	72.5%		
	constructor	1	2.0%		
	entrepreneur	7	13.7%		
	jobless	4	7.8%		
	tailor	2	3.9%		
Education caretaker (highest level)	primary school	36	70.6%		
	secondary school	7	13.7%		
	did not finish primary school	8	15.7%		
Household head	father	26	51.0%		
	grandfather	11	21.6%		
	grandmother	9	17.6%		
	mother	4	7.8%		
	mother in-law	1	2.0%		
Household count				7	3
Household children				4	2
Household daily spending (in Tsh)				10.908*	5.299
Travel cost (in Tsh)				6.569**	4.206
Fathers' job	farmer	25	49.0%		
	fisherman	6	11.8%		
	other	20	39.2%		
Livestock present	yes	38	74.5%		
	no	13	25.5%		

Mother alive	alive	50	98.0%
	dead	1	2.0%
Mothers' location	home	40	78.4%
	not home	11	21.6%
Education mother (highest level)	primary school	39	76.5%
	secondary school	5	9.8%
	did not finish primary school	6	11.8%
	unknown	1	2.0%
Eaten soybeans before	yes	6	11.8%
	no	45	88.2%
Sack gardening experience	yes	3	5.9%
	no	48	94.1%

*10.908 = $4,03 (conversion from 21 August 2024; 1 USD = 2706,09 Tsh)
**6.569 = $2,43

Child characteristics

Five of the children had a twin sibling, therefore a total of 56 children were included and screened for malnutrition (table 2). Most children were male (60,7%, n = 34). The mean age of the child was 15 months. At the time of inclusion eight children had SAM (14,3%), 22 children had MAM (39,3%), 20 were mildly malnourished (35,7%) and six were not malnourished (10,7%). At the time of writing (7th of May 2025) ten children (17,9%) had died over the course of the study.

Table 2: Child characteristics

		Count (n)	%	Mean	SD
Total		56	100.0%		
Gender	female	22	39.3%		
	male	34	60.7%		
Age (in months)				15	8
In-/outpatient	in-patient	6	10.7%		
	out-patient	50	89.3%		
Malnutrition status	SAM	8	14.3%		
	MAM	22	39.3%		
	Mild malnutrition	20	35.7%		
	Normal	6	10,7%		
Child alive	yes	47	83.9%		
	no	9	16.1%		

SAM = severe acute malnutrition, MAM = moderate acute malnutrition

Home visits

Home-visits were conducted in the catchment area of the hospital in the Rorya District (figure 2). On average there were 56 days between the training day and the home visit (table 3). The distance to households varied considerably, ranging from a few kilometers to nearly 90 kilometers. Four households (7,8%) were lost to follow-up for different reasons,

two moved away, one did not want to continue, and one was not reachable. During one home-visit, the study participant was not present, and only part of the survey could be filled in by interviewing another household member.

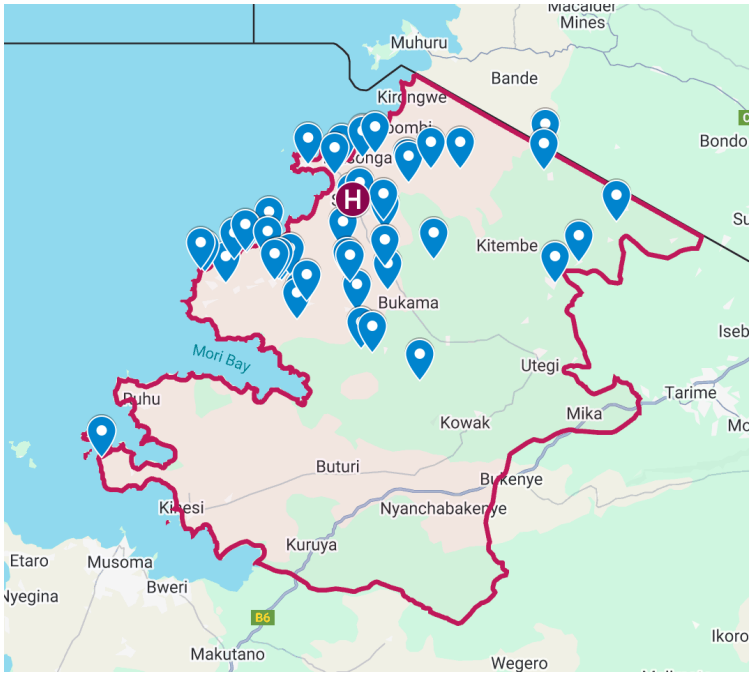

Figure 2: Location of households in Rorya District
H = location of Shirati KMT Hospital

Table 3: Home visit outcomes

		Count (n)	%	Mean	SD
Total home-visits		47	92,8%		
Lost to follow-up		4	7.8%		
Prepared soybeans porridge	yes	39	82.9%		
	no	7	17.1%		
Soybeans in the house	present	22	46.8%		
	not present	25	53.2%		
Started a sack garden	yes	37	80.4%		
	no	9	19.6%		
Active sack garden	present	28	59.6%		
	not present	19	40.4%		
Days until home visit				56	14

Demographics of interviewees

At the start of the study one FGD was conducted at baseline with 11 health care workers from Shirati KMT Hospital. These included three nurses (pediatric ward & OPD), two clinical officers, three social welfare officers, two nutritionists, and one nutrition assistant. During home visits a total of 13 interviews were conducted with adult household members. Basic demographics of interviewed household members are described in table 4. Four household

members had joined the training and nine had not. Seven were male and six were female, including mothers (n=3), fathers (n=5), grandmothers (n=3) and grandfathers (n=2).

Table 4: Overview of interviewees during household visits

		n	%	Mean	SD
Relation to child	Mother	3	23.1		
	Grandmother	3	23.1		
	Grandfather	2	15.4		
	Father	5	38.5		
Head of household	Yes	8	61.5		
	No	5	38.5		
Joined training	Yes	4	30.8		
	No	9	69.2		
Duration of interview				29:17:09	9:37:59

Acceptability

Perceived appropriateness

Training

During the focus group discussion (FGD) Health care workers acknowledged the need to strengthen and expand nutrition education as part of the intervention. Participants expressed support for introducing soybean porridge and sack gardening, viewing these strategies as practical tools to help families of malnourished children improve dietary diversity and nutritional intake at home. However, they also indicated that a potential challenge could be an increased reliance on the nutrition unit as the primary soybeans' supplier. As one nutritionist aptly noted, *"The day will come when they will not be able to manage themselves when we stop providing them with soybeans." (FGD, nutritionist)*

Overall, caretakers were very supportive of the training day. The video was particularly helpful to increase understanding of the preparation and benefits of soybean porridge, only two participants found it difficult to understand.

Soybeans

Almost all caretakers believed soybean porridge is suitable and beneficial for children. Next to the malnourished child, also other children consumed the porridge. Generally, the taste of the soybeans was well tolerated.

"Yes, it's suitable. In fact, when we have enough soy flour, we also give it to other children in the household. I've even tasted it myself to understand its flavor, and overall, it's good." (father, household 42)

Most caretakers mentioned the nutritional properties of soybeans, specifically proteins, as a reason to consume them. Sometimes they experienced the benefits of soybean porridge

with their own child.

"It is good porridge. For example, my child used to be very weak before he started drinking that porridge, but after drinking it, his body started to become healthier." (mother, household 1)

Sack gardening

Although most participants were experienced farmers, the concept of growing vegetables in sacks was entirely new to them. Logically, some scepsis was present. A grandmother describes how this changed.

"Because, first of all, I didn't know or see vegetables planted in sacks. I thought vegetables were only planted in the ground… So, I decided to observe until I saw the vegetables thrive, and she even divided them into other sacks. Now they're doing well, which has shown me it's a good garden." (grandmother, household 6)

The majority of participants supported the idea of using sacks to grow vegetables. Many recognized the importance of vegetable consumption and saw sack gardening as a practical way to obtain fresh produce.

Satisfaction

Caretakers of malnourished children were very positive about the training. Caretakers were either 'satisfied' (54,3%) or 'very satisfied' (45,7%) with the training as a whole, and would 'recommend' (76,1%) or 'strongly recommend' (23.9%) others to follow the training. Some described it as an empowering experience.

"I liked everything. For example, the video on porridge preparation helped me learn how to make porridge that benefits the child. The cooking lessons taught me about food combinations that strengthen my body, and I no longer feel weak." (grandmother, household 2)

Intent to continue use

Soybeans

During the interviews, several patients mentioned that they would continue to prepare soybean porridge at home, unless soybeans would become more expensive or unavailable. One father (household 48) says the following: *"Yes, if the family likes it, we'll continue eating it."*

Sack gardening

All participants who started a sack garden expect to continue sack gardening in the future. Most participants found it easy to start a sack garden (91,9%), but 45,9% found it difficult to maintain the garden.

Fit within organizational culture & perceived effects on organization

The design of the interventions was performed by the nutritionists themselves. So, from the beginning it was specifically tailored to our setting, ensuring a good fit with the organizational culture.

Demand

Actual use

Soybeans

A total of 39 from 51 caretakers (76,5%) said to have prepared soybean porridge at home. At the time of visit 22 participants (46,8%) actually had soybeans or soybean products in house. Eight participants (17,4%) made a meal using whole soybeans following the training day. Pictures of soybeans and sack gardens observed during home-visits are visible in appendix F.

Sack gardening

Thirty-seven participants (80,4%) said to have started a sack garden, but at the time of visit 28 (56,9%) had an active home garden, defined as containing a living plant. Twenty-five participants (67,6%) had successfully harvested vegetables from the sack garden at the time of the home visit. Of these, 24 participants (96%) had used the vegetables for their own consumption, while just one participant (4%) partly sold the vegetables. One grandmother (household 2) describes how she felt after harvesting the vegetables: *"It felt very good, and they were delicious (laughs). The vegetables were so tasty."*

Facilitators & barriers

Soybeans

The most important facilitators for those who prepared soybeans at home were: the video (92,3%), support from the HCWs (35,9%) and the cooking demonstration (28,2%). Additionally, the price of soybeans at the nutrition unit (1,800 TZS/kg) emerged as a significant factor, as nearly all participants (97.8%) considering it affordable.

"What I liked about them is their price. At your place, they're much cheaper—3,000 Tsh to 1,800 Tsh shillings is a big difference. So, when we have enough money, we'll buy three kilograms. (father, household 42)"

The most commonly mentioned barrier was the long preparation time of soybeans (7,7%). Many mentioned a lack of financial means as the most important challenge to continue with the consumption of soybeans. The availability of soybeans outside the nutrition unit or the main market in Shirati was limited, leaving several participants unable to find soybeans in their respective villages.

"But unfortunately, here where we live, I've checked three shops, and none of them stock soybeans. That's the challenge." (father, household 30)

Sack gardening

The most important facilitators for the start of a sack garden, were access to seeds and sacks (86,5%), the training on sack gardening (78,4%) and support from health care workers (14%). During the interviews, household members highlighted several advantages, including the garden's proximity to the house, its low water requirements, the ability to farm during the dry season, easier protection from animals and children compared to traditional ground gardens, and the potential to save on food expenses.

"Yes, it's a good method because it uses very little water compared to planting directly in the ground. Ground gardens use a lot of water. For example, my ground garden might need six buckets of water a day. If it rains, it's manageable, but when it's sunny, you might use five or six buckets. However, for sack gardens, even one cup of water is enough. Even if I wash dishes, the rinse water can be poured into the sacks. When I fetch water from the lake, a five-liter container is enough for all the plants." (mother, household 21)

The most important barriers for sack gardening were roaming cattle and children (58,7%), an insufficient water supply (23,9%) and pest or insects (13,0%). Many interviewees reported that they were bothered by roaming animals (goats, chickens, ducks and monkeys) and children who damaged or ate the plants. This challenge was addressed by implementing better protective barriers around the garden.

"They are a good way, but here we tried it, and chickens became a problem. Later, we decided to surround the garden with netting. So, they are good, but chickens love eating those vegetables." (mother, household 1)

A few participants encountered specific challenges, including difficulty obtaining additional sacks, affording seeds, theft of their sack gardens, pests and having to abandon their gardens temporarily to attend funerals.

Contextual themes

Challenges in addressing malnutrition

The cause of malnutrition: inadequate nutritious food or bewitchment?

HCWs mentioned that one particular large challenge is the lack of understanding that inadequate intake of nutritious food causes malnutrition. Therefore, the treatment with therapeutic food often comes as a surprise for caretakers. It requires ongoing explanation during the treatment to keep caretakers motivated to continue with the therapeutic feeds.

"…he is malnourished and they deny that their child is malnourished because they are eating very well. So, from there, you will have to start teaching again." (nurse, FGD)

It is not uncommon for caretakers to believe that the symptoms of the child are not caused by a lack of nutritious food, but rather by some form of bewitchment. This often complicates treatment, as traditional medicine is given to the child, of which the effects are unknown. This also may delay presentation and treatment in the hospital.

"…some parents do not follow the advice they are given in the hospital, for example, there are some parents who do not believe that good food can make a child healthy and they believe that a child needs traditional medicine to be healthy." (social worker, FGD)

By improving knowledge on the underlying causes of malnutrition, health care seeking behaviour could be improved according to the health care workers.

Family dynamics

Mothers are often not the primary decision-makers regarding the continuation of treatment or admission in the ward. In some cases, senior family members, often male family members, pressure them to leave the hospital before treatment is complete.

"And the male parents seem to not understand you very much and sometimes they tell their wives that if they continue to stay in the hospital with their nurses they will not deal with the issue of malnutrition and that he is not responsible for paying the hospital bill." (nurse, FGD)

Sometimes, this results in premature discharge from the nutrition services, while children are still very weak and are unlikely to survive.

Factors contributing to malnutrition

Healthcare workers (HCWs) frequently mention poverty as a significant factor contributing to malnutrition. Financial constraints can limit access to both nutritious food and essential medical care, which is often costly. Many mothers of malnourished children are young, with some still attending school during pregnancy. Sometimes, parents are not around, making it even more challenging to provide adequate care to the child. To sustain themselves, mothers often have to work, leaving their children in the care of relatives. However, these caretakers may not always be equipped to provide proper nourishment, sometimes even resulting in children staying without any food.

"An example could be a young mother leaving her child with her elderly mother while she goes to seek a livelihood, and the grandmother, due to her age and responsibilities, may not prioritize preparing nutritional porridge. So, if there is no food in the morning, the child may have to wait until afternoon, as the grandmother may also depend on others." (social worker, FGD)

A nutritionist observed significant seasonal variations in the number of children admitted to the ward. She explained that during the rainy season, caretakers are occupied with farming and refrain from seeking medical care for their children, which potentially delays adequate treatment for months.

"For example, this season, in August, September and October to November, are the dry months so the parents do not go to the farm, so they will come to the hospital." (nutritionist, FGD)

Food and cooking practices at home

Food preferences and a balanced diet

In general participants were well aware of what types of food are needed to have a balanced diet. One father, who followed the training, highlights important elements from a balanced diet.

"A balanced diet includes small fish, green leafy vegetables, beans—either regular beans or soybeans—and sometimes I might have meat, but it shouldn't just be meat. Fruits should also not be missing if possible." (father, household 42)

Although a few participants shared a more traditional perspective on a healthy diet, which primarily emphasizes carbohydrate-rich foods.

Buying & cooking food

In general, a traditional distribution of household tasks was described. In almost all households, women were responsible for the cooking, and men were not supposed to cook.

"Yes, only her. In our Luo culture, a man entering the kitchen (laughs) is unheard of. So my wife cooks, and if the children bother her, I help by taking care of them while she cooks." (father, household 30)

Although some fathers mentioned to occasionally help their wives with cooking, this was not the norm. Both men and women reported to participate in purchasing food and decision making around meal choices and preparation. However, in most households, men retain control over financial decisions, unless no man was present.

Changes of diet after training

Several members of the household described a change in diet after the training. An increase in the consumption of soybeans, fruits and green leafy vegetables were mentioned.

"And with green leafy vegetables, before, we ate just to eat. Now it's a routine—whenever we eat, there must be vegetables. Even if money is tight, she balances it to include some vegetables. I'm happy with this change because I've even noticed my skin has improved. In the past, if we ate kale leaves, we would only eat that, even if other vegetables were available. We didn't know the importance of variety, but now we do." (father, household 30)

But not all households are able to adopt the suggested changes to improve the diet. The most important limiting factor was money. Also, unavailability of a certain food produce was mentioned.

Discussion

Key Findings

This mixed-methods pilot study explored the feasibility of a combined nutrition intervention involving soybean consumption and sack gardening among families with malnourished children in Rorya District, Tanzania. The feasibility was assessed along two domains: acceptability and demand. Acceptability focused on the perspectives of healthcare workers (HCWs) who delivered the intervention, caretakers who participated in the training and other household members. Demand was evaluated through the actual uptake of the interventions at the household level, including facilitators and barriers.

The results indicate that both soybean consumption and sack gardening were novel concepts to nearly all participants. Nevertheless, the uptake was promising: 82.9% of participants prepared soybean porridge, and 46.8% had soybeans in their homes at the time of the follow-up visit, while only 11,8% had previously tasted soybeans before. For sack gardening, 80.4% reported having started a garden, and 59.6% had an active garden at the time of the visit, despite only 5.9% having prior experience. The discrepancy between reported uptake and observed use at follow-up may be explained in part by the timing of the visits. It is possible that many caretakers did initiate sack gardens or prepared soybean porridge, but by the time of the home visit, they had either finished their supply of soybeans or were unable to maintain the garden, resulting in no visible signs of continued use. In this case, reported uptake may have been accurate at the time of training, but not sustained long enough to be observed during follow-up.

In addition to this, social desirability bias may have contributed to the gap, with participants potentially overstating their engagement during interviews to meet perceived expectations or avoid disappointing the interviewer. This bias is well documented in global health research, particularly in household surveys and face-to-face data collection, and may lead to over-reporting of desirable behaviours such as health intervention uptake [40].

While these factors explain the gap between reported and observed use, other reasons may help clarify why uptake was not higher overall. These include structural and contextual barriers, such as the affordability and limited availability of soybeans, difficulty maintaining gardens due to pests, roaming animals, or lack of water, and short follow-up duration, which may not have captured later adoption efforts. Finally, household-level factors, such as limited support or competing priorities, may have further constrained participants' ability to maintain the interventions. Other studies in Tanzania have shown that limited knowledge and skills can deter continued practice while adopting new methods. Without adequate training and support, participants may struggle to integrate these practices into their daily routines [41].

Local Context: Gender Roles, Seasonal Factors, and Food Acceptability

The broader socio-cultural context also played a role in shaping the uptake of interventions. In this setting, traditional healers are often the first point of contact for health concerns, with national data indicating that they provide 60-70% of all healthcare services [42]. This reliance can delay formal medical treatment and influence nutrition practices. Moreover,

prevailing gender norms influence both access to care and decision-making within households. In many parts of East Africa, including Tanzania, men typically control household finances and major health decisions, which can result in premature discharge from medical care or reluctance to invest in new dietary practices [43]. Conversely, many women in this study demonstrated ability in purchasing soybeans without consulting male family members. This highlights potential entry points for women-centered nutritional interventions, especially those that empower women through education and control over food-related resources. Similar findings have been documented in other Tanzanian studies, which show that women's involvement in agricultural and nutrition education programs can improve child dietary diversity and health outcomes [44]. However, interventions that overlook local gender dynamics often face limited uptake or sustainability. Therefore, engaging both men and women in program design and delivery is critical to address power imbalances and promote shared decision-making [45].

The timing of the study may have influenced outcomes. The study was conducted during Tanzania's rainy seasons (short rains in November–December and long rains in March–May), in this period agricultural productivity and household availability of fresh vegetables is likely to fluctuate. It is difficult to determine whether the rainy season directly influenced the uptake of sack gardening. While increased rainfall may have supported irrigation, it could also have shifted focus towards traditional ground farming. In contrast, soybean preparation requires sun-drying, which may have been hindered by the wet conditions.

Since soybeans were relatively unfamiliar to many participants, taste was initially perceived as a potential barrier. However, nearly all caretakers reported that soybean porridge was well accepted by the children, suggesting its suitability as a complementary food. In contrast, only a few adults consumed cooked soybeans as a meal, making it difficult to draw firm conclusions about its broader acceptability in adult diets within this setting. Other studies have noted that soybeans have a distinctive "beany" flavour, which can be unappealing if not prepared properly. This flavour is largely attributed to lipoxygenase activity and can be reduced through specific processing methods. Hydrothermal preparation - cooking the soybeans in water for at least 30 minutes - has been shown to minimize these off-flavors [46]. This method was emphasized during the training and may have contributed to the high acceptability among children.

Data Consistency and Bias

An inconsistency emerged between the qualitative and quantitative data. While survey responses were overwhelmingly positive, the interviews painted a more nuanced picture, particularly regarding the challenges of soybean use. For example, in surveys, the cost of soybeans (i.e. 1800 Tsh) was rarely cited as a barrier, yet it emerged as a dominant concern during interviews. This discrepancy suggests the presence of social desirability bias, where participants may have reported what they perceived the researchers wanted to hear. Another possible explanation could be that the majority of interviewed household members did not participate in the training (9/13) and perhaps where not well informed about costs and theory on the interventions. It is also not unlikely that participants hoped for continuous support in the form of bags and seeds, if certain answers were given.

Conflicting statements were also noted regarding irrigation: while many participants mentioned reduced irrigation needs as an advantage of sack gardening compared to ground gardening, others reported struggling to access enough water to maintain their sack gardens. This contrast highlights the variability in household circumstances, even within the same district, and underscores that a one-size-fits-all approach is not feasible.

Use of Analytical Frameworks

The study design was guided by established frameworks for pilot and feasibility research, particularly those by Bowen et al. [39] and Aschbrenner et al [39,47]. These sources provided structure for selecting study domains and integrating mixed methods. However, they offered limited guidance on developing data collection tools. For this reason, interview guides and surveys were developed internally without external validation. In future phases, the CUBES framework [48] will be employed, offering a more structured approach to understanding social and environmental influences on behaviour. Preliminary comparison suggests overlap with our current tools, but formal integration may enhance methodological rigor.

Strengths and Limitations

A key strength of this study lies in its innovative combination of nutrition interventions, tested in a real-world, resource-limited context. The mixed-methods approach enabled triangulation of findings, revealing both high uptake and nuanced barriers. The participatory nature of the intervention, particularly through training sessions and direct involvement of HCWs, likely contributed to its success. However, limitations must be acknowledged. As a pilot, the study only captures short-term outcomes, approximately a two-month period. Behavioural change, particularly related to dietary habits, requires longer-term observation. This was beyond the scope of the current thesis, but follow-up will continue independently of this study. Furthermore, uptake of soybean porridge may have been underestimated in households where children were still consuming ready-to-use therapeutic food (RUTF) or where children had passed away. Another important limitation relates to the external validity of the findings. The intervention's dependence on subsidized soybeans provided by the hospital nutrition unit limits its generalizability to settings where such institutional support is unavailable. Although the provision of low-cost soybeans facilitated initial adoption, it also led to participant reliance on this specific supply channel. In rural areas, the high market cost and limited availability of soybeans present significant barriers to independent uptake. This raises concerns about the long-term sustainability and scalability of the intervention, especially considering the nutrition unit's constrained capacity to maintain ongoing distribution. At a broader level, national soybean production in Tanzania remains relatively low, particularly in comparison to neighbouring countries with similar agroecological conditions [31]. Without policy support and increased domestic production, expanding soybean-based interventions may remain challenging.

Evaluation

Caretakers responded positively to the training, often expressing appreciation for the knowledge gained and its practical applications. This was reflected in their willingness to purchase soybeans at the nutrition unit and experiment with gardening techniques, including drying and storing soybeans for future use. After the study period ended, we

evaluated with the training facilitators how best to proceed with the initiative in the future. The team proposed holding monthly training sessions and inviting all caretakers of children treated in the nutrition unit to participate. By reducing the frequency from 1-2 times per week to once a month, the additional workload for the team remains manageable. This approach has been implemented since the end of the study period. Although not formally measured, during the evaluation the team has expressed pride in what has been achieved and is very motivated to continue the training.

Conclusion

This mixed-methods pilot study explored the feasibility of a combined nutrition intervention in families with malnourished children in Rorya District, Tanzania. Despite both interventions being largely unfamiliar to participants at the outset of the study, findings indicate promising levels of acceptability and demand among caretakers and health care workers alike.

Encouragingly, 82.9% of participants prepared soybean porridge and nearly half had soybeans in the household, while 59.6% maintained an active sack garden just two months after the intervention. These uptake rates are particularly notable given that only a small fraction had any prior experience with soybeans or sack gardening. The positive reception of the training and the willingness of families to adopt new dietary practices demonstrate the potential of this intervention to contribute to improved household nutrition.

However, important barriers emerged. Limited availability and high market prices of soybeans, especially in rural areas, threaten the sustainability and scalability of the program. Current reliance on the nutrition unit for low-cost soybeans is not a viable long-term solution.

This study also highlights broader structural and social dynamics, including gender roles in household decision-making and trust in traditional healers, that must be considered when designing community-based nutrition interventions.

Although this study only captures short-term results, it provides an important first step towards developing a context-appropriate and potentially scalable nutrition intervention that may lead to improvement of household food security and reduction of relapse of malnutrition. Longer follow-up periods will be critical to evaluate the sustainability of behavior change over time.

Recommendations

Based on the findings of this pilot study, the following recommendations are proposed. These are grouped into Research, Intervention, and Policy categories and are prioritized according to urgency and feasibility in the current context. Where relevant, a brief suggestion for implementation is provided.

Research recommendations

Primarily for the research team in Shirati, but relevant for similar settings piloting nutrition interventions.

1. **Conduct a long-term follow-up study (priority: high)**

To assess sustained behaviour change, continue monitoring current participants over a period of at least 12 months. Key indicators could include frequency of soybean preparation, maintenance of sack gardens, and child nutrition outcomes.
Implementation: Use biannual household visits and integrate data collection into the regular nutrition unit schedule.

2. **Improve quality assurance in data collection (priority: high)**

Provide refresher training to data collectors and pilot all tools more rigorously. Include spot checks and regular supervision to reduce bias and improve consistency, particularly for self-reported outcomes.
Implementation: Develop a data collection tool or program.

3. **Expand feasibility research to other domains (priority: medium)**

Apply Bowen et al.'s full feasibility framework in future iterations to assess domains like practicality, integration, and limited efficacy. This will inform scalability and broader application.
Implementation: Develop a feasibility checklist and incorporate it into your evaluation plan after adaptation of the intervention.

Intervention recommendations

Targeted to local programme implementers, including the nutrition unit team and other similar NGOs.

1. **Institutionalize nutrition education at the nutrition unit (priority: high)**

Make the training part of routine services for caretakers of malnourished children. Include sessions on malnutrition causes, soybean preparation, and sack gardening.
Feasibility: Low-cost; can be conducted by existing staff during routine visits.

2. **Train and deploy CHWs for community outreach (priority: high)**

Equip CHWs to provide household-level education, screen for malnutrition, and promote sack gardening and soybean use. This strengthens early detection and community ownership.
Feasibility: Builds on existing CHW structure; initial investment needed for training and transport.

3. **Evaluate and scale up use of large-capacity sack gardens (priority: medium)**

Explore "multi-layer" sacks that grow vegetables on the sides as well, increasing yield in limited space.
Implementation: Pilot the sacks with a small group and compare yields with traditional sacks.

4. **Establish 'Sack Garden Champions' (priority: medium)**

Identify successful participants and train them to become peer educators. Provide a small kit (sack, seeds, watering can) as incentive and working tools.
Feasibility: Cost-effective peer-led approach that promotes sustainability.

5. **Explore alternative locally available protein sources (priority: medium)**

Conduct a market and consumption study to identify protein-rich foods that are more available than soybeans, to diversify intervention options.
Feasibility: Quick survey; can be done in collaboration with local agriculture extension workers.

Policy recommendations

Directed at national stakeholders, including government ministries, NGOs, and agricultural actors.

1. **Invest in local soybean production and supply chains (priority: high)**

The Tanzanian government and national agricultural bodies should promote soybean farming through seed subsidies, technical support, and value chain development.
Contextual relevance: Tanzania has underutilized agricultural potential; supporting smallholder farmers can improve access and affordability.

2. **Incorporate sack gardening into national nutrition policy (priority: medium)**

Recognize sack gardening as a cost-effective home gardening solution in national nutrition and agriculture guidelines. Pilot integration in existing programs such as the Community Health Fund (CHF) or district health plans.
Feasibility: Requires policy advocacy, but low cost of intervention supports scale-up.

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Appendices

Appendix A: Links to instructional video on the preparation of soybeans

Swahili version:
https://www.youtube.com/watch?v=0eyXlqXxdz8

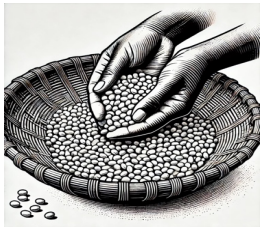
Luo version:
https://www.youtube.com/watch?v=AexY8RQNwvY

Namna ya kuandaa uji wa lishe wa watoto kwa kutumia maharage soya na mahindi Tanzania

Appendix B: Instruction flyer

Left: instructions on preparing soybeans porridge

MAELEKEZO YA UJI LISHE



1) Chambua maharage soya kutoa uchafu

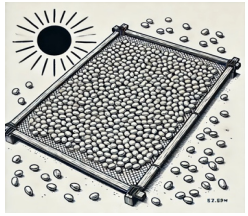
2) Chemsha maji mpaka **yachemke**

3) Weka maharage soya kwenye maji yanayochemka na yachemke kwa **dakika 45** bila kufunika

4) Toa maharage soya na **zipoze kwa maji baridi** kwa **dakika 30**

5) Ondoa maganda huku ukimwaga maji

6) Anika soya kwenye kavero safi kwa **siku 2** mpaka zikauke



7) Pima soya kiasi kilichobaki baada ya kukauka, kama ni kikombe kimoja, changanya na mahindi yaliyokobolewa vikombe viwili

8) Saga mchanganyiko huo mara mbili ili unga ulainike, kisha hifadhi unga kwenye chombo safi na kikavu

9) Chemsha maji, **pika mchanganyiko wa unga lishe** na koroga uji kwa **dakika 20**

Maswali yoyote? Tupigie simu kwa namba ya Kitengo Cha Lishe: **0764622363**

Right: instructions on starting a sack garden

MAELEKEZO YA BUSTANI YA MFUKO

1) Safisha mfuko wa sementi

2) Changanya udongo koleo tatu na mbolea ya samadi koleo moja

3) Jaza udongo mpaka **nusu** ya mfuko

4) Mwagilia maji kulainisha udongo kisha panda mbegu nne kwa kuacha nafasi

5) Baada ya kustawi **hamisha mbegu mbili** kwenye mfuko mwingine

6) Mwagilia maji walau mara moja kila **baada ya siku mbili**

7) Pulizia dawa ya asili ya kuzuia wadudu baada ya wiki tatu mpaka nne

8) Vuna mboga baada ya kuiva siku saba baada ya kunyunyiza dawa

9) Rudia tena

Kutengeneza dawa ya asili lita moja: unahitaji kuponda pamoja kiganja kimoja cha **majani** ya **mwarobaini, mpera, mpapai** na **kitunguu saumu** kimoja, **pilipili kichaa** saba na **maji** lita moja

Appendix C: Costs of local available foods

Type of food	Estimated cost in Tsh
Soybeans	1500-4000
Refined maize	1000-2500
Sorghum	1200-2500
Rice	1500-2800
Finger Millet	1500-4000
Potatoes	1500-2000
Sweet potatoes	1000-1500
Wheat flour	1700-2000
Unrefined wheat	2000-3000
Plantain	1500-2000
Cassava	1000-1500

Costs of foods per kg on the local market in Shirati (includes seasonal variability)

Appendix D: Data collection tools

Interview guide (FGD): Acceptability Health Care Workers [EN/SW]

Interview guide: Facilitators and Barriers [EN]

Interview guide: Facilitators and Barriers [SW]

Questionnaire: Baseline Demographics Caretakers [EN/SW]

Home-visit Questionnaire: Experience with Soybeans and Sack Gardening [EN]

Home-visit Questionnaire: Experience with Soybeans and Sack Gardening [SW]

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Interview guide: (FGD) Acceptability Health Care Workers

Title: Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

Participants: Health Care Workers at the Shirati KMT Hospital involved with the management and treatment of malnourished children.

1. Could you tell me briefly about your responsibilities regarding treatment and management of malnourished children at the KMT Shirati Hospital?

2. What are your current tasks during the follow-up visits of malnourished children?

3. What are the challenges you are currently encountering regarding the management of malnourished children (as in- or outpatient)?

4. We are looking for ways to improve the diet of malnourished children (and families) after discharge at their homes. We suggest multiple interventions (explain briefly) to achieve this.
    a. Do you think these interventions could improve the nutritional status of the child or family? Why/why not?
    b. What are the advantages of adding these interventions to the regular follow up visits? Why?
    c. What could be the challenges of adding these interventions to the regular follow up visits? Why? (explore about views on sufficiency of number of staff and material, location of the interventions, (maximum) number of participants, etc.)

5. What do you think are the largest challenges for participants to start consuming soy beans in their households (as part of their regular diet)? Why?

6. What do you think are the largest challenges for participants to start home-gardening using bags at their households? Why?

7. Do you have any suggestions how we could implement these interventions successfully?

8. Is there anything else you would like to add?

Mwongozo wa mahojiano 2: kwa majadiliano ya kikundi cha watoa huduma ya afya

Afua zinazowezekana kuboresha milo ya watoto wenye utapiamlo baada ya matibabu Shirati, Tanzania.

Washiriki: Watoa huduma ya afya katika Hospitali ya Shirati KMT wanaohusika katika huduma na matibabu ya watoto wenye utapiamlo.

1. Unaweza kunieleza kwa ufupi kuhusu majukumu yako kufuatana na huduma na matibabu kwa watoto wenye utapiamlo katika Hospitali ya KMT Shirati?

2. Kazi zako ni zipi kwa sasa, katika ufuatiliaji wa watoto wenye utapiamlo?

3. Ni changamoto zipi unazokutana nazo kwa sasa katika matibabu/huduma kwa watoto wenye utapiamlo (kama wagonjwa wa ndani au wa nje)?

4. Tunapanga kuboresha njia za matibabu/huduma kwa walezi na watoto, wanaoruhusiwa kutoka hospitalini baada ya kutibiwa utapiamlo, hii inajumuisha ushauri wa lishe, maonyesho ya kupikia n.k. (orodhesha kwa ufupi afua tofauti tofauti)

    a. Je, unafikiri afua hizi zinaweza kuboresha hali ya lishe ya mtoto au familia? Kwa nini ndiyo / kwa nini hapana?
    b. Ni faida gani za kuongezea afua hizi katika kliniki za ufuatiliaji za kila mara? Kwa nini?
    c. Ni changamoto zipi zinazoweza kutokea kwa kuongezea afua hizi katika kliniki za ufuatiliaji za kila mara? Kwa nini? (chunguza maoni kuhusu wingi wa wafanyakazi na vifaa, mazingira ya afua hizo, (kiwango cha juu) idadi ya washiriki, n.k.)

5. Unafikiri ni changamoto zipi kubwa kwa washiriki kuanza kula maharage soya katika kaya zao (kama sehemu ya lishe yao ya kila mara)? Kwa nini?

6. Unafikiri ni changamoto gani kubwa kwa washiriki kuanzisha bustani za nyumbani kwa kutumia mifuko katika kaya zao? Kwa nini?

7. Je, una mapendekezo yoyote kuhusu jinsi tunavyoweza kufanikisha utekelezaji wa afua hizi? Au kuzifanya ziwe na mafanikio zaidi?

8. Je, kuna kitu kingine chochote ungependa kuongeza

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Interview Guide: Interview On Facilitators and Barriers

Title: Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

Study-ID number:
Relation to child:
Date of visit:

Perceptions on malnutrition and a balanced diet

1. What do you think is a balanced diet? Can you give examples?
2. Do you normally grow vegetables or fruit around your house? (elaborate)
3. Who buys and cooks the food in your family? (which family members?)
4. Have you noticed a change in the food consumed at home after the training day in the hospital? If yes, what has changed?

Perceptions on the consumption of soybeans

5. Do you think soybeans are a good food to eat? Why (not)? (cultural reasons, taste, means of preparation)
6. Do you think soy beans could be part of a balanced diet? Why (not)?
7. Do you think the consumption of soybeans is suitable for all ages? Why (not)?
8. Do you think soy bean porridge is a suitable complementary food for children? Why (not)?
9. Are you in general supportive of consuming soy beans in the house? Why (not)?

Perceptions on home-gardening

10. Do you think home gardening using bags is a good means to grow vegetables? Why (not)?
11. Do you support home gardening using bags in your household? Why (not)?
12. If home gardening occurred in the household, what challenges did you run into? Did you have everything you need?

13. If home gardening did not occur in the household, what were reasons to not start the home garden? Did you have everything you need?

If interviewee joined the interventions also ask the following questions, if not stop the interview!

Soybeans

14. How did you experience the education (cooking demonstration, video, home gardening) in the hospital? What did you like, what didn't you like?
15. What was your experience with preparing and consuming soy beans since the training day at the hospital? (how did it go? Did you run into any challenges? Did you cook and dry in the sun? Did you have all the materials you needed?)
16. What would you need in the future to continue consuming soy beans? Do you foresee any problems?

Sack gardening

What is your experience with using the bags in starting and maintaining the home garden? Did you use other materials like pots and buckets etc. ? Elaborate on your experience, how did it go? Which challenges did you run into? How did you experience eating the veggies? Did you sell? Where you did get your water from? Are you thinking about increasing your home garden using bags?

17. How does home gardening in bags compare to regular gardening?

18. What would you need in the future to continue home-gardening? Do you foresee any problems? (eg. seeds, water, soil, manure, bags, roaming animals, pests etc)

19. Anything else you would like to add? Or do you have any questions?

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Interview Guide: Interview On Facilitators and Barriers

Title: Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

Study-ID number:
Relation to child:
Date of visit:

Mitazamo kuhusu utapiamlo na mlo kamili

1. Unadhani mlo kamili ni nini? Unaweza kutoa mifano?
2. Je, huwa unapanda mboga mboga au matunda karibu na nyumba yako? (elezea)
3. Nani hununua na kupika chakula katika familia yako? (ni wanafamilia gani?)
4. Je, umeona mabadiliko katika aina ya chakula kinacholiwa nyumbani baada ya siku ya mafunzo hospitalini? Ikiwa ndiyo, nini kimebadilika?

Mitazamo kuhusu ulaji wa soya

5. Je, unadhani soya ni chakula kizuri kula? Kwa nini (sivyo)? (sababu za kitamaduni, ladha, njia ya kupika)
6. Je, unadhani maharage ya soya yanaweza kuwa sehemu ya mlo kamili? Kwa nini (sivyo)?
7. Je, unadhani ulaji wa soya unafaa kwa rika zote? Kwa nini (sivyo)?
8. Je, unadhani uji wa soya unafaa kuwa chakula cha ziada kwa watoto? Kwa nini (sivyo)?
9. Kwa ujumla, je, unaunga mkono ulaji wa soya nyumbani? Kwa nini (sivyo)?

Mitazamo kuhusu bustani za nyumbani

10. Je, unadhani bustani ya nyumbani kwa kutumia mifuko ni njia nzuri ya kulima mboga? Kwa nini (sivyo)?

11. Je, unaunga mkono bustani ya nyumbani kwa kutumia mifuko katika kaya yako? Kwa nini (sivyo)?
12. Kama bustani ya nyumbani ilianzishwa katika kaya, ni changamoto gani mlizokutana nazo? Je, mlikuwa na kila kitu mlichohitaji?
13. Kama bustani ya nyumbani haikuanzishwa katika kaya, ni sababu zipi ziliwazuia kuanzisha? Je, mlikuwa na kila kitu mlichohitaji?

Ikiwa mhusika alishiriki kwenye afua, uliza pia maswali yafuatayo. Kama hakushiriki, simamisha mahojiano!

Marahage ya soy

14. Ulikuwaje uzoefu wako kuhusu elimu (maonyesho ya upishi, video, bustani ya nyumbani) hospitalini? Ni nini ulipenda, na nini hukupenda?
15. Ulikuwa na uzoefu gani kuhusu maandalizi na ulaji wa soya tangu siku ya mafunzo hospitalini? (iliendaje? Ulipata changamoto? Ulipika na kukausha juani? Ulikuwa na vifaa vyote vilivyohitajika?)
16. Ni nini ungehitaji siku za usoni ili kuendelea kula soya? Je, unatarajia matatizo yoyote?

Bustani ya mifuko

Ulikuwa na uzoefu gani kuhusu kutumia mifuko kuanzisha na kutunza bustani ya nyumbani? Je, ulitumia vifaa vingine kama vyungu au ndoo? Elezea uzoefu wako, iliendaje? Ni changamoto gani ulipitia? Ulikuwaje na uzoefu wa kula mboga hizo? Uliuza? Ulipata wapi maji? Je, unafikiria kuongeza bustani ya mifuko nyumbani?

17. Bustani ya mifuko ina tofauti gani na bustani ya kawaida?
18. Ni nini ungehitaji siku za usoni ili kuendelea na bustani ya nyumbani? Je, unatarajia changamoto yoyote? (mfano: mbegu, maji, udongo, samadi, mifuko, wanyama wa kuranda randa, wadudu n.k.)
19. Kuna jambo jingine lolote ungependa kuongeza? Au una swali lolote?

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Questionnaire: Baseline Characteristics Caretakers

Title: Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

Study-ID number:

Relation to child:

Date of inclusion:

Telephone number:

Household / *Kaya*

1. Where do you live? (village, street)
   Unaishi wapi? (kijiji, barabara) ……

2. Do you own livestock (yes/no)
   Unamiliki mifugo? ……
   a. If yes, which and how many?
      Kama ndiyo, ni ipi na ngapi? ……

3. What is your one-way travel cost to Shirati KMT Hospital?
   Nauli yako ya kwenda hospital ya Shirati KMT ni kiasi gani?…….

4. Who is the household head?
   Nani ni mkuu wa kaya? ……

5. How many people are living in your household?
   Je, ni watu wangapi wanaishi katika kaya yako?……

6. How many of these are children?
   Kati yao, watoto ni wangapi? ……

7. What is the age of the mother of the child?
   Je, mama wa mtoto ana umri gani? ……

8. How many children does the mother have?
   Je, mama wa mtoto ana watoto wangapi? ……

9. How many are still alive?
   Wangapi bado wako hai? ……

10. If the participant is not the mother of the child ask the following questions:
    Kama mshiriki sio mama wa mtoto, uliza maswali yafuatayo
    a. Is the child's mother alive?
       Mama wa mtoto yuko hai? ……
    b. If yes, where is she?
       Ikiwa ndiyo: yuko wapi? ……

Work / Kazi

11. What do you do for work?
    Unajishughulisha na nini? ……

12. What does the father of the child do for work?
    Baba wa mtoto anajishughulisha na kazi gani? ……

13. Apart from you, who else is contributing to the household income?
    Tofauti na wewe, nani mwingine anachangia katika kipato cha kaya? ……

14. How much money do you spend on food per day for the household?
    Je unatumia pesa kiasi gani kwa siku kwa ajili ya chakula katika kaya? ……

School / Shule

15. Did you finish primary school?

    Je ulihitimu elimu ya msingi? ……

16. Did you finish secondary school?

    Je ulihitimu elimu ya sekondari? ……

17. If the participant is not the mother, do you know what education level the mother has?

    Kama mshiriki sio mama, je unajua mama wa mtoto ana kiwango gani cha elimu?

    ……

Previous experience with soy beans / Uzoefu wa awali na maharage ya soya

18. Have you ever eaten soybeans before?

    Je, umewahi kula maharage ya soya hapo awali? ……

    a. If yes, did you like the taste of soy beans?

       Kama ndiyo, ulipenda ladha ya maharage ya soy? ……

19. Have you ever cooked soybeans before?

    Je, umewahi kupika maharage ya soya hapo awali? ……

Previous experience with home-gardening / Uzoefu wa awali na kilimo cha bustani ya nyumbani

20. Have you ever grown vegetables in bags or pots?

    Je, umewahi kulima mboga katika mifuko au vyungu? ……

21. If yes, what is your experience?

    Ikiwa ndio uzoefu wako ukoje? ……

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Home-visit Questionnaire: Experience with Soybeans and Sack Gardening

Title: Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

Study-ID number:
Date of visit:
Relation to child:

Observations

1. Are there currently soybeans or soybean flour in the house? (as observed by the interviewer)
    - Yes (take a picture)
    - No

2. Do you see an active home garden using bags? (i.e. currently an alive vegetable plant visible)
    - Yes (take a picture)
    - No

3. Do you see the remnants of a used home garden using bags?
    - Yes
    - No

Questionnaire

Treatment / Matibabu

1. Is the child currently alive?
    - Yes
    - No

2. Is the child still enrolled in the Nutrition Clinic at Shirati KMT Hospital?
    - Yes
    - No

2a. Is the child using peanut-based RUTF?

- Yes
- No

3. if answered 'no' on question 1:
    a. When did the child die?
    b. How did the child die?
    c. Did you visit the clinic or hospital before the child died?

Interventions

4. Did you join the training day at the nutrition unit in Shirati KMT Hospital? (If no, stop the interview)
    - Yes
    - No

5. How helpful did you find the educational video on preparing soy bean porridge?
    - Very helpful
    - Somewhat helpful
    - Not very helpful
    - Not helpful at all

6. How easy was it to understand the information provided in the video?
    - Very easy
    - Easy
    - Neutral
    - Difficult
    - Very difficult

Soybeans

7. Did you make soybean porridge at home?
    - Yes
    - No

8. Do you think your child liked the taste of soybean porridge?
    - Very much
    - A little bit
    - Not really
    - Not at all

9. How likely is it that you will continue preparing soybean porridge in the future?
    - Very likely
    - Likely
    - Unlikely
    - Very unlikely

10. How supportive is your husband (or man in the household) of eating soybean porridge?
    - Very supportive
    - Supportive
    - Not supportive
    - Not supportive at all

11. What were the main barriers you faced in adopting the soybean porridge preparation at home?soybeans?
    - Lack of time
    - Unsuitable material
    - Unavailability of soybeans
    - High cost
    - Did not like the taste
    - Family eating preferences
    - Lack of cooking skills
    - Unsuitable environment
    - Other: ……

11a. What did you do to overcome these barriers?

12. What helped you the most in adopting the soybean porridge preparation at home??
    - Educational video
    - Cooking demonstration
    - Support from health care workers
    - Family support
    - Availability of soybeans at wholesale price
    - Knowing the nutritional value
    - Other: …….

13. Did you make other types of meals using soybeans?
    - Yes
    - No

14. Do you like the taste of cooked soybeans?
    - Very much
    - A little bit
    - Not really
    - Not at all
    - Not applicable

15. How supportive is your husband (or man in the household) of eating meals containing soybeans?
    - Very supportive
    - Supportive
    - Not supportive
    - Not supportive at all
    - Not applicable

16. Did you buy soybeans since the training day?
    - Yes
    - No

16a. If yes, where did you buy the soy beans?

16b. If participant bought soybeans, what was the price/kg?

16c. Do you find it affordable to buy soy beans at the wholesale price provided (1800 tsh/kg) at the nutrition unit?
    - Very affordable
    - Affordable
    - Expensive
    - Very expensive

17. What were the main barriers you faced in adopting the preparation of meals with soybeans at home??
    - Lack of time
    - Unsuitable material
    - Unavailability of soybeans
    - High cost
    - Did not like the taste
    - Family eating preferences
    - Lack of cooking skills

- Unsuitable environment
- Other: ……..

17a. What did you do to overcome these barriers?

18. What helped you the most in adopting the preparation of meals with soybeans at home?
    - Educational video
    - Cooking demonstration
    - Support from health care workers
    - Family support
    - Availability of soybeans at wholesale price
    - Knowing the nutritional value
    - Other facilitator soybeans

Sack garden

19. Did you use the cement bags and seeds to start a home garden?
    - Yes
    - No

20. How easy was it to start the home garden using the provided materials?
    - Very easy
    - Easy
    - Difficult
    - Very difficult

21. How easy was it to maintain the home garden?
    - Very easy
    - Easy
    - Difficult
    - Very difficult

22. Did you successfully grow vegetables with the provided seeds and bags?
    - Yes
    - No

23. What did you do with the vegetables you harvested from your home garden?
    - I ate them
    - I sold them

- Both

24. What were the main barriers you faced in starting or maintaining the home garden?
    - Lack of space
    - Lack of time
    - Roaming cattle and children
    - Insufficient water supply
    - Pest or insects
    - Lack of gardening skills
    - Lack of material
    - Lack of manure
    - Lack of family support
    - Other: ……

25. What did you do to overcome these barriers?

26. What helped you the most in starting and maintaining the home garden??
    - The training / education
    - Support from health care workers
    - Family support
    - Access to seeds and bags
    - Community support
    - Other: …..

27. Would you recommend others to start a home garden using bags?
    - strongly recommend
    - recommend
    - not recommend
    - strongly not recommend

28. How likely is it that you will continue with home gardening using bags?
    - Very likely
    - Likely
    - Unlikely
    - Very unlikely

Satisfaction

29. Overall, how satisfied are you with the training day at the nutrition unit?

- Very satisfied
- Satisfied
- Unsatisfied
- Very unsatisfied

30. Overall, would you recommend this training day to others?
    - strongly recommend
    - recommend
    - not recommend
    - strongly not recommend

Any additional comments or suggestions?

_____

_____

Thank you for your participation!

7

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Home-visit Questionnaire: Experience with Soybeans and Sack Gardening

Title: Uwezekano wa mafunzo yanayochanganya afua mbalimbali za lishe ili kuboresha mlo kwa familia zenye watoto wenye utapiamlo vijijini Tanzania: utafiti wa majaribio wa mbinu mchanganyiko

Study-ID number:
Date of visit:
Relation to child:

Uchunguzi

1. Je, kuna soya au unga wa soya nyumbani? (kama ilivyoonekana na mhoji)

□ Ndiyo (piga picha)

□ Hapana

2. Je, unaona bustani ya nyumbani inayotumia mifuko? (yaani kuna mmea wa mboga ulio hai unaoonekana sasa)

□ Ndiyo (piga picha)

□ Hapana

3. Je, unaona mabaki ya bustani ya nyumbani iliyotumika na mifuko?

□ Ndiyo

□ Hapana

Masuali

Matibabu

1. Je, mtoto bado yuko hai?

□ Ndiyo

□ Hapana

2. Je, mtoto bado anahudhuria Kliniki ya Lishe katika Hospitali ya Shirati KMT?

□ Ndiyo

□ Hapana

2a. Je, mtoto anatumia RUTF yenye karanga?

□ Ndiyo

□ Hapana

3. Kama jibu ni "hapana" kwa swali la 1:

a. Mtoto alikufa lini?

b. Mtoto alikufaje?

c. Je, mlitembelea kliniki au hospitali kabla ya mtoto kufariki?

Afua

4. Je, ulihudhuria siku ya mafunzo katika kitengo cha lishe Hospitali ya Shirati KMT? (Kama hapana, simamisha mahojiano)

□ Ndiyo

□ Hapana

5. Je, video ya elimu kuhusu kupika uji wa soya ilikuwa msaada kiasi gani?

□ Msaada sana

□ Msaada kiasi

□ Haikuwa msaada sana

□ Haikuwa msaada kabisa

6. Ilikuwa rahisi kiasi gani kuelewa maelezo yaliyotolewa kwenye video?

□ Rahisi sana

□ Rahisi

□ Ngumu

□ Ngumu sana

Soya

7. Je, ulitengeneza uji wa soya nyumbani?

□ Ndiyo

□ Hapana

8. Je, unadhani mtoto wako alipenda ladha ya uji wa soya?

□ Alipenda sana

□ Alipenda kiasi

□ Hakupenda sana

□ Hakupenda kabisa

9. Ni kwa kiwango gani unatarajia kuendelea kupika uji wa soya siku zijazo?

□ Nafikiria sana

□ Nafikiria

□ Siwezekani

□ Haiwezekani kabisa

10. Je, mume wako (au mwanaume aliye nyumbani) anaunga mkono ulaji wa uji wa soya?

□ Anaunga mkono sana

□ Anaunga mkono

□ Hauungi mkono

□ Hauungi mkono kabisa

11. Ni vikwazo gani vikuu ulivyokutana navyo katika kupika uji wa soya nyumbani?

□ Kukosa muda

□ Vifaa visivyofaa

□ Kukosekana kwa soya

□ Gharama kubwa

□ Kutopenda ladha

□ Mapendeleo ya familia

□ Kukosa ujuzi wa kupika

□ Mazingira yasiyofaa

□ Mengineyo: ……

11a. Ulifanya nini kushinda hivyo vikwazo?

12. Nini kilikusaidia zaidi kuanza kupika uji wa soya nyumbani?

□ Video ya elimu

□ Maonyesho ya upishi

□ Msaada kutoka kwa wahudumu wa afya

□ Msaada wa familia

□ Upatikanaji wa soya kwa bei ya jumla

□ Kujua thamani ya lishe

□ Mengineyo: ……

13. Je, ulitengeneza aina nyingine za chakula kwa kutumia soya?

□ Ndiyo

□ Hapana

14. Je, unapenda ladha ya soya iliyopikwa?

□ Napenda sana

□ Napenda kiasi

□ Sipendi sana

□ Sipendi kabisa

□ Haitumiki

15. Je, mume wako anaunga mkono ulaji wa vyakula vyenye soya?

□ Anaunga mkono sana

□ Anaunga mkono

□ Hauungi mkono

□ Hauungi mkono kabisa

□ Haitumiki

16. Je, umenunua soya tangu siku ya mafunzo?

□ Ndiyo

□ Hapana

16a. Kama ndiyo, ulinunua wapi soya?

16b. Kama ulinunua soya, ilikuwa bei gani kwa kilo?

16c. Je, unaona bei ya soya (1800 tsh/kg) kwenye kitengo cha lishe inamudu?

□ Nafuu sana

□ Nafuu

□ Ghali

□ Ghali sana

17. Ni vikwazo gani vikuu ulivyokutana navyo katika maandalizi ya vyakula vya soya nyumbani?

□ Kukosa muda

□ Vifaa visivyofaa

□ Kukosekana kwa soya

□ Gharama kubwa

□ Kutopenda ladha

□ Mapendeleo ya familia

□ Kukosa ujuzi wa kupika

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□ Mazingira yasiyofaa

□ Mengineyo: ……..

17a. Ulifanya nini kushinda hivyo vikwazo?

18. Nini kilikusaidia zaidi kuanza maandalizi ya vyakula vya soya nyumbani?

□ Video ya elimu

□ Maonyesho ya upishi

□ Msaada kutoka kwa wahudumu wa afya

□ Msaada wa familia

□ Upatikanaji wa soya kwa bei ya jumla

□ Kujua thamani ya lishe

□ Mambo mengine kuhusu soya

Bustani ya mifuko

19. Je, ulitumia mifuko ya saruji na mbegu kuanzisha bustani ya nyumbani?

□ Ndiyo

□ Hapana

20. Ilikuwa rahisi kiasi gani kuanzisha bustani hiyo kwa kutumia vifaa vilivyotolewa?

□ Rahisi sana

□ Rahisi

□ Ngumu

□ Ngumu sana

21. Ilikuwa rahisi kiasi gani kuitunza bustani hiyo?

□ Rahisi sana

□ Rahisi

□ Ngumu

□ Ngumu sana

22. Je, ulifanikiwa kupanda mboga kwa kutumia mbegu na mifuko uliyopokea?

□ Ndiyo

□ Hapana

23. Ulifanya nini na mboga ulizovuna?

□ Nilizila

□ Niliziuza

□ Vyote viwili

24. Ni vikwazo gani vikuu ulivyokutana navyo katika kuanzisha au kutunza bustani hiyo?

□ Kukosa nafasi

□ Kukosa muda

□ Wanyama na watoto kuzurura

□ Kukosa maji ya kutosha

□ Wadudu au magonjwa

□ Kukosa ujuzi wa bustani

□ Kukosa vifaa

□ Kukosa mbolea

□ Kukosa msaada wa familia

□ Mengineyo: ……

25. Ulifanya nini kushinda hivyo vikwazo?

26. Nini kilikusaidia zaidi kuanzisha na kutunza bustani hiyo?

□ Mafunzo/elimu

□ Msaada kutoka kwa wahudumu wa afya

□ Msaada wa familia

□ Upatikanaji wa mbegu na mifuko

□ Msaada wa jamii

□ Mengineyo: …..

27. Je, utapendekeza wengine waanzishe bustani ya mifuko nyumbani?

□ Nitapendekeza sana

□ Nitapendekeza

□ Sitapendekeza

□ Sitapendekeza kabisa

28. Kuna uwezekano gani kwamba utaendelea na bustani ya mifuko nyumbani?

□ Uwezekano mkubwa sana

□ Uwezekano

□ Uwezekano mdogo

□ Hakuna uwezekano

Kuridhika

29. Kwa ujumla, umeridhika kiasi gani na siku ya mafunzo katika kitengo cha lishe?

6

□ Nimeridhika sana

□ Nimeridhika

□ Sijaridhika

□ Sijaridhika kabisa

30. Kwa ujumla, je, utapendekeza siku hii ya mafunzo kwa wengine?

□ Nitapendekeza sana

□ Nitapendekeza

□ Sitapendekeza

□ Sitapendekeza kabisa

Maoni au mapendekezo mengine yoyote?

_____

_____

Asante kwa ushiriki wako!

7

Appendix E: Consent forms

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Participant Information Form for Health Care Workers to Participate in Research Study

Title: Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

Introduction
You as a health care provider at the Shirati KMT Hospital are invited to participate in this study conducted by the Shirati KMT Hospital together with KIT (Royal Tropical Institute) and Maastricht University in the Netherlands. You have been selected because of your function as health care provider at the Shirati KMT Hospital where you are working with malnourished patients.

My name is _____ I am here on behalf of the research team conducting this study. We are conducting a study on the Feasibility and Acceptability of Multiple Nutritional Interventions to Improve the Diet of Malnourished Children after Inpatient Treatment in Shirati. You are selected to participate in this study. Your participation is purely based on your willingness. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any ill-treatment.

Study Procedures
If you agree to participate in this study, you will be asked the following:

- We will ask you several questions concerning your responsibilities and tasks in the work with malnourished children at the Shirati KMT Hospital.
- We will ask you several questions concerning several new interventions we want to offer to caretakers of children that are being treated at the Shirati KMT Hospital for malnutrition.
- The interventions include:
  1. *Instructional Video,* demonstrating the preparation of soy-based porridge, known as 'uji lishe'
  2. *Cooking Classes:* caretakers will receive classes to learn how to prepare 'uji lishe' and explore various uses of soybeans.
  3. *Home Gardening Education:* Caretakers will receive education on home gardening, including materials such as cement bags and seeds to start your own home garden.
- During the study we might call you to ask for the progress with the use of soy beans and

Study time
This will be a one- time interview. The overall study period will take around 8 months.

Study location
The study will take place in the Nutrition Unit of the Shirati KMT Hospital.

Benefits
The potential benefits include:

- Improving the nutritional status children treated at the KMT Shirati Hospital
- Increasing knowledge about balanced diets, the preparation of soy beans and how to start a home garden using cement bags
- Contributing valuable information to the study and potentially spread the benefits of the use of soy beans and home-gardening into the community

Risks/discomforts
There are minimal risks associated with participating in this study. However, you may experience inconvenience or discomfort during the interview questions, but you always have the option not to answer a question if you do not wish to.

Confidentiality
Any information collected during the interviews, will be kept confidential. Your participation will be anonymized, and your privacy will be respected. All data will be protected using a password. There is always a small chance of breaching confidentially, but we will take precautions to minimize this risk.

Voluntary Participation
Participation in this study is completely voluntary. You have the right to refuse or withdraw from any aspect of the study at any time without consequence.

Compensation
There will be no compensation for partaking in this interview.

Contact Information
If you have any questions or concerns about the study or the house visit, you may contact Victoria von Salmuth +255 0760903119 or v.v.salmuth@gmail.com. Otherwise contact Bwire Chirangi on +255784538740 or bmchirangi@yahoo.co.uk.

Complaints may be lodged directly through submission to the office:
The Director General, National Institute for Medical Research
3 Barack Obama Drive, P.O. Box 9653, Dar es Salaam, Tanzania.
Telephone (Landline): (+255) 022 2121400 – Available 0800 -1600 hrs Dar es Salaam.
Fax :(+255) 022 2121360
Mobile: +255 754 301 692 (Chairman of MRCC) E-mail: dg_office@nimr.or.tz, said.aboud@nimr.or.tz, ethics@nimr.or.tz

KIT Koninklijk Instituut voor de Tropen

Informed Consent signing form

Addressing Malnutrition in Rural Tanzania: Overcoming Barriers and Implementing Solutions

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant_____ ____

Signature of Participant _____

Date _____ Day/month/year

If illiterate [1]

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness_____

Signature of witness _____

Date _____

Day/month/year

Thumb print of participant

[1] A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1. Participant will be asked to take part in an interview.
2. Results will be used to assess quality of care for this group.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this informed consent form has been provided to the participant.

Print Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date _____

Day/month/year

.

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Fomu ya Taarifa kwa watoa huduma ya afya ili Kushiriki katika Utafiti

Uwezekano wa mafunzo yanayojumuisha afua mbalimbali za lishe ili kuboresha lishe katika familia zenye watoto wenye utapiamlo vijijini Tanzania: utafiti wa majaribio wa za lishe kwa kutumia mbinu mchanganyiko

Utangulizi
Wewe kama mtoa huduma ya afya katika hospitali ya Shirati KMT, umealikwa kushiriki katika utafiti huu unayofanywa na Shirati KMT Hospitali, KIT (Royal Tropical Institute) pamoja na chuo kikuu cha Maastricht, Uholanzi. Umechaguliwa kwasababu ya utendaji wako kama mtoa huduma ya afya katika hospitali ya Shirati KMT ambapo unawaudumia watoto wenye utapiamlo.

Jina langu ni _____. Nipo hapa kwa niaba ya timu inayofanya tafiti hii. Tunafanya utafiti juu
ya 'Uwezekano na upokelewaji wa jitihada mbalimbali za Lishe ilikuboresha Lishe ya Watoto Wenye Utapiamlo baada ya Matibabu katika hospitali
ya Shirati'. umechaguliwa kushiriki katika utafiti huu. ushiriki wako ni wa hiari kabisa.
Una haki ya kuchaguakutoshiriki katika utafiti huu. Ikiwa utachagua kushiriki, una haki ya kusitisha us hirikiwako wakati wowote. Ikiwa utaridhia kushiriki au kukataa au kuamua kujitoa baadaye, hautaath irika kwanamna yoyote.

Taratibu za Utafiti
kama utakubali kushiriki katika utafiti huu,utaombwa yafuatayo:
Tutakuuliza maswali kadhaa yanayohusu majukumu na kazi yako katika huduma ya watoto wenye utapiamlo katika hospitali ya Shirati KMT Hospitali.
Tutakuliza maswali kadhaa yanayohusu njia mbalimbali mpya tuanataka kuwapa walezi wa watoto wanaotibiwa utapiamplo katika hospitali ya Shirati KMT.

Elimu itatolewa kwa namna zifuatazo:
1.Video ya maelekezo: Video inayoonyesha maandalizi ya uji wa soya, uitwao 'uji lishe', kwenye iPad.
2. Darasa la Upishi: walezi watapewa mafunzo ya upishi wa uji lishe na kuchunguza matumzi mbali mnali ya maharage soya.
3. Elimu ya Kilimo cha bustani ya Nyumbani: Walezi watapata elimu juu ya kilimo cha
bustani ya nyumbani, ikiwa ni pamoja na mahitaji kama mifuko ya saruji na mbegu za kuanzisha bus tani yako
Wakati wa utafiti, tunaweza kukupigia simu kuulizia maendeleo kuhusu matumizi ya maharage ya so ya na kuanzisha bustani ya nyumbani kwa kutumia mifuko ya saruji.

Muda wa Utafiti
mahojiano haya yatakuwa ya mara moja, na kwa ujumla kipindi cha utafiti kitadumu
takribani kwa muda wa miezi minane.

Mahali pa Utafiti
Utafiti utafanyika katika Kitengo cha Lishe ya Hospitali ya Shirati KMT.

Manufaa
Manufaa yanayoweza kujitokeza ni pamoja na:
Kuboresha hali ya lishe ya mtoto waliotibiwa katika hospitali ya Shirati KMT
Kuongeza maarifa kuhusu mlo kamili, maandalizi ya maharage ya soya na jinsi ya kuanzisha bustani y a nyumbani kwa kutumia mifuko ya saruji.
Kuchangia taarifa muhimu kwa utafiti na kuweza kusambaza manufaa ya matumizi ya maharage ya s oya na kilimo cha nyumbani katika jamii

Hatari/Usumbufu
Kuna hatari ndogo zinazohusiana na kushiriki katika utafiti huu. Hata hivyo, unaweza kupata usumbu fu au kutokujisikia vizuri wakati wa maswali ya mahojiano, lakini una chaguo la kutokujibuswali kama hujiskii kujibu.

Usiri
Taarifa yoyote iliyokusanywa wakati wa mahojiano, itatunzwa kwa siri.
Ushiriki wako utakuwa ni bila kujulikana, na faragha yako itaheshimiwa. Taarifa zote zitalindwa kwa kutumia nywila. huaKuna hatari ndogo ya kuvunja usiri, lakini tutachukua tahadhari za kupunguza ha tari hii.

Ushiriki wa Hiari
Kushiriki katika utafiti huu ni kwa hiari kabisa.
Una haki ya kukataa au kujiondoa katika sehemu yoyote ya utafiti wakati wowote bila athari.

Malipo
Hakutakuwa na malipo yoyote kwa kushiriki katika haojiano haya.

Taarifa za Mawasiliano
Ikiwa una maswali au wasiwasi kuhusu utafiti, unaweza kuwasiliana Victoria von Salmuth kwa nambari +255760903119 au barua pepe v.v.salmuth@gmail.com. Vinginevyo wasiliana na Bwire Chirangi kwa nambari +255784538740 au barua pepe bmchirangi@yahoo.co.uk.

Malalamiko yanaweza kuwasilishwa moja kwa moja kwa kuwasilisha ofisini:
The Director General, National Institute for Medical Research
3 Barack Obama Drive, P.O. Box 9653, Dar es Salaam, Tanzania.
Telephone (Landline): (+255) 022 2121400 – Available 0800 -1600 hrs Dar es Salaam.
Fax :(+255) 022 2121360
Mobile: +255 754 301 692 (Chairman of MRCC) E-mail: dg_office@nimr.or.tz, said.aboud@nimr.or.tz, ethics@nimr.or.tz

KIT Koninklijk Instituut voor de Tropen

Fomu ya Kutia Sahihi Kwa Makubaliano ya Hiari

Njiazinazowezekana Kuboresha Lishe ya Watoto wenye Utapiamlo baada ya Matibabu
Shirati, Tanzania

Nimeisoma taarifa hapo juu,
au imesomwa kwangu. Nimepata fursa ya kuhihoji maswali na maswali yote niliyouliza yamejibiwa n a kuridhika. Nakubali kushiriki kwa hiari kuwa mshiriki katikautafiti huu.

Jina la Mshiriki_____
Saini ya Mshiriki _____
Tarehe _____ Siku/mwezi/mwaka

Ikiwa hauna uwezo wa kusoma [1]

Nimeshuudia wakisoma kwa usahihi fomu ya ridhaa kwa mshiriki, na mtu huyo amepata fursa ya kuu liza maswali. Nathibitisha kwamba mtu huyu ametoa ridhaa kwa hiari.

Jina la shahidi_____
Sahihi ya shahidi _____
Tarehe _____

(Siku/mwezi/mwaka) Alama ya kidole ya mshiriki

[1] Shahidi mwenye uwezo wa kusoma lazima asaini (ikiwezekana, mtu huyu anapaswa kuchaguliwa n a mshiriki na asiwe na uhusiano wowote na timu ya utafiti). Washiriki wasio na uwezo wakusoma wa napaswa kujumuisha alama ya kidole pia

Kauli ya Mtafiti/Aliyechukua Ridhaa
Nimesoma kwa usahihi fomu ya taarifa kwa mshiriki, na kwa ubora wa uwezo wangu nimehakikisha kuwa mshiriki ameelewa kwamba yafuatayo yatafanywa:

Mshiriki ataombwa kushiriki katika mahojiano.
Matokeo yatatumika kukagua ubora wa huduma kwa kikundi hili.

Nathibitisha kwamba mshiriki alipewa fursa ya kuuliza maswali kuhusu utafiti,
na maswali yote yaliyoulizwa na mshiriki yamejibiwa kwa usahihi na kwa ubora uwezo wangu Nathib itisha kwambamtu huyu hakulazimishwa kutoa ridhaa, na ridhaa imetolewa huru na kwa hiari.

Nakala ya fomu hii ya ridhaa imekabidhiwa kwa mshiriki.

Jina la Mtafiti/Aliyechukua Ridhaa_____
Sahihi ya Mtafiti/Aliyechukua Ridhaa_____
Tarehe _____ (Siku/mwezi/mwaka)

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Participant Information Form for Caretakers To Participate In Research Study

Title: Feasibility of a training combining multiple nutrition interventions to improve the diet in families with malnourished children in rural Tanzania: a mixed-method pilot study

Introduction

You and your child are invited to participate in a research study conducted by the Shirati KMT Hospital, KIT (Royal Tropical Institute) and Maastricht University. Your child has been selected because she was admitted at the pediatric ward with malnutrition and was treated with peanut paste through the Nutrition Unit in the hospital.

My name is _____ I am here on behalf of the research team. We are conducting a study on the feasibility and acceptability of nutritional Interventions to improve the diet of malnourished children after treatment at the Shirati KMT Hospital. You are selected to participate in this study. Your participation is purely based on your willingness. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any ill-treatment.

Study Procedures

If you agree to participate in this study, you will be asked to follow the study protocol:

- First, you will be requested to attend follow-up visits with your malnourished child at the regularly planned outpatient nutrition clinic every 1 or 2 weeks, where we will measure your child's weight, length, middle-upper-arm circumference and assess for edema. Peanut based RUTF will be handed out for an agreed period of time. Additionality, you will be asked to join an educational day including the following interventions:
  1. *Instructional Video:* You will watch a video demonstrating the preparation of soy-based porridge, known as 'uji lishe', on an iPad.
  2. *Cooking Classes:* You may participate in cooking classes to learn how to prepare 'uji lishe' and explore various uses of soybeans.
  3. *Home Gardening Education:* You will receive education on home gardening, including materials such as cement bags and seeds to start your own home garden.
- If you do not want to partake in one or more of the interventions, we will conduct a short interview to asks for the reasons why.
- At 2-10 weeks after the education day a member of the research team will visit your house and see if there are soy beans and if have a home-garden using cement bags. We will ask you and other members of the family a couple of questions about your experience with soy beans and home gardening.

- During the study we might call you to ask for the progress with the use of soybeans and starting the home garden with cement bags.

Study time
The study period will last for a maximum of 12 months.

Study location
The study will take place in the Nutrition Unit of Shirati KMT Hospital and home-visits will take place at your home.

Benefits
The potential benefits include:
- Improving the nutritional status of your child
- Increasing knowledge about balanced diets, the preparation of soy beans and how to start a home garden using cement bags
- Contributing valuable information to the study and potentially spreading the benefits of the use of soy beans and home-gardening in the community.

Risks/discomforts
There are minimal risks associated with participating in this study. However, you may experience inconvenience or discomfort during the interview questions, but you always have the option not to answer a question if you do not wish to.

Confidentiality
Any information collected during the study, including the house visit and interviews, will be kept confidential. Your participation will be anonymized , and your privacy will be respected. All data will be protected using a password. There is always a small chance of breaching confidentially, but we will take precautions to minimize this risk.

Voluntary Participation
Participation in this study is completely voluntary. You have the right to refuse or withdraw from any aspect of the study at any time without consequence. This will not influence the care you would otherwise receive from the Nutrition Unit.

Compensation
Other than the transportation costs you will not be paid for the study. You will receive cement bags and seeds at the start of study to begin a home garden at your house. Afterwards you need to purchase these materials yourself.

Contact Information
If you have any questions or concerns about the study, you may contact Victoria von Salmuth +255 0760903119 or v.v.salmuth@gmail.com. Otherwise contact Bwire Chirangi on +255784538740 or bmchirangi@yahoo.co.uk.

Complaints may be lodged directly through submission to the office:
The Director General, National Institute for Medical Research
3 Barack Obama Drive, P.O. Box 9653, Dar es Salaam, Tanzania.
Telephone (Landline): (+255) 022 2121400 – Available 0800 -1600 hrs Dar es Salaam.
Fax :(+255) 022 2121360
Mobile: +255 754 301 692 (Chairman of MRCC)
E-mail: dg_office@nimr.or.tz, said.aboud@nimr.or.tz, ethics@nimr.or.tz

KIT Koninklijk Instituut voor de Tropen

Informed Consent signing form

Possible Interventions to Improve the Diet of Malnourished Children after Treatment in Shirati, Tanzania

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant_____ ____

Signature of Participant _____

Date _____ Day/month/year

If illiterate [1]

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness_____

Signature of witness _____

Date _____

Day/month/year

Thumb print of participant

[1] A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1. Participants will be asked to take part in an interview.
2. Results will be used to assess quality of care for this group.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this informed consent form has been provided to the participant.

Print Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date _____

Day/month/year

.

SHIRATI KMT COUNCIL DESIGNATED HOSPITAL P.O. BOX 18, SHIRATI, RORYA TANZANIA

Fomu ya Taarifa kwa walezi ili Kushiriki katika Utafiti

Uwezekano wa mafunzo yanayojumuisha afua mbalimbali za lishe ili kuboresha lishe katika familia zenye watoto wenye utapiamlo vijijini Tanzania: utafiti wa majaribio wa za lishe kwa kutumia mbinu mchanganyiko

Utangulizi

Wewe na mtoto wako mnaalikwa kushiriki katika utafiti unao fanywa na Hospitali ya Shirati KMT, KIT (Taasisi ya Kifalme ya Tropiki) na Chuo Kikuu cha Maastricht. Mtoto wako amechaguliwa kwa sababu alilazwa katika wodi ya watoto na utapiamlo na alitibiwa kwa chakula dawa yenye asili ya karanga kupitia Kitengo cha Lishe hospitalini.

Jina langu ni _____. Nipo hapa kwa niaba ya timu inayofanya tafiti hii. Tunafanya utafiti kuhusu 'Uwezekano na upokelewaji wa juhudi mbalimbali za Lishe ili kuboresha Lishe ya Watoto Wenye Utapiamlo baada ya Matibabu i Shirati'. umechaguliwa kushiriki katika utafiti huu. Kushiriki kwako ni kwa hiari yako pekee. Una haki ya kuchagua kutoshiriki katika utafiti huu. Ikiwa utachagua kushiriki, una haki ya kusitisha wakati wowote. Ikiwa utaridhia kushiriki au kukataa au kuamua kujitoa baadaye, hautaathirika kwa vyovyote kuhusu huduma.

Taratibu za Utafiti

kama utakubali kushiriki katika utafiti huu,utaombwa kufuata itifaki ya utafiti:

- Kwanza, utaombwa kuhudhuria kliniki za lishe za kawaida za mara kwa mara za ufuatiliaji na mtoto wako mwenye utapiamlo za wagonjwa wa nje zinazopangwa kila wiki 1 au 2, ambapo tutapima uzito wa mtoto wako, urefu, mzingo wa mkono na kufanya tathmini ya uvimbe. Karanga dawa inayotokana na karanga itatolewa kwa kipindi cha makubaliano. Vilevile , utaulizwa utaombwa kujiunga na siku ya elimu ambayo itajumuisha afua zifuatazo:
  1. Video ya maelekezo: Utaangalia video inayoonyesha maandalizi ya uji wa soya, uitwao 'uji lishe', kwenye iPad.
  2. Darasa la Upishi: Unaweza kushiriki katika madarasa ya upishi kujifunza jinsi ya kuandaa 'uji lishe' na kuchunguza matumizi mbalimbali ya maharage ya soya.
  3. Elimu ya Kilimo cha bustani ya Nyumbani: Utapata elimu juu ya kilimo cha bustani ya nyumbani, ikiwa ni pamoja na mahitaji kama mifuko ya saruji na mbegu za kuanzisha bustani yako
- kama hutaki kushiriki katika mojawapo au zaidi ya hizi afua tutafanya mahojiano mafupi kuuliza sababu za kutoshiki.
- Kati ya wiki 2-10 baada ya siku ya elimu, mwanachama wa timu ya utafiti atatembelea nyumbani kwako na kuangalia kama kuna maharage ya soya na kama kuna bustani ya nyumbani

inayotumia mifuko ya saruji. Tutakuuliza wewe na wanafamilia wengine maswali machache kuhusu uzoefu wako na maharage ya soya na kilimo cha bustani ya nyumbani.

- Wakati wa utafiti, tunaweza kukupigia simu kuulizia maendeleo kuhusu matumizi ya maharage ya soya na kuanzisha bustani ya nyumbani kwa kutumia mifuko ya saruji.

Muda wa Utafiti

Kipindi cha utafiti kitadumu kwa muda wa miezi minane kama kiwango cha juu.

Mahali pa Utafiti

Utafiti utafanyika katika Kitengo cha Lishe ya Hospitali ya Shirati KMT na ziara za majumbani zitafanyika nyumbani kwako.

Manufaa

Manufaa yanayoweza kujitokeza ni pamoja na:

- Kuboresha hali ya lishe ya mtoto wako
- Kuongeza maarifa kuhusu mlo kamili lmaandalizi ya maharage ya soya na jinsi ya kuanzisha bustani ya nyumbani kwa kutumia mifuko ya saruji
- Kuchangia taarifa muhimu kwa utafiti na kuweza kusambaza manufaa ya matumizi ya maharage ya soya na kilimo cha nyumbani katika jamii

Hatari/Usumbufu

Kuna hatari ndogo zinazohusiana na kushiriki katika utafiti huu. Hata hivyo, unaweza kupata usumbufu au kutokujisikia vizuri wakati wa maswali ya mahojiano, lakini una chaguo la kutokujibu swali kama hautaki.

Usiri

Taarifa yoyote iliyokusanywa wakati wa utafiti, ikiwa ni pamoja na ziara za nyumbani na mahojiano, itatunzwa kwa siriKushiriki kwako kutakuwa ni bila kujulikana, na faragha yako itaheshimiwa. Taarifa zote zitalindwa kwa kutumia nywila. hua Kuna hatari ndogo ya kuvunja usiri, lakini tutachukua tahadhari za kupunguza hatari hii.

Ushiriki wa Hiari

Kushiriki katika utafiti huu ni kwa hiari kabisa. Una haki ya kukataa au kujiondoa kutoka katika sehemu yoyote ya utafiti wakati wowote bila athari. Hii haitaathiri huduma utakazopokea kutoka Kitengo cha Lishe.

Malipo

Hutalipwa chochote kwa ajili ya utafiti Isipokuwa gharama za usafiri. Utapokea mifuko ya saruji na mbegu mwanzoni mwa utafiti ili kuanza bustaninyumbani kwako. Baadaye, utahitajika kununua mahitaji hivi mwenyewe.

Taarifa za Mawasiliano

Ikiwa una maswali au wasiwasi kuhusu utafiti, unaweza kuwasiliana na Victoria von Salmuth kwa nambari +255760903119 au barua pepe v.v.salmuth@gmail.com. Vinginevyo wasiliana na Bwire Chirangi kwa nambari +255784538740 au barua pepe bmchirangi@yahoo.co.uk.

Malalamiko yanaweza kuwasilishwa moja kwa moja kwa kuwasilisha ofisini:

The Director General, National Institute for Medical Research
3 Barack Obama Drive, P.O. Box 9653, Dar es Salaam, Tanzania.
Telephone (Landline): (+255) 022 2121400 – Available 0800 -1600 hrs Dar es Salaam.
Fax :(+255) 022 2121360
Mobile: +255 754 301 692 (Chairman of MRCC) E-mail: dg_office@nimr.or.tz,
said.aboud@nimr.or.tz, ethics@nimr.or.tz

KIT Koninklijk Instituut voor de Tropen

Fomu ya Kutia Saini Kwa Makubaliano ya Hiari

Kushughulikia Utapiamlo Vijijini Tanzania: Kushinda Vikwazo na Utekelezaji wa Masuluhisho -

Nimeisoma taarifa hapo juu, au imesomwa kwangu. Nimepata fursa ya kuhihoji maswali na maswali yote niliyouliza yamejibiwa na kuridhika Nakubali kushiriki kwa hiari kuwa mshiriki katika utafiti huu.

Jina la Mshiriki_____ ____

Saini ya Mshiriki _____

Tarehe _____ Siku/mwezi/mwaka

Ikiwa hauna uwezo wa kusoma [1]

Nimeshuudia wakisoma kwa usahihi fomu ya ridhaa kwa mshiriki anayeweza, na mtu huyo amepata fursa ya kuuliza maswali. Nathibitisha kwamba mtu huyu ametoa ridhaa kwa hiari.

Jina la shahidi_____

Saini ya shahidi _____

Tarehe _____

(Siku/mwezi/mwaka) Alama ya kidole ya mshiriki

[1] Shahidi mwenye uwezo wa kusoma lazima asaini (ikiwezekana, mtu huyu anapaswa kuchaguliwa na mshiriki na asiwe na uhusiano wowote na timu ya utafiti). Washiriki wasio na uwezo wa kusoma wanapaswa kujumuisha alama ya kidole pia

Kauli ya Mtafiti/Aliyechukua Ridhaa

Nimesoma kwa usahihi fomu ya taarifa kwa mshiriki, na kwa ubora wauwezo wangu bora nimehakikisha kwamba mshiriki ameelewa kwamba yafuatayo yatafanywa:

1. Mshiriki ataombwa kushiriki katika mahojiano.
2. Matokeo yatatumiwa kukagua ubora wa huduma kwa kikundi hii. hili

Nathibitisha kwamba mshiriki alipewa fursa ya kuuliza maswali kuhusu utafiti, na maswali yote yaliyoulizwa na mshiriki yamejibiwa kwa usahihi na kwa ubora uwezo wangu Nathibitisha kwamba mtu huyo hakuwa amelazimishwa kutoa ridhaa, na ridhaa imetolewa huru na kwa hiari.

Nakala ya fomu hii ya ridhaa imekabidhiwa kwa mshiriki.

Jina la Mtafiti/Aliyechukua Ridhaa_____

Saini ya Mtafiti/Aliyechukua Ridhaa_____

Tarehe _____

(Siku/mwezi/mwaka)

Appendix F: Pictures of sack gardens & soybean (flour)

These pictures were made during home-visits