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Amelia Foley

“I Should Not Be Giving My Child the Same Thing Over and Over:”

A Qualitative Assessment of Barriers to and Opportunities for Child Dietary Diversification in Ntchisi, Malawi

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“I Should Not Be Giving My Child the Same Thing Over and Over:”

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By

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Abstract

Introduction
Stunting affects approximately 47% of the population in Malawi. The Government of Malawi, with support from the World Food Programme (WFP) and cooperating partners, has launched a stunting prevention programme to support the Scale Up of Nutrition (SUN) initiative in the Ntchisi district of Malawi.

Objective
This study assesses the knowledge, attitudes, and practices of mother beneficiaries of the stunting prevention programme in rural Ntchisi District, Malawi regarding infant and young child feeding. It examines the real and perceived barriers to and opportunities for enhanced infant and young child feeding in this population and context.

Methods
The data for this qualitative study were collected from May to July 2015. Data collection included 5 focus group discussions and 14 in-depth interviews with mother beneficiaries of the stunting prevention program. Descriptive analysis was conducted using MAXQDA version 11, qualitative data analysis software.

Results
The data revealed that mother beneficiaries' depth of infant and young child feeding knowledge was limited. The attitudes of participants towards stunting also showed a lack of understanding of this serious condition. This study confirmed that current complementary feeding practices utilized by participants were not in accordance with program-promoted infant and young child feeding practices. Barrier analysis uncovered a number of obstacles that participants faced when trying to adopt promoted infant and young child feeding practices, including but not limited to: financial resources, availability and seasonality, birth spacing, education and skill, and inadequate external support.

Discussion
In order to increase the adoption of promoted infant and young child feeding practices, the stunting prevention program needs to adhere to the Social and Behavior Change Communication Strategy. In addition, there are contextual, underlying determinants that need to be addressed in order to increase adoption of promoted complementary feeding practices and ultimately prevent stunting in this population.

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Mutu umodzi susenza denga: One head alone cannot carry a roof

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Table of Contents

Chapter 1: Introduction

Background

One hundred sixty-two million children were estimated to be stunted in 2013 [1]. A child is considered stunted if their height-for-age-Z-score (HAZ) is more than two standard deviations below the age-and-sex-adjusted reference population median [2]. The percentage of children who are stunted denotes the cumulative effects of undernutrition and infections in a given population [3]. A stunted child at the age of two is unable to achieve their full potential for the rest of his or her life [4-6]. Stunting truncates the linear growth and development of individuals and reduces human capital [6].

The overall prevalence of stunting for children under 5 in low-and-middle income countries has decreased in the past two decades from 40% in 1990 to 26% in 2011 [7]. While this decline is considerable, stunting is still pervasive and concentrated in certain parts of the globe; approximately 75% of stunted children live in South Asia and sub-Saharan Africa [7]. While South Asia has experienced a dramatic decrease in stunting prevalence from 1990 to 2010, the stunting prevalence has remained stagnant in sub-Saharan Africa (around 40%) during the same time period [8]. In the sub-Saharan African country of Malawi, stunting affects approximately 47% of the population [2, 9].

The Government of Malawi has made the reduction and prevention of malnutrition a top priority in the country [10]. Acting on this commitment, the Government of Malawi with support from the World Food Programme (WFP) and World Vision, funded by the Children's Investment Fund Foundation (CIFF) has launched a pilot of a stunting prevention program. This program, here on referred to as the stunting prevention program, is an innovative, multi-faceted, full coverage stunting prevention program that is unique for the community, the Malawian government, and the World Food Programme. This program supports the Scale Up of Nutrition

(SUN) initiative, in the rural, central district of Ntchisi [11]. The main components of the stunting prevention program include: (1) the distribution of Nutributter®, a small quantity lipid-based nutritional supplement (SQ-LNS), which is distributed to all program registered children aged 6-to-23 months of age, (2) the implementation of a social marketing and behavior change communication (SBCC) campaign, (3) program reinforcement of and advocacy for current government interventions and complementary interventions [11].

The stunting prevention program distributes Nutributter®, which is product made by the French company Nutriset, to all children registered in the program. This supplement is used in an effort to bridge the "nutrition gap," defined as the "gap between what foods are grown and available and what foods are needed for a healthy diet" [12, 13].

The social marketing and behavior change communication campaign aims to deliver high-quality, culturally- and context-appropriate messaging through a number of channels, including health talks, picture-based print media and radio messaging [14]. The Social and Behavior Change Communication campaign works to positively influence behaviors of program beneficiaries related to infant and young child feeding [14]. The stunting prevention program utilizes a CLAN-Led Care Group Model to disseminate social messages; this care group model trains volunteers to become Community Leader Action on Nutrition (CLAN) members, who provide nutrition education and counseling to small groups of beneficiary mothers [15].

The stunting prevention program also supports and reinforces current government interventions and complementary intervention. Current government practices include the following interventions: provision of iron and folic acid (IFA) to pregnant and lactating women (PLW), vitamin A supplementation to women post-partum, and the distribution of deworming medication to women and children [11]. The stunting prevention program also advocates for and

supports stakeholders who are doing complementary interventions. Complementary interventions are interventions that pair well with program interventions, including but not limited to: the management of severe and acute malnutrition and the improvement of water and sanitation hygiene practices [11].

The stunting prevention program has a robust and advanced quantitative monitoring and evaluation system; it utilizes quarterly Post-Distribution Monitoring surveys to collect primary data from beneficiaries on a number of program-related topics [11].

Problem Statement

Ntchisi district has a high burden of child malnutrition, the prevalence of stunted children under the age of five in Ntchisi in 2011 was 58. 1% [14]. The *Malawi Prevention of Stunting Project- Third Post Distribution Monitoring* report found that beneficiary mothers' knowledge around infant and young child feeding was high, but only 36% of beneficiary children's diets reached the standard for minimum dietary diversity (MDD) and 32% had reached the standard for a minimum acceptable diet (MAD).[1] If the consumption of Nutributter® was not included, then the prevalence of children's diets that qualified was reduced to 12% for MDD and 10% for

[1] "Minimum Acceptable Diet (MAD) is an Infant and Young Child Feeding indicator that is the combination of two other IYCF indicators: Minimum Dietary Diversity and Minimum Meal Frequency. MAD is part of the compendium of indicators used internationally to measure IYCF Practices, developed and recommended by WHO and UNICEF (2010).

For Minimum Dietary Diversity (MDD) a child needs to consume 4 out of 7 food groups within the previous 24 hours to successfully meet the criteria. The 7 WHO/UNICEF standard food groups are: 1) Grains, roots and tubers 2) Legumes and nuts 3) Dairy products (milk, yoghurt, and cheese) 4) Flesh foods (meats, fish, poultry and liver/organ meats) 5) Eggs 6) Vitamin A rich fruits and vegetables 7) Other fruits and vegetables. WFP modified the IYCF indicator to include Nutributter®, under Flesh foods. For Minimum Meal Frequency, requirements are 2 feedings for breastfed children 6-8 months, 3 feedings for breastfed children 9-23 months, and 4 feedings for non-breastfed children 6-23 months within the previous 24 hours." WFP. *Malawi Prevention of Stunting Project- Third Post Distribution Monitoring.* Report.

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MAD [16]. These results were significant because it indicates that infant and young child feeding practices in the beneficiary population are sub-optimal [16]. The program recognized the need for a qualitative assessment in order to better understand the factors that influence the translation of infant and young child feeding knowledge into feeding practices in this population.

Purpose

This study utilizes qualitative evaluation methods to first, advance the understanding of mother beneficiaries' infant and young child feeding-related knowledge and attitudes, and second to, identify the real and perceived barriers preventing mother beneficiaries from adopting promoted infant and young child feeding practices.

The study investigated the following research questions:

1. What are the current knowledge, attitudes, and practices concerning infant and young child feeding of the mother beneficiaries enrolled in the stunting prevention program?
2. What are the real and perceived barriers to increased adoption of promoted infant and young child feeding practices for mother beneficiaries?
3. What are the programmatic opportunities available to increase promoted infant and young child feeding practice adoption in the target population?

Significance

The results of this study generate an in-depth understanding of mother beneficiaries' knowledge and attitudes related to infant and young child feeding. These findings also reveal opportunities for positive programmatic change that will ideally enhance the adoption of promoted infant and young child feeding practices in this population and context [11].

Acronyms/Definitions of Terms

CIFF: Children's Investment Fund Foundation

CG: Care group: volunteer community-based health educators

CLAN: Community Leader Action on Nutrition

EDP: Extended Distribution Point

FGD: Focus Group Discussion

HAZ: Infant height-for-age *z* scores

HSA: Health Surveillance Assistant: Ministry of Health extension workers

IDI: In-Depth Interview

IYCF: Infant and Young Child Feeding

IFA: Iron-Folic Acid

LAZ: Infant length-for-age *z* scores

LNS: Lipid-based Nutritional Supplement

MAD: Minimum Acceptable Diet

MDD: Minimum Dietary Diversity

MMF: Minimum Meal Frequency

NECS: Nutrition Education and Communication Strategy

PDM: Post-Distribution Monitoring Survey

PLW: Pregnant and Lactating Women

SBCC: Social and Behavior Change Communication

SDG: Sustainable Development Goals

SQ-LNS: Small-Quantity Lipid-Based Nutritional Supplement

SUN: Scaling Up Nutrition

RUTF: Ready-To-Use-Therapeutic Food

TA: Traditional Authority

WFP: World Food Programme

Chapter 2: Literature Review

Etiology of Linear Growth

Despite high global burden, the causative mechanisms behind the development of stunting are still being researched, and are not fully understood [2, 17]. Stunting is described as "multiple pathological changes marked by linear growth retardation" [2]. Linear growth is a heritable trait, but is strongly influenced by health and nutrition in a child's early life [18, 19]. Research demonstrates that fetal growth and early childhood length are similar despite population and geographic differences, with the qualification that maternal nutritional and health needs are adequately met, and environmental constraints on growth are low [5, 20, 21].

Lifecycle Vulnerability

Linear growth failure strikes when children are -9 months to 24 months of age, in other words this condition can develop from conception until a child's 2nd birthday [5]. The period from -9 months to 24 months of age is often referred to as the "window of opportunity" [22, 23]. The "window of opportunity" is a time of essential growth and development, and therefore this is the period in the lifecycle when people are the most vulnerable to stunting [23]. This period in a child's lifespan is where nutritional interventions have the most impact on growth and consequently, the greatest potential to prevent stunting [24].

A study by Maleta et al. revealed important information on the timing of early childhoold growth [25]. The study collected the growth data of 767 Malawian children, from birth to 36 months of age [25]. This study showed that when compared to the WHO Standard, Malawian children at 36 months of age, already had a 10 centimeter deficit in length [25, 26]. Analysis of this Malawian cohort revealed that 20% (2 centimeters) of the height deficit was already present at the time of birth, 40% (4 centimeters) occurs between 0 to 12 months of age,

and 30% (3 centimeters) of the deficit occurs between 12 to 24 months of age [26]. Only 10% (1 centimeter) of the height deficit, in this cohort, happened during 24-36 months of age [26]. This study provided evidence that the decline in length-for age is greater during specific periods inside the window of opportunity, which reinforced the importance of intervening throughout the first 1,000 days of life [25]. Most of the decline in length for age occurs during the complementary feeding period (6-24 months of age), this is when a child begins to consume foods other than breast milk [5, 24, 25].

Determinants of Stunting

Current research purports that the immediate determinants of stunting are suboptimal breastfeeding, inadequate complementary feeding, frequent and recurrent infections, and micronutrient deficiencies [5]. The posited, underlying determinants of stunting are numerous and varied [5]. The World Health Organization's (WHO) *Conceptual Framework on Childhood Stunting: Context, Causes, and Consequences* expands upon the proximal determinants by including contextual factors that influence the growth and development of children, please refer to Appendix A [24]. The contextual factors in this framework that are theorized to affect child linear growth are separated into the following broad categories: (1) political economy, (2) health and health care systems, (3) education, (4) society and culture, (5) agriculture and food systems, and (6) water, sanitation and environment [24].

Recent research has shown the substantial influence that unhealthy sanitation practices and harmful environments can have on stunting incidence [5, 7, 27, 28]. Children who live in resource-constrained settings are often living in environments with poor water and sanitation which results in exposure to pathogenic microbes [27, 29]. These microbes often cause diarrhea and a condition called environmental enteric dysfunction, which is also known as environmental enteropathy (EE) [30].

Environmental Enteropathy is a subclinical condition that damages small intestine function through inflammation, which in turn, reduces the absorptive ability and barrier capacity of the small intestine and may impair growth [29, 31]. The burden of and effects associated with environmental enteropathy has been hypothesized to be a large contributing factor to the obduracy of stunting prevalence [28].

Consequences of Stunting

Reduced physical stature is the indicator of stunting, however, evidence supports that in addition to retarded linear growth, there are short-, medium- and long-term consequences associated with stunting [24, 32]. A child's height on their second birthday is an excellent indicator of their cognitive development and human capital, therefore the occurrence of stunting during the first 1,000 days is a reliable predictor "of forgone individual and societal potential in future generations" [6, 33].

Stunting is insidious. When compared to a healthy child, a stunted child is more likely to get sick, perform worse in school, complete less schooling, earn lower wages in adulthood, have higher levels of depression and anxiety, and be at greater risk for the development of obesity and associated comorbidities [2, 5, 6, 33-36]. Additionally, stunted children are at an increased risk for mortality and have increased health expenditures [5].

From a population perspective, stunting pervasively impedes the economic development of low-income countries [33]. Linear growth and economic development have a strong positive correlation [19, 37-39]. Stunting negatively impacts cognition, which results in lower economic output; stunted children earn "8 to 46% lower wages" and own "up to 66% fewer assets" [2, 5, 6, 34, 35]. The estimated gross national product (GNP) lost to undernutrition in Africa, in the 20th century, was 11% and will remain high unless action is taken [1].

Stunting Prevention Interventions

Preventing stunting takes a concerted and sustained effort. Due to that fact that there is an intergenerational cycle of growth failure [33, 40]. Stunted women are three times more likely to give birth to children who are classified as stunted when they reach two years of age [33, 40]. There is growing global attention and action that is dedicated to reducing stunting incidence and prevalence [5, 41]. Within the undernutrition field, there are many perspectives on what is the best strategy and further, what are the best interventions to reach the goal of reducing and preventing stunting [41].

Nutrition interventions are categorized into two main groups, nutrition-specific or nutrition-sensitive [42]. Nutrition-specific interventions are interventions "that address the immediate determinants of fetal and child nutrition and development" [42]. While nutrition-sensitive interventions address the underlying causes of malnutrition by integrating nutrition objectives into the goals and actions "of a wide range of sectors, including agriculture, social safety nets, early child development, and education" [42, 43].

The Lancet published a comprehensive review, *Evidence-based interventions for improvement of maternal and child nutrition: what can be done at what cost?,* that investigated the effectiveness of current interventions that target undernutrition [44]. This review used the Lives Saved Tool (LiST) to estimate the potential effect on child health and mortality in 2012 [44]. The authors selected 34 countries with high stunting burdens and modeled the effect on child health outcomes when a set of ten nutrition-specific interventions were scaled up to 90% coverage [44]. This model suggested that the mortality in children under five could be reduced by 15% (range 9-19), with a mean reduction of stunting of 20.3% (range 10.2-28.9) [5, 44].

The Lancet review illustrated that a reduction in stunting prevalence is possible. It is also

revealed that the sole use of nutrition-specific interventions, which often address only the proximal determinants of stunting, had a conservative effect on the reduction child stunting [24, 44]. These findings bolster the argument that nutrition-sensitive interventions that address the contextual determinants of stunting are needed in order to further progress in the reduction of stunting incidence and prevalence [24].

There is a growing body of literature that asserts that interventions that aim to meaningfully reduce child stunting need to evolve in order to tackle the impact of poor water and sanitation and environment [5, 7, 27, 28]. Current undernutrition research and programming may need to increase emphasis on addressing the burden of the aforementioned fecally transmitted infections, especially environmental enteropathy. There is currently an innovative trial being implemented in Zimbabwe called the Sanitation Hygiene Infant Nutrition Efficacy (SHINE) trial that is measuring "the independent and combined effects of improved water, sanitation, and hygiene and improved infant feeding on child stunting and anemia" [45]. Optimistically, this study could serve as evidence of the causal relationship between environmental enteropathy and stunting, but the results will not be published until December 2016 [45].

Social and Behavioral Change Communication Strategy

The stunting prevention program's Social and Behavior Change Communication strategy is grounded in three theoretical models, including: (1) the Social-Ecological Model, (2) the Social Marketing Framework, and (3) the Health Belief Model [46]. The Social Ecological Model (SEM) "is a theory-based framework for understanding the multifaceted and interactive effects of personal and environmental factors that determine behaviors" [47]. While, the Social Marketing Framework has a number of definitions, the researcher, Andreasen, defines social marketing as "the adaptation of commercial marketing technologies to programs designed to

influence the voluntary behavior of target audiences to improve their personal welfare and that of the society of which they are a part" [48]. Alternatively, the Health Belief Model posits that an individual's health-related behavior is dependent on their perception of four main areas (1) the severity of a potential illness, (2) the person's susceptibility to that illness, (3) the benefits of taking a preventative action, and (4) the barriers to taking action [49].

These theories are used in tandem with one another, with the intention of spurring positive behavior change, in the target population and larger community of Ntchisi. The combination of these theories underscores the importance of using an evidence-based, multi-pronged approach that synergistically confronts the numerous individual and community factors that affect behavior change [50].

The program's Social and Behavior Change Communication messages fall into several main categories, including the following: the adverse effects of chronic malnutrition and stunting, the importance of a nutrient-dense diet during pregnancy, the promotion of exclusive breastfeeding for 6 months, and the necessity of optimal complementary feeding with continued breastfeeding after 6 months for a child's health [11, 46]. One of the primary focuses of the Social and Behavior Change Communication is to increase the dietary diversity during complementary feeding.

Complementary Feeding Emphasis

Poor complementary feeding has been identified as a proximal determinant of stunting [26]. The Maternal and Child Nutrition Study Group looked at the effectiveness of individual interventions on nutrition-related outcomes using a cohort model [51]. This review found that the extant interventions that aim to improve nutritional outcomes have the potential to reduce stunting at 36 months by 36% [51]. In regards to complementary feeding, this review found that

when populations are food secure, complementary feeding education improved the "height-for-age Z score by .25 (range .01 to .49), whereas provision of food supplements (with or without education) in populations with insufficient food increased the height-for-age Z score by 0·41 (range .05 to .76)" [51]. The need for improved complementary feeding practices in Malawi is well documented in literature and verified by the stunting prevention program's monitoring system [52].

Dietary Diversity

The consumption of a diverse diet that includes animal-source foods has been shown to reduce the incidence of stunting [53]. The lack of dietary diversity in a young child's diet has serious developmental consequences. WHO's *Guiding Principles for Complementary Feeding of the Breastfeed Child* stated that, "plant-based complementary foods, by themselves are insufficient to meet the needs for certain micronutrients. Therefore, it is advisable to include meat, poultry, fish or eggs in complementary food diets as often as possible" [54]. Animal source foods have a variety of micronutrients; these micronutrients include the enriched type-1 and the particularly important, type-II nutrients, often referred to as growth nutrients [53]. The lack of these growth-promoting micronutrients is "associated with negative impact[s] on health outcomes, such as poor growth, impaired cognitive performance, and death" [53]. The increased inclusion of growth nutrients is essential for the reduction of stunting in Ntchisi.

In a study by Rah (2010), it was shown that reduced dietary diversity of children in Bangladesh, is a strong predictor of stunting, and that the inclusion of diverse complementary foods may be essential to improving the nutritional status of children [55]. Several studies in various countries have also found that, even when other factors were controlled for, a diverse diet was a protective factor of stunting [56-59].

Lipid Nutrient Supplementation

Lipid nutrient supplements (LNSs) are ready-to-use therapeutic foods (RUTFs) that have traditionally been given in large doses (200 to 300 g/dm) [60]. RUTFs are most commonly used to rehabilitate children with severe acute malnutrition to achieve rapid nutritional recovery [60]. The use of Lipid nutrient supplements to prevent malnutrition, in the forms of wasting and stunting, is novel and is still being investigated [60]. When the goal is to prevent wasting and stunting lipid nutrient supplements is given in much smaller quantities, and is referred to as small quantity-lipid nutrient supplement (SQ-LNS) [61].

The hypothesis that the provision of small quantity-lipid nutrient supplements could reduce the incidence of child stunting and improve linear growth has been tested in a number of different settings. Studies in the Democratic Republic of Congo, Ghana, Burkina Faso and Haiti showed that Small quantity- lipid nutrient supplements had a significant impact on stunting when used as a supplement to complementary feeding [5, 62-65]. Alternatively, there have been a number of studies completed in Malawi that found contradictory results; these studies indicated that the small quantity-lipid nutrient supplements did not have a significant impact on linear growth outcomes [66, 67].

In a recent study done by Maleta et al., the authors hypothesized that the change in mean length for age score (LAZ) in Malawian infants, provided with 10-40 g/d Lipid nutrient supplements from 6 to 18 months of age, would be greater than that for infants receiving no dietary intervention at the same age [25]. The mean length and length for age changes among the intervention group that received lipid nutrient supplements compared with the un-supplemented control group, were not significantly different [25]. As discussed earlier stunting is multifactorial. The study by Maleta et al. stated that lipid nutrient supplements supplementation during infancy

and childhood, by itself, does not promote length gain or prevent stunting between 6 and 18 months of age, in the study area in Malawi [25].

Possible explanations for the differences of the results mentioned above include: components of interventions, study design, and differences in the initial length for age Z score of the target populations [65]. Certain studies implemented complementary interventions, for example the study in Burkina Faso integrated diarrhea and malaria treatment in their intervention which resulted in better outcomes [65]. The study design of small quantity-lipid nutrient supplementation efficacy research varied greatly. The use of control groups and sample size greatly influenced results [5, 62-65]. Additionally, the current nutritional status is relevant as the findings from the studies in Burkina Faso and Malawi supported the conclusion that children with the "greatest degree of growth restriction benefitted most" from small-quantity lipid nutrient supplementation [65].

When the evidence is viewed collectively, there is an obvious need for further research on the effect of small quantity- lipid nutrient supplements in regard to its ability to prevent stunting and improve linear growth. As summarized in the Maleta et al. paper, the extant research suggests that "LNS supplementation may promote growth only in some settings or in combination with other interventions, and that the predictors and/or intervention package combinations that result in positive outcomes remain to be clarified" [25].

Reinforcing Government Priorities

The stunting prevention program reinforces the Government of Malawi's current nutrition interventions which include: the provision of iron/folic acid to PLWs, post-partum vitamin-A, supplying deworming medication to women and children, which are all evidence-based strategies that have shown to have positive maternal and child nutrition outcomes [68-70].

The stunting prevention program has also made it a priority to support complementary water, hygiene and sanitation interventions [11].

Conclusion

The stunting prevention program's key objective is to meaningfully contribute to the prevention of stunting, during the window of opportunity in Ntchisi district, Malawi [11]. While the effects of stunting are widely understood and researched, the causal mechanisms of the condition are not. The dearth of literature on large-scale stunting prevention programming is a hindrance to progress on this important issue.

This study seeks to advance large-scale programming efforts by examining mother beneficiaries infant and young knowledge, attitudes and practices and to reveal barriers to infant and young child feeding practice adoption. Additionally, this study aims to further elucidate what contributes to successful growth promotion in stunting prevention interventions through an emic approach. Qualitative assessment is a key evaluative piece for the stunting prevention program because logistically the program is operating incredibly well; the interventions are accepted and coverage is high. However, the uptake of promoted infant and young child practices is low. This research reveals the numerous and complex factors that influence the adoption of growth-promoting practices in this context and aims to edify the stunting prevention program on potential opportunities for increased barrier mitigation.

Chapter 3: Methodology

Introduction

This study utilized qualitative research methods to evaluate the knowledge, attitudes, and practices of the mother beneficiaries regarding infant and young child feeding; and to assess real and perceived barriers to and opportunities for enhanced infant and young child feeding practice in this population [16]. The data collection methods used in this study are in-depth interviews (IDIs) and focus group discussions (FGDs). This assessment was implemented in affiliation with the Government of Malawi's Stunting Prevention pilot program in Ntchisi district. The data for this study were collected from May to July 2015.

Study Setting

Data were collected from all seven geographic sections, here on referred to as Traditional Authorities (TA), of Ntchisi district, Malawi. The formative research for the stunting prevention program was published in 2015. This paper titled "*Identifying the Sociocultural Barriers and Facilitating Factors to Nutrition-Related Behavior Change: Formative Research for a Stunting Prevention Program in Ntchisi, Malawi*" written by *Kodish et al.* presents a descriptive analysis of the population in Ntchisi, which is summarized below [14].

Ntchisi district has approximately 250,000 residents [14]. Ntchisi district is an agrarian economy, Seventy percent of community members indicated that agricultural is their primary source of income [14]. In Ntchisi, 6.4% of the population had access to electricity, which is significant because access to modern energy is often used as a proxy indicator of rural development and improved livelihoods [14, 71]. In addition to the high stunting rate (58.1%), the children under 5 in Ntchisi, face many health challenges: the area is malaria endemic, there is also a high prevalence of child anemia (64%) and diarrhea (20%) [14].

Nearly all children living in Ntchisi under the age of 2 years are breastfed (99%) [14]. This high percentage is reduced as children age, only 71% are exclusively breastfed until 6 months, and 76.8% are continuously breastfed until 2 years of age [14]. There is a significant gap between the recommended nutritional content of complementary foods and what children in Malawi are consuming, as verified by Post-Distribution Monitoring results [52]. There is a high reliance on the nutrient-lacking staple food, ntshmia. Ntshima is a dish made from maize flour and water. It is the primary food offered to children during the complementary feeding period in Ntchisi [14].

Study Procedures

Population

The population of participants consisted of mother beneficiaries throughout Ntchisi district. Mother beneficiaries were eligible to participate in this assessment if they received and had a child enrolled in the program that was between the age of 6 and 23 months.

Individuals were excluded from this study if they were non-participants of the stunting prevention program, men, grandmothers and/or community leaders. This study had a very narrow focus and wanted to completely focus on the experience and perceptions of mother beneficiaries.

Sampling

A purposive approach was used because the purpose of this assessment was to understand health attitudes and behaviors of participants [72]. Homogenous sampling of mother beneficiaries, with children under the age of 2, allowed the assessment team to understand participants' views in more depth and focus on the central issue of low recommended infant and young child feeding practice. The study participants were purposefully selected from all seven

traditional authorities. The identification of participants was completed with the help of Health Surveillance Assistants (HSA), cooperating partners and World Food Programme program staff.

The field methods were selected in order to collect information on why the recommended infant and young child feeding practices were not being adopted by program beneficiary mothers. The primary data collection phase resulted in fourteen IDIs and five FGDs with beneficiary mothers. The IDIs and FGDs took place at health centers, extended distribution points (EDP), and the residences of beneficiary mothers. The data were collected through face-to-face discussions by a facilitator and note taker.

Instruments

Focus group discussions (FGDs) and in-depth interviews (IDIs) guides were utilized, in order to gain an understanding of the cultural norms and attitudes, as well as learn about the unique experience of individuals. The interplay between the group and individual perceptions uncovered barriers and attitudes more thoroughly than any single method could, if used alone [73].

The development of study tools was an iterative process. The health belief model, social ecologic model, and barrier analysis methodology influenced the development of study data collection tools. Prior to the first phase of data collection, the interview guide and focus group discussion guide were piloted on a small scale to ensure clarity of questions and assess facilitator ability. Tools were then updated based on the findings from the pilot test and integrated feedback from discussions with program staff.

In-depth Interviews

In-depth interviews (IDIs) utilized a semi-structured interview guide (Appendix B). Interviews usually lasted between 20 to 50 minutes. Topics covered in these interviews, included: current Infant and young child feeding practices, knowledge of nutrition and infant and

young child feeding practices, perceptions and knowledge of stunting, perceived barriers to uptake of recommended infant and young child feeding behaviors and recommendations for providing increased support for mothers.

Fourteen IDIs were collected. This sample size was used based on the findings from *Guest et al*. which found that in a homogenous sample, idea saturation occurs around twelve interviews [74]. In an effort to gather data from all communities covered by the program, two interviews were completed in each TA.

All in-depth interviews were recorded and conducted in Chichewa by a trained interviewer. The primary investigator was present at all interviews, and took notes on interview dynamics and setting.

Focus Group Discussions

Focus group discussions followed a semi-structured discussion guide, that include an activity, to investigate beneficiary mothers' cultural norms, attitudes, practices, or reactions as a group to infant and young child feeding practices (Appendix C) [73]. Topics covered in these discussions were identical to the content covered in that of IDIs, with an increased emphasis on community perceptions. Five focus group discussions were recorded and conducted with mother beneficiaries. FGDs were facilitated in Chichewa by a trained interviewer. The primary investigator was present at all FGDs, and took notes on participants' contributions, and discussion dynamics. Given the homogeneity of the group composition and the level of familiarity with the topic, only five focus groups were completed due to the fact that this study did not stratify by any variable. Each group contained seven to ten women per focus group. This number of participants was used since the range of seven to ten participants has been shown to stimulate good but manageable discussion [75].

Data Analysis

All data collected were recorded with informed interviewee permission and then translated into English, and transcribed. Translation took a meaning-based approach from the original language into English. Audio recordings were transcribed into Word and then entered into MAXQDA in English.

Analysis was conducted using MAXQDA version 11, qualitative data analysis software. Line-by-line memo-ing was completed on two IDIs and one FGD, which resulted in the creation of inductive and deductive codes. Deductive codes are based on relevant literature and the formative research completed by Kodish et al. [14]. The codebook consisted of seven codes, with deductive codes including Infant and young child feeding practices, participant attitudes, CLAN/Care group functioning, barriers to infant and young child feeding recommendations, and knowledge of infant and young child feeding. Within these main codes, certain sub-codes were derived inductively and others were based on barrier analysis literature [76]. Once the codebook was established it was applied to all segmented data. Descriptive analysis was completed by applying the set of codes to all transcripts to investigate how themes were discussed across participants and between groups of participants. Data were systematically retrieved and reviewed using individual codes.

Ethical Considerations

Before any interviews or focus groups took place, informed consent was obtained from all participants. After consultation with the chair of Emory IRB and WFP Program staff, it was determined that this study did not require Emory IRB approval, due to the fact that the study is a program evaluation. The primary investigator (PI) was CITI-certified and all staff involved received training on the proper collection and handling of data.

Limitations and Delimitations

Some bias may have occurred during the data collection process, the facilitator was a contract worker for WFP. While every effort was made to create rapport and ensure confidentiality, it is possible that certain interviewees did not feel comfortable discussing dissatisfaction with someone from outside their community who was associated with the program. Ideally the interviews would have been conducted in secluded settings but the first priority was to conduct discussions in convenient locations for the women. Discussions were often interrupted by local community members, which may have compromised the participant's feelings of anonymity. Additionally, there are some issues related to data quality: the focus group participants could not always be identified during transcription. This is a result of the note taker aiding in the facilitation process and was unable to note the speaker. Furthermore, the facilitator often phrased questions in a leading manner, which may have biased answers. This qualitative study had a very narrow focus and only investigated the barriers, knowledge, attitudes, and practices of mother beneficiaries. Mothers who are not enrolled in the stunting prevention program were not included which means these results are not externally valid.

Chapter 4: Results

Introduction

These results examine the knowledge, attitudes and practices of mother beneficiaries in rural Ntchisi District, Malawi regarding Infant and young child feeding. Additionally, the real and perceived barriers to, and opportunities for, enhanced infant and young child feeding in this population and environment were assessed. These results improve awareness and understanding of the factors that influence the translation of mother beneficiaries' infant and young child feeding knowledge into action. In-depth interviews and focus group discussions yielded a deeper understanding of these issues.

Participant Information

The demographic characteristics of study participants are summarized in Table 1 below. The average age of participating mothers is 26.3 years. Seventy-one point nine percent self reported that they were literate in Chichewa, while 28% of the respondents said they were illiterate. Fifteen point eight percent of the participants went to secondary school, 84% did not attend secondary school. Out of the fifty-seven mother beneficiaries that were interviewed, only 9 went to secondary school (high school). The highest level of educational attainment are as follows, only 1 mother reached Form 3 (11^{th} grade), 5 mothers reached Form 2 (10^{th} grade), and 3 mothers reached Form 1 (9^{th} grade).

Table 1: Study Population Demographics

Target Group	Number of participants	Mean age (In years)	Chichewa Literacy Rate	Education Level
Mother Beneficiaries	57	26.3	72 % Literate 28% Illiterate	16% went to secondary school 84% did not attend secondary school

Data were collected from all 7 TAs of Ntchisi district, which include Nthonodo, Malenga, Chilooko, Kalumo, Vuso Jere, Chikoho, and Kasakula.

The Results

The main findings from this study, and demonstrative quotes can be found below. They are separated by research objectives: knowledge, attitudes, practices, and barriers.

Knowledge

Depth of Knowledge

In the interest of understanding mother beneficiaries' familiarity with Infant and young child feeding information, participants were asked a serious of questions to assess their level of infant and young child feeding knowledge. This study found that mothers' infant and young child feeding knowledge around broad concepts was high, however, the depth of that knowledge was limited. Mothers recalled main, sound-byte, messages from infant and young child feeding nutrition education, but when probed on the details of these messages, most mothers couldn't recall specific information. Participants consistently recited broad concepts like the importance of "frequent feeding," "exclusive breastfeeding," and "the six different food groups," but almost none of the mothers could list all six food groups.

Additionally, the level of mother beneficiaries' knowledge around the proper introductory time period of certain practices was mixed. As shown by the quotes below, when asked about the appropriate age to start feeding all six-food groups, some mothers stated that the six-food groups should be introduced at 1 year, while other interviewees asserted that the inclusion of the six-food groups should start at 6 months (the recommended introduction). These findings are prominently found in the data:

Respondent 1: At 1 year, when the child starts eating Ntshima, that is when she can start eating foods from all the different food groups.
Respondent 2: We start giving the six-food groups at six months.
- Mother beneficiaries, Nthonodo FGD

* In certain FGDs the participants could not be individually identified

Nutributter® Knowledge

In order to understand mother beneficiaries' knowledge of Nutributter®, participants were asked about Nutributter®'s use and properties. Virtually all the mother beneficiaries knew the proper way to use Nutributter®. This finding should not be used as a proxy indicator for appropriate Nutributter® use; improper use of Nutributter®, in the form of sharing, was frequently admitted and discussed by participants. There was also a lack of knowledge around the correct role of Nutributter® in a child's diet. Many of the study participants regarded Nutributter® as a panacea. They believed that a child could not become stunted if Nutributter® was consumed, a mother explained this thought process:

P: Mine cannot get stunted as long as they are getting Nutributter®, because they told us that… when they introduced this program, that our kids cannot get stunted.
-Mother beneficiary, age 22, Kasakula, FGD

Stunting Knowledge

Most of the participants confirmed that they were familiar with the terms "stunting" or "stunted." The participants who had heard the term often related stunting to poor child health and linear growth: some participants extended the effects beyond height and linked stunting to poor developmental outcomes e.g. cognitive deficits. Mothers often grouped stunting and malnutrition together and presented them as the same concept. A number (n=13) of participants expressed confusion about the meaning and effects of stunting as seen in the example below:

I: Have you ever heard of the word stunting?
P: Yes, I have, but I also ask myself what is the meaning of the word... but my understanding, I think it means lacking proper foods in the body. The child doesn't look healthy and they are not properly taken care of.
- Mother beneficiary, age 25, Kalumo, IDI

Attitudes

Uncovering the attitudes held by beneficiary mothers about infant and young child feeding was one of the primary objectives of this study. The subthemes of the larger attitude theme are as follows, perceived susceptibility, perceived severity, perceived action efficacy, perceived social acceptability, perceived self-efficacy, cues for action, perception of divine will, and positive and negative attributes of the preventative action [76]. These were deductive sub-themes based on barrier analysis methodology [76].

Perceived Susceptibility

Mothers were asked a series of questions about how vulnerable they felt children were to stunting and malnourishment to gain insight on the perception of susceptibility. Most mothers did not believe that their own children were at risk for malnutrition or stunting, however, when asked about the susceptibility of children in their TA, virtually all of the participants confirmed that children were at risk. This is depicted in the quote below:

> *I: Do you think there are stunted children in this community?*
> *P: Yes.*
> *I: Do you think your child could become stunted?*
> *P: No [Laugh].*
> *-Mother beneficiary, age 23, Chikoho, IDI*

Perceived Severity

In order to learn about the perceived severity of stunting and malnourishment, mother beneficiaries were asked their opinion on these conditions. Almost all of the mothers considered a lack of food groups and malnourishment as serious issues that had grave health consequences. Participants had varying perspectives, on the severity of stunting. Some participants expressed worry about child stunting and considered it a "big" problem, while others voiced that stunting was not a source of concern. This contrast is demonstrated below:

> *I: Do you think this is a serious problem—that children are stunted?*

P: No, it is not a serious problem, as long as the parent has interest in the child.
-Mother beneficiary, age 25, Kalumo, IDI

P: Stunting is a very big problem, because it is a big concern to, us parents, when we have a kid who is stunted. When a kid is growing healthier, parents also become very happy.
-Mother beneficiary, age 22, Kasakula, FGD

Perceived Action Efficacy

Participants were asked if they believed promoted infant and young child feeding practices were able to prevent adverse nutritional outcomes, in order to examine their outlooks on the preventive action's efficacy. The majority of participants believed that children under 5 would be protected from adverse nutritional outcomes through a combination of maternal attention, feeding practices, and Nutributter® use. Participants often discussed how a "lack of the six different food groups" leads to child malnourishment, however, the link between inadequate dietary diversity and the development of stunting was rarely discussed.

I: Do you think your children can get malnourished?
P: No.
I: Why?
P: I give them Nutributter® and I try so hard to give them all the six different food groups.
-Mother beneficiary, age 23, Chikoho, IDI

Perceived Social Acceptability

In order to further understand the social acceptability of promoted infant and young child feeding practices in this community, mothers were asked about the extent of approval for the infant and young child feeding practices on a personal, family, and community level. Overall, women expressed high levels of acceptability in the personal and family domains. Nearly all the women described high levels of community acceptance, however, a small number of participants (n=3), explained that if the promoted infant and young child feeding practices were adopted, community members would speculate that the motivation prompting the behavior change was to

feel superior to that mothers who did not or could not uptake the promoted behavior. The quotes following demonstrate this juxtaposition:

> *I: If you were to feed your child a diet with a variety of food groups, would there be anyone in the community who would object to that?*
> *P: No, instead people would be happy and proud about it…seeing how healthy the child would grow.*
> *-Mother beneficiary, age 35, Nthondo, IDI*

> *I: Is there anyone who would object to you feeding your child with all six-food groups?*
> *P: Yes.*
> *I: Which?*
> *P: People from this village.*
> *I: Why can't they agree to that?*
> *P: They would say that I was trying to be proud and boastful, when in fact, it would only be the advice from the hospital that I was following.*
> *-Mother beneficiary, age 23, Chikoho, IDI*

Responses indicated that participants tended to be critical of other mothers' feeding practices. Participants often pointed to a woman's "laziness," as the reason why promoted infant and young child feeding practices were not adopted. This property of the social acceptability theme was particularly prominent when mothers were asked to hypothesize why the adoption of promoted infant and young child feeding practices was low, as demonstrated by the quote below:

> *I: When we talk to mothers like you about feeding, you know a lot, but when we survey… the results for different food groups are very low, and we want to know why…*
> *P: Laziness of the woman.*
> *-Mother Beneficiary, age 22, Malenga, FGD*

Perceived Self-Efficacy

Mother beneficiaries were asked about the ease of adopting promoted infant and young child feeding actions to assess perceived self-efficacy. Mothers firmly believed that feeding their child a health-promoting diet was their direct responsibility and were confident in their ability to do so if resources were present. Participants consistently expressed how their attempts to adopt

promoted infant and young child feeding practices were thwarted due to resource constraints, as detailed below:

> *I: There are things that I want to change, but they are beyond my reach.*
> *-Mother beneficiary, age 26, Vuso Jere, IDI*

Cues for Action

In order to assess mother beneficiaries' need for action cues, participants were asked to describe their ability to remember promoted infant and young child feeding practices. The majority of participants responded positively when asked about their own capacity to remember practices, but participants often asserted that cues would be helpful for everyone, especially for the larger community, as demonstrated by the quote below:

> *I: Do you need more reminders to act on the message of the six-food groups?*
> *P: Yeah, we need reminders because some women they forget. We need regular meetings. It can help!*
> *-Mother beneficiary, age 27, Kasakula, IDI*

Perception of Divine Will

In order to learn if mother beneficiaries' uptake of the promoted infant and young child feeding action was influenced by spiritual beliefs, participants were asked about the effect of otherworldly actors on malnutrition and stunting. Nearly all participants referenced the influence of God on their child's life and health, but did not believe that God had a direct impact on nutritional outcomes. One mother described how trusting on God to intervene, when it comes to the nutritional status of a child, could be detrimental:

> *P: You give the kid little food, but [go] by just saying, 'only God knows.' It means the kid will not grow. As you are saying, 'only God knows,' in the process, the child can get malnourished and even die.*
> *-Mother beneficiary, age 23, Kasakula, FGD*

Comparatively, mothers routinely mentioned that witchcraft had the potential to cause adverse nutritional outcomes. While this belief was stronger in certain TAs, it was voiced in all areas of the district, as depicted by the example below:

> *I: So, you mean a child can get malnourished because of witchcraft?*
> *P: Yes, it happens. It is possible. A child [as] healthy as this one [points at baby]… using witchcraft, you can make this child thin. And when you go to the hospital, they don't find anything wrong, but it keeps getting thinner and thinner.*
> - *Mother beneficiary, age 30, Chilooko, IDI*

Positive and Negative Attributes of the Action

Participant mothers were asked a series of questions about their perceptions of the advantages and disadvantages of the promoted infant and young child feeding behavior in order to assess attitudes around the positive and negative attributes of the action. Mothers recognized several benefits to feeding a child less than 2 years of age a diverse diet. These benefits included, in order of frequency: 1) improved linear growth, 2) reduced occurrence of sickness, 3) increased happiness, 4) improved behavior, 5) increased earning potential and 6) an increased life span. It should be noted that participants were probed with specific benefits in order to stimulate interviewee response.

Participants typically linked promoted infant and young child feeding practices to health-related, short-term outcomes but did not discuss the life-long, positive impacts of stunting prevention. A single participant (n=1) negatively linked the effect of recommended infant and young child feeding practices on child behavior. Nearly all mothers were aware that feeding your child in the promoted manner had a number of benefits, in addition to height gains, which is demonstrated by the quote below:

> *I: If you are feeding your child the six different food groups, do you think it would help your child grow healthy?*
> *P: Yes, I think she can grow healthy.*
> *I: Perform better in school?*

P: Yes, I do feel like if I give all these foods my kids can do well in school, because I have heard healthy kids do better in school.
I: What about for the child to be better behaved?
P: Eating those six food groups can help with that.
I: What about sickness?
P: There is a need for those six food groups to be there.
I: Can it lead to the child living longer?
P: For that to happen, there is a need to give good foods while the child is young.
I: Do you also think this could help the child to have more money in the future?
P: No, feeding a kid properly cannot make the child have a lot of money.
-Mother beneficiary, age 27, Kasakula, IDI

Practice

Porridge Preparation

In order to further understand complementary feeding practices used by mother beneficiaries, participants were asked to describe how they feed their children under the age of 2 years. Porridge, made with white maize flour and water, was the food most frequently feed to children. Mother beneficiaries described multiple ways to make porridge. The preparation method that was the most common was to make porridge with whole maize flour, which includes bran. Most mothers mentioned, as detailed in the quote below, said that they added certain ingredients (pending availability) to the porridge.

I: Feeding children is not easy, in villages like here, to be honest. When you prepare porridge most of the times we just add salt, because it is very difficult to find sugar. It looks like we don't look after the children well; the problem is we can't afford most of these other things, like sugar.
-Mother beneficiary, age 26, Vuso Jere, IDI

The extra ingredients, that were routinely cited, include sugar, salt, groundnut-flour, soya, beans, fish and vegetables. Milk and margarine were also cited as additional ingredients, but the occurrence was low. Participants revealed that the practice of making porridge with maize, that does not have bran, is still prevalent in their communities. They also disclosed that watery porridge is being given to children less than 2 years of age. This finding confirms that detrimental infant and young child feeding practices are still prevalent in this community.

Animal-Source Foods

Another main finding was that animal-source foods in child beneficiaries' diets are scarce. These results can be verified by the program's Post-Distribution Monitoring survey reports. Animal -flesh foods, dairy, and eggs were foods that the participants wished to include in their complementary feeding practices, but most mothers were unable to incorporate animal-source foods, due to finances and limited availability of such items.

> *P: It can be a big lie to be saying that I can be buying meat, ½ kg daily, and on the same day, I also buy eggs and other things… because of some problems. I can manage at least to be giving 1 food group a day, but if I say I can manage all six-food groups daily…I am lying and may perish in hell.*
>
> *-Mother beneficiary, age 23, Kasakula, FGD*

Barriers

In pursuance of the factors that impede beneficiary mothers' ability to translate infant and young child feeding into recommended complementary feeding practices, participants were asked to describe the hindrances they faced when trying to adopt promoted infant and young child feeding practices. The most commonly cited barriers, in order of occurrence, were: 1) financial resources, 2) availability and seasonality, 3) birth spacing, 4) education and skill, and 5) inadequate external support. A minority of mothers expressed issues related to a lack of water or their child's temperament, but these barriers were only voiced by a select few.

Financial Resources

The most commonly cited barrier to the uptake of promoted infant and young child feeding practices was inadequate financial resource. Participants discussed that their husbands were the ultimate decision makers on how financial resources were used, but voiced that their husbands also prioritized feeding their child[ren]. Mothers often emphatically talked about how they wished to improve their children's diets, but did not have the resources, as illustrated in the evocative quote below:

P: Look at my kid…she is thin. My heart always pains when I see my kid like this, I may have the wish to buy the items, but I lack finances. So, it is not about willingness, it is about the ability to get money.
-Mother beneficiary, age 22, Kasakula, FGD

Availability and Seasonality

Food availability, often related to seasonality, was routinely cited as a barrier to adopting recommended infant and young child feeding practices. The foods that were the most difficult to obtain, differed by Traditional Authority (TA), but certain provisions, often animal-source foods, were cited as hard to obtain throughout the district. In addition to effecting food availability, seasonality also presented time demands for the participants. There are three distinct seasons in Malawi: lean season (LS), post harvest season (PHS), and harvest season (HS) [77]. Each season presents different feeding challenges for the mothers, as depicted by the quote below:

I: You said that seasonality makes you fail to feed your child the different foods, what exactly about the rainy season make you fail to feed your child the different foods?
P: For example, during the rainy season, it is difficult to find relish. Even soya is scarce, to find soya, you have to go and buy…what we find is what we give the child. If it porridge, it is only porridge with maize flour, and that is all.
-Mother beneficiary, age 26, Vuso Jere, IDI

Participants often described harvest season as being particularly challenging, in terms of feeding their young children, because of time demands, as depicted below:

I: Do the seasons make you fail to feed your child properly?
P: Yes, for instance now, we are harvesting. We go in the morning and sometimes we come very late, and you don't feed the child, maybe you say 'oh I will feed the baby tomorrow.' And like that days go by.
-Mother beneficiary, age 23, Chikoho, IDI

Birth Spacing

Mothers often cited the short time intervals in-between pregnancies as a cause of child malnutrition and a lack of infant and young child feeding practice adoption. When mothers were

probed about the reason birth control was not widely used, they stated that birth control was available and that the lack of use actually stemmed from their husband's condemnation of family planning, as shown below:

> *I: Why is there a lack of child spacing in the area?*
> *Respondent 1: Sometimes it happens because, in our families, most men don't allow the woman to go to family planning. To avoid conflicts, we just have as many kids as possible.*
> *I: Is there access to family planning? If you wanted it, could you find it?*
> *Respondent 2: It is accessible.*
> *-Mother beneficiaries, Chilooko, FGD*

Education and Skill

Virtually all of the participants expressed the desire for more education, specifically more skills-based training pertaining to cooking. Mothers often expressed disappointment when asked about their experiences with care group leaders and CLAN members; most mothers disclosed that knowledge translation through these mediums was limited. Participants cited Health Surveillance Assistants (HSAs) as their main source of information about infant and young child feeding. The quotes below are example of participant experiences with stunting prevention program education efforts:

> *P: They should train the door-to-door advisors properly; they should empower the door-to-door advisors because they are mostly left with nothing. As such, it is difficult for those advisors to be moving to the homes of the people to give them advice. So, we only hear that the advisors were saying 'what and what,' in terms of completion they don't go to check in the homes-- that those things are really happening. [For] us women, they should at least train us how to properly cook porridge for the kid.*
> *-Mother Beneficiary, age 27, Kasakula, IDI*

External Support

The lack of support was discussed by approximately half of the participants. When directly asked about the support they receive in relation to feeding their child[[ren], mothers' answers were varied. When the interviews were conducted at home, mothers consistently said

spousal support was adequate, but in neutral group settings, responses indicated that spousal support was limited. The differences in these responses can potentially be attributed to interview setting. Additionally, mothers voiced the desire to have a better community network, with the aim of working with other mothers to give support and leverage collective power.

> *P: There is just need for oneness in the families, so that the kids will not get malnourished. If there is no, unity, each and everyone minds their own business, things cannot work out. If there is no unity, the problem is the kids suffer. In our setting, most of those who find money are men, it means, that without unity the lady cannot approach him to get money to assist the kids.*
> *-Mother Beneficiary, Chilooko, FGD*

Summary

A summary of the main findings of the study and its implications are detailed below in Table 2.

Table 2: Summary of Key Results and Implications

Results: Key Concepts			
Research Objective	**Theme**	**Summary**	**Implication**
Knowledge	Depth of Knowledge	Participant's knowledge around broad infant and young child feeding concepts is high, but the depth of that knowledge is limited.	Detailed infant and young child feeding education is necessary to improve practices. Nutrition education should build on the basic IYCF foundation most mothers have.
Knowledge	Nutributter® Knowledge	The knowledge related to correct Nutributter® usage is high, but mothers often think that Nutributter® is a panacea.	The complementary nature of Nutributter® needs to be stressed in community outreach.
Knowledge	Stunting Knowledge	While participants were familiar with the term stunting, the level of knowledge around stunting is limited. Participants often combined stunting and undernutrition together.	Participants need further on education on stunting and its impacts. This is needed to link the importance of healthy growth to and overall child health.
Attitude	Perceived Susceptibility	Mothers did not believe their own children were susceptible to adverse nutritional outcomes but did believe the children in their community were at risk.	Sensitization is needed to emphasize that all children are at risk of stunting. If mothers do not believe their child can become stunted or malnourished they will

			be less motivated to adopt the preventative action.
Attitude	Perceived Severity	Mothers strongly believe that malnourishment is a serious issue with detrimental effects to their child's health. Comparatively, most mothers did not believe stunting was a serious problem.	There is a need for further education on the effects and impacts of stunting in this community. If the community does not think that stunting is a serious issue then they may not adopt the preventative action.
Attitude	Perceived Action Efficacy	Mothers believed that dietary diversity was important and effective in preventing malnourishment. The connection between the adoption of promoted infant and young child feeding actions and the prevention of stunting was rare.	Education should stress the preventive effect of infant and young child feeding practices on stunting. While mothers believe the preventative action works for mitigating malnourishment this link needs to be extended to stunting.
Attitude	Perceived Social Acceptability	The majority of mothers expressed a large extent of personal, household and community acceptance.	Community sensitization events, that emphasize the improved health of the entire population, should be continued.
Attitude	Perceived Self-Efficacy	Mothers were conditionally confident in their ability to adopt infant and young child feeding practices. Participants said they would be able to adopt behaviors if they had the necessary resources.	Education should emphasize actionable, barrier mitigation strategies in order to maintain high levels of self-efficacy.
Attitude	Cues for Action	Mothers were confident in their ability to remember promoted infant and young child feeding actions, but also expressed interest in an increase in reminders.	Practice adoption might increase if more frequent reminders were given to mothers.
Attitude	Perception of Divine Will	God plays a large role in the participant's lives but they did not believe He played a role in nutritional outcomes. However, most mothers did believe that witchcraft had the ability to cause adverse nutritional outcomes.	Further education is needed on the causes of adverse nutritional outcomes. If participants feel like there are no effective actions to take, because their child has been bewitched, then they will be less likely to adopt promoted practices.
Attitude	Positive and Negative Attributes of the Action	Mothers ascribed promoted actions to a number of positive health outcomes for their children. Mothers often described the short-term, immediate benefits.	Long-term benefits (education attainment, economic productivity, life expectancy) of promoted IYCF actions should be emphasized in this

			community.
Practice	Porridge Preparation	Porridge is the most commonly fed food. Mothers fortify porridge when ingredients are available. Thinned out porridge is still being given to children under 2 years.	The complementary feeding messages of the SBCC strategy need to be widely distributed, in order to improve practices.
Practice	Lack of Animal-Source Foods	Animal-source foods are not being routinely given to children under 2 years.	Barrier mitigation messages from the SBCC and additional, actionable strategies need to be given to mothers to increase animal-source food consumption by child beneficiaries.
Barriers	Lack of Financial Resources	The lack of financial resources was cited as the main impediment to IYCF practice adoption in almost every interview.	The burden of poverty is having significant effects to mother's ability to adopt promoted IYCF. The inclusion of nutrition-sensitive interventions that alleviate poverty could increase IYCF adoption.
Barriers	Availability and Seasonality	IYCF practices were very affected by the season. Certain seasons made nutrient-dense food items unavailable.	Season-specific SBCC messages need to be distributed in a timely manner in order to overcome the barriers presented by different seasons.
Barriers	Birth Spacing	Mothers expressed the inadequate birth spacing as significant barrier to health-promoting child feeding and child health. Birth control is not widely used, even though it is available, because of husband censure.	The program should partner and support with other interventions that provide family planning methods. There is a need for male involvement in family planning education programs.
Barriers	Education and Skill	Participants frequently requested more IYCF education; specifically mothers asked for education that includes food preparation and storage skills.	Mothers could benefit from further cooking and preparation skills education. Imparting these skills has the potential to increase the depth of knowledge and use of practices.
Barriers	External Support	Mothers often described child feeding as an individual responsibility. They sometimes expressed a lack of support from their spouses and community members.	In order to increase uptake mothers need to have a greater support network.

Chapter 5: Discussion

This study used qualitative data collected from in-depth interviews and focus group discussions with mother beneficiaries in Ntchisi district, with the intention of advancing program understanding of the knowledge, attitudes, practices and barriers related to growth-promoting Infant and young child feeding practices. There is not a simple explanation for the low adoption rates of promoted infant and young child feeding practices in this population. Infant and young child feeding behaviors are not formed by one factor; these behaviors arise from a complex interplay of determinants [24]. This study increased program understanding of mother beneficiaries' knowledge, attitudes and practices related to infant and young child feeding in this community. In addition this study revealed that underlying, contextual barriers are diminishing mother beneficiaries' ability to adopt promoted practices.

The principal question that guided this study, and will be the primary focus of this discussion was: if the infant and young child feeding knowledge of beneficiary mothers is so high, then why are dietary diversity scores of the beneficiaries so low? The data collected in this study helps explain the reasons behind the discordant results of the seemingly high infant and young child feeding knowledge and low dietary diversity practices found in the stunting prevention program's January 2015 Post Distribution Monitoring survey. This data confirmed that the knowledge of mother beneficiaries around broad infant and young child feeding concepts is high, but it also revealed that the knowledge of important details of the infant and young child feeding messages is limited. This suggests that an effective strategy for improving infant and young child feeding practice in this community could be increasing education that focuses on translating infant and young child feeding knowledge with greater granularity.

The dearth of detailed infant and young child feeding knowledge in the target population

is likely due to a combination of low maternal education levels, the Social and Behavior Change Communication, response bias and the enervating effects of underlying determinants. The "complexity of complementary feeding practices and the extremely short window, in which these are applied," means that education efforts on this topic require need to be evidence-based and concentrated [78].

Maternal Education

Low levels of formal maternal education in the study population indicate that in order to optimize infant and young child feeding practices, nutrition education should be active, practical, and participatory [79]. A study completed by USAID, showed that even after controlling for other factors, high levels of maternal education had a significant role in reducing child malnutrition [80]. It was determined that in order for this protective effect to occur, mothers have to be educated beyond primary school [80]. The study found that in order to significantly reduce the odds of stunting, mothers in Malawi needed nine years of schooling which translates into mothers finishing form 1 in the Malawi education system [80]. This information is relevant because it means that increased education for girls (future mothers) could reduce the odds of stunting and adverse nutritional outcomes for their children [80].

Social & Behavior Change Communication Strategy

The Social and Behavior Change Communication *Strategy*, which is based on scientific research, Malawi's Nutrition Education and Communication Strategy (NECS) and the program's formative research completed for the stunting prevention program in Ntchisi, provides clear instructions on the mobilization actions needed and the necessary time frame to complete said actions [14, 46]. One of the main implementation strategies stressed in the in *Social & Behavior Change Communication Strategy Manual* was the need for season-specific messaging [46, 77]. The findings from this assessment support this assertion, because participants repeatedly

mentioned that with different seasons come radically different feeding challenges. This suggests that the season-specific messages formulated in the *Social & Behavior Change Communication Strategy Manual* that focus on barrier mitigation, are not reaching the target population.

Social Desirability Bias

Given that mother beneficiaries have received education around the program and infant and young child feeding, it is important to note, that social desirability bias could be present when surveying [81]. There is a scarcity of research on issues resulting from reporting bias on food-consumption surveys in developing country settings. Given the full coverage of the Social and Behavior Change Communication campaign activities in the program, it is possible that mothers may give what they know to be the "correct" answer [81]. This could be another reason that knowledge levels from quantitative surveys appear high.

Underlying Determinants

Poverty

The fact that mothers' feeding behaviors are affected by poverty may seem straightforward, but this finding has significant effects on the ability of mothers to apply infant and young child feeding knowledge. Feeding practices are "mediated by knowledge as well as by resource availability" [43]. The data from this study confirms that mothers of low socioeconomic status, living in remote rural areas with inadequate resources, may be unable to apply acquired nutritional knowledge and skill [43]. The relationship between poverty and malnutrition is well established [82, 83]. It is also widely known that dietary diversity scores increase with income and wealth [57]. Research suggests that increased dietary diversity scores have a positive effect on nutritional outcomes, independent of socioeconomic status [57].

In regards to the effects of poverty on infant and young child feeding practices, there are some potential solutions. In contexts where dietary diversity score improvement is limited by financial constraints, income transfers to the poor have been an effective intervention strategy [53]. While conditional cash transfers are controversial, they have proven to be very effective in inciting behavior change [84]. Admittedly, this strategy is often reliant on donor funding and lacks sustainability.

A viable option for the program is the linkage of mothers to Village Banking Groups (VBG). Connecting mothers with these groups could result in higher incomes. Additionally, developing relationships with organizations that offer trainings on income generating activities could be effective. The stunting prevention program could use a collective impact model and be the backbone organization that coordinates trainings for the beneficiary mothers; trainings could cover: small-scale livestock, homestead gardening, fish farming and business [85].

Family planning

Mothers expressed that closely spaced pregnancies were a prominent barrier to the adoption of promoted practices. Research has shown that there is a risk of maternal nutritional depletion when pregnancies are close together. Furthermore, short intervals between pregnancies increase the risk of preterm birth and infant growth failure [86]. Data from World Fertility Surveys and Demographic and Health Surveys clearly illustrates that improvements in both maternal and child nutrition are related to increases in birth spacing [87].

Male engagement in maternal and child health is needed to address the issues of spousal displeasure of family planning. Engaging men in maternal and child health programming has shown to have positive benefits on nutrition, family planning and birth preparedness outcomes [88]. In the family planning domain, male involvement have shown to increase acceptance of,

and effective use and continuation of contraceptives [59]. The stunting prevention program could work with the District Health Office (DHO) to coordinate messages and increase sensitization around the importance of birth spacing, with an increased focus on engaging husbands. The combination of nutrition initiatives and family planning programs has been shown to be successful and could result in healthier generations in Ntchisi [89, 90]. Partnering with organizations that provide gender equality training could also yield positive results for the beneficiary mothers. Research has shown that increasing gender equality can have an short-and long-term impact on stunting rates [91]. Family planning messages could also be added to the stunting prevention Program's Social and Behavior Change Communication curriculum.

The potential that nutrition-sensitive interventions could have a significant impact on stunting rates in this community is great, given that most of the barriers that women cited during this study related to underlying determinants. This data creates an opportunity for the stunting prevention program to address the underlying determinants of stunting to complement and enhance the effectives of the ongoing interventions [42].

Limitations

This study aimed to answer the specific question of what was keeping mother beneficiaries from adopting infant and young child feeding practices, this lead to a narrow sampling frame. After analysis it became apparent that there were certain gaps in understanding. In future assessments, it would be useful to include key informant interviews, especially interviews with CLAN members and Care Group Leaders. Additionally, it could be useful to survey a larger sample of mother beneficiaries. A tool that could be suitable for further barrier analysis in this setting is the Doer/Non-Doer Analysis, where mothers would be stratified by the uptake of feeding practices [76]. The fact that all discussions were conducted in Chichewa and translated for the primary

investigator later raises issues with data quality. The research methods of direct meal observations and full-day child observations could further validate findings.

Implications

Participant's answers provided insight into the factors that influenced their ability to translate infant and young child feeding knowledge into action, which can further tailor the social and behavior change communication efforts. This research revealed access points for positive programmatic changes that could ultimately increase the uptake of recommended infant and young child feeding practices by participant mothers, and prevent child stunting. It also highlighted the need to utilize and closely follow the guidelines and messages set out in the *Social and Behavior Change Communication Strategy Manual.*

The study demonstrates the need for qualitative approaches in nutrition research and programming. Nutrition research and program monitoring and evaluation is still dominated by quantitative methods [92]. The findings from this study demonstrate that qualitative assessments are essential to meaningfully answer the *how* and *why* questions related to behavior change.

In Ntchisi and other communities across the globe, the detrimental effects associated with stunting are pervasively crippling development and progress. Goal 2 of the United Nation's Sustainable Development Goals (SDGs) plans to "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture" [93]. This ambitious goal is supplemented by 8 targets; target 2.2 aims to "end all forms of malnutrition, including achieving, by 2025, the internationally agreed-upon targets on stunting" [93]. The established international target aims to reduce the number of stunted children by 40% by the year 2025 [93]. In order to reach this goal, the current number of stunted children worldwide, an estimated 162 million

children, would need to be reduced to less than 100 million children [1, 19]. In order to achieve this goal, effective interventions and programs that reduce stunting are needed [5].

The stunting prevention program aims to improve the lives of vulnerable children in Ntchisi through a community-based model that will build local capacity, and simultaneously strengthen the World Food Programme's ability to implement stunting prevention programming globally [11]. The findings from the study have the potential to enhance both local capacity and the WFP's ability to effectively prevent stunting, which could have positive implications for the stunting prevention programming globally.

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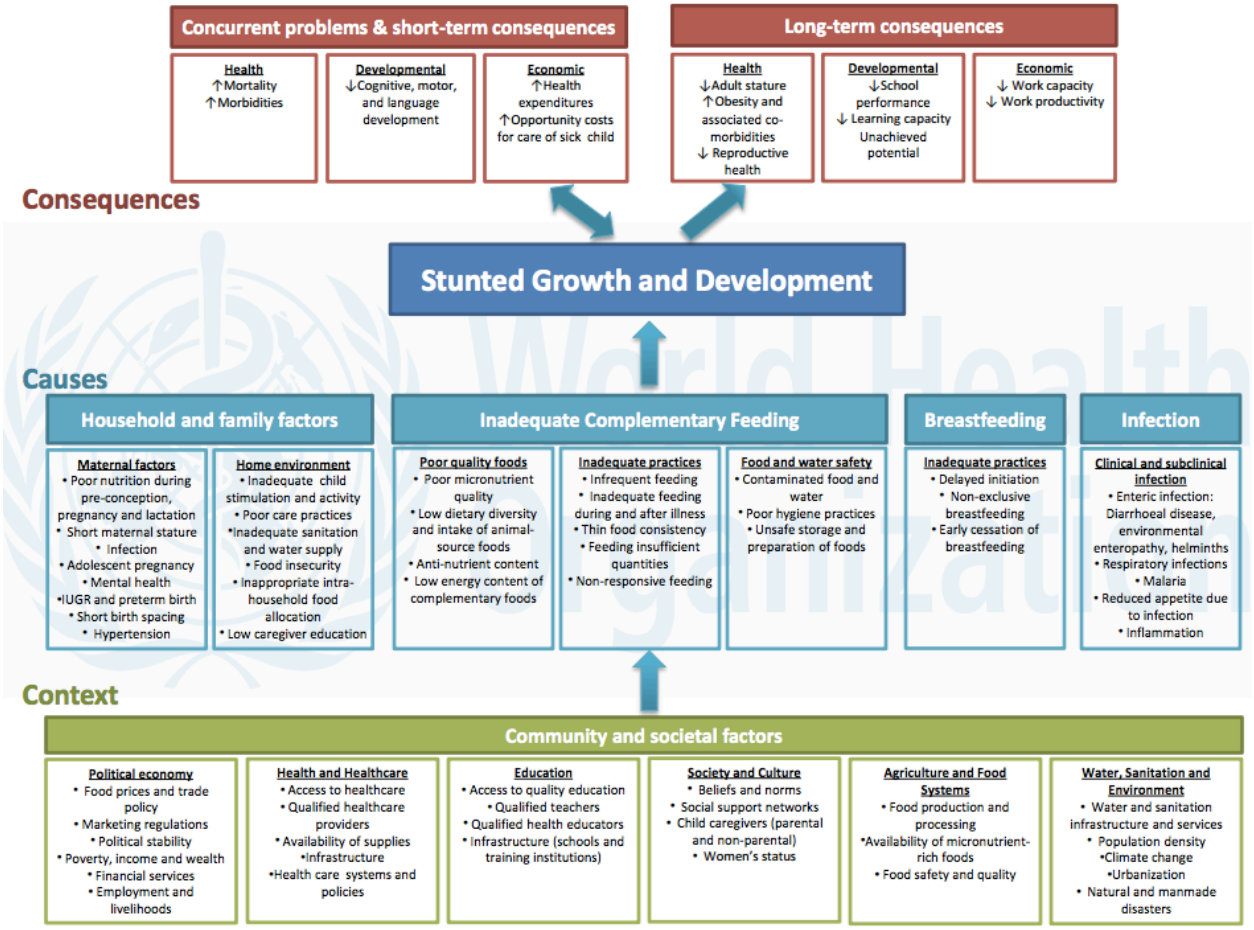
Appendix A:

Figure 1: WHO CONCEPTUAL FRAMEWORK



Citation: Stewart, C.P., et al., *Contextualizing complementary feeding in a broader framework for stunting prevention.* Matern Child Nutr, 2013. **9 Suppl 2**: p. 27-45.

Appendix B: *In-depth Interview Guide*

Welcome and thank you for talking to me today. I'm ____and my note taker is Amelia Foley.

The goal of this discussion today is to learn more about your experiences in the government's stunting prevention program. We also want to know what you have heard about healthy Infant and young child feeding, which mean how you're feed your baby and children under 2 of age.

I would like you to know that we won't use your name when we write our report about what we discuss today. And that what you say here will not be told to anyone in the community. So please don't worry about saying what you think we want to hear, we just want you try to answer as honestly as possible.

If there are questions or discussions that you are not comfortable with, you do not have to answer and are free to leave at anytime; however please try to answer and be as involved as possible. Additionally, if you need breaks please let me know.

I have brought along this tablet and hope to use it as a recording device. Do I have your consent to record this interview in order to facilitate its recollection?

If you get a verbal confirmation from the participant, sign the verbal consent form. Switch on the recorder.

As a reminder much of our discussion today will focus on your knowledge, attitudes, and practices in association with nutrition and INFANT AND YOUNG CHILD FEEDING. We will also talk about the stunting prevention program and barriers to healthy feeding practices. Are you ready? *Wait, if she says she is ready begin, Start.*

Opening Questions:

Life History Narrative

1. I'm interested in getting to know you a little bit better; I am now going to ask you a series of questions based on your personal history?
   - ⇒ Can you tell me your full name?
     Probe: What is your baby's name?
       a. How old is you baby?
   - ⇒ When were you born?
     Probe: Which makes you how old?
   - ⇒ If I was to ask people in the community about you, what would you say?
     Probe: Can you give me three words?
       a. Examples: Hardworking, funny?
   - ⇒ How many brothers and sisters do you have?
   - ⇒ What religion are you?
   - ⇒ What was your family home/ compound like, when you were a child?
     Probe: What did you parents do when you were a child?
   - ⇒ How does it compare to the house you live in now?
     Probe: Are you better off now than your family was when you were a small child?
   - ⇒ What activities do you do to make money?
   - ⇒ Are you married?
     Probe: How old were you when you were married?
     Probe: How did you feel about getting married?
   - ⇒ How many children do you have?
     Probe: What are their ages?
   - ⇒ Do you plan on having more children?
   - ⇒ How is your health right now?
   - ⇒ What are some of the worst things you can remember from your life?
     Probe: When did they happen?
     Probe: How did they affect your well being/that of your family?
   - ⇒ What are some of the best events you can remember from your life?

Probe: When did they happen?
Probe: How did they affect your well being/ that of your family?
Probe:

Thank you for sharing!

Topic 1: Barrier Analysis to Healthy INFANT AND YOUNG CHILD FEEDING

Perceived Susceptibility

2. What types of children become thin/malnourished (Kunyentchela)?
   ⇒ Do you think your child could become thin?
   Probe: Why?
3. Are there things that mothers sometimes do with their children that make them become thin?
   ⇒ What does the community think of mothers with thin children?
4. Are you happy with your child's diet?
   ⇒ Why or why not?
   Probe: What exactly would you like to improve on?

Perceived Severity

5. When a child who is about 8 months old doesn't have diet with different food groups (zakudya za magulu or zakudya za kasintchasintha), it that a serious problem?
   ⇒ Can the lack of a diet with diverse food groups result in serious consequences? Even death?
   ⇒ Can lack of different food groups be easily helped?
   Probe: By whom?

6. If a child grows up stunted (Kupilipizka/Kupinmbira), is that a serious problem?
   ⇒ What are the main effects of stunting (Kupilipizka/Kupinmbira)?
   ⇒ Can stunting be easily helped?
   Probe: By whom?

Perceived Action Efficacy

7. What would happen to a child that wasn't feed frequently?
8. How many times do you feed you child a day?
   ⇒ Do you want to feed your child more often?
   ⇒ What makes feeding at this frequency easy or difficult?

Refer to the recommended amounts below.

WHO Guidelines: For Minimum Meal Frequency, requirements are 2 feedings for breastfed children 6-8 months, 3 feedings for breastfed children 9-23 months, and 4 feedings for non-breastfed children 6-23 months within the previous 24 hours [94].

9. Can you tell me about the different food groups (zakudya za magulu or zakudya za kasintchasintha)?

   ⇒ Can you tell me how many, on average how many food groups you think your child does your child get a day?

   Probe: Which food groups?

   Probe: Do you think giving your children this many food groups has benefits?

For Minimum Dietary Diversity a child needs to consume 4 out of 7 food groups within the previous 24 hours to successfully meet the criteria.

-The seven WHO/UNICEF standard food groups are: 1) Grains, roots and tubers 2) Legumes and nuts 3) Dairy products (milk, yoghurt, and cheese) 4) Flesh foods (meats, fish, poultry and liver/organ meats) 5) Eggs 6) Vitamin A rich fruits and vegetables 7) Other fruits and vegetables.

-For WFP programme purposes WFP modified the INFANT AND YOUNG CHILD FEEDING indicator to include LNS under Flesh foods. This decision is justified based on the nutrient profile of these products which is more similar to this food group than any other food group – that is to say the nutrients provided to the child from these products are more similar to the nutrients that child would get from a flesh food than from the foods in any other group.

10. What would happen to a child if they have a diet with different food groups?
    - ⇒ Probe: Does this lead healthy growth and development (kukula mwa thanzi)?

Perceived Social Acceptability

11. Who do you talk to when you have questions about feeding your child under 2?
    - ⇒ Why?
12. Who has offered you advice on feeding?
    - ⇒ What did your mother tell you that you should feed the child?
    - ⇒ What advice were you given?
13. If you were to feed your child a diet with different food groups what would your mother or mother in law think of that?
    - ⇒ Are there other people who would not agree to your doing that? Why would they not want you to do that?
    - *Probe:* What about your husband, is his priority feeding you child a diverse and frequent diet?

Perceived Self Efficacy

14. If you wanted to feed your child under 2 a diet from different food groups regularly, what would make it easier for you to do that?
15. Can you tell me what are the things that make it difficult (or would make it difficult) to give your child foods from different food groups?
    - ⇒ How does your environment affect your feeding practices?
    - *Probe:* Access to fresh water, access to soap, access to certain foods, seasonality?
        a. Can you tell me about what seasonality affects your feeding practices?
            a. Refer to image from formative research.
    - ⇒ How does your economic situation affect your feeding practices?
    - ⇒ How does time affect your feeding practices?
        - Do you feel like you have enough time to feed you child diverse food groups?
    - ⇒ How does society and culture impact feeding practices?
    - *Probe:* Do common practices in the community go against what is being taught by nutrition programs?
    - *Probe:* What about feeding traditions? Such as feeding men the protein available or feeding men first?
    - ⇒ How does food access affect your feeding practices?
    - *Probe:* Do you find that what you want to feed your child is not available?
        a. How often does that happen?
        b. Why is not available?
    - ⇒ Which barrier to do you think is the most difficult to overcome?

Probe: Why?

Cues For action

16. If you had those problems resolved, and assuming that you wanted to do it, how difficult do you think it would be to give your child a healthy and diverse diet until 2 years of age?

    ⇒ How confident would you be in your ability to do these practices?

    ⇒ Do you think it would difficult to remember to feed your young child the recommended way every day?

    Probe: Can you explain that to me further?

Perception of Divine Will

17. Why are there children who become thin, and other children who do not become thin?

    ⇒ Is it God's will that some children are malnourished? Why?

18. Why are there children who become stunted, and other children who do not become stunted?

    ⇒ Is it God's will that some children are stunted? Why?

Positive Attributes of the Action

19. Do you believe that feeding your child under 2 a certain way will help them be healthy?
    - ⇒ Be less sick?
      - Why or why not?
    - ⇒ Grow more?
      - Why or why not?
    - ⇒ Do better in school?
      - Why or why not?
    - ⇒ Be better behaved?
      - Why or why not?
    - ⇒ Live longer?
      - Why or why not?

Negative Attributes of the Action

20. What are the things about feeding your child under two a diet with different food groups that you really do not like?

    ⇒ Do you think that giving your child a diet with food different groups would cost you more or less money?

Topic 2: Opportunities

21. You know a lot about feeding your child a diverse diet, what would make it easier for practice this knowledge?

    Probe: More education?
    a. In what sense?
    Probe: More skills?
    Probe: Better transportation? More support? Easier access to certain resources? More reminders?

Closing Questions

22. For the last part of the conversation I just want to hear about your experience and opinion of the Nutributter program?
    - ⇒ Are you glad you are part of the program?
    - *Probe:* Why or why not?
    - ⇒ How can the program improve?
    - ⇒ Have you noticed any difference in your child?
    - *Probe:* Better health? Other things?

At the end of the discussion, the moderator should thank the participant, remind them of how the information will be used and how the research team will maintain confidentiality/

Appendix C: Focus Group Discussion Guide

Before starting, instruct participants to take their seats and have the translator go around and collect demographic information. Each participant will be assigned a pen in order to help with de-identification and to keep track of who has said what. Information required can be found in the appendix.

Welcome and thank you for volunteering to take part in this focus group. I'm ___and my note taker is Amelia

I am really excited to have the opportunity to have this discussion with all of you today. Your viewpoint is really important, so I appreciate all of you taking time out of your busy schedules to join us today.

The goal of this discussion today is to learn about the your and the larger community's knowledge, attitudes, and practices in association with how to feed your baby or child under 2. We will also talk about the stunting prevention program and the barriers that stop mothers from doing healthy child feeding practices.

I would like you to know that we won't use your name when we write our report about what we discuss today. The information you share will not be discussed with any community members. In order to make this a safe place where the opinions of people are protected, please don't discuss the conversation today with anyone who wasn't here. Please don't worry about saying what you think we want to hear, we just want you try to answer as honestly as possible.

Please remember that participation is voluntary so if there are questions or discussions that you are not comfortable with, you do not have to participate and are free to leave; however please try to answer and be as involved as possible.

The information discussed here will be used to better understand your and other program participant views on the stunting prevention program and child feeding. These findings will ultimately improve the program to better serve you and your community. Does anyone have any questions about the topic or how this information will be used?

Wait to see if there are questions, and then continue.

Ground rules:

Before we get started I want to lay down some ground rules so our conversation is respectful and good. If you have any questions or want to say something please wait until I have finished going over the rules.

- The golden rule is that only one person speaks at a time. Please wait until someone has finished talking before jumping in.
- There are no right or wrong answers; the goal is to hear your thoughts!
- There are no rules about order, please speak at any time (as long as someone else is not speaking).
- If you would like to say something please speak up. In order to get the views of all of you it is important that you share.
- It is okay to disagree with the other individuals in this group but please be respectful!
- It may take some time for the translator to tell me what you have discussed; I would really appreciate it if we could all be patient.

I have brought along this tablet and hope to use it as a recording device. Do I have your consent to record this interview in order to facilitate its recollection?

If you get a verbal confirmation from the participant, sign the verbal consent form. Switch on the recorder.

Do you have any questions before we get started? *If there are no questions*…Great, let's begin!

Opening Questions:

1. Can you tell me about how you learned about feeding your child under 2?
   ⇒ Who has offered you advice on feeding?
   Probe: Family specifically mother, grandmother mother in law, hospital workers, nutrition educators?
      a. What did they say?

Main Discussion:

Main Questions	Follow ups & Probes
2. What are the different types of food that your child under 2 eats?	○ What foods does your child not have access to that you wish they did?
3. Are there foods that help with healthy growth and development (kukula mwa thanzi)?	○ How about foods that prevent nutritional illness? ○ How do these foods help? *Probe:* Are these foods easily accessible? ○ What foods does your child not have access to that you wish they did?
4. What types of children become thin (Kunyentchela)?	○ Do you think your child could become thin? *Probe:* Why? *Probe:* Is it God's will that some children are malnourished? Why?
5. What types of children become stunted (Kupilipizka/Kupinmbir) ?	○ Do you think that your child could become stunted? *Probe:* Why?
6. Are there things that mothers sometimes do with their children that make have lack of food in the body (kusowekela kwa chakudya mthupi)?	○ What does the community think of mothers with stunted children?
7. When a child who is about 8 months old doesn't have diet with different food groups (zakudya za magulu or zakudya za kasintchasintha), it that a serious problem?	○ Can not having diverse food groups kill a child? ○ Can lack of different food groups be easily helped? *Probe:* By whom?

8. If you were to feed your child a diet with different food groups, would there be people who would not agree with you doing that?	○ Why or why not? ○ Support when it comes to feeding?
9. If you wanted to feed your child under 2 a diet from different food groups regularly, what would make it easier for you to do that? 10. What are the things that make it difficult (or would make it difficult) for you to regularly feed your child from the different food groups? 11. If you had those problems resolved, and assuming that you wanted to do it, how difficult do you think it would be to feed child a healthy diet with different food groups?	○ How confident would you be in your ability to do these practices? ○ Do you think it would difficult to remember to feed your young child the recommended way every day? ▪ Can you explain that to me further?
12. In what ways do you believe that feeding your baby a certain way will help them be healthy?	○ Probe: growth, cognitive development, increase life expectancy, be less sick?
13. What are the things about feeding your child a diet with different food groups that you really do not like?	

Opportunities & Activity

We are now going to do a listing and ranking activity.
Identify solutions to the most important barriers. *Refer to appendix on how to do activity.*
Summarize what they have said and ask for clarification

Closing Questions

14. For the last question I just want you to talk about your experiences as participants in the program.
    - ⇒ Are you glad you are participating?
      Probe: Why or why not?
    - ⇒ Do you think the program can improve?
      Probe: How?

⇒ Has your child's health changed?
⇒ What do you think the community's impression of the program is?

At the end of the discussion, the moderator should thank the participants, remind them of how the information will be used and how the research team will maintain confidentiality, and then offer the participants refreshments.

Activity:

Activity Road Blocks:

*This activity is based on material developed by the International HIV/AIDS Alliance [95].

What is it?

This tool involves participants identifying the barriers (road blocks) to something, and identifying solutions to the most important barriers.

Why use it?

Using road blocks helps to:

- provide a fun and non-threatening way to discuss difficult issues relating to HIV/AIDS
- identify the different barriers to something
- explore how those barriers can be grouped and how they relate to each other
- begin to identify solutions to the most important barriers.

Facilitators notes

- Encourage participants to be specific about the barriers. For example, rather than 'lack of resources', they might write 'lack of money', 'lack of food', 'lack of electricity', "lack of clean water."
- This tool can be overwhelming if it results in long lists of barriers. Emphasise that something can be done about every barrier and even small successes can make a big difference!

How to use it

1. Explain the purpose of the tool and explain that today we will be discussing the problem will be poor INFANT AND YOUNG CHILD FEEDING practices.
1. Ask the participants to brainstorm and identify the different barriers to that subject. Write down their answers on a blank sheet.
2. Fold pieces of card/poster board in half and draw or write one barrier on each piece of card.
3. Place the pieces of card in a row on the floor, so that they look like a series of road blocks.
4. Walk along the road blocks, and discuss why each barrier has been identified.
5. Agree how to group the barriers. Examples of groups might include: organizational barriers, financial barriers, physical barriers (for example, lack of equipment), social barriers (for example, people's attitudes), political barriers and so on.
6. Draw a chart with a column for each group. Place each barrier on the chart under the heading that suits it best.
7. Encourage the participants to identify the most important barrier of those listed. Ask them to write the barrier in the middle of a large piece of paper.
8. Encourage the participants to identify possible solutions to that barrier. Ask them to brainstorm and then write those solutions around the outside of the paper, with arrows linking them to the barrier.
9. When the activity is complete, encourage the participants to discuss what they have learned. For example, how do the different types of barriers link together? Which are the largest barriers? Which can be addressed most easily? What type of people and organizations need to address the barriers?

Probes for conversation:

- How do the following affect feeding? (Based on framework by Stewart et.al, 2013)
    - Political economy
        - Food prices and trade policy
        - Marketing regulations
        - Politics
        - Poverty, income, wealth
            - Do they think it would be more expensive to feed this way?
        - Employment and livelihoods
    - Health and HealthCare
        - Access to health care
        - Qualified healthcare
        - Availability of supplies
        - Health Care Systems and policies
    - Education
        - Access to quality education
        - Qualified Teachers
        - Qualified Health educators
        - Infrastructure (schools and training institutions)
    - Society and Culture
        - Beliefs and norms
        - Social support networks
        - Child caregivers (parental and non parental)
        - Women's status
    - Agriculture and Food Systems
        - Food Production and processing
        - Availability of micronutrient rich foods
        - Food safety and quality
- What are the coping mechanisms to food shortage issues in Ntchisi?
- How does seasonality affect your child's diet refer to the image!
    - Water, Sanitation and Environment
        - WASH infrastructure
        - Population density
        - Climate change
        - Seasonal changes