



MULUNGUSHI UNIVERSITY

DISSERTATION

**ROLE OF COMMUNITY BASED NUTRITION EDUCATION IN
COMBATING STUNTING AMONG UNDER-FIVE CHILDREN IN
LIVINGSTONE**

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**A Dissertation Submitted in Partial Fulfillment of the Requirements for the Master
of Transformative Community Development Degree of Mulungushi University.**

May 2018.

Certification

The undersigned certify that they have read and hereby recommend for acceptance by Mulungushi University a thesis research proposal titled: “The Role of Community Based Nutrition Education in Combating Stunting among under-five children in Livingstone District” in fulfillment for the Degree of Masters in Transformative Community Development of Mulungushi University.

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Date: 22nd May, 2018

Declaration

I, **Catherine Muhau**, do hereby declare to the Senate of Mulungushi University that this dissertation is a true reflection of my own efforts with due and full acknowledgement of the ideas and works of others where required, and has never been submitted as such to any university. Therefore, I take full responsibility of the findings of this research and so commit myself in signing here under.

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I am highly indebted to them all. To God be the glory.

Dedication

I dedicate this document to all researchers who have interest in the health of under-five children.

Abstract

Recent figures on Protein Energy Malnutrition (PEM) indicate that 45% of Zambian children are stunted. Maternal exposure to nutrition and health information are essential elements that may influence the nutritional status of under-five children. However, very few studies have placed emphasis on community based nutrition education. The aim of this study was to contribute to the pool of knowledge with regard to the nutritional status of the under-five children in Zambia with special reference to Livingstone district. Specifically, the study wanted to determine the role of community based nutrition education on the nutrition status of under-five children.

The study used a mixed research design which was a combination of both qualitative and quantitative methods. A semi-structured questionnaire and interview guide were used to collect qualitative data. The heights and weights (quantitative data) of the children in all the communities were also taken. A random sample of 350 caregivers was chosen from four communities of Livingstone – two of which were receiving community based nutrition education and the other two were not. Those that were receiving the nutrition education were Mahatma Gandhi and Libuyu (three years and one year respectively), while those that were not receiving were Dalice and Linda.

The results showed that apart from Libuyu where children's heights were lower ($P = 0.026$), the heights of children in other communities were similar. The study established that community based nutrition education on its own was not useful in fulfilling the role of combating stunting among under-five children. This is because it was limited by economic factors and other factors. In view of this, it is recommended that community based nutrition education be expanded to include supporting factors to effectively deal with the problem of under-five child stunting. It is further recommended that government in collaboration with other stakeholders should provide low interest loans payable over a long period of time to enable parents from chronically food insecure households engage in entrepreneurship ventures. Finally, further research is recommended to do a comparative study of nutritional status of under-five children being under the care of their parents and those under the care of maids.

Table of Contents

Certification	i
Declaration.....	ii
Statement of Copyright.....	iii
Acknowledgments.....	iv
Dedication.....	v
Abstract.....	vi
List of Tables	x
List of Figures	xi
List of Abbreviations and Acronyms.....	xii
Definition of Concepts	xiii
CHAPTER ONE.....	1
1.0 INTRODUCTON.....	1
1.1Background.....	1
1.2 Research Problem.....	3
1.3 Aim	3
1.4 Objectives.....	3
1.5 Research Questions	4
1.6 Hypotheses	5
1.7 Conceptual framework.....	6
1.8 Significance of the study.....	7
CHAPTER TWO	8
2.0 LITERATURE REVIEW	8
CHAPTER THREE	11
3.0 METHODOLOGY	11

3.1 Study Area.....	11
3.2 Sampling Design	11
3.3 Data Collection.....	12
3.3.1. Qualitative data.....	12
3.3.2. Quantitative data	12
3.4 Data Analysis.....	12
CHAPTER FOUR.....	13
4.0 RESULTS	13
4.1 Gender distribution of respondents	13
4.2 Age distribution of respondents	13
4.3 Marital status of respondents	14
4.4. Age distribution of under-five children	15
4.5 Gender distribution of under-five children	16
4.6 Level of education of respondents	16
4.7 Sources of livelihood for respondents	17
4.8 Average monthly incomes of households	18
4.9 Number of meals given per day to under-five children in the households.....	18
4.10 Nutritional composition of food given to under-five children.....	19
4.11 Quantity of food given to under-five children	20
4.12 Household food security situation	21
4.13 Frequency of sickness in the under-five children	22
4.14 Source of medication for under-five children.....	22
4.15 Growth monitoring of under-five children.....	23
4.16 Hindrances to provision of nutritious food for under-five children	24
4.17 Factors that prevent provision of nutritious food for under-five children.....	24
4.18 Stunting status by Sex for under-five children	25
4.19 Stunting status by Age for under-five children.....	26
4.20 Heights (cm) and Weights (kg) of under-five children	27
CHAPTER FIVE.....	28
5.0 DISCUSSION.....	28

5.1 Preamble.....	28
5.2 Stunting status in the study area	28
5.2.1 Level of education of caregivers.....	29
5.2.2 Economic factors	32
5.2.3 Number of meals provided per day	35
5.2.4 Quality and quantity of food provided.....	36
5.2.5 Frequency of sickness of children	38
5.2.6 Time factor	39
CHAPTER SIX.....	41
6.0 CONCLUSION AND RECOMMENDATIONS	41
6.1 Conclusion.....	41
6.2 Recommendations	41
REFERENCES.....	43
APPENDICES.....	48
APPENDIX I: Questionnaire.....	48
APPENDIX II: Interview guide for the focus group discussion.....	53
APPENDIX III: length/height-for-age for boys and girls as extracted from the procedure manual.	54

List of Tables

Table 1	Gender distribution (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	30
Table 2	Level of education (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	34
Table 3	Source of livelihood for respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	34
Table 4	Household monthly incomes of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	35
Table 5	Number of meals per day for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	36
Table 6	Household food security situation in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	38
Table 7	Source of medication for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	40
Table 8	Frequency of growth monitoring for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	40
Table 9	Factors that prevent provision of nutritious food for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	42
Table 10	Sex and Stunting for under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	43
Table 11	Stunting status by Age for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	43
Table 12	Least squares means \pm se of heights (cm) and weights (kg) of under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	44

List of Figures

Figure 1	Conceptual framework	5
Figure 2	Age distribution (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	31
Figure 3	Marital status distribution (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	31
Figure 4	Age distribution (%) of under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	32
Figure 5	Gender distribution (%) of under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	33
Figure 6	Nutritional composition of food given to under-five children (%) in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	37
Figure 7	Adequacy of food quantity given to under-five children (%) in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	38
Figure 8	Frequency of sickness for under-five children (%) in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	39
Figure 9	Hinderences of factors (%) that prevent provision of nutritious food for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District	41

List of Abbreviations and Acronyms

GRZ	Government of the Republic of Zambia
HBM	Health Belief Model
NHP	National Health Policy
PEM	Protein Energy Malnutrition
PWAS	Public Welfare Assistance Scheme
SPSS	Statistical Package for Social Sciences
Dalice	David Livingstone College of Education

Definition of Concepts

Nutrition:

This is the study of foods and how our bodies use them. It is concerned with how food is produced, processed, handled, sold, prepared and eaten.

Malnutrition:

Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients.

Balanced diet:

A diet that contains all the essential nutrients required by the body in their right quantities.

Unbalanced diet:

A diet that does not contain the right quantities of all the essential nutrients required by the body.

Stunting:

Stunting is defined as the percentage of children aged 0-59 months whose height-for-age is below minus two standard deviations for moderate and minus three standard deviations for severe stunting from the median of the 2006 WHO Child Growth Standards.

Community Based Nutrition Education:

Nutrition educational programmes working with families to support skills to produce, buy, cook and eat healthy foods.

Food security:

Food security exists when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and health life.

Micro nutrient:

Micro nutrients are nutrients required by organisms throughout life in small quantities to coordinate a range of physiological functions such as vitamins and minerals.

Macro nutrient:

Macro nutrients are defined as a class of chemical compounds which humans consume in the largest quantities (must be above a threshold amount) and which provide humans with the bulk of energy such as carbohydrates, proteins, and fats.

Role:

A role is a set of connected behaviours, rights, obligations, beliefs, and norms as conceptualized by people in a social situation.

Poverty:

Inability to have adequate access to basic needs, characterized by food insecurity and low incomes.

Caregiver:

Any person could be parents or guardian who takes care of the under-five children in the family.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Preamble

This chapter discusses the background, research problem, aim, objectives and research questions. Further, the chapter also explains the hypothesis, conceptual framework, and significance of the study.

1.2 Background

The promotion of good health in society is one of the major determinants of socio-economic development. In broad terms, the economic and social progress of any society is a function of the health status of its inhabitants. Generally, children suffer from health related issues which impede their overall development. According to Akombi et al. (2017), “stunting has been identified as one of the major proximal risk factors for poor physical and mental development of children under-five years of age; stunting predominantly occurs in the first 1000 days of life (0-23 months) and continues to the age of five.” Developing countries are more at risk of having children who are stunted and having underdeveloped brain (Akombi et al., 2017). Moreover, more than one-quarter of under-five children in the developing world are stunted, and those with poor nutrient intake are at risk of irreversible cognitive impairment (Akombi et al., 2017). For example, Mahmudiono et al. (2017) in their study in Indonesia found that the prevalence of child stunting was 39.4%. Similarly, in Bangladesh, Ahsan et al. (2017) reported that 50% of the under-five children in slums were stunted while 43% were underweight. In terms of regions, the Sub-Saharan region has the world's highest rate of stunting among the under-five children, standing at 43% (Keino et al., 2014).

The Zambian situation is not quite different. The National Health Policy (NHP) of 2012 recognizes that a significant number of Zambian children are stunted; many are underweight while some of them are wasted. Stunting is a measure of overall nutritional status and is a major public health concern because of its association with child

mortality, morbidity and reduced growth rate in human development (National Health Policy, 2012; Slemming et al., 2017). The Zambian government has recognized the problem of malnutrition among children as a situation which needs urgent attention because of the negative effects it causes such as stunted growth and underdeveloped brains of under-five children (National Health Policy, 2012). The National Health Policy (2012) further acknowledges that malnutrition is consistently higher in rural than in urban areas. This is because of the high levels of poverty in rural areas as many people in these areas lack assets they need to produce or buy the nutritious food needed for the body. The incidence of undernourishment is most often due to inadequate high quality food available to eat. According to the Zambian country report on Mapping Nutrition (2016), malnutrition in form of stunting is very high in Zambia, standing at 40% among the under-five children. Undoubtedly, this situation has grave consequences on the human capital which is key to national development. Stunting, if not prevented early enough, has a lasting negative effect including low education outcomes, reduced adulthood productivity and compromised immunity (Zambian country report on Mapping Nutrition, 2016).

There are a number of factors that could be attributed to incidences of stunting of under-five children. Largely these factors are associated with poor socio-economic position which inhibits access to nutritious foods such as milk, meat, poultry, and fruits. Understanding the multi-causal factors of stunted growth of under-five children would help us to provide relevant mitigation measures to reverse the scourge and avert its multiple negative effects on the growth of under-five children (Yusa et al., 2015). One of these factors is family size. Studies have shown that larger families are more likely to have stunted children than those with smaller families (Tariku et al. (2016). The other factor is nutrition education. Inadequate nutrition education among care givers could endanger the ability to combat malnutrition of under-five children, as malnutrition can be significantly associated with maternal illiteracy (Emamian, et al., 2014; Mahmood et al., 2016).

1.3 Research Problem

Good health of under-five children is a key prerequisite for a prosperous future generation. However, stunting seems to be threatening the physical and cognitive development of these children in Zambia. Stunting is a major public health concern because of its association with child mortality and morbidity and later adult performance (Slemming et al., 2017). Stunting in early childhood is strongly related to impaired physical development and cognitive functioning (Casale et al., 2014). Under-nutrition and micro-nutrient deficiencies undermine cognitive development and child survival, trapping individuals into vicious cycles of ill health and poverty across generations. The National Health Policy of 2012 recognizes stunting as a major public health problem in Zambia as it contributes up to 42% of under-five deaths. Recent figures on Protein Energy Malnutrition (PEM) indicate that 45% of Zambian children are stunted. Further, studies have indicated that maternal exposure to nutrition and health information are essential elements that may influence the nutritional status of under-five children (Mahmood et al., 2016; Dillon et al., 2017). According to the Global Hunger Index (GHI) report of 2017, Zambia with a GHI of 38.2 is in the “alarming hunger situation” and is ranked the 5th most malnourished country among the 119 countries surveyed globally. These are unpleasant statistics. Yet, there are programmes in some parts of the country where caregivers are exposed to information on the nutrition and health of under-five children. This leaves more questions than answers on the role of community based nutrition education in combating malnutrition among under-five children in the country.

1.4 Aim

The aim of the study was to contribute to the pool of knowledge with regard to the nutritional status of the under-five children in Zambia with special reference to Livingstone, and how stunting can be combated.

1.5 Objectives

1. To determine the role of community based nutrition education on the nutrition status of under-five children.

2. To identify factors which may be working against community based nutrition education given to caregivers in combating stunting.
3. To find out whether the nutrition status of under-five children in the areas of intervention was better than those who were not on the nutrition program.

1.6 Research Questions

1. What is the role of community based nutrition education on the nutrition status of under-five children?
2. Which factors may be working against community based nutrition education given to caregivers in combating stunting.
3. Is the nutrition status of under-five children in the areas of intervention better than those who are not on the nutrition program?

1.7 Hypothesis

H₁:Community based nutrition education plays a vital role in promoting the nutrition status of under-five children

H₀: Community based nutrition education does not play a vital role in promoting the nutrition status of under-five children

1.8 Conceptual framework

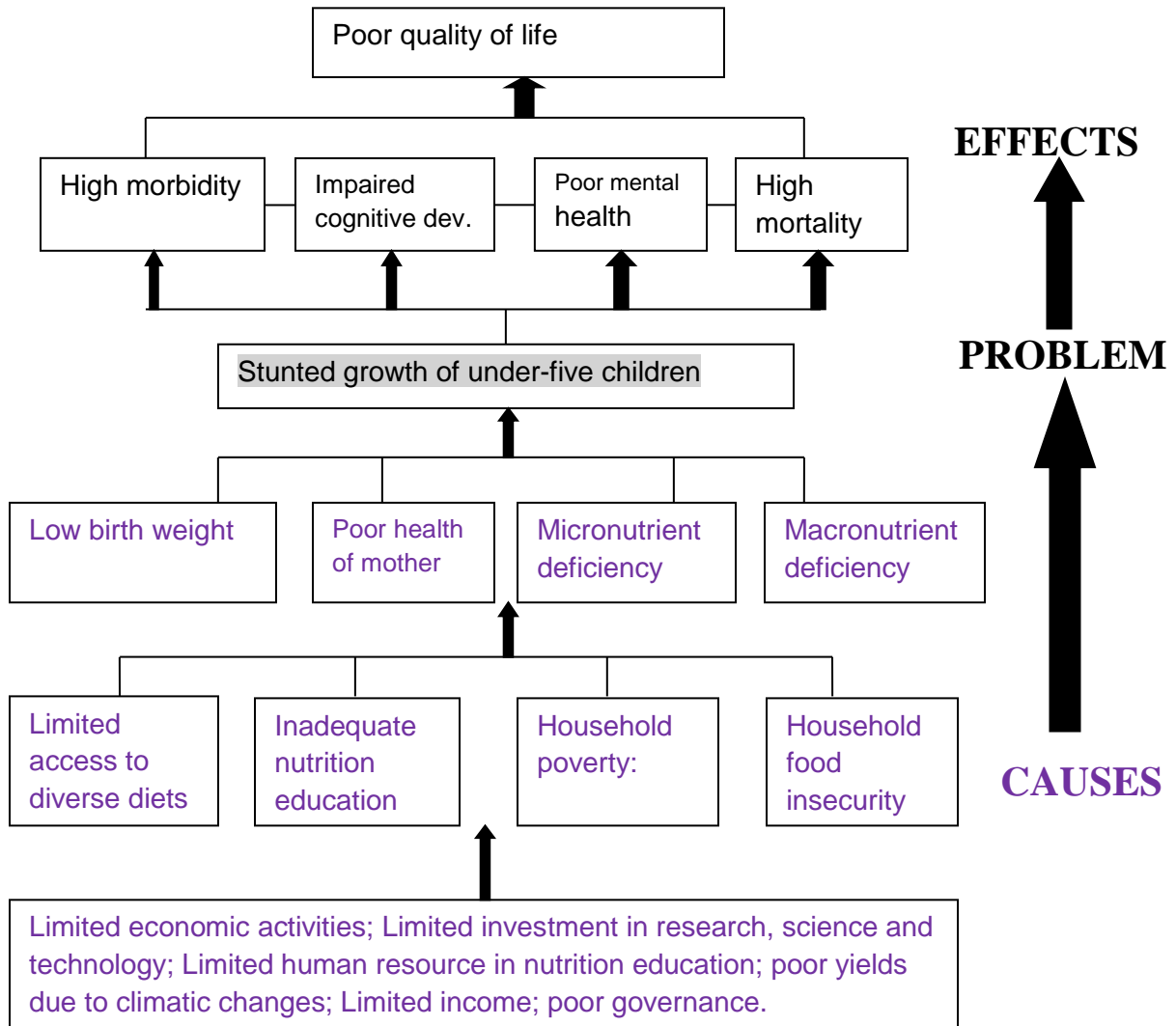


Figure 1: Conceptual framework

The framework in Figure 1 was based on cause-effect analysis:

- The independent variables were community based nutrition education and other factors (insufficient funds, expensive food, low earnings, limited time to prepare nutritious food for the children and limited knowledge on how to prepare nutritious food for the under-five children)
- The dependent variable was growth of under-five children.

The framework was in line with the social model of health of Duncan et al. (2010) which proposes that good quality of health is influenced by a wide range of individual, interpersonal, organization, social, environmental, political and economic factors beyond biology, physiology and anatomy. The model recognizes that health, and what makes people healthy, can only be fully understood by exploring various interactions and influences that emerge out of the complexities of human experience and the various inter-relationships of the mind, body and society. In line with this theory, poor quality of life of under-five children is as a result of various environment-socio-economic factors which predispose children to stunting.

1.9 Significance of the study

This study was important because it revealed the role of community based nutrition education in combating stunting among the under-five children. With this information, it would be possible, if necessary, to come up with community based intervention measures aimed at addressing the issue of stunted growth through nutrition education. The results would help the government planning departments and stakeholders responsible to strategize on how to develop preventive and other intervention measures to reduce incidences of child stunted growth through community based nutrition education.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Preamble

This chapter seeks to review the findings of other scholars in relation to the topic of this study. The first part deals with the prevalence rates of stunting in different countries. The second part reviews studies which focus on the factors leading to stunting among under- five children. This is followed by a review of literature about under five child stunting pertaining to the Zambian situation. The last part reveals the gap in research which validates this study.

2.2 Review of literature

Nutritional status plays a vital role in the health of children. However, stunting is a major public health problem in most of the developing countries and occurs prominently among under-five children (Chataut and Khanal, 2016). The Sub-Saharan region has the world's highest rate of stunting among the under-five children, standing at 43% (Keino et al., 2014). Studies at international level have acknowledged the prevalence of stunting among under-five children. Studies such as those by Rokotomanana et al. (2016) in Madagascar confirm the presence of child stunting. Equally, a study done in Nigeria (Akombi et al., 2017) found that the prevalence of stunting and severe stunting for children aged 0-23 months, was 29% and 16.4%, respectively. For children aged 0-59 months, the prevalence of stunting and severe stunting was 36.7% and 21%, respectively. Tariku et al. (2016) who conducted a study in Ethiopia among preschool children in Dembia district, reported that the overall prevalence of stunting was 46%. The study further identified factors that were associated with child stunting. Among them was family size of more than four members as this contributed to reduced food intake. Other studies (Neves et al., 2016) have attributed child stunting to low socio-economic class and low parental education. The Bangladesh study by Rabbani et al. (2016) observed that one in three children remain stunted in Bangladesh, and concluded that maternal factors such as mothers' schooling were major contributors to child stunting.

The factor of maternal literacy or education has been seen as of significance in many studies and as a determinant of stunting. Studies have shown that when the care giver is exposed to education, it may create positive health outcomes on the child. A study by Mahmood et al. (2016) found that inadequate education among care givers could endanger the ability to combat malnutrition of under-five children. Further, studies have indicated that maternal exposure to nutrition and health information are essential elements that may influence the nutritional status of under-five children (Mahmood et al., 2016; Dillon et al., 2017).

Looking at the problem of stunting affecting most of Sub-Saharan Africa, Keino et al., (2014) conducted a systematic review with the purpose of exploring the determinants of stunting in this part of Africa. The results showed that the prevalence rates of stunting were dependent on socioeconomic, demographic, and environmental factors. The study further showed that indicators of socio-economic status, such as mother's education, mother's occupation, household composition, and household income, were some of the determinants directly linked to stunting. These findings are similar to those in the study of Emamian (2014), who reported that when mothers were exposed to education, child stunting could be reduced by as much as 70%. Similarly, Ali et al. (2005) in their study involving children under three years of age in the rural area of district Malir, Karachi, reported that maximum malnutrition (40.75%) was observed in children whose mothers were illiterate. The study showed that there was a significant difference between the children whose mothers were illiterate (or had only reached primary level) in comparison to the children whose mothers had education beyond primary level. The study concluded that mother's literacy status has a definite association with the malnutrition of the children and recommended that mother's literacy status should be enhanced especially in the rural areas. To combat malnutrition, it has been recommended by many researchers that nutrition intervention should be accessible, sustainable, culturally sensitive and integrated with local resources. One such intervention is the training of some community members to provide nutrition education to caregivers in their villages to prevent and improve childhood under-nutrition.

Tontisirini (2017), in a keynote presentation at the food and nutrition security convention, mentioned that efforts of Thailand's progress in achieving food and nutrition security included nutrition education as one of the community based programmes as a strategy to prevent and control malnutrition. In fact, with this intervention, Thailand has reduced levels of stunted under-five children by 40%. Similarly, Kabahenda (2006) acknowledges that nutrition education can improve nutritional status and growth of young children, although alongside other factors. Equally, Mamajanda, et al. (2014) who conducted a systematic review and examined the best available evidence on the effectiveness of community based nutrition education reported that this intervention improved the weight, height, and mid upper arm circumference of the children, as well as reducing morbidity. Although the review established improved performance among children as a result of community based nutrition education, the authors also reported varied results on the effects of the intervention, mainly attributed by differences in the implementers' characteristics, different intervention strategy and intensity, difference in age of the children at enrolment, pre-existing children's growth and nutritional status and follow up periods. Overall however, the review concluded that community based nutrition education improve the nutrition status of the under-five children in developing countries.

It is argued that one of the major causes of malnutrition in young children in developing countries is poor feeding practices such as: introducing complimentary foods at an early or late stage, restriction in food selection and giving children poor quality and insufficient amounts of complimentary foods (Majamanda et al., 2014). Such poor feeding practices are associated with caregivers' poor knowledge, lack of information and their being restricted by traditional beliefs. Poverty is another major cause and affects food choices. With poverty, caregivers tend to give children the food that is available regardless of its nutrition value (Majamanda et al., 2014).

In the Zambian scenario, the National Health Policy of 2012 recognizes that up to 59 % of the national population are living below the poverty datum line. Thus, income inequity among the population has remained high, and part of the population depends on government aid for survival (PWAS, 2008). Under such a situation, malnutrition is

certainly high and has great effect on the quality of life. In fact, it is estimated that malnutrition contributes up to 42% of all under-five child deaths. The 2012 statistics on Protein Energy Malnutrition (PEM) indicate that 45% of Zambian children are stunted, 15% are underweight while 5% are wasted (National Health Policy, 2012). Hoffman et al. (2017), using secondary data from the World Bank (1996-2014), re-analysed the data on the factors influencing childhood nutrition status in Zambia. The analysis indicated a reduction in the prevalence of stunting to 40% while the prevalence of wasting was unchanged (6-8%). Whatever the case, there is still the question of the role of nutrition education in combating stuntedness.

The reviewed literature shows that many studies have largely reported on the role of education (in general) of the mother or caregiver rather than zeroing in on the role of community based nutrition education in combating child stunting. Because there is insufficient information concerning the role of community based nutrition education in under-five child health, an investigation of the role of community based nutrition education of caregivers and how this affects the nutritional status of the under-five children, is therefore critically important.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Preamble

This chapter discusses the methodology that was used in the research. It gives details of the study area, sampling design, data collection and data analysis. The study used a mixed research design which was a combination of both qualitative and quantitative methods. The use of both methods was important to capture both quantitative and qualitative data which was vital in the study.

3.2 Study Area

The study was conducted in four high density communities of Livingstone district, namely Mahatima Gandhi, Libuyu, Linda and Dalice. These areas had been purposively selected because the community based nutrition education programme focused on the high density areas. The caregivers in the first two communities had been receiving community based nutrition education for the past three years and one year, respectively. The last two communities did not have the programme of community based nutrition education. Each community had a health center where caregivers took the under-five children for various measurements such as weight, height, and other related health services.

3.3 Sampling Design

The total number of households in the study area was estimated at 2735. The total population of the under-five children in the same area was 8207. Using the scientific method of estimating sample size (Yamane, 1967),

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample size

N = Total number of households

e = Margin of error or sampling error,

and assuming 95% confidence level, the sample of caregivers was estimated at 352. Thus on average, 88 caregivers per community were involved in the study. Random sampling was used to select households from which the caregivers were interviewed. The same number of under-five children was also involved for quantitative measurements since only one child was selected per household.

3.4 Data Collection

3.4.1. Qualitative data

Primary data was collected from the caregivers using a semi-structured questionnaire. Respondents who were able to read and write were requested to fill in the questionnaires on their own. For those who were not able to, information was collected directly through verbal interview. The questions mainly focused on the role of the programme they were receiving on the nutritional status of their children. These questions mainly covered nutrition related issues such as food composition, source of livelihood and number of meals under-five children were eating per day. Apart from the questionnaires, one focus group discussion (FGD) was arranged in each community. The FGDs involved caregivers who were not interviewed through questionnaires. With the permission of discussants, the discussion was recorded to facilitate data analysis.

3.4.2. Quantitative data

Quantitative data was collected as secondary data through the under-five clinics at each of the health care facility. With permission from health personnel, under-five cards of children were used to collect the weights and heights of the children as a way of determining their nutritional status. Where necessary, primary data was collected since the researcher visited the clinics on a weekly basis.

3.5 Data Analysis

SPSS (version 22) was used to analyze both qualitative and quantitative data. The data from the four communities were pooled and analysed descriptively. With respect to other variables, the frequencies, tabulations, cross tabulations and graphs derived were

used to describe the characteristics of the different communities as observed during the study. The quantitative data (weights and heights of children) were analysed using Analysis of Variance (ANOVA). In this respect, means were computed for each community and were compared at 5% significance level.

CHAPTER FOUR

4.0 RESULTS

4.1 Preamble

This chapter shows the results that were generated from the study. The results are presented in tables and figures, with brief explanations on each.

4.2 Gender distribution of respondents

Table 1 shows the gender distribution of respondents in the four communities of study. As can be seen from the table, the majority, 326 out of 350 respondents were female (93%), while males accounted for only 7%.

Table 1: Gender distribution (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Community	Gender		Frequency	Percent
	Male	Female		
Mahatma Gandhi	9	73	82	23.4
Libuyu	8	76	84	24.0
Linda	3	84	87	24.9
Dalice	4	93	97	27.7
Total	24	326	350	100.0

4.3 Age distribution of respondents

Figure 2 shows the age distribution of respondents. Those aged below 21 years accounted for 8.3%, and those aged 21-30 years were the majority (48.3%), followed by

those aged 31-40 years (36.3%). The study found out that those aged 41-50 years accounted for 5.4%. The smallest percentage was for those who were above 50 years (1.7%).

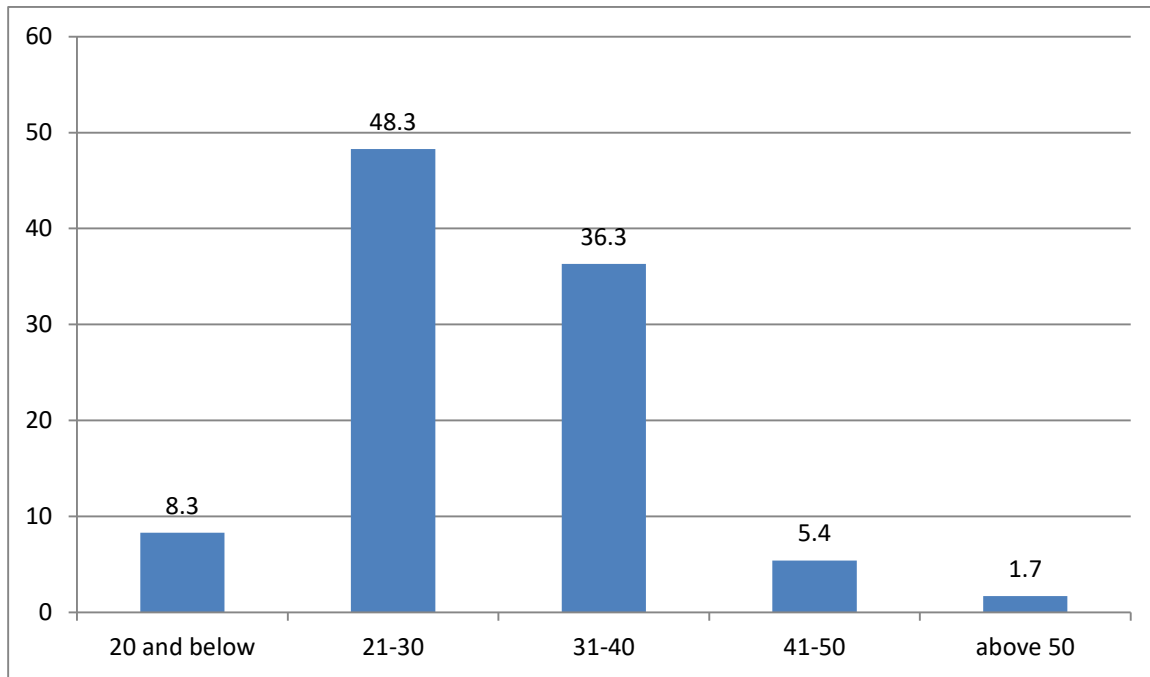


Figure 2: Age distribution (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.4 Marital status of respondents

Most of the people (69.4%) who participated in this study were married, followed by those who were single (21.7%) and divorced/separated (6%). The lowest percentage was for those who were widowed (2.9%).

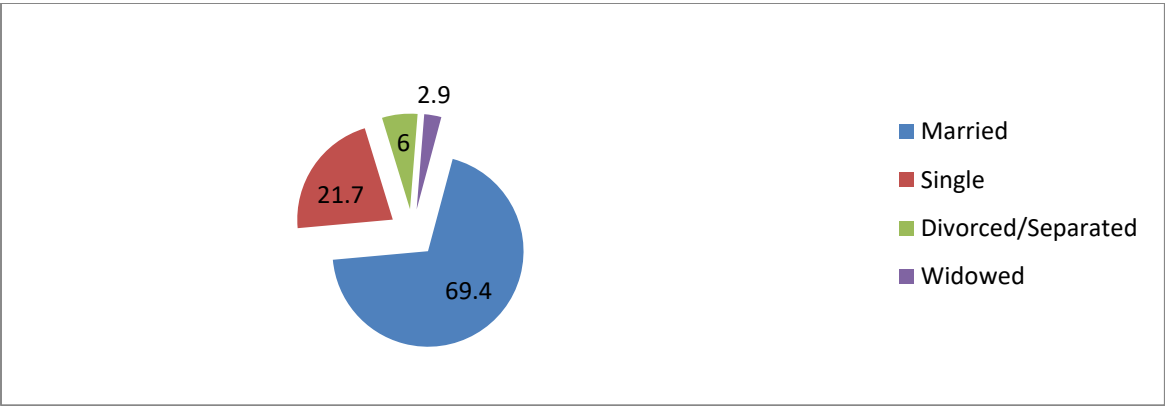


Figure 3: Marital status distribution (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.5 Age distribution of under-five children

As can be seen from Figure 3, the highest percentage of under-five children was for those in the age category of 12 -23 months (26.8%) followed by those who were aged 48-59 months (23.7%), and 36-47 months (21.1%). The lowest categories were for those aged 0-11 months (10.1%) and 24-35 months (18.3%).

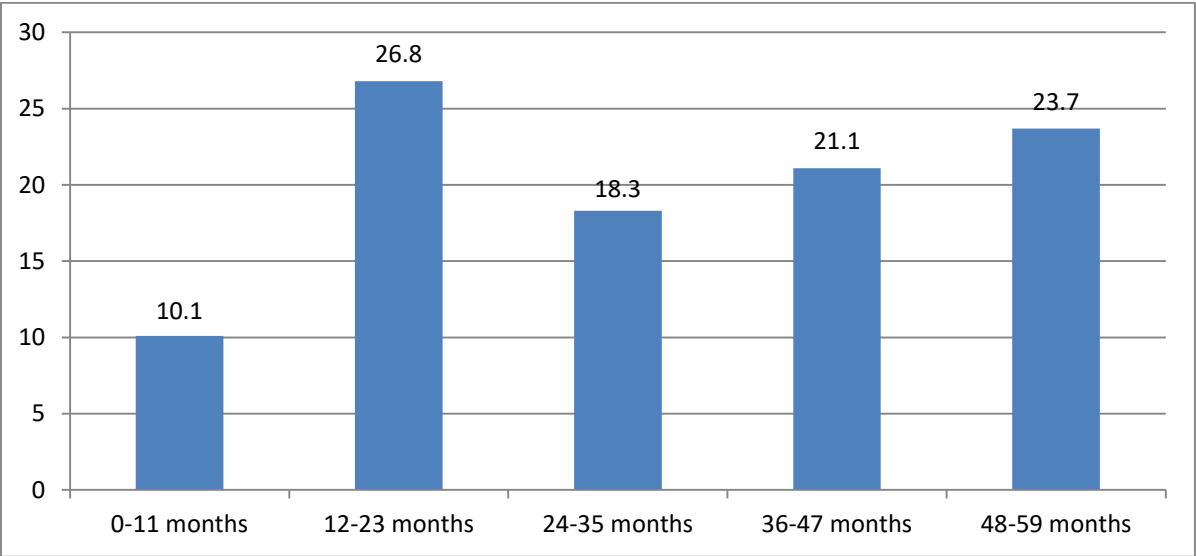


Figure 4:Age distribution (%) of under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.6 Gender distribution of under-five children

Except for the Dalice community, the proportion of female children was more than male children in all communities (Figure 4). In Dalice community, males accounted for 52.3% while females accounted for 47.7%.

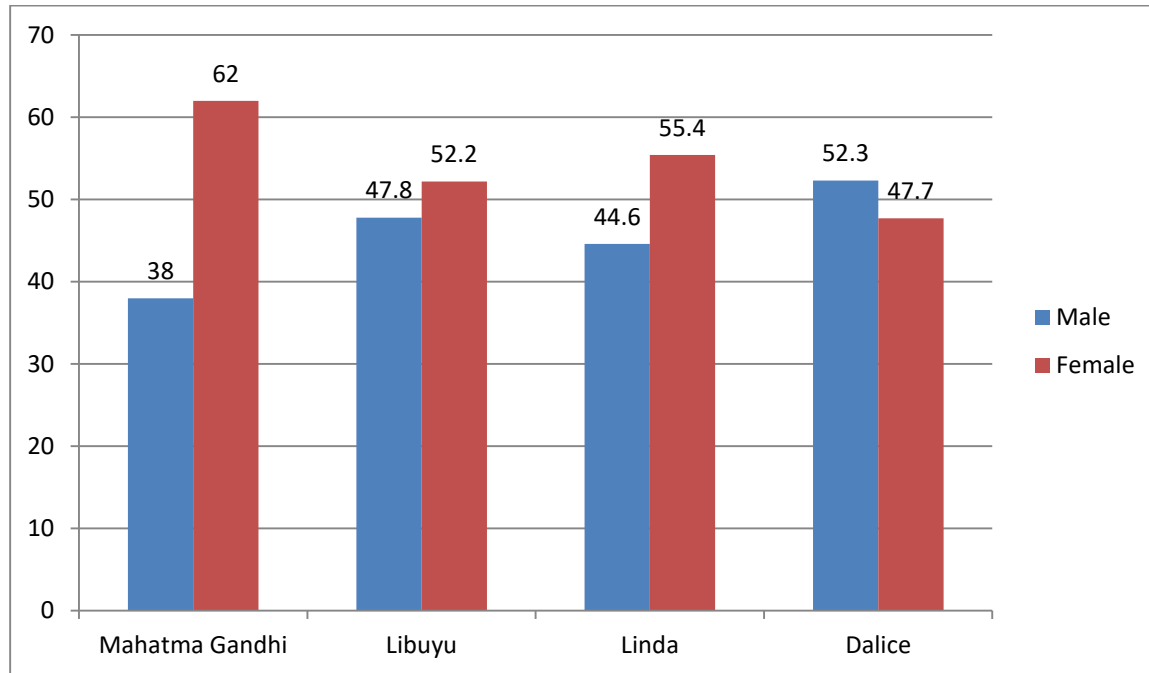


Figure 5: Gender distribution (%) of under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.7 Level of education of respondents

Table 2 shows the level of education of respondents in the study communities. Generally, in all communities, the majority of the respondents had been to school. However, Mahatma Gandhi and Libuyu communities recorded significant numbers of respondents who had not been to school (4.9% and 4.8% respectively). On the other extreme side (tertiary education), only Linda and Mahatma Gandhi communities recorded somewhat significant figures (16.1% and 14.6%, respectively).

Table 2: Level of education (%) of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Education level	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Never been to school	4	4.9	4	4.8	0	0	1	1
Primary school	16	19.6	29	34.5	27	31	32	33
Junior secondary school	19	23.1	33	39.3	19	21.9	32	33
Senior secondary school	31	37.9	15	17.9	27	31	30	31
Tertiary	12	14.6	3	3.5	14	16.1	2	2
TOTAL	82	100	84	100	87	100	97	100

4.8 Sources of livelihood for respondents

The results showed that there were various sources of livelihoods for the respondents. These included farming, trading, piecework, formal employment and other minor activities. Most respondents had more than one source of livelihood, although piece work seemed to be more common. In Dalice community, farming was quite significant. The leading communities in piece work were Libuyu and Linda (41.7% and 34.5% respectively), followed by Mahatma Gandhi and Dalice (34.1% and 18.6% respectively).

Table 3: Source of livelihood for respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Source of Livelihood	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Farming	5	6.1	9	10.7	23	26.4	25	25.8
Trading	23	28.1	30	35.7	21	24.2	14	14.4
Piecework	28	34.1	35	41.7	30	34.5	18	18.6
Formal Employment	25	30.5	8	9.5	11	12.6	34	35.1
Others	1	1.2	2	2.4	2	2.3	6	6.1
TOTAL	82	100	84	100	87	100	97	100

4.9 Average monthly incomes of households

The results showed that a significant number of respondents (33.4%) had their monthly income below K1000.00, and only 11.4% in the study area had their monthly income above K3000.00. Going by community, Libuyu had the highest percentage (48.8%) of respondents who had an income below K1000.00, while Dalice had the highest percentage (25.8%) of respondents with an income above K3000.00 (Table 4).

Table 4: Household monthly incomes of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Household monthly incomes (K)	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Below 1000.00	23	28	41	48.8	38	43.7	15	15.5
1000.00-2000.00	25	30.5	29	34.5	32	36.8	20	20.6
2000.00-3000.00	27	32.9	11	13.1	12	13.8	37	38.1
3000.00	7	8.6	3	3.6	5	5.7	25	25.8
TOTAL	82	100	84	100	87	100	97	100

4.10 Number of meals given per day to under-five children in the households

As can be seen from the table below, most of the children in all communities ate three meals per day. The highest percentage was for Dalice community where 65.9% of the children ate three meals per day, followed by Libuyu with 57.2%, Linda 40.1% and Mahatma Gandhi at 35.4%. For households providing one meal per day, Libuyu community had the highest percentage of 9.5% followed by Linda with 5.7%. Mahatma Gandhi and Dalice had the lowest percentages of 3.7% and 4.2% respectively. Generally, in all communities, there was a very low percentage of households providing more than five meals per day which is recommended for under-five children. However, Dalice community had the highest percentage (11%).

Table 5: Number of meals per day for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Number of Meals per day for under-five children	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
One	3	3.7	8	9.5	5	5.7	4	4.2
Two	11	13.4	7	8.3	1	1.5	4	4.2
Three	29	35.4	48	57.2	35	40.1	64	65.9
Four	23	28	18	21.4	20	22.9	15	15.5
Five	7	8.5	2	2.4	24	27.5	8	8.2
More than five	9	11	1	1.2	2	2.3	2	2
TOTAL	82	100	84	100	87	100	97	100

4.11 Nutritional composition of food given to under-five children

Figure 6 shows the status of the diet given to under-five children, whether balanced or not. Only Dalice had a higher percentage (55.2%) of respondents who provided balanced diet to their children. On the other extreme, Libuyu and Linda communities had a higher percentage (67.8% and 64.6%, respectively) of households with unbalanced diet. In Mahatma Gandhi, the proportion of balanced and unbalanced diets was approximately equal.

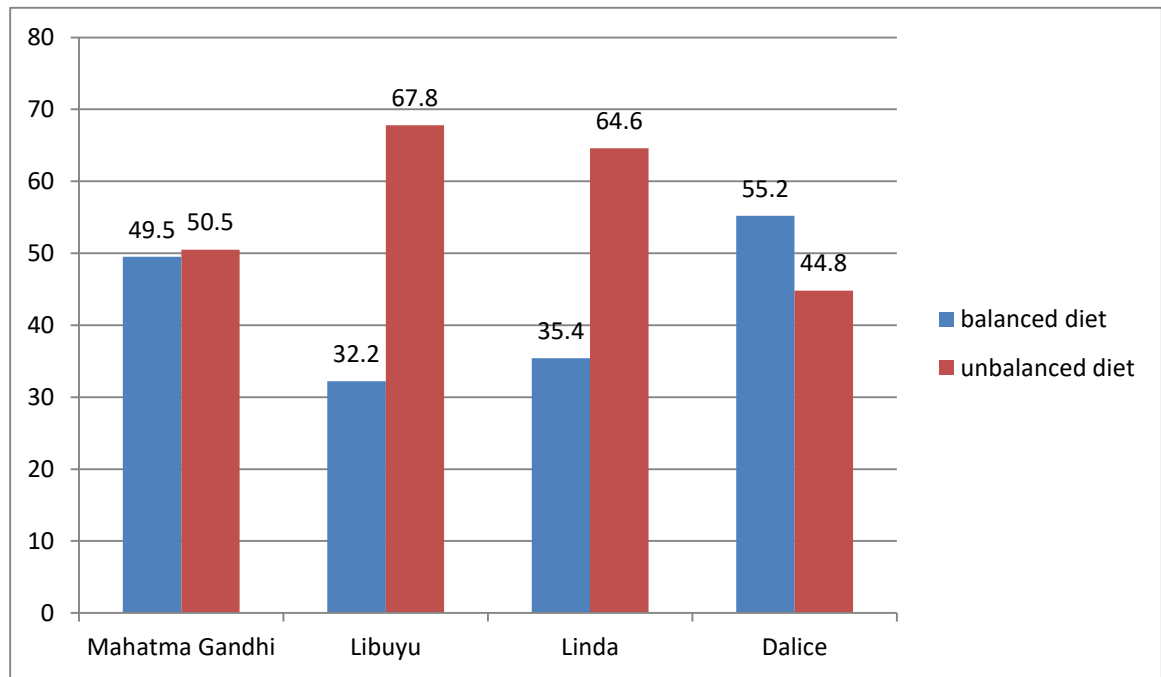


Figure 6: Nutritional composition of food given to under-five children (%) in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.12 Quantity of food given to under-five children

The results concerning the adequacy of food given to under-five children showed that in most communities, the number of children who had adequate food provided to them was higher than those who did not have adequate food (Figure 7). The highest was Dalice community with 72.6% of households who provided children with adequate food against 27.4% who did not have adequate food. The only community which reported a higher number of households with inadequate food given to under-five children was Libuyu with 54.9% with inadequate against 45.1% with adequate food supply.

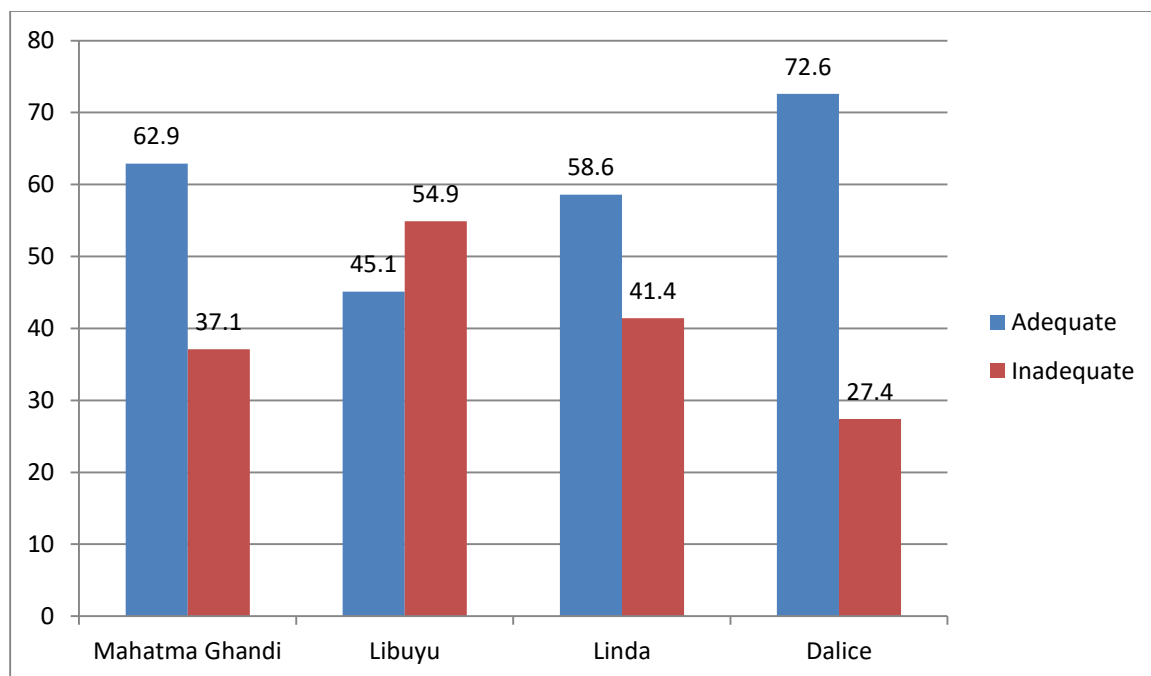


Figure 7: Adequacy of food quantity given to under-five children (%) in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.13 Household food security situation

The results concerning food security situation showed that the food security situation of households in the study communities was not very good. Dalice community had the highest percentage (17.5%) of “very secure” households followed by Linda (9.2%), Mahatma Gandhi (4.9), and Libuyu had nil (0%) (Table 6).

Table 6: Household food security situation in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Household food security	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Very Insecure	6	7.3	4	4.8	8	9.2	6	6.2
Insecure	40	48.8	30	35.7	31	35.7	40	41.2
Secure	32	39	50	59.5	40	45.9	34	35.1
Very Secure	4	4.9	0	0	8	9.2	17	17.5
TOTAL	82	100	84	100	87	100	97	100

4.14 Frequency of sickness in the under-five children

Figure 8 shows that the frequency of sickness of under-five children in the four study communities was at the same level in the three communities. The only community which had extreme figures for “moderate” was Libuyu with 79.8%, while the rest were in the similar range (Dalice 44.3%, Linda 36.8%, and Mahatma Gandhi 35.4%). However, for those who rarely fell ill, Libuyu had the lowest percentage (5.4%), followed by Dalice (44.3%), Linda (44.8%), and Mahatma Gandhi (52.4%).

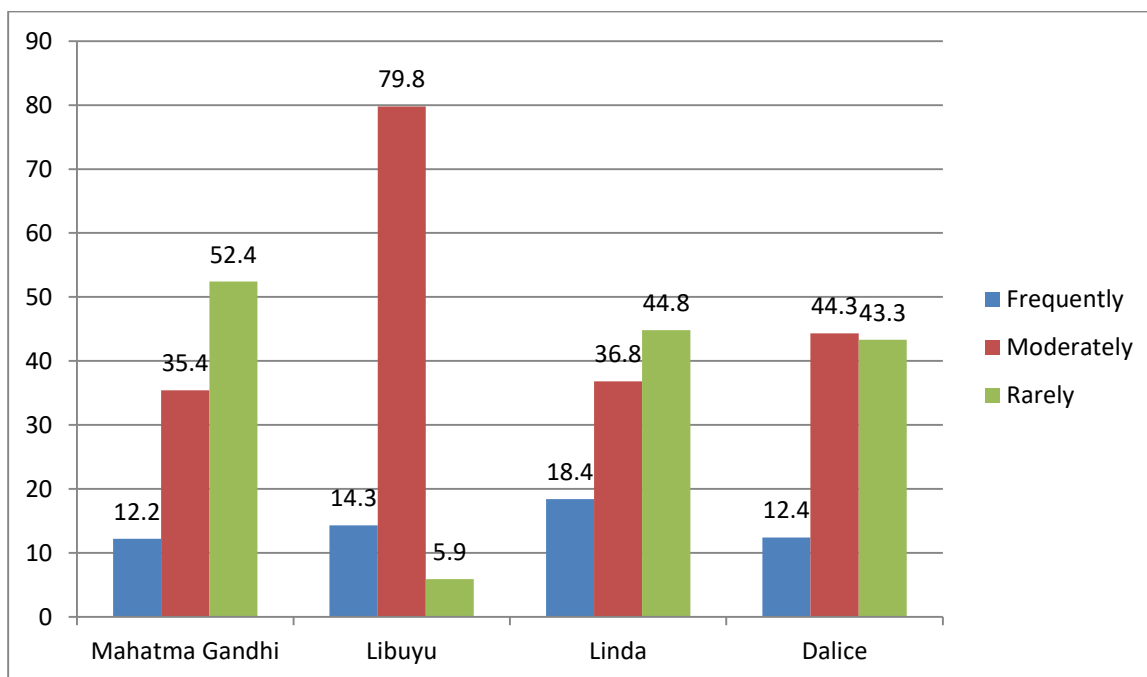


Figure 8: Frequency of sickness for under-five children (%) in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.15 Source of medication for under-five children

As can be seen from Table 7 below, the clinic was overwhelmingly the main source of medication for under-five children followed by the chemist. However, there were other sources of medication for under-five children. On other sources, the highest Mahatma Gandhi was 3.7% of households sourced medication from other sources, followed by Linda (2.3%), Dalice (1.1%) and Libuyu (0%).

Table 7: Source of medication for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Source of medication	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Clinic	77	93.9	78	92.9	81	93.1	95	97.9
Chemist	2	2.4	6	7.1	4	4.6	1	1
Others	3	3.7	0	0	2	2.3	1	1.1
TOTAL	82	100	84	100	87	100	97	100

4.16 Growth monitoring of under-five children

Table 10 shows that in all communities, most of the households took their under-five children for growth monitoring once per month. However, there were households in the study communities which rarely took their children for growth monitoring. The highest was Libuyu where 14.3% of households rarely took their children for growth monitoring, followed by Mahatma Gandhi (7.3%), Dalice (3.1%), and Linda (2.3%).

Table 8: Frequency of growth monitoring for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Frequency of growth monitoring	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Once per month	68	83	61	72.6	72	82.8	81	83.5
Once in two months	5	6.1	10	11.9	10	11.5	7	7.2
Once in three months	0	0	0	0	1	1.1	6	6.2
Once in four months	2	2.4	1	1.2	2	2.3	0	0
Rarely takes child for growth monitoring	6	7.3	12	14.3	2	2.3	3	3.1
Never takes child for growth monitoring	1	1.2	0	0	0	0	0	0
TOTAL	82	100	84	100	87	100	97	100

4.17 Hindrances to provision of nutritious food for under-five children

The results also showed that there were some factors which prevented households from providing nutritious food to their under-five children. Figure 9 shows that different communities had different percentages of the existence of these factors, and in most communities there were more households without preventing factors than those who had. Dalice and Libuyu communities had the same percentage (60%) confirming the existence of factors that prevented the provision of nutritious food to under five children. On the other hand, Linda had 53% and Mahatma Gandhi 46%.

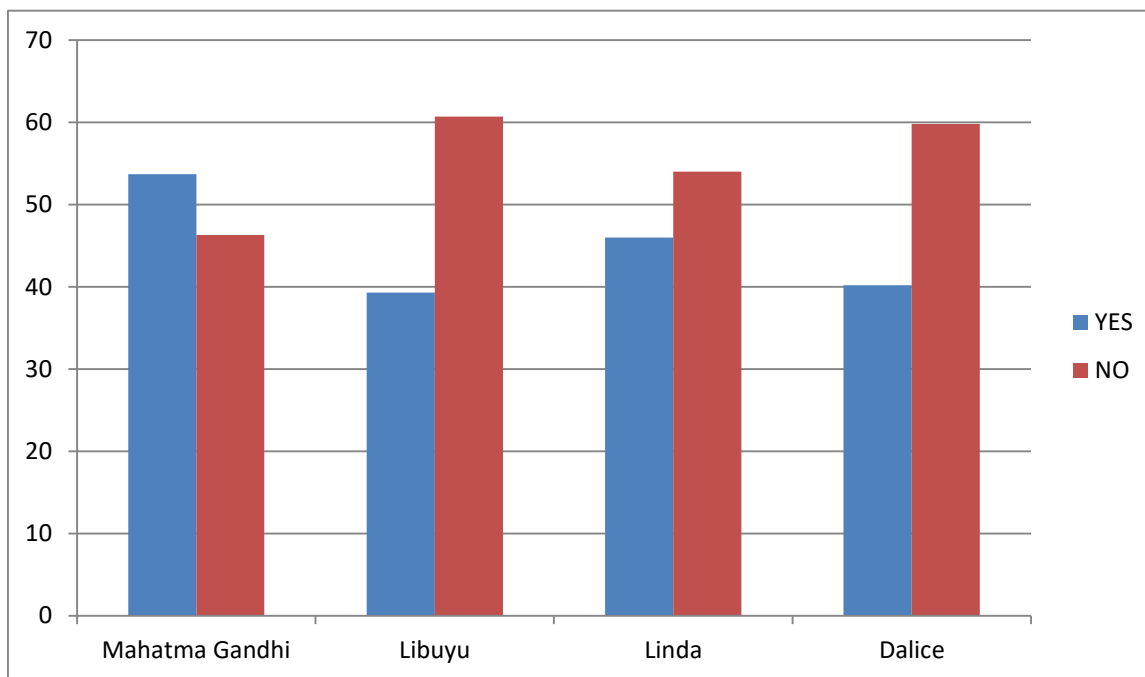


Figure 9: Hindrances of factors (%) that prevent provision of nutritious food for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

4.18 Factors that prevent provision of nutritious food for under-five children

The study also found out what factors were preventing respondents to provide nutritious food to their under-five children (Table 9). The top two leading factors in all communities were insufficient funds and expensive food. However, limited knowledge in the

preparation of nutritious food also came out as a limiting factor. The community which had the highest percentage of limitation in the knowledge needed to prepare nutritious food for the children was Mahatma Gandhi (12.2%), followed by Libuyu (2.4%), Linda (2.3%), and Dalice (1%).

Table 9: Factors that prevent provision of nutritious food for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Factors that prevent provision of nutritious food	Mahatma Gandhi		Libuyu		Linda		Dalice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Insufficient funds	55	67.1	27	32.1	21	24.1	77	79.4
Expensive food	16	19.5	3	3.5	14	16.1	18	18.6
Limited time to prepare meals	1	1.2	6	7.2	8	9.2	1	1
Limited knowledge in preparation of nutritious food	10	12.2	2	2.4	2	2.3	1	1
Not Applicable	0	0	46	54.8	42	48.3	0	0
TOTAL	82	100	84	100	87	100	97	100

4.19 Stunting status by Sex for under-five children

The results showed that in three communities, namely, Mahatma Gandhi, Libuyu and Dalice, a higher proportion of male children was stunted compared to female children (Table 13). The Linda community, on the other hand, had a higher proportion of stunted female under-five children compared to male children.

Table 10: Sex and Stunting for under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Stunting status by sex	Male	Community				
			Mahatma Gandhi	Libuyu	Linda	Dalice
		Stunted %	31.4	45	37.8	21.7
		Not stunted %	68.6	55	62.2	78.3
		TOTAL	100	100	100	100
	Female	Stunted %	29.8	43.7	39.1	21.4
		Not stunted %	70.2	56.3	60.9	78.6
		TOTAL	100	100	100	100

4.20 Stunting status by Age for under-five children

Table 11 shows that the worst age group in terms of stunting was 12-23 months. The worst stunting in this category was Libuyu (11%), followed by Dalice (7.9%), Mahatma Gandhi (7.6%), and Linda (6%). The lowest stunting was in the 0-11 months' category, with Mahatma Gandhi and Dalice having the lowest levels (1.1% and 2.2% respectively), followed by Linda and Libuyu (3.6% and 6.5% respectively).

Table 11: Stunting status by Age for under-five children in the households of respondents in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Stunting by age	Age (mo)	Stunting Status	Community			
			Mahatma Gandhi	Libuyu	Linda	Dalice
0-11		Stunted %	1.1	6.5	3.6	2.2
		Not stunted %	3.3	8.7	7.2	7.9
12-23		Stunted %	7.6	11.0	6.0	7.9
		Not stunted %	19.6	14.1	12.0	28.4
24-35		Stunted %	6.5	6.5	7.2	3.5
		Not stunted %	15.2	8.7	10.6	14.7
36-47		Stunted %	7.6	8.7	8.4	3.5
		Not stunted %	16.3	12.0	13.2	14.7
48-59		Stunted %	7.6	9.8	10.8	3.5
		Not stunted %	15.2	14	21	13.7
TOTAL		%	100	100	100	100

4.21 Heights (cm) and Weights (kg) of under-five children

There were significant differences ($P = 0.026$) in the height of the under-five children between communities (Table 12). The heights of children in Mahatma Gandhi and Dalice were taller than those in Libuyu community. However, the heights of children in Linda community were similar to both Libuyu and the other two communities. There were no significant differences in the weights of children between the communities.

Table 12: Least squares means \pm se of heights (cm) and weights (kg) of under-five children in the study areas of Mahatma Gandhi, Libuyu, Linda and Dalice in Livingstone District

Parameter	Mahatma Gandhi	Libuyu	Linda	Dalice	P
Height	86.8 \pm 2.3 ^b	81.5 \pm 2.0 ^a	85.3 \pm 2.8 ^{ab}	87.2 \pm 1.2 ^b	0.026
Weight	12.2 \pm 3.2	11.6 \pm 3.5	12.1 \pm 2.7	11.9 \pm 0.4	0.482

CHAPTER FIVE

5.0 DISCUSSION

5.1 Preamble

The nutritional status of children, especially under-five children is the concern of the government in Zambia. Many documents produced by the Ministry of Health, especially the National Health Policy (2012) articulate the need to promote the nutritional status of under-five children. One of the ways of promoting the nutritional status of children is through the provision of nutrition education. Many studies regard nutrition education as a means of improving the nutritional status of under-five children (Kabahenda, 2006; Mamajanda, et al., 2014; Tontisirini, 2017). Whilst this can be true, this study raises questions as to the role of community based nutrition education in combating stunting among under-five children.

5.2 Stunting status in the study area

This study was done in four different communities in Livingstone, namely, MahatmaGandhi and Libuyu (where there was three years and one-year community based nutrition education, respectively), Dalice (an urban community) and Linda (a rural community) both of which did not have any community based nutrition education. The overall stunting status was 33.8%. In Zambia, this stunting level was lower than the average Southern Province stunting levels among under-five children pegged 37.2% and ranks 5th position out of the 9 provinces (Zambia Demographic Health Survey, 2014). Northern Province has the highest stunting level at 46.05%, while Lusaka Province having the lowest stunting at 35.7%. The national stunting level for under-five children in Zambia is 45%. The difference between the Southern Province and the national statistics is probably not surprising in that the incidence of poverty is 57.6% compared to the national average of 61.4% (CSO, 2015). In any case, Livingstone is predominantly urban, and studies show that urban areas are less susceptible to under-five stunting than rural areas (Hoffman et al, 2017).

As interpreted in Table 12, the children's heights in Mahatma Gandhi community which had been receiving community based nutrition education for three years were not statistically different from Dalice and Linda which did not have any intervention. In fact, interestingly, Libuyu community which had been receiving community based nutrition education for one year exhibited lower heights than in communities without intervention. Further, Libuyu had the worst stunting levels (81.5 ± 2.0^a) followed by Linda community at (85.3 ± 2.8^{ab}), Mahatma Gandhi at (85.3 ± 2.8^{ab}) and Dalice (87.2 ± 1.2^b). statistically Libuyu community differed significantly with the other three communities. Clearly according to this empirical data, the intervention did not lead to improved health among under-five children in the communities in question. This raises questions why community based nutrition education was unable to create a difference in combating stunting in communities of intervention. This situation suggests that there are other factors which influence the growth performance of under-five children, apart from the provision of community based education.

These factors include level of education of caregivers, economic factors (e.g. sources of livelihoods, food security situation, and income levels), number of meals provided per day, quality and quantity of food provided, and frequency of sickness of children (which is directly related to nutrition).

5.2.1 Level of education of caregivers

The role of education in the promotion of the nutritional status of under-five children cannot be overemphasized. Generally, the study showed that in all communities, more than half of the respondents had been to school. However, Mahatma Gandhi and Libuyu communities recorded significant numbers of respondents who had not been to school (4.9% and 4.8 respectively). On the other extreme side (tertiary education), only Linda and Mahatma Gandhi communities recorded somewhat significant figures (16.1% and 14.6% respectively). The level of education played a role in the stunting status of children because Libuyu community which had one of the lowest education levels, had the highest stunting levels. This makes one argue that education plays a vital role in the nutritional status of under-five children.

The education which is obtained from formal learning processes in school and that obtained in adulthood both are significant in the promotion of the nutritional status of under-five children in that the educated caregiver could appreciate the benefits of taking their under-five children for growth monitoring, provision of nutritious diets and preparation of balanced diets hence contributing to breaking the cycle of malnutrition. This study identified that the importance of having necessary knowledge and skills in food preparation had far reaching effects on the stunting status of children. Respondents felt that it was difficult to prepare nutritious food for their under-five children because they lacked the necessary knowledge and skills. It was for this reason that the programme of community based education was introduced to cover the knowledge gap and promote skills needed for child nutrition.

During a focus group discussion one discussant said:

We have been taught about the importance of hygiene generally and during breastfeeding. We have also been taught about how to prepare a balanced diet for the child. For example, we need to ensure that we prepare porridge with groundnuts or kapenta, and we also need to boil the water for drinking.

The necessity of knowledge and skills in the promotion of the nutritional status of under-five children has been acknowledged by some studies. Other studies argue that exposure to nutrition and health information are essential elements that may influence the nutritional status of under-five children (Mahmood et al., 2016; Dillon et al., 2017). Similarly, the study of Kuchenbecker et al (2017) conducted to assess the potential of communitybased nutrition education to improve height-for-age z-scores in children 6–23 months of age agrees that community based nutrition education is vital in child nutritional status. The study involved a cluster-randomized-controlled trial to assess the effectiveness of nutrition education. A total of 24 Extension Planning Area Sections served as clusters. The sections were randomized into intervention and control restricted on mean height for age Z-score using baseline information. In the intervention

area, food security activities and communitybased nutrition education was implemented. The control area received food security activities only. The study concluded that participatory communitybased nutrition education for caregivers improved child dietary diversity even in a food insecure area. As such the study recommended that participatory nutrition education should be part of programs in food insecure settings aiming at ameliorating food insecurity among communities.

However, in this study, the two communities which received community based nutrition education, did not perform better than the other communities which did not receive the intervention as far as the improvement of the nutritional status of under-five children is concerned. What they received was only head knowledge (theory) of what was required to make a nutritious diet for the child and lacked practical skills of how to do it.

One discussant said:

I have learnt that I need to breastfeed my baby several times in a day and I should take an hour per breast feeding session. I have also learnt what nutritious foods are needed for the child instead of only giving 'chibwantu' to the child the whole day. I was also taught that children should not only eat three times per day like adults, but should regularly eat even six or seven times per day because they feel hungry faster. But the problem is that we have not been taught how to mix certain ingredients and how long it should boil.

The low levels of education in Libuyu had an influence on the stunting levels of children because those with low levels of education could not appreciate the value of community based nutrition education provided in the health of their children such as feeding children nutritious diets This shows that the intervention provided through community based nutrition education had gaps which needed to be addressed.

5.2.2 Economic factors

Economic factors were cited as the main reason contributing to stunting in the communities of study. Therefore, although community based nutrition education was done in two communities, it did not produce the intended result due to economic factors which acted as a barrier. Other studies agree that apart from maternal exposure to nutrition and health information (Mahmood et al., 2016; Dillon et al., 2017), there are certain factors which influence the nutritional status of children. For example, some studies have identified low socio-economic status, household income (Keino et al., 2014; Neves et al., 2016), and giving children poor quality and insufficient amounts of complimentary foods due to poverty (Majamanda et al., 2014) as factors influencing child nutrition.

The current study agrees with the arguments of these previous studies. This study acknowledges that poverty is the main reason why nutrition education could not create an impact on the nutritional status of under-five children in the communities of intervention. As already mentioned, the households in communities which received intervention for one year and three years, respectively, did not show better nutritional status than those which did not receive any intervention. This possibly could be explained by the fact that in the communities of intervention, the levels of poverty tended to be higher than in communities of non-intervention.

As the difference in the levels of poverty was between communities, so was the difference in the food security situation. In some areas like Dalice, there was better food security situation with 17.5% of households having “very secure” food position compared to Libuyu with 0% “very secure” households. Therefore, to a large extent the poverty levels experienced by the people in the four communities determined the nutritional status of their under-five children.

The manifestation of poverty was also seen in the amount of money people earned per month and other economic activities they engaged in for a livelihood a significant number of respondents (33.4%) in the study communities earned below K1000.00 per

month, and only 11.4% of the people earned above K3000.00 per month. However, Libuyu had the highest percentage (48.8%) of respondents who had an income below K1000.00, while Dalice had the highest percentage (25.8%) of respondents with an income above K3000.00. Similarly, Dalice had a better nutritional status than Libuyu community.

This picture was similar to the national scenario where the mean monthly income for a Zambian household in 2010 was K1112=, and 66.8% of the households had monthly income below K800= (Central Statistical Office, 2012). Similarly, in the study by Arsan et al (2017), for people living in slums, poverty was perceived with income and consumption patterns. In majority cases, the poor were involved in stumpy earning jobs and often had inadequate income to support their basic needs. The truncated level of earning of the urban poor subsequently resulted in spending majority of the earnings on food, mainly staples like rice, cereals, lentils, potatoes and vegetables, and usually evaded costly items like meat and poultry, milk and fruits. The study concluded that lack of access to such necessary food items led to chronic malnutrition and undernutrition among children. Similarly, in this study Dalice community had the highest percentage of people earning above K3000.00. This enabled the households to provide nutritional requirements for their children, hence there was the lower rate of stunting in this community despite not having received community based nutrition education.

A discussant during focus group discussion said:

Those who have money are able to buy nutritious food for their children. For us we have to depend on what you get that day. If you are lucky, you can manage sugar for the porridge, but in most cases it is a struggle. To say the truth, we have the knowledge, but to implement it is difficult because the needs in our families are too many. But we are trying.....

The view expressed above shows that financial limitations are a constraint to the promotion of under-five child nutrition. The above arguments also agreed with the

findings of the study by Galgamuwa et al (2017) whose aim was to determine socio-economic factors associated with nutritional status among children in plantation communities of Sri Lanka. A cross-sectional study was performed among preschool and school going children in three rural communities of Sri Lanka from January to August 2014. The result showed that low monthly income and maternal employment were significantly associated with undernutrition among school children. High prevalence of stunting also revealed that decreased food purchasing ability had a role in the nutritional status of children. The Sri Lanka Household Income and Expenditure Survey in 2012/2013 reported that mean income per household in the estate sector was USD 201. However, the majority of the community had less than USD 133 per month income (Household Income and Expenditure Survey, 2015). Because of this, underweight was more common in lower income groups than children in higher income households. This was similar to the studies conducted in India which showed that children in low income groups had a high rate of undernutrition (Bhutia, 2014). This indicated that poverty played a role in the undernutrition of under-five children. This predisposed children from low income groups to stunting. The study of Ashan et al (2017) also agrees that household's socio-economic status significantly affect stunting and underweight levels among children.

From the views of discussants, it was clear that economic challenges were a constraint to the implementation of the knowledge they were getting from community based nutrition education. What made the situation worse was that only 22.3% were in formal employment in the study communities. The community with the highest rate of employment in the formal sector was Dalice community with 35.1%, while Libuyu had 9.5%. These percentages were even below the national paid employment rate of 44% (Central Statistical Office, 2012). Dalice and Mahatma Gandhi had a better formal employment position compared to Libuyu and Linda. This translated into a similar pattern of stunting levels where the former had lower stunting levels while the latter had higher stunting levels. This strengthens the argument about the role of the economic factors in stunting.

Although the formal employment rate in the region under study was below the national paid employment rate, the stunting rate was generally lower than the provincial and national rates. This was due to other economic activities people engaged in such as farming, trading, and piecework, although these did not give them enough money. Their main source of livelihood was doing piece works. The majority of the people depended on piece works for a livelihood, and most of these earned low incomes and subsequently were food insecure. Among those depending on piecework for a livelihood, the highest percentages were from Linda (34.5%) and Libuyu (41.7%). The earnings from piece works were not enough to make the households provide sufficient nutritional requirements for their children. As such these two communities had the worst stunting status of under-five children.

5.2.3 Number of meals provided per day

The challenges caused by poverty create a barrier against the achievement of the goals of community based nutrition education as it cripples the ability of households to provide nutritious food for their children. This is manifested in the number of meals that children are receiving per day. Most of the children in all communities ate three meals per day. The highest percentage was for Dalice community where 65.9% of the children ate three meals per day, followed by Libuyu with 57.2%, Linda 40.1% and Mahatma Gandhi at 35.4%. For households providing one meal per day, Libuyu community had the highest percentage of 9.5% followed by Linda with 5.7%. Mahatma Gandhi and Dalice had the lowest percentages of 3.7% and 4.2% respectively. Generally, in all communities, there was a very low percentage of households providing more than five meals per day as per requirement. However, Dalice community had the highest percentage (11%).

The above scenario suggests that in the study communities, especially in Libuyu and Linda, there is need to provide them with aid aimed at increasing the number of meals children are given per day, similar to what has been suggested by other studies. Without providing aid to the households, it would be difficult for them to provide nutritious diets which is needed combat stunting of their children. In a study by

Devereaux (2006), poverty stood out to have a major impact on undernutrition level among children living in urban slums of Bangladesh. In order to address this, there was need to link integrated health and nutrition services to social transfer mechanisms for the ultra-poor households. Bangladesh itself provided multiple examples of effective social transfer programs that significantly improved nutritional outcomes, like food-for-work projects of the Government (Devereaux, 2006); asset transfer and cash stipend by a non-government organization (Haseen, 2006); and cash-for-work project of the Chars Livelihoods Program (Goto, et al, 2010). Based on these experiences, Bangladesh needed to design and implement appropriate social transfer programs targeted for ultra-poor households for urban slums (Devereaux, 2006). Providing targeted aid to poor households helps to lift them to a position where they can provide the needed food requirements for their children.

The Zambian government can take advantage of the Public Welfare Assistance Scheme (PWAS) programme, Food Security Pack and social cash transfer under the Ministry of Community Development and Social welfare to help incapacitated households with an income to enable them meet the food requirements of their under-five children. PWAS is one of the government's social assistance programmes aimed at alleviating the problems of the poorest and the most vulnerable people in Zambia. According to PWAS guidelines (2008) "PWAS aims at targeting 10% of the population who fall in the lowest decile. These are the poorest in the country. The majority of households in this category lack self-help capacity, and cannot be reached by labour based programmes like micro-credit schemes, farmer input support programme, or food for work because they may be too old, too young, too sick, at the same time do not have external sources of support." Under this initiative the vulnerable households can be empowered and helped to increase the number of meals they are providing to their under-five children.

5.2.4 Quality and quantity of food provided

The study found out that generally, the food security situation of households in the study communities was not very good. Some communities such as Libuyu had as low

as 0% “very secure” food security position, while Linda had only 9.2%. Linda, being a rural community had the worst food security position and a high level of stunting. This was in line with the Central Statistical Office (2012) which found out that poverty in Zambia had continued to be more of a rural than an urban phenomenon. The survey found out that the levels of poverty in rural areas was more than twice that obtaining in urban areas. In 2006, rural poverty was estimated at 80.3% compared to urban levels of 29.7%. The same pattern was revealed in 2010 where head count poverty was as high as 77.9% in rural areas compared to urban poverty levels of 27.5% (Central Statistical Office, 2012). For this reason, Linda rural community had the worst food security position amongst the four communities. These findings were also consistent with the study by Hoffman et al (2017), whose objective was to determine factors influencing childhood nutrition status in Kenya and Zambia. The result showed that from 1998 to 2009, there was a protective effect against stunting for wealthier families for both countries. The study concluded that there was a higher risk of stunting in both Kenya and Zambia for those living in rural areas due to an overall lower wealth index.

In addition, the results concerning the adequacy of food given to under-five children showed that in most communities, the number of children who had adequate food provided to them was higher than those who did not have adequate food. The highest was Dalice community with 72.6% of households who provided children with adequate food against 27.4% who did not have adequate food. The only community which reported a higher number of households with inadequate food given to under-five children was Libuyu with 54.9% against 45.1% with adequate food supply. The limited quantities of food provided to children, especially in Libuyu created a conducive environment for stunting to flourish.

Further, the quality of food given to under-five children in the study communities was not very impressive. This is because only Dalice community had a higher percentage (55.2%) of respondents who provided balanced diet to their children. On the other extreme, Libuyu and Linda communities had a higher percentage (67.8% and 64.6%, respectively) of households with unbalanced diet. In Mahatma Gandhi, the proportion of balanced and unbalanced diets was approximately equal. This means that apart from

Dalice community, the other three communities provide an unbalanced diet to their under-five children. Unbalanced diet has health consequences such as ill health in form of stunting, other sicknesses and general poor quality of life. The National Health Policy (2000) acknowledges that the coverage of child interventions, especially those which promote their good health are still inadequate. As a result of unbalanced diet being a recipe for child stunting, we have high levels of stunting in communities where the diet was poorest (Linda and Libuyu).

5.2.5 Frequency of sickness of children

Unbalanced diet can also cause frequent sicknesses. The study found out that generally, the frequency of sickness of under-five children in the study communities was at the same level in the three communities (Mahatma Gandhi, Linda and Dalice). The only community which had extreme figures for “moderate frequency” was Libuyu with 79.8%, while the rest were in the similar range (Dalice 44.3%, Linda 36.8%, and Mahatma Gandhi 35.4%). However, for those who rarely fell ill, Libuyu had the lowest percentage (5.4%), followed by Dalice (44.3%), Linda (44.8%), and Mahatma Gandhi (52.4%).

Close examination of the above findings shows that communities which had the greatest percentage of children with unbalanced diet, lowest number of meals per day, and were from households which were food insecure were more frequently ill than other children. Consequently, these are the same children who had the highest levels of stunting as the incidences of illness usually contributes to loss of appetite which negatively affects the child food intake and therefore reducing the nutritional requirements of child’s body. The evidence provided above suggests that, the provision of nutrition education alone without attending to other factors such as child illness is not enough to combat stunting of under-five children. This study showed that although community based nutrition education was vital in the promotion of the nutrition status of children, as acknowledged by other studies such as Palwala, et al (2009) and Devereaux et al (2006), its usefulness was diluted by lack of supportive mechanisms. Devereaux et al (2006) indicated that nutrition education activities were helpful in the

nutritional status of a child particularly when the families were supported by enabling social networks. When families are economically supported, they are empowered to provide the necessary diet which is needed for the child's good health. This helps to reduce child illnesses. This strengthens the view that social cash transfer provided by the government of Zambia through the Ministry of Community Development can be an appropriate avenue for the empowerment of vulnerable households with financial resources needed to support the nutritional status of their under-five children which is cardinal for their good health.

5.2.6 Time factor

Further, the arguments of caregivers having limited time to prepare nutritious food for the children came out strongly and cannot be ignored. The argument was that some caregivers did not have enough time to prepare food for the children due to their busy schedule at work or at the market or mainly seeking piece work. This is similar to other studies which have shown that some economic activities that people involve themselves in deny mothers time needed to prepare nutritious food for their children. In a study by Galgamuwa et al (2017) concerning socio-economic factors associated with nutritional status among children in plantation communities of Sri Lanka, the result showed that the main source of income for most families in the study area conducted was working as labourers in tea plantations on a day-to-day basis. Therefore, parents, particularly mothers had very limited time to prepare meals and feed children at home. This contributed to poor nutritional status of children. In our study, the provision of good nutrition for under-five children was compromised by the fact that there is no gender division of labour. The majority of caregivers were female. Only 7% of caregivers providing care to under-five children are male. This means that when the females are busy looking for pieceworks to earn a living for the family, children are either left unattended to or are carried by their mothers from place to place as they seek piece work. This compromises their nutritional status, especially that even after doing their piece work the money they get is not enough to provide nutritional requirements of their under-five children.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Statistically the P value of 0.026 means that the probability is that the differences observed in the study communities are not occurring by chance. Therefore, we are 95% confident that the differences between communities are real. If this project intervention is to be replicated in other areas, there is need for policy changes in its approach. It needs supportive factors to work well. This is because there are factors which work against community based nutrition education given to caregivers in combating stunting, and these factors limit its role in combating stunting among under-five children. Largely, these are poverty related economic factors. Particularly these factors include having insufficient funds, expensive food, and low earnings. These financial constraints are the major hindrances to the usefulness of the role of community based nutrition education. However, there are other factors also which deserve attention. These are caregivers having limited time to prepare nutritious food for the children and limited knowledge on how to prepare nutritious food for the under-five children. If these factors are not dealt with, the resources used to finance community based nutrition education interventions will be wasted.

6.2 Recommendations

In view of the discussion above, the following recommendations are suggested:

- i. Expansion of community based nutrition education activities. The information given to caregivers should not only be about what they are supposed to do to improve the nutritional status of their children, but should also contain training and cooking demonstrations. The broadening of training can be done through the use of radio and television programs in disseminating nutrition education as a supplement to community nutrition programs. There is, however, need to budget for this activity.

- ii. In order to ensure support for the provision of good nutrition for under-five children, there should be the involvement of both wives and husbands in nutrition education programs. When both are involved, the support for the nutritional requirements of the child will be scaled up.

- iii. Government in collaboration with other stakeholders should provide low interest loans payable over a long period of time to enable parents from chronically food insecure households engage in entrepreneurship ventures. This is in view of the fact that most households struggle to promote nutritious health of their children due to financial limitations.

- iv. A comparative research study is proposed to determine if there could be any significant effect in the nutritional status of under-children when the children are under the care of their parents and when they are under the care of the maids. This is in view of the fact that the study established that some children were stunted because mothers did not have enough time to prepare nutritious food for their children.

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APPENDICES

APPENDIX I: Questionnaire

Letter to the respondent

Dear respondent,

I am a student at Mulungushi University pursuing a Master's degree programme. In partial fulfillment of my programme, I am required to conduct a research. As such, you have been selected at random to be one of my respondents in this research. Kindly answer the questions provided faithfully. Be assured that the responses you give will not be used for any other purpose other than that of academic purpose. Further, you are not required to indicate your identity on the questionnaire as your responses are confidential. Be reminded also that your participation is voluntary, and I would greatly appreciate your help. If you have any queries concerning my research or concerning your involvement in my research, please feel free to discuss with me.

Thank you.

Catherine Muhau

Questionnaire

Please tick [✓] your choice or write in the spaces provided.

SECTION A

	For official use only
1. What is your gender? i) Male <input type="checkbox"/> ii) female <input type="checkbox"/>	<input type="text"/>
2. What is your age? i) 20 years and below <input type="checkbox"/> ii) 21-30 years <input type="checkbox"/> iii) 31-40 years <input type="checkbox"/> iv) 41-50 years <input type="checkbox"/> v) Above 50 years <input type="checkbox"/>	<input type="text"/>
3. What is your marital status? i) Married <input type="checkbox"/> ii) Single <input type="checkbox"/> iii) Divorced/separated <input type="checkbox"/> iv) Widowed <input type="checkbox"/>	<input type="text"/>
4. How would you rate your monthly income in Kwacha? i) below 1000 <input type="checkbox"/> ii) 1000-2000 <input type="checkbox"/> iii) 2000-3000 <input type="checkbox"/> iv) Above 3000 <input type="checkbox"/>	<input type="text"/>
5. What is your highest level of education? i) Never been to school <input type="checkbox"/> ii) primary school <input type="checkbox"/> iii) junior secondary school <input type="checkbox"/> iv) senior secondary school <input type="checkbox"/> v) tertiary level <input type="checkbox"/>	<input type="text"/>
SECTION B 6. How many people stay at your home?	<input type="text"/>

Male	Female	
7. How many of these are under-five years?		<input type="text"/>
8. What is your main source of livelihood?		<input type="text"/>
i. Farming <input type="checkbox"/>		
ii. Trading <input type="checkbox"/>		<input type="text"/>
iii. Piecework <input type="checkbox"/>		
iv. Formal employment <input type="checkbox"/>		
v. Any other (please specify) <input type="checkbox"/>		
9. How many meals does your child take in a day?		<input type="text"/>
10. Where do you get this food from?		<input type="text"/>
11. What types of food do you usually give to your child? (mention the foods)		<input type="text"/>
12. Do you always have enough food for your child?		
i) Yes <input type="checkbox"/>		
ii) No <input type="checkbox"/>		<input type="text"/>
13. How would you generally describe your food security situation in your family?		
i. Very insecure <input type="checkbox"/>		<input type="text"/>
ii. Insecure <input type="checkbox"/>		
iii. Secure <input type="checkbox"/>		
iv. Very secure <input type="checkbox"/>		
14. How often does your child get sick?		
i. Frequently		<input type="text"/>
ii. Moderately		
iii. Rarely		
15. Where do you get medicine when your child is sick?		<input type="text"/>
16. How often do you take your child for growth monitoring?		
i. Once per month <input type="checkbox"/>		

ii. Once in two months	<input type="checkbox"/>	
iii. Once in three months	<input type="checkbox"/>	
iv. Once in four months	<input type="checkbox"/>	<input type="text"/>
v. I rarely take my child for growth monitoring	<input type="checkbox"/>	
vi. I never take my child for growth monitoring	<input type="checkbox"/>	
17. Have you received any nutrition education?.....		<input type="text"/>
18. If Yes, where did you receive this nutrition education from? (If no go to question 21)		<input type="text"/>
19. Please mention four important things you were taught on how to keep your child in good health.		
.....		
.....		<input type="text"/>
.....		
20. Do you practice what you are taught in the programme?		
i. Yes	<input type="checkbox"/>	
ii. No	<input type="checkbox"/>	<input type="text"/>
iii. Sometimes	<input type="checkbox"/>	
iv. Not applicable	<input type="checkbox"/>	
21. Are there factors that prevent you from providing nutritious food to your child?		<input type="text"/>
i. Yes	<input type="checkbox"/>	
ii. No	<input type="checkbox"/>	
22. If Yes to the above question, please mention the most important factor which prevents you from providing nutritious food to your child.		<input type="text"/>
.....		
(if No, please go to question 24)		
23. Please explain how these factors contribute to stunted growth of under-five children.		

<p>.....</p> <p>.....</p> <p>24.What makes your child to be in their current state of health?</p> <p>25.In your opinion, what should be done to make community based nutrition education more useful in combating stunting in under-five children?.....</p> <p>.....</p> <p>THANK YOU FOR YOUR RESPONSES</p>	<p><input data-bbox="1214 222 1388 298" type="text"/></p> <p><input data-bbox="1170 541 1354 621" type="text"/></p>
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APPENDIX II: Interview guide for the focus group discussion

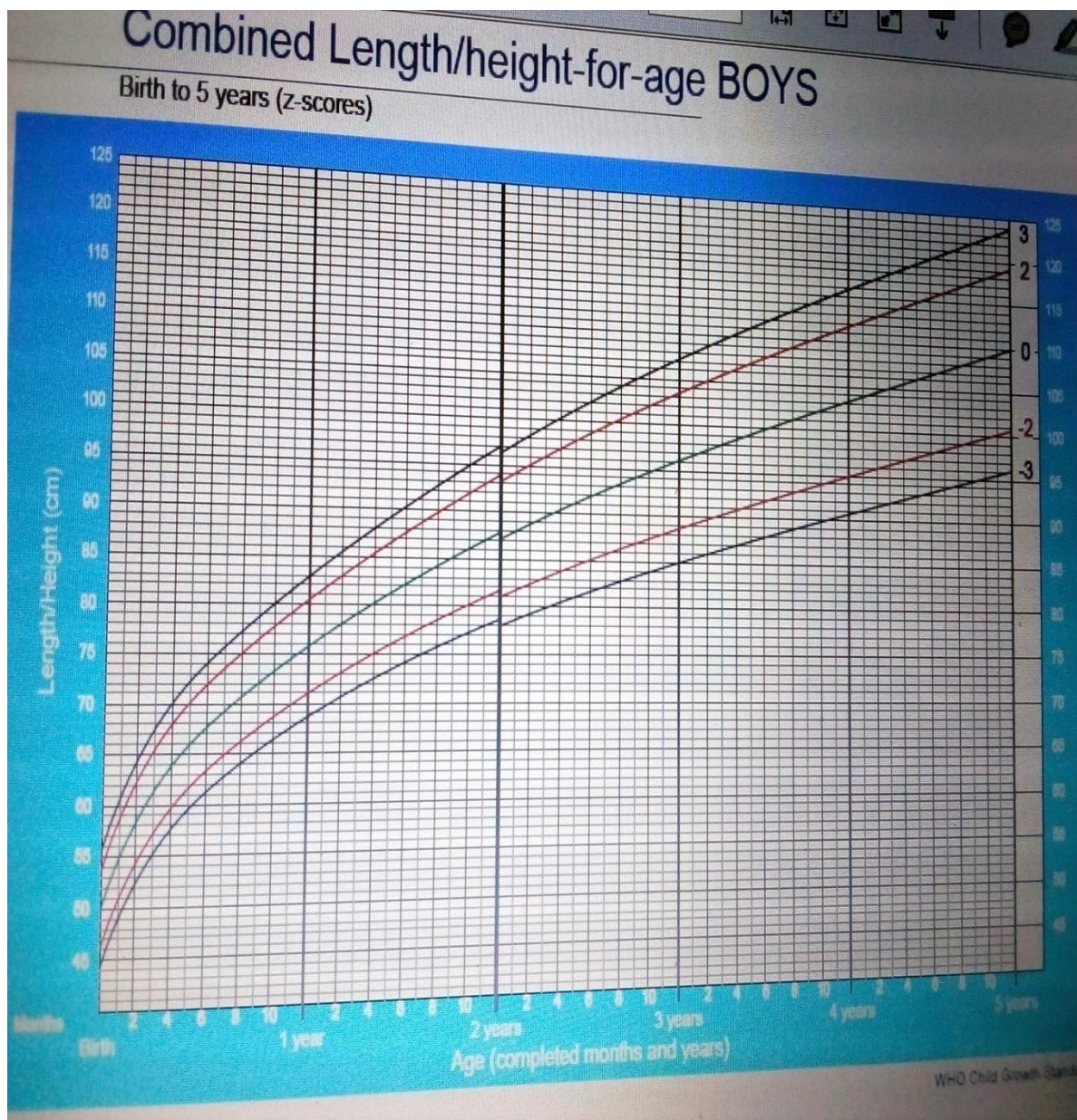
Group 1: (with Community Based Nutrition Education Interventions).

1. Have you received any nutrition education for your under-five child? Could you please explain from where and what you were taught.
2. How helpful was this information as far as the promotion of the nutritional status of under-five children is concerned? Please explain.
3. Do you practice what you were taught? Kindly explain.
4. Do you meet any challenges in implementing what you were taught? Give details of these challenges.
5. How do these challenges affect the nutritional status of your child?
6. What do you think should be done to ensure that community based nutrition education given is useful in combating stunting among under-five children.

Group 2: (without Community Based Nutrition Education Intervention).

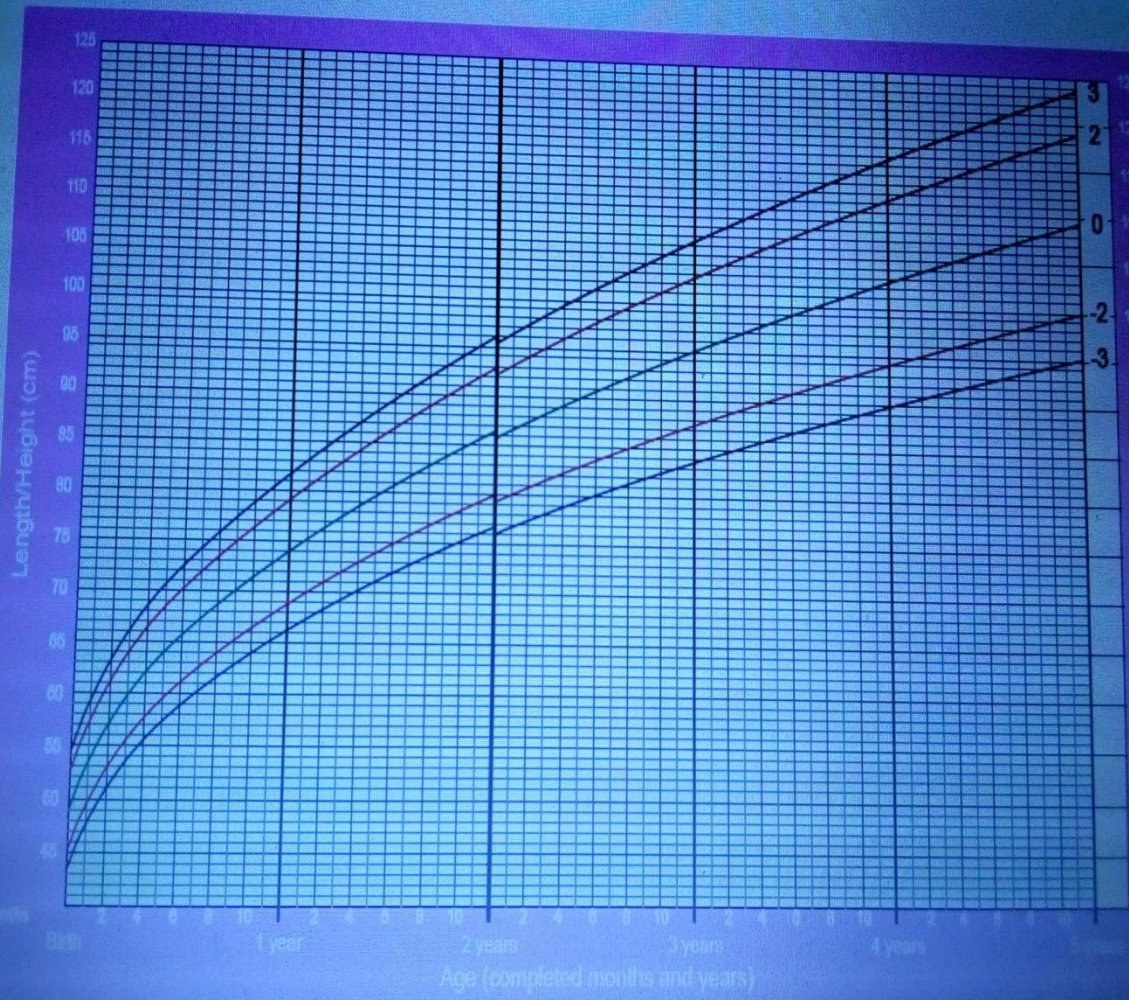
1. How is the general nutrition status of children in this community? Explain.
2. For those under-five children who are health, what would you attribute their health status to?
3. For those under-five children who are not health, what would you attribute their health status to?
4. Do you think it would be helpful to have community based nutrition education in your community? Please explain
5. What are the likely benefits from community based nutrition education?
6. Are there any likely challenges that you would face in implementing community nutrition education to your children or putting in practice what you are taught
7. What supportive measures would you recommend if community based nutrition education is to be implemented in your community

APPENDIX III: length/height-for-age for boys and girls as extracted from the procedure manual.



Length/height-for-age GIRLS

Birth to 5 years (z-scores)



WHO Child Growth Standards