FACTORS INFLUENCING CHILD CARE ACTIVITIES OF MOTHERS' WITH UNDER-FIVE CHILDREN TOWARDS UNDERNUTRITION PREVENTION IN KABWE DISTRICT

BY

LUFUNDA BEATRICE CHILOMBO (BSc NURSING)

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN CLINICAL NURSING AT

THE UNIVERSITY OF ZAMBIA

LUSAKA

MAY 2021

NOTICE OF COPYRIGHT

AUTHOR'S DECLARATION

I, **Lufunda Beatrice Chilombo**, do declare that this dissertation represents my own work and that it has neither in part nor in whole, been presented as substance for the award of any degree at this or any other University. Where other people's work has been used, acknowledgement has been made.

Signature of the author: ……. Date: ……

Signature of the supervisor: …… Date: ……

Signature of the co-supervisor: …..…… Date: ……

CERTIFICATE OF APPROVAL

The University of Zambia approves the dissertation of **Lufunda Beatrice Chilombo** as fulfilling part of the requirements for the award of the degree of Masters of Science in Clinical Nursing.

Examiner's Signature …… Date…….....

Examiner's Signature…….... Date……..

Examiner's Signature..... Date.....

CERTIFICATE OF COMPLETION OF DESSERTATION

I……here by certify that this dissertation is a product of my own work and, in submitting it for the Degree of Masters in Clinical Nursing and I further attest that it has not been submitted before to another University in part or whole for the award of any program.

Signature……. Date……

Supervisor

Name……... Signature……. Date…….

DEDICATIONS

This dissertation is dedicated to my husband, **Henry Kamocha**, who encouraged me both emotionally and spiritually in hard times during the studies. Other dedications go to my dear children, **Benedict**, **Sante**, **Bessie** and **Phande** for their patience during my absence from home. My very special dedication goes to my last-born son **Chinyemba** for enduring the absence of maternal love during the time I was out to school. I am also grateful to my late father and mother, **Fernando Lufunda** and **Margaret Pezo Lufunda,** who could have celebrated this achievement with me, M.T.S.R.I.E.P.

ACKNOWLEDGMENT

I am indebted to the Almighty God for His bountiful mercies and love that have seen me reach this far. For the most part, I have to thank my research supervisors, **Dr. Dorothy Chanda and her co-supervisor Dr. Caroline Zulu**. I am thankful for their guidance, input and advice during the process of conducting this research. My appreciation goes to Kabwe General Hospital Management for allowing me to get the preliminary data for this study. As for **Dr Dorothy Chanda**, may the Almighty God grant her that which she will require from His hand. God bless you all.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

1. **CI** - Confidence Interval
2. **CSO –** Central Statistical Office
3. **DRC** – Democratic Republic of Congo
4. **GDP -** Gross Domestic Product
5. **HIV –** Human Immune Virus
6. **IEC -** Information Education and Communication
7. **IMAM -** Integrated management of acute malnutrition
8. **MCH** - Mother Child Health
9. **MUAC -** Mid upper arm circumference
10. **OPD -** Outpatient department
11. **OR** - Odds Ratio
12. **UNICEF** – United Nations International Children's Emergence Fund
13. **TPB -** Theory of Planned Behavior
14. **TRA -** Theory of Reasoned Action
15. **SPSS -** Statistical Package For Social Sciences
16. **WHO** - World Health Organization
17. **ZDHS** - Zambia Demographic Health Survey
18. **ZSA** - Zambia Situational Analysis

ABSTRACT

Introduction

Under-nutrition is the principal perpetrator for long hospital stay of children under the age of five years in Zambia, with a tremendous impact on both the institutions of care and the family. Poor feeding of infants and young children, especially a lack of optimal breastfeeding and responsive complementary feeding, along with such illnesses as diarrhoea, often exacerbated by helminthes, are major causes of under-nutrition. Studies, have shown that under nutrition is the underlying cause of nearly 3.1 million child deaths each year. Studies, have also shown that more than 170 million children fail to reach their full potential due to poor nutrition and two billion children suffer the effects of nutritional deficiencies. Under-nutrition is estimated to account for a ten percent reduction of lifetime earnings, placing a huge burden on household and national economies. The purpose of this study was to identify factors influencing child care activities of mothers towards preventing under-nutrition.

Materials and Methods

A quantitative, non-interventional cross sectional design was used in this study. The sample size was 175 mothers. A semi structured questionnaire was used to collect data from respondents. Data was screened for completeness, internal consistency, legibility and any possible errors using Statistical Package for Social Sciences (SPSS version 22.0).

Results

Mothers had negative attitudes (74%, n=129) and bad cultural beliefs (92.6%, n=162) towards prevention of child under-nutrition. The study further revealed that more than half (55%, n=96) of the study respondents had high level knowledge, while 69% (n= 120) of the study respondents had good nutritional and child-care practices towards prevention of under-nutrition. However, there was no statistical relationship between child care and the following independent variables: knowledge (*p*-value=**0.394**), perceptions of mothers (p=0.590), cultural behaviours (*p*-value=**0.570).** Nevertheless, after conducting Logistic Regression Analysis adjusted for the independent variables the study revealed that there is a relationship between child care practice/ activities and; Knowledge, perceptions of mothers and cultural behaviours where odds of good

practices were 0.816 times more in respondents with positive perceptions regarding malnutrition prevention compared to those with negative perceptions.

Conclusion

The study revealed that more than half (55%, n=96) of the respondents had high level knowledge, on good nutritional and child-care practices. It further revealed that mothers had negative perceptions (74%, n=129) and bad cultural beliefs (92.6%, n=162) towards prevention of child under-nutrition.

The study therefore, recommends that concerted efforts by all concerned personnel, senior management support through intensifying dissemination of information on prevention of child under-nutrition is needed. Issues of staffing, outreach services among others should be enhanced to educate mothers towards curbing the scourge.

CHAPTER ONE

1.0 INTRODUCTION

Under-nutrition is the principal perpetrator for long Hospital stay of children under the age five years in Zambia with a tremendous impact on both the institutions of care and the family, (Richards and Bellack, 2016)). Under-nutrition is a subtle brain drain of both the family and the nation for the instantaneous future. The danger to long hospital stays being under- nutrition in form of marasmic kwashiorkor which is also a cause of morbidity and mortality on a hefty scale. Under-nutrition is the upshot of insufficient food intake or hunger and repeated infectious diseases, (United Nations International Children's Emergency Fund (UNICEF, 2016). Poor feeding of infants and young children, especially a lack of optimal breastfeeding and responsive complementary feeding, along with such illnesses as diarrhoea, pneumonia, malaria, Human Immune-deficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS), often exacerbated by helminthes, are key causes of under-nutrition, (UNICEF, 2016).

According to the Central Statistics Office (CSO, 2015), under-nutrition is an insufficient provision of energy and nutrients, such as good quality protein with an ample balance of essential amino acids, vitamins and minerals, and an inability to meet the requirements of the body to ensure growth, maintenance, and specific functions. Under-nutrition includes being underweight for one's age, being too short for one's age, stunted, dangerously thin, wasted, deficient in vitamins, and minerals. These cases cause many children to stay unnecessarily longer days in health institutions, (Chanda, 2004). The paramount way of preventing under-nutrition is to provide care and balanced diet in child feeding. In many instances, poverty and reduction in food security have shouldered the censure for this scourge and yet even in instances of abundant crop, under-nutrition has super-ceded the list of national burdens, (Chanda, 2017). This shows that it is not all about poverty, but much to do with knowledge and perception of the mother towards improving child nutrition. Malnutrition can prevent children from achieving their full potential in life. Under-nutrition also has implications for the human capital, because it can impair brain development, and diminish adult earnings by reducing body size and capacity for physical labor, (Solis-soto, paudel and Nicoli, 2020). Findings at Kabwe general Hospital, on morbidity and mortality resulting from malnutrition, (according to Table 1.1) are still

unacceptably high. To this effect, there is need to investigate mothers' knowledge levels, attitudes and behaviors towards prevention of under-nutrition in the under-five years old children. This chapter is based on the background information, statement of the problem, theoretical framework, justification of the study, study objectives, hypotheses, definition of terms and study variables.

1.1 BACKGROUND INFORMATION

Worldwide, under-nutrition is the salient source of 3.5 million child deaths each year, (Das and Gulshan, 2017). About 161 million children under the age of 5 years, globally, are stunted while 51 million children do not weigh enough for their height (wasted), and are not in healthy state, (Muzumara, et al, 2018). Over the years, the prevalence of stunting has reduced but overall progress is insufficient and many children are still at risk. The prevalence of stunted children in Bangladesh, according to Das and Gulshan, was 41% in 2011, 43.2% in 2007 and 51% in 2004. Nonetheless, it is still inadequate to attain the target of the malnutrition prevalence of 34% of the Millennium Development Goal (MDG), 2015. More than 170 million children fail to achieve their academic goals due to poor nutrition and two billion children suffer the effects of nutritional deficiencies. Under-nutrition is also estimated to account for a ten percent reduction of lifetime earnings, placing a huge burden on household and national economies. Malnutrition includes under-nutrition and over-nutrition. Both lead to poor health conditions and early death in developing and developed countries around the world. Under-nutrition is the principle cause of death in children under-five years of age in developing countries where nutritional deficiency is common, (Shaker, et al, 2017). Across Yemen, over 2 million children under five years of age suffer from acute malnutrition, including nearly 358,000 with severe malnutrition – a number that is expected to rise. In 133 districts in southern Yemen, recent analysis reveals a near 10 per cent increase in children with acute malnutrition between January and October 2020. This includes a more than 15 per cent increase of nearly 100,000 cases of severe acute malnutrition in under five children. (Tidey, 2020).Tajikistan faces the highest rate of under-nutrition in Central Asia with approximately 5% of children under the age of 5 years suffering from acute under-nutrition (wasting), 30% from chronic under-nutrition (stunting), and 11% from underweight, (McNamara and Wood, 2019).

Regionally, in Democratic Republic of Congo (DRC), chronic malnutrition is a serious problem affecting some 48 percent of children with very high malnutrition rates recorded in the war provinces because of insecurity, yet even in peaceful areas untouched by the present conflict, nearly half of the children are malnourished. This indicates that prevention of under-nutrition has more to do with practices in feeding and care, (Kismul et al, 2018). According to a press release by UNICEF, (2018), it was estimated that, in DRC, 3.3 million children under five will suffer from acute malnutrition in 2021 including at least 1 million with severe acute malnutrition. These alarming figures were due to ongoing insecurity, the socioeconomic consequences of the COVID-19 pandemic, and limited access to essential services for vulnerable children and families. The study emphasizes the significant losses incurred each year through increased healthcare costs, additional burdens to the education system and reduced workforce productivity which is estimated at more than $1 billion a year, (Tidey, 2020) . At 41.8 percent in 2017–2018, child stunting at the national level has not declined substantially since 2001, when it was 44.4 percent. At the provincial level the highest stunting rates are in Kwango, Kasaï-Central, and Sankuru, with more than half of children stunted in each province, (Kismul, et al, 2018).

In addition, mothers' knowledge on diet and care of their children is pivotal in the prevention of under-nutrition. A study conducted on factors affecting the prevalence of malnutrition among children below three years of age in Botswana revealed that 46.1% of mothers had average level of knowledge while only 19.1 % of mothers had good knowledge regarding the prevention and management of malnutrition. Only 24.3%, of mothers had reported good practice but 36.6%, of mothers had poor practice score, (Imera, 2016). However, the gaps on the mothers' practices on feeding and negative cultural beliefs towards certain foods can be corrected through educating them. In a cross-sectional house hold survey, conducted in Kenya by Guyatt, et al, (2020), twenty-three per cent of the 1004 children with anthropometric data were stunted, 10 % were underweight and 6 % experienced wasting. The strongest predictors of stunting and underweight were being in the second year of life and being born with a low birth weight. Residing in a poor household and having more than one child less than 2 years of age in the household were also significant risk factors for being underweight. When age was removed as a covariate in children aged 12–23 months, being male resulted in a significantly higher risk of being stunted**.**

Nationally, Zambia continues to be ranked among countries in Africa with the highest levels of undernourished children at 48 per cent, a figure projected between 2014 and 2016. In terms of malnutrition, CSO (2015), has also revealed that 40 per cent of children under the age of five were stunted, five per cent wasted, 15 per cent underweight, and 9 per cent of children were estimated to be overweight. At 40 per cent stunting rates, Zambia's malnutrition levels are among the highest in the world, (Mukuka and Mofu, 2016). Besides, malnutrition in Zambia has numerous adverse consequences. Malnourished children are ill more often than children who are not malnourished and consequently at increased risk of death. They have delayed cognitive development and are therefore likely to complete fewer years of schooling, which results in lower economic productivity in adulthood (Mzumara, et al, 2018). Children who are poorly nourished suffer up to 160 days of illness each year. Under-nutrition magnifies the effect of every disease including measles and malaria. The estimated proportions of deaths in which under-nutrition is an underlying cause are roughly similar for diarrhea (61%), malaria (57%), pneumonia (52%), and measles (45%), (WHO, 2017).

1.2 STATEMENT OF THE PROBLEM

Despite all the interventions by the Government through Ministry of Health in conjunction with Ministry of Agriculture, to eradicate malnutrition by increasing house hold food security, including the interventions through Information Education and Communication (IEC) undertaken in under five children clinics on feeding and care of the children, Kabwe District is still recording high numbers of severe cases of under nutrition.

MORBIDITY AND MORTALITY DUE TO MALNUTRITION

Year	Total admissions	Cases of malnutrition	Percentages	Number of deaths	Percentage
2015	1671	247	14.78%	49	19.83%
2016	1502	134	8.92%	22	16.42%

Table 1 above shows that the number of under-nutrition still remains unacceptably high despite a 5.86% reduction in morbidity and 3.41% reduction in mortality in the number of children

admitted with severe malnutrition between 2015 and 2016. (Kabwe General Hospital Statistics Office, 2015-2016).

It is worthy to note that in this data, children that were stunted and those that were under weight for their ages were not captured in the register for malnourished children. The probable causes of malnutrition could be due to socio-cultural traditions and behaviours that force mothers to reserve better food portions for the father and denying certain nutritious foods like eggs, as they are considered to cause a child to become a thief, (Mzumara, et al, 2018). Under nutrition has potential to devastating short- and long-term effects on the child, the family and the nation as a whole. These include stunting, reduced intelligence quotient in the child, reduced production of the mother, neglect of the other children by the mother due to long stay in hospital, congestion on the ward and resource depletion for the nation through interventions to correct/treat under-nutrition. These effects of malnutrition could lead to poor family and national development. Therefore, investing in nutrition is a "best investment" for Zambia. The Ministry of Health through the District Health Management has conducted health promotion services to reach out to mothers on good nutrition. Conversely, the levels of under-nutrition in under-five children are still unacceptable in Kabwe District as shown in the Table1 above. To this effect, there is need to investigate mothers' knowledge levels, attitudes/perceptions and cultural behaviours, (as cardinal care givers) that may be contributing to the perpetual under nutrition in children in the district.

1.3 THEORITICAL FRAMEWORK: THE THEORY OF PLANNED BEHAVIOUR (TPB)

A theoretical framework is the discussion of one theory or interrelated theories being tested in order to support the rational for conducting the study (Basavanthappa, 2007).

The Theory of Planned Behaviour (TPB) started as a Theory of Reasoned Action (TRA) in 1980, and it was coined by Ajzen and Fishbein to predict an individual's intention to engage in behaviour at a specific time and place, after trying to estimate the discrepancy between attitude and behaviour.

Later on, behaviour appeared not to be 100% voluntary and under control, this resulted in the addition of perceived behavioural control. With this addition, the theory was called the theory of

planned behaviour (TPB). The Theory of Planned Behaviour is a theory which predicts deliberate behaviour, because behaviour can be deliberative and planned. The theory was intended to explain all behaviours over which people have the ability to exert self-control.

The key component to this model is behavioural intent. Behavioural intentions are influenced by the attitude about the likelihood that the behaviour will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome, (LaMorte, 2016).

The TPB has been used successfully to predict and explain a wide range of health behaviours and intentions including smoking, drinking, health services utilization, breastfeeding, and substance use, among others. The TPB states that behavioural achievement depends on both motivation (intention) and ability (behavioural control). It distinguishes between three types of beliefs - behavioural, normative, and control. The TPB comprises six constructs that collectively represent a person's actual control over the behaviour.

1.6 Behavioral Intention - This refers to the motivational factors that influence a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed e.g. after receiving IEC on care and child feeding the mothers of the children become determined to prepare nutritious foods for the children. The mother does this by adding pounded kapenta or peanuts to the child's porridge. In addition, the mother also takes the child for immunization schedules.

1.7 Subjective Norms - This refers to the belief about whether most mothers approve or disapprove the behaviour. It relates to a person's beliefs about whether peers and significant others think he or she should engage in the behaviour e.g. feeding a child on eggs and continuing to breast feed when a mother falls pregnant.

1.8 Social Norms - This refers to the customary codes of behaviour in a group or people or larger cultural context. Social norms are considered normative, or standard, in a group of mothers e.g. serving the best portions and nutritious food to the father as priority over children and not giving eggs to children because it is a taboo.

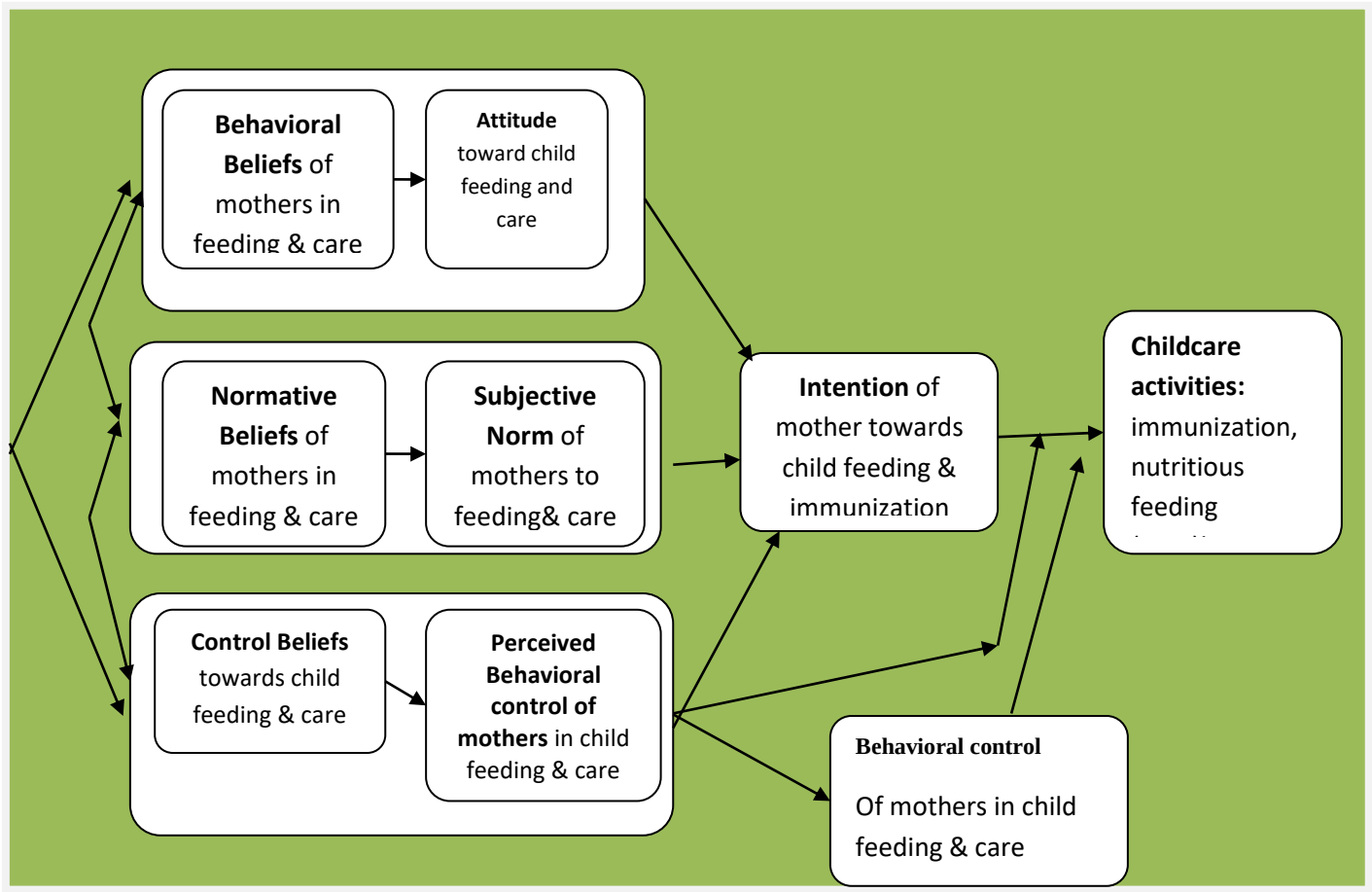
1.9 Perceived Power - This refers to the perceived factors that may facilitate or impede performance of a behaviour e.g. cultural beliefs, child care and feeding habits, immunization,

hygiene, etc. Perceived power contributes to a mother's perceived behavioural control over each of the factors.

2.0 Perceived Behavioral Control - This refers to a mother's perception of the ease or difficulty of performing the behaviour of interest which is taking the child for immunization, de-worming and early treatment of infections, and taking time to prepare food that is beneficial to child health e.g. pounding kapenta for easy consumption by the child.

This study was about knowledge, factors influencing child care activities of mothers with under five-year-old children towards prevention of under nutrition. The TPB guided in identifying factors that influence mothers' practices in child care.

FIGURE 1: CONCEPTUAL FRAMEWORK ON THEORY OF PLANNED BEHAVIOUR



Modified Conceptual Framework on the theory of Planned Behaviour by Lufunda B.Cand Chanda D. O.2021. Adapted from Theory of Planned Behaviour (TPB) and Reasoned Action (TRA) by Ajzen and Fishbein (1980).

2.1 STUDY JUSTIFICATION

Combating under nutrition could bring great gains for Zambia and the investment case is strong. Thus, research implies that money invested in nutrition interventions has a 17:1 ratio on average for return on investment in Zambia. Research, by the Central Statistics Office (CSO, 2016), also shows that gross domestic product (GDP) totals in Africa are less than 90% of what they would be without under nutrition. Statistics from Kabwe General Hospital (2015 and 2016), still revealed unacceptable numbers of child morbidity and mortality rates (8.92 % and 16.42 % respectively) from severe under-nutrition. Investing in nutrition saves the mothers' and children's lives and improves children's education outcomes, which, in turn, boosts economic

productivity (Alderman, et al, 2017). For every US$1 spent on nutrition, there is a US$16 return in health and economic benefits (International Food Policy Research Institute, 2015). Therefore; this study will provide very useful information that will be used in implementing better ways of preventing malnutrition. The identified knowledge gaps will be used to design an appropriate information, education and communication (IEC) tool for educating mothers on appropriate practices in preventing under-nutrition, thereby, aiding in the reduction of child morbidity and mortality owing to under-nutrition. The findings of this study will add knowledge to the existing body of knowledge and serve as a stepping stone for future research.

2.2 RESEARCH QUESTION

Would improving the knowledge levels, attitudes, and cultural behaviours of mothers with under five years old children help improve child care activities towards reducing under-nutrition rates in Kabwe District?

2.3 GENERAL OBJECTIVE

To determine factors influencing child care activities of mothers with under-five children towards preventing under-nutrition.

2.4 SPECIFIC OBJECTIVES

I. To assess the knowledge levels of mothers with under-five children regarding the prevention of under nutrition
II. To determine the attitudes (perceptions) of mothers with under-five children on prevention of under nutrition
III. To determine the cultural behaviours of mothers with under-five children towards prevention of under nutrition.

2.5 DEFINITION OF KEY TERMS

2.6 CONCEPTUAL DEFINITIONS

- **KNOWLEDGE:** Knowledge is a mixture of framed experiences, contextual information, values and expert insight that provides the frame work for evaluating and incorporating experiences and information (Davenport and Prusak, 2000**).**
- **NUTRITION:** the process by which a living organism assimilates food and uses it for growth and replacement of tissues, (American Heritage Dictionary, 2016).
- **MALNUTRITION:** Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients, (WHO, 2020).
- **PREVENTION:** Doing something now to avoid something unpleasant or undesirable from happening in the future (Vera, 2013).
- **STUNTING:** is a consequence of severe and long-lasting malnutrition in which a child fails to achieve the expected height for his or her age, (Farlex, et al, 2009).
- **UNDERNUTRITION:** is defined as the outcome of insufficient food intake and repeated infectious diseases. It includes being underweight for one' s age, too short for one' s age (stunted), dangerously thin for one' s height (wasted), and deficient in vitamins and minerals (micronutrient malnutrition), (Richards and Bellack, 2016).
- **BEHAVIOUR:** is the way somebody/ something responds/ reacts to a stimulus, (Oxford Dictionary, 2000).
- **CHILD CARE:** Child care is a complex set of behaviors that range from child feeding practices, to responses that promote a safe and healthy environment for the child and provide adequate health care, to psychosocial interactions and emotional support, (Shubh, et al., 1997).
- **PERCEPTION:** The way in which something is regarded, understood, or interpreted, (Oxford Dictionary, 2000)

- **ATTITUDE:** The way a person views something or tends to behave towards it, often in an evaluative way, (Dictionary.com).

2.7 OPERATIONAL DEFINITIONSAS WILL BE USED IN THIS STUDY

- **BEHAVIOUR:** In this study, Behaviour relates to the activities that the mothers of under-five year old children perform in the care of their children such as feeding, taking the child for immunization and actions taken when the child falls sick.

- **KNOWLEDGE:** In this study, knowledge relates to acquired **information/education** and understanding that the mothers of under five-year old children have regarding right feeding, hygiene, immunization, signs of nutrition deficiency, etc.

- **UNDER-NUTRITION:** In this study, Under-nutrition is a condition resulting from wrong feeding and care of a child by mothers of under five-year old children.

- **PREVENTION:** In this study, Prevention relate to precautions taken by mothers with under five years old children in barring under nutrition.

- **STUNTING:** In this study, Stunting relates to child failure to attain weight, height and other developmental attributes due to under nutrition.

- **UNDERNUTRITION:** In this study, Under-nutrition relate to feeding of children on little and unbalanced/wrong food by mothers with under-five years old children.

- **UNDER FIVE CHILD:** In this study, an Under-five-child is a child who is below five years of age.

- **CHILD CARE:** In this study, Child Care relate to activities that mothers with under five years old children undertake in feeding, immunization, hygiene, identification and treatment of illnesses when they occur.

- **PERCEPTIONS:** In this study, Perception relate to the importance mothers with under five children attach to child care and feeding.

- **MALNOURISHED CHILD**: A child less than five years old with a low weight and height for age.
- **EDUCATION**: In this study education relates to acquired knowledge that helps in prevention of under-nutrition.

2.8 VARIABLES, CUT OFF POINTS AND INDICATORS

2.9 Dependent variable

Child care activities of mothers with under-five children towards prevention of under nutrition.

3.0 Independent variable

Knowledge of mothers with under-five children, towards prevention of under-nutrition

Attitudes of mothers with under-five children towards prevention of under-nutrition

Cultural behaviours of mothers with under-five children towards prevention of under nutrition.

TABLE 2: VARIABLES CUT OFF POINT AND INDICATORS

VARIABLES	**Indicator**	Cut off point	Question Numbers
INDEPENDENT VARIABLE			
Knowledge of mothers with under-five children on feeding and care towards prevention of under nutrition.	High level knowledge	A mother who scores above 5 of correct responses on knowledge questions	12-18 (2 marks each)
	Medium level knowledge	A mother who scores 4-5 of correct responses on knowledge questions	
	Low level knowledge	A mother who scores below 4 of correct responses on questions of knowledge	
Attitude of mothers with under five children towards prevention of under nutrition	Positive perception	A mother who scores above 6 of correct responses on Attitude questions	19-28 (2 marks each)
	Negative perception	A mother who scores below 6 of correct responses on Attitude questions	

Cultural Behaviors of mothers with under-five children towards prevention of under nutrition.	Good cultural behaviors	A mother who scores above 3 of correct responses on cultural behaviors questions	29-32 (2 marks each)
	Bad cultural behaviors	A mother who scores below 3 and below of correct responses on cultural behaviors questions	
DEPENDENT VARIABLE			
Child care activities of mothers with under-five children towards prevention of under nutrition.	Good child care activities	A mother who scores above 10 of correct responses on questions on child care activities	33-47 (2 marks each)
	Bad child care activities	A mother who scores below 10 in correct responses on questions on child care activities	

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

The literature review in this study focused on knowledge, attitude/ perceptions, cultural behaviours and child care activities of mothers with under five children towards prevention of under nutrition. The literature reviewed sources included books, articles, journals and both published and unpublished dissertations from computerized search engines/data bases like Pub Med and Google Scholar.

2.2 OVERVIEW OF UNDER-NUTRITION

Child care is a complex set of behaviors that range from child feeding practices, to responses that promote a safe and healthy environment for the child and provide adequate health care, to psychosocial interactions and emotional support, (WHO, 2018). According to UNICEF's conceptual model for child nutrition, the care behaviours for both the child and mother are included as underlying factors to the two direct determinants of child nutrition, and directly impact on child growth. These factors include care giving behaviours such as; knowledge and skills applied to promote child nutrition, and household production of child nutrition in form of provision of resources, (Engle, 1992). Care behaviours were also grouped into (1) child feeding behaviours, (2) child health and hygiene-related behaviours, (3) characteristics of psychosocial interactions/care of the child, and (4) characteristics of maternal care and social support systems. These behaviours affect child nutritional outcomes by impacting on nutritional intake and disease incidences, (Engle, et al., 1996). This implies that care giving behaviours that are adopted in the household together with the household's access to food and health services contribute to child nutrition. This suggests that child nutrition is generally a combination of household resource access, skills, and knowledge inputs in the process.

2.3 KNOWLEDGE OF MOTHERS WITH UNDER-FIVE OLD CHILDREN TOWARDS PREVENTION OF UNDER NUTRITION

Mothers' knowledge on how to prepare food for their children and when to take them for medical protective routines such as de-worming plays a major role in prevention of under-nutrition. According to UNICEF, (2019), family wealth is not necessarily a determinant of good nutrition but, other mechanisms have been proposed instead. For instance higher education, can improve caregivers' ability to understand, be more willing to change their behaviour and adopt alternative food preparation methods or recipes. Education can also increase caregivers' ability to read and interpret food labels correctly. After all, children take very small portions of food; therefore, it's not about quantities but quality of the food fed to children.

Knowledge could make a difference by empowering mothers' decisions on nutrition, use of preventive medicine and/ health promotion activities such as immunization. Immunization of children can help in the reservation of nutrients needed for growth, unlike channeling nutrients to tissue repair resulting from preventable diseases. Vaccination provides protection against morbidity and this in long run improves nutritional status. A study by Abedi and Srivastava, (2018), to determine associations between vaccination and under-nutrition in India, revealed significant association between immunization status of the pre-school child and underweight/ stunting rates ($p<0.005$). According to the study repeated illness leads to deterioration of health. In the same study, the most common form of malnutrition seen was stunting (51.4%), followed by underweight (43.5%) and 21.7% of children had wasting. Nutritional status parameters were analyzed with immunization status of children and it was observed that fully immunized children had better nutritional status. In the study, out of the children suffering from any form of malnutrition, more than 50% had either no or incomplete vaccination status. In another study by Solis-Soto, Paudel and Nicoli , (2018), conducted in Angola, Chad and Guatemala, to determine the relationship between vaccination and nutritional status of children, results showed that incomplete vaccinations led to higher underweight, stunting, and wasting. It was also demonstrated that a significantly higher prevalence of underweight was found among children with incomplete vaccination schedules in seven countries. Similarly, wasting and stunting were frequently observed in under-vaccinated children in four countries. Moreover, logistic regression adjusted for background variables revealed a relationship between incomplete vaccination and

underweight in Angola, Chad, and Guatemala (95% CI lower bound > 1). Combined data for all the countries, underweight had adjusted Odds Ratio; 1.21, 95% CI 1.11–1.31, wasting 1.18, 95% CI 1.05–1.33 and stunting 1.07, 95% CI 1.00–1.14 which were associated with poor vaccination status.

The level of education also brings with it advantages especially higher education. According to a study by Chege, Kimiywe and Ndungu, (2015), to determine the Influence of culture on dietary practices of children under five years among Maasai pastoralists in Kajiado, Kenya, children of mothers with secondary or higher education are likely to have better nutritional status due to better child care practices compared to those who only attained up to primary education or with no education. Kismul, et al, (2018), in a study conducted in Democratic Republic of Congo (DRC), to determine malnutrition in children, a gap observed on stunting prevalence between children from uneducated mothers or those whose mothers have a primary school level of education compared with those from mothers with secondary or high level of education remains high. Education could also help the mothers make informed nutritional decisions about cultural norms on certain types of food for children. A study conducted by Lija and Kanniammal, (2017) in Botswana to determine knowledge and practices of mothers, revealed that education plays a big role in prevention of under nutrition. In the study, a little less than half (46.1%) of the study respondents had average level of knowledge while only19.1 % of mothers had good knowledge regarding the prevention and management of malnutrition. It was found that only 24.3% of mothers had reported good practice but 36.6% of mothers had poor practice score, concluding that there is a strong association between the nutritional status of children and knowledge and practice of mothers. In a study by USAID, (2018), conducted in Zambia it was revealed that a mother's level of education generally has an inverse relationship with stunting levels; stunting ranges from as low as 18 percent among children whose mothers have more than a secondary education to as high as 45 percent among those whose mothers have no education.

Knowledge positively affects the correct timing of initiation of complementary feeding and the source of knowledge plays a role on the kind of information the mother receives. A study conducted in Kenya among the Maasai community by Kizilyildiz, et al, (2016), on pediatric reports, indicated that only 5.9% of the mothers had received information on feeding their children from the Mother Child Health (MCH) clinic with 81.2% having received it from the

relatives. In this study a little more than three quarters (75.9%) of the respondents, reported health workers to be their source of information. This reflected positively in terms of the knowledge the mother acquired because chances of getting the correct information on how to feed their children would be correct/ scientific compared to information obtained from the relatives, (Kizilyildiz, et al, 2016).

2.4: ATTITUDES OF MOTHERS WITH UNDER-FIVE CHILDREN

Perceptions of mothers on prevention of under-nutrition are key determinants of whether the mother will perform the care activities or not. If a mother's attitude (intention) is positive or strong towards a certain behavior, according to Lamorte, (2016), a chance of performing the behavior becomes high. If mothers feel food preparation and taking a child for immunization is important, it will be reflected in how much time they apportion/ dedicate to these activities. In a study conducted in Kenya, Thika town, by Imera, (2016), to determine knowledge and practices of mothers, it was revealed that the children who were malnourished had less time devoted to them for breast-feeding, food preparation and feeding, and the frequency of feeds was four times less compared to the well-nourished. Perceptions can also influence value attached to feeding, for example, in the same study 60% believed that nutritious foods were expensive, thus beliefs and attitudes towards certain foods lead to inadequate and unbalanced diet, predisposing the children to under-nutrition.

Mother's perception of their child's body size is also related to child's nutritional status and recognition that a child is undernourished underpins efforts to improve their nutritional status. According to Muraya, et al, (2016), in a study to determine perceptions of childhood under-nutrition in rural households in Kenya, about 16% of the mothers in the UC/OM group and 17% in the NC/NM group preferred children who were either thin or somewhat thin while about 39% (UC/OM) vs. 37% (NC/NM) preferred children who were somewhat fat to very fat to be more attractive. Suggesting that the incorrect perception of mothers of their child's body size in the UC/OM group and their attraction to thin children, could pose a greater risk of worsened nutritional condition of their children because mothers might not provide extra childcare, especially on the quality and quantity of food intake. These children could suffer from the negative consequences of under-nutrition, like poor school performance, stunted growth and

decreased immune response. On the other hand, mothers in the NC/NM group who perceived their children's body size as thin (17%) might have the tendency to binge feed their children that might cause them to become overweight.

Misconceptions of under-nutrition, its causes and its identification can influence the care activities of mothers. For instance in a study by Muraya et al, (2016), mothers viewed a swollen belly of a child with kwashiorkor to result from breastfeeding by a pregnant mother. Consequently, morbidity and mortality of the children is likely to increase, since interventions to correct under-nutrition would be unlikely. In another study, conducted in Kalomo, Zambia by Khunga and Okop, (2015), to determine perceptions of mothers and care givers regarding the detection and treatment of severely malnourished children, it was revealed that some mothers and care givers perceived severe malnutrition to be linked to HIV and AIDS, while others viewed it to be caused by witchcraft or the child's fathers promiscuity. The study also revealed that those who perceived severe malnutrition to result from witchcraft or the father's promiscuity sought treatment from traditional healers believing that they had the remedy or sent the child away to another village to escape the 'bad air', while those who saw it as related to HIV kept their children away in fear of stigma. Meanwhile, sending the child away from the mother deprived the child of maternal love needed most at the point of illness and keeping the child confined in fear of stigma lead to worsening of malnutrition.

2.5: CULTURAL BEHAVIOURS OF MOTHERS WITH UNDER-FIVE CHILDREN

There are gaps on the mother's practices on feeding and negative cultural beliefs towards certain foods. Cultural behaviours of mothers with under-five children can have a great impact in child care practices of these mothers towards prevention of under nutrition. Culture views certain foods, unfortunately very nutritious ones, as harmful and the food would not be given to children. In a study by MCNamara and Wood, (2019), to determine household food choice and nutrition in rural Tajikistan, mothers-in-law believed that "babies who did not start talking should not eat eggs because their speech would be delayed, denying children nutrients needed at a very critical time of cognitive development.

In a study by Perez and Garcia, (2013), to determine nutritional taboos among the Fullas of Gambia, the respondents identified various types of food that were not to be eaten because it was

believed that it could affect the newborns' health, prolong labour, or provoke other health problems to the mother. The most mentioned were catfish, pepper, bread, bitter tomato, egg, and banana. Other foods mentioned were millet, sorrel, groundnut, mango, baobab, beef, goat, salt, crocodile, warthog, squirrels, lime, and guinea fowl. If the pregnant mother ate goat, baobab, or crocodile, the belief is that the child could acquire some typical characteristics of these foods. This could result in limiting sources of nutritious food stuffs predisposing the babies to low birth weight. A study conducted in Kenya by Oberle, (2018), to determine the role of culture in child nutrition, revealed that lack of knowledge among mothers in child care practices accentuates under-nutrition in children. For instance, immunization and apportioning of bigger potions of nutritious foods like milk to herders and unhygienic practices which predispose children to diarrheal diseases.

Fruits and vegetables are a protective need in a child's immunity, yet they happen to be the most common foods missing from children's diets worldwide, (UNICEF, 2019). According to a report by UNICEF; the State of the World's Children, in a study to determine Cultural Perspectives on the Interactions between Nutrition, Health, and Psychological Functioning, conducted in Ethiopia, even in warm tropical climates where fruits and vegetables are plentiful, children are denied these important nutrients. According to a study by McNamara and Wood, (2019), there is a belief that fruits and vegetables give children diarrhea. Unfortunately, even in industrialized countries, children and adults eat much less than the daily 5-9 fruit and vegetable servings they should. For instance, in a survey conducted in Western Australia by Pettigrew and Roberts, (2015), to determine Mothers' Perceptions on their Control over their Children's Diets, it was discovered that 45% of the children sampled had not consumed any fruit on the previous day and 30% had not eaten any vegetables. This practice poses a lot of danger to children's immunity which eventually culminates in malnutrition.

Colostrum is very important for providing nutrients, immunity and laxative to a new born, but most cultures would not allow a mother to feed the first milk to their new born, viewing it as harmful. This was revealed in a study conducted in Somalia by the food security analysis, where it was found that most children were put on the breast 2-3 days after delivery and the Colostrum was not fed to children by majority of mothers as it is considered heavy, thick, coarse, dirty, toxic, and harmful to children's health. According to Boumslag, (2017), Colostrum is not given

to many newborn babies, instead they are fed on water and sugar or water and milk during their first days of life, defeating the purpose of exclusive breastfeeding.

While feeding is good for a child, a healthy relationship between a mother and child supersedes all. Therefore, an abrupt cessation can send a child into depression and consequently under nutrition can set in. Yet most cultures would separate a child from the mother at a prime age as revealed in a study in Kilifi- Kenya, according to Mijikenda culture, that when a mother with an infant or toddler becomes pregnant, 'the heat' from the unborn child burns the toddler when the child sleeps with the mother and leads to severe under-nutrition. This separation deprives the child of maternal loving care, (Imera, 2016).

Many cultures have wrong notions about the cause of malnutrition thereby applying wrong interventions, for instance, Oberle, (2018) in a study conducted in Kenya at Kibera slum areas, to determine the role of culture in child nutrition, it was revealed that in most cases the symptoms of kwashiorkor and marasmus were not associated with inadequate feeding but were seen as being caused by the transgression of sexual taboos by the parents. In the same vein potential of a child is misinterpreted in various ways which yet in the same study by Oberle, (2018), it was observed that a boy child was introduced to camel milk early as a rite of initiation so they will like the animals they are to look after in future and that if the boy is introduced to the mother's milk first, they will be useless. In the same study, grandmothers influenced mothers to give water to their new born babies citing that the babies would die of thirst if not given water as opposed to exclusive breast feeding.

2.6: RELATIONSHIPS BETWEEN DEPEDENT AND THE INDEPENDENT VARIABLES.

This section is about relationships between child-care activities of mothers with under five children towards prevention of under-nutrition and the following factors; knowledge of child care, perceptions/attitude, and cultural behaviours of mothers.

According to a study conducted by Chowdhury et al, (2020), to determine Factors associated with stunting and wasting in children under 2 years in Bangladesh, it was revealed that more than 200 million school-age children globally are stunted and it is predicted that nearly 1

billion children will grow up with impaired physical and cognitive health by 2020 unless this problem is addressed. Stunting is in the highest frequency (40%) in South Asia and Sub-Saharan Africa. Determinants of child nutrition are not exactly the same for different groups of children, even in the same population. Factors that influence the nutrition status in children, among others, are; knowledge, cultural beliefs and child care practices, (UNICEF, 2018). A selection of caring practices and indicators identified in a descriptive, multivariate analyses conducted to identify key caring practices, and indicators associated with well and poorly growing children, were; infant feeding, complementary feeding, maternal diet and health, hygiene practices and psychosocial care. In this study according to Aronson, Wilson & Akert, (2013), two important key factors identified across the board were hygiene practices and mothers' access to knowledge such as listening to radio programmes on child health and nutrition. Other cardinal factors contributing to negative deviance that were isolated were early introduction of complementary food before four months of age, maternal diet restriction for longer periods after the child's birth, lack of special attention in preparation of child's diet and care factors such as psychosocial care. Mkhize and Sibanda, (2020), also alluded to hygiene and sanitation as being among the factors that lead to development or worsening of under-nutrition.

An intervention study in Rajasthan on the impact of nutrition care centers by Sahu, et al, (2015), showed a reduction in prevalence of under-nutrition from 66.7% to 59.6% after nutritional counseling to mothers. The study also revealed that success in reducing under nutrition depends on various factors including regional or state level needs, community perceptions and behaviors, acceptability of intervention measures by households, food security issues, food beliefs or taboos, likes or dislikes, cooking and child rearing practices, quality and quantity of the food item served. Therefore, nutritional counseling for mothers and recommending sustainable behavioral change are important factors needing consideration to reduce the burden of malnutrition.

Education/ knowledge could make a difference by empowering mothers' decisions on nutrition and use of child health services such as immunizations. Knowledge can go another mile in helping mothers make informed nutritional decisions concerning cultural norms on certain foods included in children's diet. According to Das & Gulshan, (2017), in a cross section study conducted in Bangladesh to determine prevalence and determinants of malnutrition in children,

educated mothers have greater knowledge regarding the health and nutrition of their children, improved child care, usage of health services, hygiene and sanitation, among other things.

Econometric studies according to Central Statistics Office (CSO (2019), have confirmed that better status for women is correlated with better nutrition outcomes in a wide range of developing countries. In a study, by Mzumara, et al, (2018), conducted in Zambia, to determine the Factors Associated with Stunting Among Children Under five old, it was observed that the gap on stunting prevalence between children from uneducated mothers or of a primary school level of education compared with those from mothers with secondary or high level of education remains high. Children whose mothers had higher education showed a 75% reduction of odds compared to children whose mothers had no education (AOR = 0.35, 95%CI: 0.22, 0.54; $p < 0.05$). In yet another study, in Zambia, by Richards and Bellack, (2016), which looked at women's education, related to the effect of food price rises on stunting, it was discovered that the better educated the mother is in urban areas, the taller the children were.

2.7 CONCLUSION

From the literature reviewed, it is evident that low levels of knowledge, negative perceptions and bad cultural practices of mothers with under-five children, negatively affect child care practices of mothers towards prevention of under-nutrition among children. However, the studies have not shown much on the change impartation of knowledge to mothers could bring in the quest to prevent under-nutrition. Therefore, this study set out to determine whether impartation of knowledge to mothers improved child care practices towards prevention of under-nutrition.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter focused on research design, research setting, and study population, sample selection, sample size, data collection tool, validity, reliability, pilot study and ethical considerations. The purpose of the study was to determine factors influencing child-care practices of mothers with under-five-children towards prevention of under nutrition.

3.2 RESEARCH DESIGN

A quantitative, non-interventional cross-sectional descriptive design was used in this study. It is quantitative because it involves assigning numerical values to responses and proceedings/situations. Non-interventional because there was nothing done about the situation apart from getting responses from respondents, Cross-sectional because data was collected at one point in time from the respondents and descriptive because the tool used was a semi-structured questionnaire which involved narrations in a few instances. This design was suitable for this study because of the time constraints.

3.3 RESEARCH SETTING

This study was conducted at Mahatma Gandhi memorial clinic and Kasanda clinic in Kabwe District. The two clinics were chosen to allow for a balanced view of different socio-economic levels. The sites are centrally placed catering for both well designated residential areas and shanty compounds, offering a fair opportunity to interview both the elite and lowly educated. Moreover, the sites offer Maternal and Child Health services such as Under-five Child Clinics which offered an ideal site for scientific data. Besides, the large catchment areas of the sites gave an adequate sample size, they also happened to be referring centres for patients to Kabwe General Hospital.

3.4 STUDY POPULATION

The population for this study comprised mothers with children below five years of age.

3.5 SAMPLE SELECTION

A systematic random sampling method was used to select mothers with under-five children as participants. The method involved selecting elements at equal intervals from the sampling frame. Thus, the researcher selected every second person/Mother with an under-five old child that came for health services in the Under-five children's Clinic.

3.5.1 INCLUSION CRITERIA

The inclusion criterion in this study were mothers with under-five children seeking child health services at Mahatma Gandhi and Kasanda clinics at the time of the study and were willing to participate.

3.5.2 EXCLUSION CRITERIA

The study did not include:

1. Mothers who did not consent because the researcher wanted to uphold ethics and not to coerce.
2. Those with sick children were already emotionally affected therefore, data would be biased.
3. The mentally challenged because they wouldn't give valid data since they were not in their right minds.
4. Care takers other than mothers because care takers were of vast categories, therefore, this was to avoid biasness in choosing, moreover the study is about investigating mothers and not any other care giver.

3.6 SAMPLE SIZE

Sample Size and Procedure

- **Sample size determination**; Sample size was calculated using the formula as per Fisher et al, (1991).

$$n = \frac{Z^2 \times P \times (1-P)}{d^2}$$

P = the proportion/prevalence

Z = 1.96 is the standard normal variant at 95% confidence level

d = ±5% = ± 0.05 (5%/0.05) is the margin of error

A prevalence of 48% was used because most of the reviewed literature at national, regional and global level indicates the prevalence of under nutrition within this margin. For instance, the (ZDHS, 2018).

Sample size will therefore be:

$$n = \frac{Z^2PQ}{D^2} = \frac{1.96^2 \times 0.48 \times 0.50}{0.05^2} = 368.79 = \mathbf{369}$$

FN = n/ (1+n/N)

FN = 369/ (1+369/280)

FN = 159.20

FN = 159

Therefore, the actual sample size for this study was 159plus 10% for non-response of 159 clients which came to 175 clients in total, (Fisher, et al, 1991).

3.7 DATA COLLECTION TOOLS

A semi structured questionnaire was used to collect data from the respondents. This tool was selected because it can be used for both the illiterate and literate respondents and also enables the researcher to capture as much information as possible. The semi structured questionnaire had both open ended and closed ended questions. The questionnaire was divided into 5 sections (A, B, C, D and E). Section A focused on demographic data, section B was on information on knowledge on child care, section C was on information on attitude of mothers with under five children towards prevention of under nutrition, section D was on the cultural practices and beliefs of mothers with under five children and section E focused on information on child-care by mothers towards prevention of under nutrition.

3.8 VALIDITY

Internal validity was upheld by ensuring that confounding variables that could have influenced the independent variables such as age, level of education and socio-economic status were also measured. This increased the confidence of the researcher that the results realised were caused by only one independent variable. To ensure high internal validity, the researcher also used random sampling to choose the respondents.

External validity was upheld through randomizing the study sample which gave every individual an equal chance of being selected to participate, hence the results attained high validity of being generalized to the general public. The study involved interviewing participants in person meaning that it was applied in real world situation. The results attained by use of a semi-structured questionnaire could be replicated. Furthermore, the researcher indicated limitations of the study and recommendations for the study to be conducted in other settings such as the rural.

3.9 RELIABILITY

Reliability was upheld by use of a semi-structured questionnaire as a tool that was used to interview the participants. Reliability was upheld by ensuring that the required total number of clients was interviewed as long as they met the inclusion criteria. The data collection tool was checked by the supervisors, was checked by ethics committee and Health Research Authority.

Finally, the tool was tested in a pilot study. Data was entered into the SPSS version 22.0, was cleaned and analysed. The Principal Component Analysis (PCA) which helps identify variables being measure by the questions was done, e.g. Question 1 to 6 was on maternal demographic data. Cronbach's Alpha (CA) which tests the internal consistence of questions on each variable was also done. For example, the CA for questions representing maternal demographic data was 0.91. Data was then revised, questions that had errors were corrected and those that weren't making sense were removed.

3.10 DATA COLLECTION TECHNIQUES

In the study, data from the respondents was collected in a private environment to provide confidentiality and the respondents remained anonymous to the researcher and the general public.

The Data Collection procedure involved the researcher introducing herself to the respondents which was done in order to make the respondents feel at ease. The purpose, risks and benefits of the study were explained to the respondents in order for them to make an informed decision whether or not to participate in the study. Confidentiality was assured to the respondents to enable them to participate in the study without fear. Permission was gotten from each respondent before conducting an interview. Questions were read out carefully without cross-examining the respondent and questions which were not understood were interpreted or merely repeated without indicating the direction to the answer. Questions which were not fully answered by the respondents were probed further and clarified. All the responses from the respondents were noted down on the interview schedule to avoid missing out any information. The interviews were conducted during working hours from 08:00 to 16:00hours and took approximately 30 minutes to interview each respondent. Finally, the researcher thanked each respondent at the end of the interview for their time and participation in the study.

3.11 PILOT STUDY

The pilot study was conducted at Pollen clinic because the characteristics of the mothers were similar to the one on the selected sites. It consisted of respondents which were approximately 10% of the actual study sample population who were selected using systematic random sampling method.

3.12 ETHICAL AND CULTURAL CONSIDERATION

Nonmaleficence: was upheld by ensuring that participants were not subjected to any harm, as the research did not involve any invasive procedures. They were also protected from psychological harm by allowing them to answer questions in a natural setting.

In this study, participants were given the freedom to choose to participate or not to participate. The participants were assured of confidentiality and that no names would appear in the questionnaire. If they chose to take part in the study, they were asked to sign a consent form. **Justice** was upheld by ensuring that all participants were treated equally, selected randomly using systematic sampling method and asked the same questions by way of questionnaire. **Beneficence** was upheld, as the outcome of the research will add to a body of knowledge in helping increase mothers' knowledge towards prevention of under-nutrition in under-five year old children. Clearance was sought from the University of Zambia Biomedical Research Ethics Committee and from the National Health Research Authority. Written permission to conduct the research was obtained from the Kabwe District Health office.

CHAPTER FOUR

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1. INTRODUCTION

This chapter presents quantitative data on Knowledge, Cultural behaviours and Perceptions of Mothers with Under Five-year-old Children towards Prevention of under Nutrition in Kabwe District, Zambia**.** This chapter describes how the processing and analysis of data was done and presented in form of frequency tables, pie charts and cross tabulation tables to provide a better understanding and summary of data collected.

4.2. DATA PROCESSING AND ANALYSIS

Data was screened for completeness, internal consistency, legibility and any possible errors by scrutinizing each and every questionnaire immediately after data collection. Responses were assigned numerical codes then entered into Statistical Package for Social Science (SPSS) version 22.0 software and analyzed for frequencies. Cross tabulations among the dependent and independent variables was done to establish association using the Chi-Square test on SPSS software. The level of statistical significance was set at 5%. Therefore, only *p* values of 0.05 or less were considered statistically significant.

4.3. PRESENTATION OF FINDINGS

Frequency tables, pie charts and histograms were used to summarize the findings of the study for better understanding. Cross tabulations have been helpful in comparing the association between the variables from which meaningful inferences have been drawn. The comparisons were done with respect to the objectives of the study. Findings of this study were presented according to the sequence and sections in the semi structured questionnaire as follows: demographic data, knowledge on nutrition, perceptions, cultural behaviors and child care activities.

4.3.1. SECTION A: DEMOGRAPHIC DATA OF RESPONDENTS

This section presents the demographic data of respondents in terms of age, educational level, marital status, occupation, religion and parity, number of living children, MUAC, child's gender and birth order.

Table 4.1.0: Socio-Demographic Information of mothers (n=175).

Characteristic	Frequency	Percentage
Age		
10-19 years	11	6.3
20-29 years	100	57.1
30-39 years	59	33.7
40-49 years	5	2.9
Total	**175**	**100**
Marital Status		
Single	35	20.0
Married	140	80.0
Total	**175**	**100**
Religious Affiliation		
Christian	175	100
Total	**175**	**100**
Level of education		
None	3	1.7
Primary	34	19.4
Secondary	90	51.5
Tertiary	48	27.4
Total	**175**	**100**
Number of births		
One to three	139	79.4
Four to five	32	18.3
Over five	4	2.3
Total	**175**	**100**
Number of living children		
One to two	117	66.9
Three to Four	50	28.6
Five to six	8	4.5
Total	**175**	**100**

Occupational status		
Formal employment	37	21.1
Self-employment	28	16.0
Unemployed	110	62.9
Total	**175**	**100**

The table shows that more than half (57.1%, n=100) of the mothers were aged 20-29 years, over a quarter (33.7%, n=59) were aged 30-39 years and 6.3% (n=11) were adolescents. All the mothers (100%, n=175) were Christians and more than three quarter (80%, n=140) were married. Slightly over half (51.5%, n=90) attained secondary education, over a quarter (27.4%, n=48) attained tertiary education and 1.7% (n=3) had no formal education. More than three quarters (79.4%, n = 139) of the women have had 1-3 births while 2.3% (n=4) have had over five births. About 66.9% (n=117) of the mothers had 1-2 living children, 4.5% (n=8) had 5-6 living children. More than half (62.9%, n=110) of the mothers were unemployed while less than a quarter (21.1%, n=37) were in formal employment.

Table 4.1.1: Child's Socio-Demographic Information (n=175).

Characteristic	Frequency	Percentage
Age		
1-6 months	85	48.6
7-12 months	40	22.8
13-24 months	26	14.9
Above 24 months	24	13.7
Total	**175**	**100**
Gender		
Male	90	54.1
Female	85	48.6
Total	**175**	**100**
Mid Upper Arm Circumference		
Below 11cm	1	0.6
11cm-12.5 cm	60	34.5
12.6cm-13.5cm	52	29.7
Over 13.5cm	62	35.2
Total	**175**	**100**

Weight		
Below 5kg	9	5.1
5kg-10kg	121	69.1
10.1kg-15kg	41	23.4
Over 15kg	4	2.4
Total	**175**	**100**
Birth order		
First	77	44.0
Second	35	20.0
Third	29	16.6
Fourth	24	13.7
Over four	10	5.7
Total	**175**	**100**

According to table 4.2, less than half (48.4%, n=85) of the children were aged 1-6 months, 22.8% (n=40) were aged 7-12 months and 13.7% (n=24) were aged above 24 months. Over half (54.1%, n= 90) of the children were males and over a quarter (35.2%, n=62) had a MUAC of over 13.5cm while 34.5% (n=60) children had a MUAC of 11cm-12.5cm. More than half (69.1%, n = 121) weighed between 5kg and 10kg while 5.1% (n=9) weighed below 5kg. Less than half (44%, n=77) of the children were first born and 20% (n=35) were second born.

4.3.2. SECTION B: KNOWLEDGE ON CHILDFEEDING AND CARE

This section presents information of the respondents on knowledge about child feeding and care.

Table 4.2: Knowledge on child feeding and care (n=175).

Characteristic	Frequency	Percentage
Appropriate time of initiating breastfeeding		
Within an hour of birth	138	78.9 Correct
An hour after birth	23	13.1
A day after birth	4	2.3
I don't know	10	5.7
Total	**175**	**100**
Frequency of breastfeeding a child		
On demand	137	78.3correct
Following a set timetable	30	17.1
No sure	8	4.6
Total	**175**	**100**

Age of commencing breast milk supplements		
At 6 months	159	90.9 correct
Before 6 months	15	8.6
I don't know	1	0.6
Total	**175**	**100**
Appropriate age of weaning a child		
At least 18 months	132	75.4 correct
Before 18 months	42	23.4
I don't know	2	1.1
Total	**175**	**100**
Appropriate diet after weaning of a child		
Balanced diet	94	53.7 correct
Unbalanced diet	81	46.3
Total	**175**	**100**
Frequency of feeding after weaning a child		
Three meals	48	27.4
Less than three meals	6	3.4
Over three meals	121	69.1 correct
Total	**175**	**100**
Sources of information regarding child nutrition and care		
Family members	57	32.6
Health facility	114	65.1 correct
All	4	2.3
Total	**175**	**100**

From table 4.3 above, more than three quarters (78.9% n= 138) of the study respondents indicated that initiation of breastfeeding was appropriate in the first hour of birth, more than three quarters (78.3%, n= 137) indicated that a child was supposed to be breastfed on demand and the majority of 90.9% (n=159) indicated that commencing breast milk supplements was appropriate when a child is aged 6 months. Three quarter (75.4%, n= 132) of the study respondents stated that weaning a child was appropriate at least 18 months of age and less than half (46.3% n= 81) stated that an unbalanced diet was appropriate after weaning a child. More than half of the study respondents (69.1%, n=121) stated that more than three meals were appropriate for a child after weaning. More than half of the study respondents (65.1%, n= 114)

obtained information about child nutrition and care from health facilities, over a quarter (32.6%, n= 57) obtained information from family members.

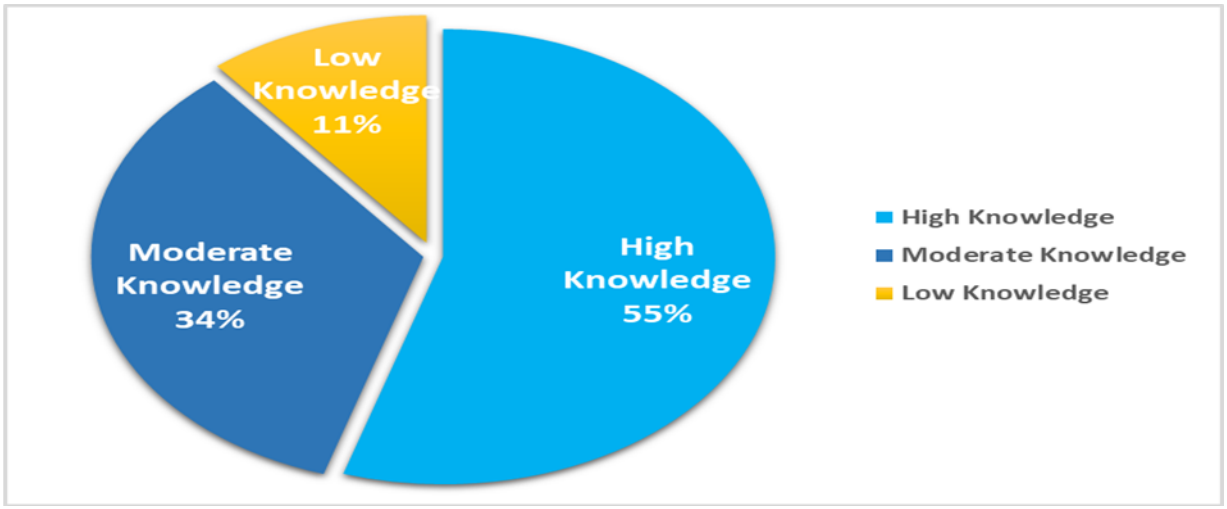


Figure 4.1: Knowledge of respondents on child nutrition and care (n=175)

The figure above shows that over half of the study respondents (55%, n=96) had a high knowledge of child nutrition and care and over a quarter (34%, n=60) had moderate knowledge while 11% (n=19) had low knowledge on child nutrition and care.

4.3.3. SECTION C: ATTITUDES TOWARDS PREVENTION OF UNDER NUTRITION

This section presents information attitudes of mothers with under five children towards prevention of under nutrition.

Table 4.3: Perceptions towards Prevention of Under Nutrition (n=175).

Characteristic	Frequency	Percentage
Colostrum is very nutritious to the baby		
Strongly agree	119	68.0
Agree	51	29.1
Not sure	4	2.3
Disagree	1	0.6
Total	**175**	**100**
A baby can survive for 6 months only on breast milk		
Strongly agree	23	13.1
Agree	35	20.0
Not sure	11	6.3

Disagree	69	39.4
Strongly disagree	37	21.1
Total	**175**	**100**
Importance of food supplements in the first 6 months		
Strongly agree	20	11.4
Agree	33	18.9
Not sure	10	5.7
Disagree	77	44.0
Strongly disagree	35	20.0
Total	**175**	**100**
Poor/thin breast milk predisposes children to malnutrition		
Strongly agree	36	20.6
Agree	52	29.7
Not sure	35	20.0
Disagree	39	22.3
Strongly disagree	13	7.4
Total	**175**	**100**
Nutritious foods are expensive		
Strongly agree	12	6.9
Agree	34	19.4
Not sure	3	1.7
Disagree	96	54.9
Strongly disagree	30	17.1
Total	**175**	**100**
Malnutrition is caused by witchcraft/evil eye		
Strongly agree	5	2.9
Agree	7	4.0
Not sure	9	5.1
Disagree	98	56.0
Strongly disagree	56	32.0
Total	**175**	**100**
Eggs are too heavy for a child to digest		
Strongly agree	18	10.3
Agree	32	18.3
Not sure	30	17.1

Disagree	71	40.6
Strongly disagree	24	13.7
Total	**175**	**100**
One should stop breastfeeding once pregnant		
Strongly agree	34	19.4
Agree	55	31.4
Not sure	27	15.4
Disagree	41	23.4
Strongly disagree	18	10.3
Total	**175**	**100**
breast milk protects children from illnesses		
Strongly agree	70	40.0
Agree	82	46.9
Not sure	9	5.1
Disagree	10	5.7
Strongly disagree	4	2.3
Total	**175**	**100**
Breastfeeding should be halted during child's illness		
Strongly agree	6	3.4
Agree	6	3.4
Not sure	11	6.3
Disagree	106	60.6
Strongly disagree	46	26.3
Total	**175**	**100**

According to the table, more than half (68%, n=119) of the respondents strongly agreed that Colostrum is very nutritious to the baby and over a quarter (29.1%, n=51) agreed. More than a quarter (39%, n=69) disagreed that it is possible for a child to survive only on breast milk for 6 months, less than a quarter (20%, n=35) agreed that it is possible for a child to survive only on breast milk for 6 months and less than half (44%, n=77) disagreed that it is important to give the baby some water, honey and other solid foods during the first six months. Above a quarter (29.7%, n=52) disagreed that poor/thin breast milk predisposes children to malnutrition, over half (54.9%, n=96) disagreed to the view that nutritious foods were expensive and over half (56%, n=98) disagreed to the view that malnutrition was caused by witchcraft or an evil eye. More than a quarter (31.4%, n=55) of the study respondents agreed that one should stop

breastfeeding once pregnant, less than half (46.9% n=82) agreed and 40% (70) strongly agreed that breast milk protects children from illnesses and more than half (60.6%, n=106) disagreed that breastfeeding should be halted during child's illness.

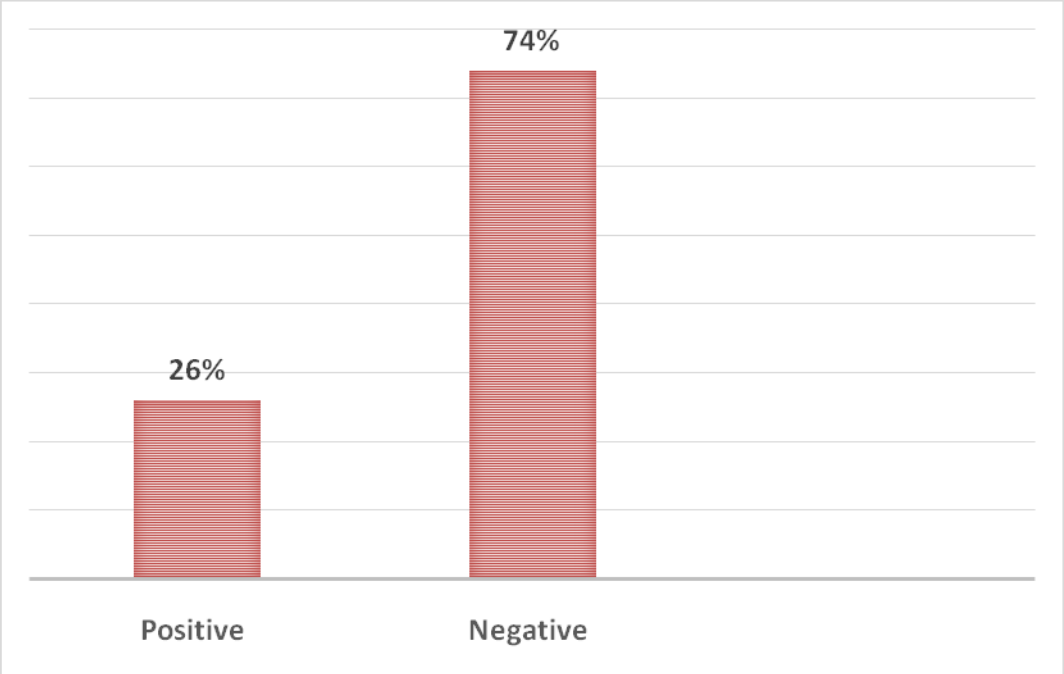


Figure 4.2: Respondents attitudes towards prevention of under nutrition (n=175)

According to the figure above, about three quarters (74%, n=129) of study respondents expressed negative attitude towards prevention of under-five under nutrition compared to a quarter (26%, n=46) who expressed a positive perception.

4.3.4. SECTION D: CULTURAL BEHAVIOURS TOWARDS PREVENTION OF UNDER NUTRITION.

This section presents information on cultural beliefs and practices of mothers towards prevention of under nutrition in under-five children.

Table 4.4: Cultural Behaviours towards prevention of under nutrition (n=175).

Characteristic	Frequency	Percentage
Foods culture forbids to give children		
None	28	16.0
Protein rich foods	50	28.6
Not sure	97	55.4
Total	**175**	**100**
Cultural views on breastfeeding immediately after birth		
Allowed	6	3.4
Not allowed	129	73.7
Not sure	40	22.9
Total	**175**	**100**
Cultural views on breastfeeding during pregnancy		
Allowed	6	3.4
Not allowed	129	73.7
Not sure	40	22.9
Total	**175**	**100**
Care of children when mother is pregnant		
Mother and father	22	12.6
Grand mother	83	47.4
Other relatives	23	13.1
Not sure	47	26.9
Total	**175**	**100**

From the table, over a quarter (28.6%, n=50) of the study respondents indicated that their culture practices did not allow protein rich foods to be given to children while over half (55.4%, n=97) were not aware of any cultural beliefs. About three quarters (73.7%, n=129) indicated that their culture disallowed women breastfeeding immediately after birth and about three quarters (73.7%, n=129) indicated that their culture disallowed women to breastfeed during pregnancy. Less than half (47.4%, n=83) indicated that grandmothers were responsible for child care when the child's mother fell pregnant and about 13.1% (23) indicated that it was other relatives' responsibility.

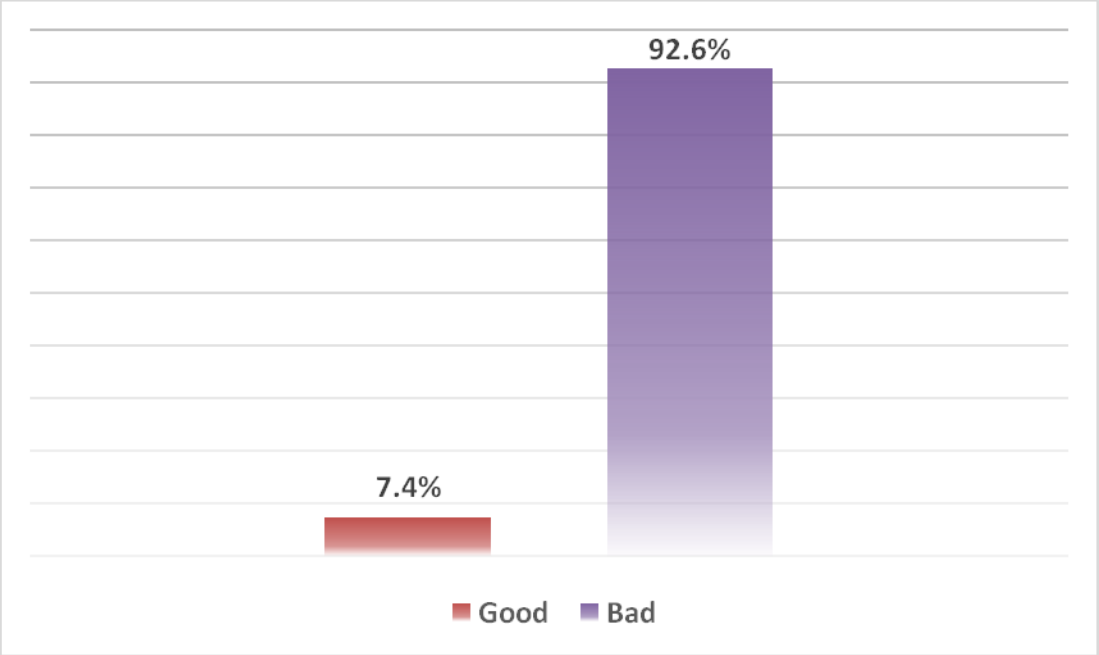


Figure 4.3: Cultural behaviours of respondents towards prevention of under nutrition in under five children (n=175).

From the figure above, the majority of the study respondents (92.6%, n=162) expressed bad cultural beliefs and practices towards prevention of under nutrition in under five children.

4.3.5. SECTION E: CHILD CARE ACTIVITIES OF MOTHERS WITH UNDER-FIVE CHILDREN TOWARDS PREVENTION OF UNDER NUTRITION.

This section presents information on child care activities of mothers with under-five children towards prevention of under nutrition.

Table 4.5: Child care activities Towards Prevention of Under Nutrition (n=175).

Characteristic	Frequency	Percentage
Period at which respondents commenced breastfeeding		
Within an hour after birth	129	73.7
After an hour of birth	35	20.0
After a day of birth	6	3.4
I don't know	5	2.9
Total	**175**	**100**

Administration of any oral feeds to the child before breastfeeding		
Infant milk formula	13	7.4
Glucose	2	1.1
Nothing	160	91.4
Total	**175**	**100**
Administration of the first breast milk to the child		
Yes	170	97.1
No	5	2.9
Total	**175**	**100**
Age at commencement of complementary feeding		
6 months	95	54.3
Before 6 months	23	13.1
Not yet	57	32.6
Total	**175**	**100**
Reasons for commencing complementary feeding before 6 months of age		
Excessive crying of the baby	16	69.6
Work/school	4	17.4
Inadequate milk expression	2	8.7
Maternal illness	1	4.3
Total	**175**	**100**
Respondents' breastfeeding status		
Yes	134	76.6
No	41	23.4
Total	**175**	**100**
Age of the child at weaning		
Above 18 months (appropriate age)	152	86.9
Less than 18 months (inappropriate age)	18	14.1
Total	**175**	**100**

Most of the study respondents (73.7%, n=129) initiated breastfeeding within an hour of birth and the majority (91.4%, n=160) indicated that nothing was administered orally to their child before breast milk. The majority (97.1%, n=170) indicated that their child had received the first breast milk after birth, over half (54.3%, n=95) commenced complimentary feeding of their child at age 6 months while over a quarter (32.6%, n=57) had not started giving their child any complimentary feeds at study time. Over three quarters of the study respondents (76.6%, n=134)

were still breastfeeding at the time of data collection while less than a quarter (23.4%, n=41) were not. More than three quarters (86.9%, n=152) had weaned/ would wean their child at over 18 months of age while 14% (18) had weaned/ would wean their child at less than 18 months of age due to inadequate milk expression, illnesses, work demands and baby refusal to eat other foods.

Table 4.6: Child care activities Towards Prevention of Under Nutrition (n=175).

Characteristic	Frequency	Percentage
Type of food fed to the child in the last 24 hours		
Balanced diet	71	40.6
Exclusive Breastfeeding	83	47.4
Unbalanced diet	19	10.9
Infant milk formula	2	1.1
Total	**175**	**100**
Number of meals given to the child in a day		
Three meals	32	18.3
Less than here times/breastfeeding per timetable	12	6.9
Over four times/breastfeeding on demand	131	74.9
Total	**175**	**100**
Method of administering semi-solid foods such as milk		
Feeding bottle	100	57.1
Cup and spoon	63	36.0
Breastfeeding	12	6.9
Total	**175**	**100**
Boiling of drinking water		
Always	125	71.4
Sometimes	40	22.9
Never	8	4.6
Take mineral water	2	1.1
Total	**175**	**100**
Washing of hands with soap before feeding the child		
Always	126	72.0
Sometimes	49	28.0

Total	**175**	**100**
Child care when the mother is away		
Mother takes the child with her	77	44.0
Husband	10	5.7
Older children	9	5.1
Relatives and acquaintances	79	54.9
Total	**175**	**100**
Child's immunization status		
Fully immunized	174	99.4
Not fully immunized	1	0.6
Total	**175**	**100**

Less than half (47.4, n=83) of the study respondents had their child on exclusive breastfeeding in 24 hours while 40.6% (71) fed their child a balanced meal. About three quarters of the respondents (74.9%, n=131) were breastfeeding their child on demand while 18.3% (32) gave three meals per day. Over half (57.1%, n=100) were using a feeding bottle to administer semi-solid foods such as milk to the child while more than a quarter (36%, n=63) used cup and spoon. About three quarters (71.4%, n=125) of the study respondents always boiled drinking water while less than quarter (22.9, n=40) sometimes boiled drinking water. About three quarters (72%, n=126) always washed their hands with soap before feeding their child while over a quarter (28%, n=49) only washed hands with soap sometimes. Over half (54.9%, n=79) left their children under the care of relatives and acquaintances when they were away and almost all (99.4%, n=174) the mothers had their children fully immunized for age.

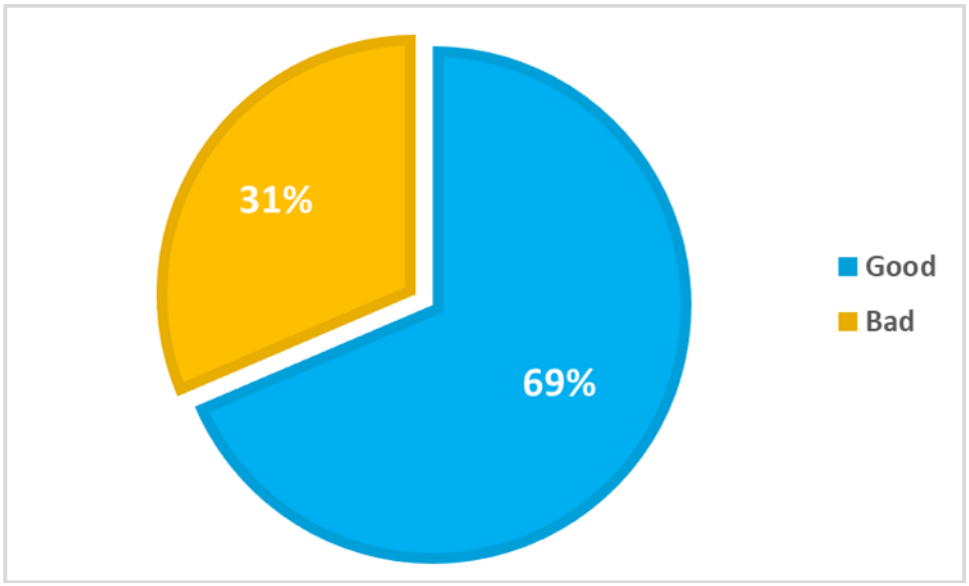


Figure 4.4: Child care practices of mothers towards prevention of under nutrition in under five aged children (n=175).

The figure above shows that more than half (69%, n=120) of the study respondents had good child care practices towards prevention of under-five malnutrition. More than a quarter (31%, n=55) expressed bad child care practices towards prevention of under-five malnutrition.

4.3.6 SECTION F: RELATIONSHIP BETWEEN VARIABLES

This section describes the relationship among the study variables. To establish the relationship between the dependent variable and independent variables, mother's child care practices towards prevention of under nutrition in under-five children was cross tabulated with, knowledge on nutrition and child care, perceptions toward nutrition and child care, and cultural behaviours towards nutrition and child care.

Table 4.7: Relationship between child care practices towards prevention of under nutrition in under-five children and knowledge on nutrition and child care (n=175).

Knowledge on nutrition and child care	**Child care practices**		**Total**	**P-value**
	Good	Bad		
High	72.9% (70)	27.1% (26)	**96(100%)**	**0.394**
Moderate	63.3% (38)	36.7% (22)	**60 (100%)**	
Low	63.2% (12)	36.8% (7)	**19 (100%)**	
Total	**69 (120)**	**31% (55)**	**175 (100%)**	

According to the table above, almost three quarters of the study respondents (72.9%, n=70) with high knowledge on nutrition and child care expressed good child care practices towards prevention of under nutrition, compared to those with moderate knowledge (63.3%, n=38) and those with low knowledge (63.2%, n=12). The relationship between mother's child care practices towards prevention of under nutrition in under-five children and knowledge on nutrition and child care was not significant (Chi-square value**=1.863, df=2** and *p*-value=**0.394**).

Table 4.8: Relationship between child care practices towards prevention of under nutrition in under-five children and attitudes toward nutrition and child care (n=175).

Perceptions toward nutrition and child care	**Child care practices**		**Total**	**P-value**
	Good	Bad		
Positive	71.7% (33)	28.3% (13)	**46 (100%)**	**0.590**
Negative	67.4% (87)	32.6% (42)	**129 (100%)**	
Total	**69 (120)**	**31% (55)**	**175 (100%)**	

According to the table above, about three quarters of the study respondents (71.7%, n=33) with positive attitudes on nutrition and child care expressed good child care practices towards prevention of under nutrition compared to those with negative perceptions (67.4%, n=87). The relationship between mother's child care practices towards prevention of under nutrition in under-five children and perceptions toward nutrition and child care was not significant (Chi-square value**=0.291, df =1** and *p*-value=**0.590).**

Table 4.9: Relationship between child care practices towards prevention of under nutrition in under-five children and Cultural behaviors towards nutrition and child care (n=175).

Cultural behaviors towards nutrition and child care	**Child care practices**		**Total**	**P-value**
	Good	Bad		
Good	61.5% (8)	38.5% (5)	**13 (100%)**	**0.570**
Bad	69.1% (112)	30.9% (50)	**162 (100%)**	
Total	**69 (120)**	**31% (55)**	**175 (100%)**	

The table above shows that more than half of respondents (69.1%, n=112) with bad cultural behaviors towards nutrition and child care and those (67.4%, n=87) with good culture behaviors towards nutrition and child care expressed good child care practices towards prevention of under nutrition. The relationship between mother's child care practices towards prevention of under nutrition in under-five children and cultural behaviors towards nutrition and child care was not significant (Chi-square value**=0.322, df=1** and *p*-value=**0.570**).

Table 4.10: Logistic Regression Analysis adjusted for knowledge, attitudes and cultural behaviours regarding practices towards prevention of malnutriton.

Variables		**B**	**Sig.**	**Exp(B)**	**95% Confidence Interval**	
					Lower	**Upper**
Knowledge	**Ref: Low knowledge**					
	High	-0.451	0.393	0.637	0.226	1.793
	Moderate	-0.008	0.989	0.992	0.340	2.893
Attitude	**Ref: Negative attitudes**					
	Positive attitudes	-0.203	0.590	0.816	0.389	1.710
Cultural behaviours	**Ref: Poor behaviours**					
	Good cultural behaviours	0.336	0.572	1.400	0.436	4.493

Binary logistic regression analysis showed that odds of good practices towards the prevention of malnutrition in under-five children were 0.992 times more in those with moderate knowledge and o.637 more in those with high knowledge compared to those with low knowledge on malnutrition. The odds of good practices were 0.816 times more in respondents with positive

perceptions regarding malnutrition prevention compared to those with negative perceptions. Respondents with good cultural behaviours towards the prevention of malnutrition were 1.4 times more likely to exhibit good practices towards the prevention of childhood malnutrition. However, none of these factors was significant.

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

5.1 INTRODUCTION

This chapter includes the implications of the findings to the health care system, recommendations drawn from the findings and the study limitations.

5.2 DISCUSSION ON EACH VARIABLE

5.2.1 DEMOGRAPHIC DATA

Section A of the questionnaire obtained information on the demographic data of the respondents. This data included age, educational level, marital status, occupation, religion and parity, number of living children, MUAC, child's gender and birth order. This information was essential for the interpretation of study findings.

According to USAID, (2018), the risk of stunting is 33 percent higher among first-born children of girls under 18 years in Sub-Saharan Africa, and as such, early motherhood is a key driver of malnutrition. Being older and more educated also confers greater capabilities to provide optimal care for young children. The age range of the current study respondents was within the reproductive years with majority (57.1%, n=100) falling between 20 and 29 with the mean age of 25 years. While adolescents were the minority at 6.3%, the majority of the respondents happened to be youths (>57.1%). This was contrary to findings by USAID, (2018), which revealed that by the age 19, 59 percent of adolescent girls had begun childbearing and saw it to have serious consequences because, relative to older mothers, adolescent girls are more likely to be malnourished and have a low-birth-weight baby who is more likely to become malnourished, and be at increased risk of illness and death than those born to older mothers. The controversy could be due to the fact that the study by USAID covered both urban and rural areas while the current study was restricted to urban. The data obtained under marital status revealed that more than 3/4 of the respondents (80%) were married hence upholding the moral values of the family and this also creates a conducive environment for upbringing of children. The results are in line with the CSO, (2015) report which revealed that 59.5% of women in the age group of 15-49 were married.

The number of children that a mother has to take care of can influence the nutritional status of children. It is very logical that a mother may not stress up much to provide nutritious meals for a small family as compared to a big family. In the current study, more than half (66.9%) of the mothers had 1-2 living children, a number which is manageable and would not pose too much stress on a mother in terms of provision of nutritious food stuffs. These results are in line with findings by CSO, (2018), attributing to the increase in uptake of family planning services by people in urban areas, where 54% of married women residing in urban areas use contraception compared to 46% of women in rural areas. The findings of the current study were contrary to findings of a study by Perez and Garcia, (2013), where the mean parity was 6-3 children. The difference could be due to differences in the study settings (urban Vs rural). However, the majority of the mothers (> 57.1%) in the current study were still within child bearing age and the fact that the majority fell within 15 and 29 years, means the number of children could increase.

Religion could affect nutritional state of children in that some religions may have food restrictions that can pose a danger to child nutrition. For instance, in a study by Reddy and Anitha, (2015), to determine culture and its influence on nutrition and oral health conducted in India, it was revealed that many people are vegetarians because of religious beliefs. It was also discovered that Moslems and Jews can only eat meat if the animal was slaughtered religiously. These restrictions can limit the nutrition access to many especially children who need daily supplies. In the current study all (100%) of the respondents were Christians which is in accordance with the fact that Zambia is a Christian nation as was declared in 1991 by the late president Dr Fredrick Chiluba a born-again Christian, (World Council of Churches, 2015). This was contrary to a Descriptive study by Bagilkar and Savadatti, (2015), conducted in Belgaum which revealed that 70% of parents belonged to Jain religion.

According to findings by CSO, (2016), the proportion of mothers who attained primary and secondary education was increasing steadily. The findings in the current study also revealed that slightly over half (51.5%) of the mothers attained secondary education, over a quarter (27.4%) attained tertiary education, only a few had attained primary education and very few (9.3%/ 1.7%) had incomplete /no formal education. These results are corresponding to the increase in primary and secondary schools in Zambia (CSO, 2016). This implies that most of the mothers are likely to have adequate knowledge about child nutrition and good child care practices. This is contrary

to a study by Lija and Kanniammal, (2017) in Botswana, where a little less than half (46.1%) of the study respondents had average level of knowledge while only 19.1 % of mothers had good knowledge regarding the prevention and management of malnutrition. only 24.3% of mothers had reported good practice but 36.6% of mothers had poor practice score, concluding that there is strong association between the nutritional status of children and knowledge and practice of mothers ($p<0.01$). The difference, however could be because the study by Kanniammal included the rural population while the current study was restricted to urban area.

The study revealed that, more than half of the respondents were unemployed while less than a quarter, (21.1%) were formerly employed. This means that majority of the respondents had no formal income of their own, but depended on either their husbands or parents for provisions of food and other requirements which could limit the choice of food groups accessed. This is in line with a study by Imera, (2016), where the majority of the mothers were unemployed (75%, n=81), only 8.3% (n=9) were in formal employment.

Health promotion services are very important in the monitoring of the nutritional health of a child, yet mothers tend to relax on taking their children for these services once they are weaned. In the current study, close to half of the children enrolled in the study (48.4%) were aged 1-6 months, only 13.7% were above 24 months old. This suggests that many children above 24 months of age are rarely taken for health promotion services and it correlates with the study by Guyatt, et al, (2020), which revealed that the strongest predictors of stunting and underweight were being in the second year of life. Over half of the children were males, contrary to a study by Samiakl and Ameto, (2017) where more than half, 58 (55%), were females. Over a quarter had a Mid Upper Arm (MUAC) of over 13.5cm while 34.5% of the children had a MUAC of 11cm-12.5cm. More than half (69.1%, n = 121) weighed between 5kg and 10kg, suggesting normal health in most of the children, which was similar to Samiakl and Ameto, where the majority weighed 5.2 to 17.7 kg, with a mean of 11.2. This could be attributed to the Knowledge in child care the mothers received from the health services. Less than half of the children were first born and very few (5.7%) had a birth order of over four. The results could be attributed to the zeal that mothers have with their first and second child towards health promotion service seeking and nutrition.

5.2.2 KNOWLEDGE OF MOTHERS WITH UNDER-FIVE YEARS OLD CHILDREN ON CHILDFEEDING AND CARE

In this study, knowledge relates to acquired information and understanding that the mothers of under five-year-old children have regarding right feeding, hygiene, immunization, signs of nutrition deficiency and many more.

Inadequate knowledge on breast feeding, inappropriate practices such as early and delayed introduction of complementary foods, low energy and nutrient density of food offered, feeding thin consistency feeds, small amounts and food restrictions due to cultural beliefs are often greater determinants of malnutrition than even the availability of food, (Akombi, et al, 2017). Mothers are the foremost providers of primary care for children. Their understanding of basic nutrition and health measures strongly influence the care they provide. According to Memon, et al, (2019), in an article that was examining Pregnancy and Childbirth, aspects of nutritional knowledge include: duration of exclusive breastfeeding, appropriate age for introducing solid foods into a child's diet and the type of solid foods to introduce, frequency of child feeding and how the food is prepared/mixed. Mothers' practical nutritional knowledge is important for their children's nutritional outcome.

Attending health promotion services can positively affect mothers' child care activities and improve nutritional status of their children because of the knowledge they acquire. In a study by Sahu, et al, (2015), conducted in India to determine malnutrition in under-five children and strategies for control, it was revealed that the rates of exclusive breast feeding and complementary feeding were higher for mothers who had more antenatal visits and watched health education on infant feeding practices on television. The current study, results show that over half of the study respondents (55%, n=96) had high knowledge of child nutrition and care and only 11% (19) had low knowledge on child nutrition and care. This suggests that mothers attending child health promotion services are knowledgeable because of the IECs they receive from the health practitioners. This is contrary to a study by Lija and Kanniammal, (2017), where a little less than half (46.1%) of the study respondents had average level of knowledge and only19.1 % of mothers had good knowledge regarding the prevention and management of

malnutrition. This reflected in their practices which showed that only 24.3% of mothers had reported good practice but 36.6% of mothers had poor practice score.

The source of knowledge/ information on child care may influence the care activities positively or negatively. For instance, if the mother's source of information is from the family, it could be suspected that the mother is likely to uphold cultural beliefs. According to findings in the current study, more than half of the study respondents (65.1%, n= 114) obtained information about child nutrition and care from health facilities, over a quarter (32.6%, n= 57) obtained information from family members. This implies that these respondents are very likely to uphold good feeding and child care practices hence being able to curb under-nutrition because the information they acquire from the clinics is scientific. This is similar to a study by Baran et al, (2016), where 75.9% of the respondents received information about child care from health facilities. This reflects positively in child care practices of the mothers. A study conducted by MCNamara (2017), revealed that those respondents who got information from the health centre also had high knowledge. Similarly in a study by Quinn et al,(nd), more than half of the respondents (65.1%, n= 114) obtained information about child nutrition and care from health facilities. Over a quarter (32.6%, n= 57) obtained information from family members while 2.3% (4) obtained information about child nutrition and care from both family members and health facilities. According to the study, incorrect information from family, neighbours, and friends as well as 'local myths' may lead to nutritional practices that fail to provide optimal benefits to mothers and their children, (Quinn, et al, nd).

5.2.3 ATTITUDES OF MOTHERS WITH UNDER-FIVE YEAR OLD CHILDREN TOWARDS PREVENTION OF UNDER NUTRITION

Attitudes of mothers in all the activities that lead to prevention of under nutrition are key to whether the mother will perform the care activities. Certain barriers such as beliefs of mothers, their conventional and traditional thinking, makes it hard to change their behaviour and perception regarding the healthy foods. A study conducted by Archaya, et al, (2017), to determine Knowledge, attitudes, beliefs and behaviour of mothers of young children related to healthy eating; comparing rural and urban perspective in Nepal, stated that although mothers have become aware of the healthiness of food and the requirement of proper micronutrients and

nutrition for the people in Nepal to combat the problem of malnutrition, the mothers regard these foods as being unappetizing, but appropriate for sick people only and not for normal people. If mothers perceive the cause of under-nutrition to be witchcraft even interventions would be wrongly applied, equally interventions may depend on how the mother looks at the gravity of the problem. According to Muraya, et al, (2016), in a qualitative study to determine Perceptions of childhood under-nutrition among rural households on the Kenyan coast, a mother's decision in relation to child illnesses is determined by a range of inter-related factors and understanding the dynamics of perceptions of illness, gender intra-household relations, and how these interact with recognition of child under-nutrition. Subsequent treatment and interactions with nutrition interventions is crucial to addressing the malnutrition situation. In this study, about three quarters (74%, n=129) of study respondents expressed negative perception towards prevention of under-five under-nutrition compared to a quarter (26%, n=46) who expressed a positive perception. This entails that these mothers would unlikely conform to activities that avert under-nutrition. This is similar to what Lamorte, (2016), alluded to. According to Lamorte, if a mother's attitude (intention) is positive or strong towards certain behaviour, the chance of performing the behaviour becomes high. If mothers feel child care and feeding such as food preparation and taking a child for immunization is important, it will be reflected in how much time they apportion to these activities.

Early initiation of breast feeding provides warmth, promotes bonding and the mother's health by reducing the risk of postpartum haemorrhage. A study by Quinn, et al, (nd) in Ghana estimated that 22% of newborn lives could be saved if breastfeeding were initiated within the first hour. During the first days of life, breast feeding helps to prevent hypoglycaemia and hypothermia, which are important contributors to newborn deaths. In this study, more than half (68%, n=119) of the respondents strongly agreed that the first milk (Colostrum) is very nutritious to the baby and over a quarter (29.1%, n=51) agreed. This implies that these mothers are likely to breast feed their babies early and give colostrums to their babies. Nevertheless, this is contrary to a study by Boumslag, (2017), where Colostrum was not given to many newborn babies, instead they were fed on water and sugar or water and milk during their first days of life. In a study by Oberle, (2018), a boy child was introduced to camel milk early as a rite to like the animals they will look after in future citing that if the boy is introduced to the mother's milk first, they will be useless.

Exclusive breastfeeding protects children against major causes of death such as sepsis, acute respiratory tract infections, meningitis and diarrhoea. It also provides all of the fluid and nutrients needed for optimal growth and development during the first six months, is associated with increased maternal-infant bonding and the earlier establishment of effective suckling and feeding behaviours, (Hasegawa, Ito and Yamauchi, 2017). The current study results revealed that, more than a quarter (39%, n=69) of the study respondents disagreed to the statement that it is possible for a child to survive only on breast milk for 6 months and 21.1% (37) strongly disagreed. Less than a quarter 20% (35) of the study respondents agreed that it is possible for a child to survive only on breast milk for 6 months. This is similar to a study by Reinsma et al, (2016), where exclusive breastfeeding was often undertaken as mixed feeding, notwithstanding the fact that mixed feeding increases the risk of infant morbidity and mortality because it increases the risk of infections from unhygienic food preparation practices. Bacteria and other contaminants may be introduced into the infant's gut and may cause inflammatory responses with subsequent damage to the gut mucosa, resulting in diarrhea and upper respiratory tract infections.

WHO recommends that children should be exclusively breastfed for at least six months, followed by the introduction of complimentary nutritious foods, (Akombi, et al, 2017). When Mothers perceive breast milk alone not to suffice for the child, they are likely to practice mixed feeding and early introduction of supplementary feeding. In the current study, less than half of the study respondents (44%, n=77) disagreed to the statement that it is important to give the baby some water, honey and other solid foods during the first six months after birth and 20% (35) strongly disagreed. Only 18.9% (33) agreed that it is important to give the baby some water, honey and other solid foods during the first six months after birth. This is contrary to a study by Aboud et al, (2011), in Ethiopia, where newborns might be given a spoonful of soft rancid butter or warm water with sugar to oil the 'pipes'(intestines) and sweeten the vocal cords. Even hospitals in urban settings were found to interfere with early breastfeeding by supplying commercial milk in bottles defeating the whole purpose of exclusive breastfeeding. The current study results are also contrary to a study by MCNamara, (2016), where grandmothers influenced mothers to give water to their new born babies citing that the babies would die of thirst if not given water as opposed to exclusive breast feeding.

According to the current study, over half (54.9%, n=96) of the study respondents disagreed and 17.1% (30) strongly disagreed to the view that nutritious foods were expensive. About 19.4% (34) agreed that nutritious foods were expensive. The results can be attributed to the teachings about readily available and affordable nutritious foods that mothers receive from the health centre, contrary to a study by Van der Velde et al, (2019), that healthy eating behaviour is an essential determinant of overall health. However, this behaviour is generally poor among people at risk of experiencing food insecurity, which may be caused by many factors including perceived higher costs of healthy foods, financial stress, inadequate nutritional knowledge, and inadequate skills required for healthy food preparation.

Certain foods like meat, eggs and nuts are thought to be too hard for the children to digest. Some foods have been associated with causing illnesses. In this study, over half (54.3%, n=93) of the study respondents disagreed that certain foods such as eggs were too heavy for a child to digest while 38.6% (40) agreed, suggesting that most of the mothers would not deny their children nutritious foods. This is contrary to a study by MCNamara and Wood, (2019), in rural Tajikistan, where mothers-in-law believed that "babies who didn't start talking shouldn't eat eggs because their speech would be delayed, denying children nutrients needed at a very critical time of cognitive development.

WHO (2018), recommends that breast feeding continue for at least 18 months before a child is completely weaned. Breast feeding should continue even if the mother becomes pregnant. A child gets, not only the nutrients, but psychological satisfaction in bonding with the mother. The current study results revealed that, more than a quarter (31.4%, n=55) of the study respondents agreed and 19.4% (34) strongly agreed that one should stop breastfeeding once pregnant, while less than a quarter (23.4%, n=41) and 10.3% (18) disagreed and strongly disagreed respectively. This is in line with Imera, (2016) study in Kilifi of Kenya on Maternal perceptions of factors contributing to severe under-nutrition among children, where maternal gravidity was raised as a cause of severe malnutrition. Some mothers of Mijikenda culture, stopped breastfeeding when they became pregnant saying, „the heat" from the unborn child burns the toddler when the child sleeps with the mother and leads to severe under-nutrition. More than half of the study

respondents (60.6%, n=106) disagreed and a quarter (26.3%, n=46) strongly disagreed that breastfeeding should be halted during child's illness while equal proportions (3.4%, n=6) agreed and strongly agreed that breastfeeding should be halted during a child's illness. This is contrary to recommendations by WHO, (2018), that feeding be doubled in sick children to replace lost nutrients.

Misconceptions of what under-nutrition is, may also affect child care and nutrition. Cultural beliefs may influence child care and interventions to correct nutritional deficiencies. Over half (56%, n=98) of the study respondents disagreed and more than a quarter (32%, n=56) strongly disagreed to the view that malnutrition was caused by witchcraft or an evil eye. About 2.9% (5) strongly agreed that Malnutrition was caused by witchcraft or an evil eye. This is contrary to the study by Kismul, et al, (2018), where they believed that child malnutrition was a result of children's parents offending gods.

5.2.4 Cultural beliefs and practices of respondents towards prevention of under nutrition in under-five children

Culture encompasses the ideas, customs, and social behaviour of a particular people or society, (Acosta, 2012). Cultural beliefs and perceptions of mothers with under-five children can have a great impact in child care practices of these mothers towards prevention of under nutrition and recognition that a child is undernourished underpins efforts to improve their nutritional status. However, understanding of under-nutrition, its causes and its identification vary across cultures, medical systems and between lay and health professional models, (Muraya, et al, 2016). Culture views certain foods, unfortunately very nutritious ones, as harmful and the food wouldn't be given to children. Certain foods like meat, eggs and nuts are thought to be too hard for the children to digest and have been associated with causing illnesses. In the current study, the majority of the study respondents (92.6%, n=162) expressed bad cultural beliefs and practices towards prevention of under nutrition in under five children. This is in line with a study by McNamara and Wilson, (2019), which revealed that cultural factors and taboos have a powerful influence on feeding practices and eating patterns.

Colostrum is very important for providing nutrient, immunity and laxative to a new born, but most cultures would not allow a mother to feed the first milk to their new born, viewing it as

harmful, (Wanjohi, et al, 2016). About three quarters of the study respondents (73.7%, n=129), in the current study, indicated that their culture disallowed women breastfeeding immediately after birth while less than a quarter (22.9%, n=40) were not sure of their cultural views regarding breastfeeding immediately after birth. This is in line with a study conducted in Kenya by Wanjohi et al, (2016), to determine social-cultural factors influencing breastfeeding, where it was revealed that Colostrum was not fed to children by majority of mothers as it was considered 'dirty' or 'curdled milk'. Equally in this study, over a quarter (28.6%, n=50) of the study respondents indicated that their cultural practices did not allow some nutritious foods like eggs to be given to children while 16% (28) had no food restrictive cultural beliefs and over half (55.4%, n=97) were not aware of any cultural beliefs restricting food intake in under-five children. This is contrary to a study by Muraya, (2016), where children were denied fruits and vegetables because they believed that they caused diarrhea. The results in the current study could due to the fact that the study was conducted in urban where culture is diluted because of mixed groupings.

Whereas feeding is good for a child, a healthy relationship between a mother and child supersedes all and an abrupt interception can send off a child into depression and consequently under nutrition can set in. In current study, less than half (47.4%, n=83) of the study respondents suggested that grandmothers were responsible for child care when the child's mother fell pregnant, about 13.1% (23) indicated that it was other relatives' responsibility and 12.6% (22) suggested that the mother and father were responsible for the care. This is in agreement with a study by Imera, (2016), where a child was not allowed to be with its pregnant mother citing that if the toddler slept with the mother, the heat from the unborn child could burn or even kill the toddler. This separation deprives the child of maternal loving care.

Advice from health promotion services concerning breast feeding during pregnancy insist on the mother continuing until the child is above 18 months old. About three quarters of the current study respondents (73.7%, n=129) indicated that their culture disallowed women to breastfeed during pregnancy while less than a quarter (22.9%, n=40) were not sure of their cultural views regarding breastfeeding during pregnancy. This means that most of the mothers in this study are likely to stop breast feeding when they fall pregnant. This in line with a study by Chege, et al, (2015), conducted in Kenya, where it is believed that if a nursing mother becomes pregnant her milk will be harmful to the infant.

5.2.5 CHILD CARE BEHAVIOURS OF MOTHERS WITH UNDER-FIVE YEAR OLD CHILDREN TOWARDS PREVENTION OF UNDER-NUTRITION.

Child care is a complex set of behaviours that range from child feeding practices, to responses that promote a safe and healthy environment for the child and provide adequate health care, to psychosocial interactions and emotional support, (Shubh, et al., 1997). Child care behaviours in this study are activities that mothers with under-five children undertake in feeding, immunization, hygiene, identification and treatment of illnesses when they occur. For instance, a study done in Accra, Ghana, revealed that poor infant feeding practices predispose children to nutritional disorders which may persist into early childhood with life-long consequences. These practices, as reported from developing countries, include the use of pre-lacteal feeds, mixed feeding and lack of exclusive breastfeeding in the first six months.

According to a study by Archaya, et al, (2017), to determine Knowledge, attitudes, beliefs and behaviour of mothers of young children related to healthy eating; comparing rural and urban perspective in Nepal, more than 35% of mothers gave pre-lacteal feeds to babies, but geographically it varied from 75.7% in the central part of the Terai to 4.3% in the Mid-Western Hills. Contrary to the current study where results showed that more than half (69%, n=120) of the study respondents had good child care practices towards prevention of under-five malnutrition. Only 31%, (n=55) expressed bad child care practices towards prevention of under-five malnutrition. This is contrary to a study by Shaker, et al, (2017), where it was discovered that many mothers in Africa and Asia, believe that one can wait until the child has teeth at one year before feeding him/her adult food. Others believe that a special kind of traditional porridge with lots of mass but few calories will satisfy the child's hunger and yet these diets lead to malnutrition.

Breast milk is considered to be the best for the baby because it is the most nutritious. Breast milk contains all the nutrients and vitamins needed by the baby in the first six months of life. Breast feeding is integral to meet the physiological and psychological needs of both mother and child. It is a highly reliable source of nutrition which provides food security for children up to the age of six months. According to Acharya, (2017), the lives of eight million children aged under-five years could be saved every year with improved breastfeeding. Optimal breastfeeding and

appropriate complementary and supplementary feeding could save about 220,000 children below five years of age. Children who are breastfed within the first hour of birth are less likely to be stunted (Kismul et al. 2018). Similarly, mothers in the current study were following instructions received from health centers as results revealed that most of the study respondents (78.9%, n=138) initiated breastfeeding within an hour of birth while less than a quarter (13.1%, n=23) initiated breastfeeding an hour after birth which percentage is even higher than the study at Kitui by Imera where 64.8% initiated breastfeeding within one hour of birth despite only 46.3% having the correct knowledge that breastfeeding should be initiated within one hour after birth. This is contrary to a study by Boumslag, (2017), where mothers would throw Colostrum away, because of its yellow color, fearing it is "pus" or "poison", and purge the infant for 1to 4 days with a variety of substances such as honey, rose water and hyssop.

WHO, recommends that a child is exclusively breast fed until the age of six months to prevent diarrheal and respiratory infections that come with unhygienic introduction of complementary feeding. The majority of the current study respondents (91.4%, n=160) indicated that nothing was administered orally to their child before breast milk and 97.1% (n=170) indicated that their child had received the first breast milk after birth. This is in conformity with the teachings received by mothers at clinics that recommended children under the age of 6 months to be exclusively breastfed, (ZDHS, 2018). However, these findings were contrary to findings in Nepal by Acharya, (2017), where 35% of mothers, a number which varied across the region to about 75.7%, gave their new born babies pre-lacteal foods. Over half of the study respondents (54.3%, n=95) commenced complimentary feeding of their child at age 6 months while 13.1% (n=23) commenced complimentary feeds before their child was 6 months of age. The mothers in the current study were heeding to the teachings received from health centers. This is in line with a study by ZDHS, (2018), where 70% of the infants under age 6 months were found to be exclusively breastfed.

Correct weaning practices are necessary to enhance the nutritional status of children. Poor weaning practices are also found to be a significant factor that influences the nutritional status of children. According to Akombi et al, (2017), poor weaning practices, such as replacing breastfeeding with sucrose feeding, can deprive the child of necessary nutrients. His study revealed that children who are poorly weaned and not breastfed are underweight and stunted. In

the current study more than three quarters of the study respondents (86.9%, n=152) had weaned their child at over 18 months of age, only 14% (18) weaned their child at less than 18 months of age due to inadequate milk expression, illnesses, work demands and baby refusal to eat other foods. The good child care practices in this study were practiced among the majority of the mothers. This is contrary to a study by Tette, et al, (2016), in Accra to determine feeding practices and malnutrition, where it was revealed that faulty feeding practices including early weaning, shorter duration of exclusive breastfeeding, mixed feeding, bottle feeding and limited consumption of fruits were present. Less than half (47.4, n=83) of the study respondents had their child on exclusive breastfeeding 24 hours prior to the time of data collection. This is in line with a study conducted in Sinazeze by Hasegawa, Ito and Yamauchi, (2017), to determine development of a screening tool to predict Malnutrition among children under two years old in Zambia. In the study, more than 90% of mothers with a child under six months old exclusively breastfed, while less than 10% of children below six months old had started solid food or another non-milk liquid. Similarly, among children 6–24 months old, for whom it is recommended to start complementary food and continue breastfeeding, almost 10% had not yet started complementary food or had already been weaned from breast milk. In the current study, 40.6% (71) fed their child a balanced meal while only 10.9% (19) fed their child an unbalanced diet in the last 24 hours of data collection.

Teachings to mothers, in health promotion clinics emphasizes breast feeding on demand. In the current study about three quarters of the study respondents (78.3%, n=137) were breastfeeding their child on demand, contrary to finding by Reddy and Anitha, (2017) where the study revealed that in some societies an infant is breast-fed or offered other food after punishment or when it cries. If these people are advised to breast-feed a child only at scheduled times or if they are advised that it is harmful to eat between meals, the children will end up with little than they require and this can lead to under-nutrition. In the current study, 27.4% (48) gave three meals per day and 3.4% (6) gave less than three meals or breastfed their child following a strict timetable. The results could be attributed to information received from the clinics, but more so because most of the cultures encouraged breast feeding on demand. This is contrary to a study by Muraya, (2016), where it was recommended that children aged six to eight months should be given complementary foods two to three times a day, and additionally one or two nutritional

snacks, and from nine months onwards, children should be given three to four meals a day with snacks, but adherence to this recommendation was low.

Bottle feeding is discouraged because of the risk of contamination by bacteria that easily build up around folds. Unfortunately, over half (57.1%, n=100) of the current study respondents were using a feeding bottle to administer semi-solid foods such as milk to the child only about over a quarter (36%, n=63) used cup and spoon. This is similar to findings by USAID, (2018), where 7% of the children were bottle fed which is even far less compared to the current study percentage.

Hygiene has also been singled out as a contributing factor to child under nutrition. In a cross-sectional study by Das and Gulshan, (2017), to determine malnutrition among under-five children in Bangladesh, good and proper environmental sanitation were found to be an important factor that was associated with child nutritional status. Children from households with good and proper environmental sanitation were less likely to be stunted as compared to their counterparts. This is very rational in the sense that areas with poor environmental sanitation are often breeding areas of diarrheal diseases, which may result in child under-nutrition. Equally poor access to water and sanitation has a negative impact on an individual's health status. According to Mkhize and Sibanda, (2020), water and sanitation is a factor that contributes to the nutritional status of children under five years of age and researchers all over the world also identify poor access to water and sanitation as the main factor influencing the nutritional status of children, hence, contributing to malnutrition. About three quarters (71.4%) of the current study respondents always boiled drinking water very few (4.6%) never boiled their drinking water. This means that the majority of mothers would be able to safeguard their children from some factors that could predispose children to diarrheal diseases. The study findings also correlate with Mkhize and Sibanda, (2020), in the review of studies on Factors Associated with nutritional status of under Five Years old children in South Africa, where it was reported that an estimated 17.20% of households in South Africa still had poor access to water and sanitation.

Universal child immunization against common vaccine preventable diseases is crucial to reducing infant and child mortality. In Zambia, routine childhood vaccines include BCG vaccine (tuberculosis), DPT-HepB-Hib or pentavalent vaccine (diphtheria, tetanus, pertussis, hepatitis B

and Haemophilus influenzae type b, oral polio vaccine or OPV (poliomyelitis), PCV vaccine (pneumococcal), rotavirus or RV vaccine, and measles and rubella or MR vaccine. According to the WHO guidelines, children are considered to be fully vaccinated when they have received BCG, three doses of DPT (pentavalent), three doses of polio vaccine (excluding one given at birth), and a vaccination against measles, (USAID, 2018). In the current study, almost all (99.4%) the mothers had their children fully immunized/ up to date. The results show that mothers are heeding to teachings received at the clinics about the importance of immunization. The study findings correlate with the high knowledge levels of the mothers in child care, though statistics revealed no significant association. This is contrary to a study by Solis-Soto, Paudel and Nicoli, (2020), where only sixteen children (15%) were fully vaccinated and 89 children (85%) had incomplete vaccinations. When stratified by gender, 8 girls (14%) out of 58, and 8 boys (17%) out of 47 were fully vaccinated. This poses a great danger to child immunity consequently, predisposing the children to under-nutrition.

5.2.6 RELATIONSHIP AMONG VARIABLES

This section focuses on the relationship that exists among the four variables in this study which include Knowledge, Cultural behaviours and Perceptions of Mothers with Under Five-year-old Children towards Prevention of under-nutrition in Kabwe District, Zambia. As Muraya and friends, (2016), stated that inadequate knowledge on breast feeding, inappropriate practices such as early and delayed introduction of complementary foods, low energy and nutrient density of food offered, feeding thin consistency feeds, small amounts and food restrictions due to cultural beliefs are often greater determinants of malnutrition than even the availability of food. A study by Chege et al, (2015), also noted that low levels of education among mothers is a barrier to good dietary practices.

Mothers' age can influence child nutrition. According to Mkhize and Sibanda, (2020), children borne of adolescent are likely to be under-nourished because of poor knowledge on child care. The results of the current research show that more than half (57.1%) of the mothers were aged 20-29 years, only 6.3% (11) were adolescents, suggesting the resultant high knowledge and good child care practices among mothers in the current study. All the mothers (100%) were Christians and more than three quarter (80%, n=140) were married, implying that child care is likely to be

good as families are expected to be socially and morally stable in agreement with the study by Imera, (2016).

Education plays a big role in prevention of under nutrition. An educated mother is knowledgeable about food group combinations and can interpret labels on food packages as commonly said that 'knowledge is power'. In the current study, slightly over half (51.5%, n=90) of the study respondents attained secondary education, over a quarter (27.4%, 48) attained tertiary education only 1.7% (3) had no formal education. These results imply that child care practice among mothers is likely to be good since most of the mothers have had secondary and tertiary education, in accordance with a study by Kismul, et al, (2018), in Democratic Republic of Congo (DRC), where mothers who had failed to complete primary school education or had no formal education were about 80% less likely to have appropriately initiated complementary feeding as compared with their counterparts who had achieved, at least, secondary school education with odds ratio (OR) 0.198 and 95% confidence interval (CI) 0.048-0.823, p=0.025). Similarly, mothers with no education had less significant KAP score about newborn care as compared to those who had higher education as indicated by the $p < 0.05$, (Memon, et al, 2019).

Knowledge has an effect on practices of mothers towards prevention of under-nutrition and in under-five clinics mothers and care takers receive health education on child nutrition and care to better their care practices. About three quarters of the current study respondents (72.9%, n=70) with high knowledge on nutrition and child care expressed good child care practices towards prevention of under nutrition, compared to those with moderate knowledge (63.3%, n=38) and those with low knowledge (63.2%, n=12). This is similar to a study by Lija and Kanniammal, (2017), in Botswana, where results revealed that education plays a big role in prevention of under nutrition. In the study, a little less than half (46.1%) of the study respondents had average level of knowledge while only19.1 % of mothers had good knowledge regarding the prevention and management of malnutrition and was discovered that only 24.3% of mothers had reported good practice but 36.6% of mothers had poor practice score. This also correlates with a study by Sarika, (2016), in New Delhi, to determine the knowledge and practices of mothers regarding prevention of PEM among mothers of under five children, which revealed that there was

significant association between knowledge and educational status of mothers, ($p<0.01$). According to the results majority of mothers (46.1%) had average level of knowledge while only 19.1 % of mothers had good knowledge regarding the prevention and management of malnutrition. Only 24.3% of mothers had reported good practice but 36.6% of mothers had poor practice score. However, in the current study, the level of education does not seem to determine the relationship between mother's child care practices towards prevention of under nutrition in under-five children as reflected by the *p*-value=**0.394**. In Figure 4.4 the majority of mothers (69%) still practiced good child care.

Furthermore, if a mother's attitude (intention, feelings, thoughts) is positive or strong according to Lamorte, (2016) towards a certain behaviour, a chance of performing the behaviour becomes high. If mothers feel child care and feeding such as food preparation and taking a child for immunization is important, it will be reflected in how much time they apportion to these activities. Similarly, about three quarters of the current study respondents (71.7%) with positive perceptions on nutrition and child care expressed good child care practices towards prevention of under nutrition compared to those with negative perceptions (67.4%). Nevertheless, the relationship between mother's child care practices towards prevention of under nutrition in under-five children and perceptions toward nutrition and child care was not significant, as evidenced by *p*-value of **0.590.** This contradicts findings from a study by Lija and Kanniammal, (2016) less than half of the mothers (46.1%) had average level of knowledge while only 19.1 % of mothers had good knowledge regarding the prevention and management of malnutrition. Less than a quarter (24.3%) of mothers had reported good practice but more than a quarter of the mothers (36.6%) had poor practice score.

Cultural beliefs and perceptions of mothers with under-five children can have a great impact in child care practices of mothers towards prevention of under nutrition. Culture views certain foods, unfortunately very nutritious ones, as harmful and the food wouldn't be given to children. A study by Muraya et al, (2016), revealed that cultural factors and taboos have a powerful influence on feeding practices and eating patterns. Certain foods like fruits and vegetable are thought to be too hard for the children to digest and have been associated with causing diarrhea. In the current study, results show that more than half of the respondents (69.1%, n=112) with bad cultural behaviours towards nutrition and child care and those (67.4%, n=87) with good cultural

behaviours towards nutrition and child care expressed good child care practices towards prevention of under nutrition. The relationship between mother's child care practices towards prevention of under nutrition in under-five children and cultural behaviours towards nutrition and child care was not significant (*p*-value=**0.570**). This is contrary to a study by Chege, Kimiywe and Ndungu, (2015), where the study concluded that culture influences the dietary practices among children under five years. The controversy could be because the Maasai have a strong culture which affects dietary practices among children and the fact that the current study was conducted in urban culture is diluted by formal education.

However, binary logistic regression analysis showed that odds of good practices towards the prevention of malnutrition in under-five children were 0.992 times more in those with moderate knowledge and 0.637 more in those with high knowledge compared to those with low knowledge on malnutrition. The odds of good practices were 0.816 times more in respondents with positive perceptions regarding malnutrition prevention compared to those with negative perceptions. Respondents with good cultural behaviours towards the prevention of malnutrition were 1.4 times more likely to exhibit good practices towards the prevention of childhood malnutrition.

5.3 IMPLICATION TO THE HEALTH CARE SYSTEM

The health care system has a leading role in the dissemination of information on health and health care matters, therefore, majority of women who access maternal and child services receive information, education and communication (IEC) on various issues. According to the current study, more than half (96) 55%/ (60) 34% of the mothers had high/ moderate knowledge respectively about child nutrition and care. This implies that the Ministry of Health in collaboration with Ministry of Education has a lot to do on sensitizing and educating women on child nutrition and care especially in rural and shanty compounds.

5.3.1 Nursing Practice

According to table 4.9 of the study, more than half, (65.1% n=114) of the respondents got the information from the health care providers. This means that the health workers are doing a good job and should be encouraged to continue. However, it is important for the nursing staff and

other health workers including community-based agents to increase efforts towards informing and educating the mothers on the importance of good nutrition and child care towards prevention of under-nutrition in children.

5.3.2 Nursing Research

Continued education of the mothers with under-five children on the importance of good nutrition and child care would contribute to the health outcomes of children. Therefore, there is need to carry out more research on mothers' nutritional knowledge and child care activities in the peri-urban shanty compounds and rural areas in order to have a wider coverage of information country wide.

5.3.3 Nursing Administration

Leadership is quite crucial in ensuring that good nutrition and child-care activities are performed by mothers towards health promotion and prevention of under-nutrition. Through good leadership, good nutritional and child care activities of mothers can be improved by collaborating with both non-governmental and governmental partners supporting child health while working with community influential leaders like councilors, members of parliament, chiefs and village headmen to encourage mothers uphold good nutrition and child-care activities. It is important to deal with the challenges such as improving staffing to ensure that many mothers get information on nutrition and child care from health care providers in order to enhance good practices towards prevention of under-nutrition in children.

5.3.4 Nursing Education

Nursing education providers to provide more information on how to deliver information on nutrition and child care activities to mothers thereby improving the health of children.

Therefore, the nursing schools should aim at ensuring that they produce nurses who are competent enough to handle a variety of health issues that may affect under-five children.

5.4 CONCLUSION

The objectives of this study were achieved through the findings which revealed that mothers had negative perception and bad cultural behaviours towards prevention of child under-nutrition. The

study further revealed that the majority of the respondents had high knowledge, good nutritional and child-care practices towards prevention of under-nutrition. Nevertheless, with the use of Chi-square, the study did not reveal any relationship between child care; and knowledge (*p*-value=**0.394**), perceptions of mothers (*p*-value=0.590) and cultural behaviours (*p*-value=**0.570).**

However, after conducting Logistic Regression Analysis adjusted for the independent variables the study revealed that the odds of good practices were 0.816 times more in respondents with positive perceptions, and respondents with good cultural behaviours towards the prevention of under-nutrition were 1.4 times more likely to exhibit good child care practices.

Whilst there is evidence that efforts are being made by the Ministry of Health through Kabwe District Health Management, in providing health education on good nutrition and child care, negative perceptions and bad cultural behaviours of mothers are deemed to be thwarting the efforts. In this vein, there is still much to be done by intensifying dissemination of information on prevention of child under-nutrition. Therefore, issues of staffing, outreach services among others should be enhanced to educate mothers towards curbing the scourge.

5.4.1 KEY FINDINGS

Over half of the study respondents (55%, n=96) had high knowledge of child nutrition and care, and this knowledge was received from health facilities.

However, the study also revealed that about three quarters (74%, n=129) of the study respondents expressed negative perception towards prevention of under-nutrition compared to a quarter (26%, n=46) who expressed a positive perception.

The study further revealed that more than three quarters of the study respondents (92.6%, n=162) expressed bad cultural beliefs and practices towards prevention of under-nutrition in under five children.

5.4.2 WHAT IS NEW IN THIS STUDY

Despite the majority of the respondents having knowledge on child care practices, 74% of the study respondents expressed negative perception and 92.6% expressed bad cultural behaviours towards prevention of under-nutrition in under five children. Hence, the study

concluded that, negative perceptions and bad cultural behaviours of mothers are deemed to be thwarting the efforts towards prevention of child under-nutrition.

5.5 RECOMMENDATIONS

Good nutrition and child-care practice is an imperative strategy towards preventing under-nutrition in under-five years old children. Based on the findings of this research, the following recommendations were that:

1. The Ministry of Health should scale up on the dissemination of information, education and communication to mothers concerning good nutrition and child-care activities, because child morbidity and mortality has continued to reflect worrying statistics.
2. Issues of staffing, outreach services among others should be enhanced to educate mothers towards curbing the scourge
3. The Ministry of Health to work in conjunction with other line ministries of Agriculture, Fisheries and Livestock, and the Ministry of Chiefs and Traditional Affairs to encourage households to practice mixed crop farming in order to improve on the balanced diet in the house children.

5.6 FUTURE RESEARCHES

This study suggests areas in which more studies are needed. These include:

1. A study with a large sample drawn from urban, semi-urban, rural areas, cities and small towns, in all the ten provinces will be needed.
2. Conducting a community based study with the purpose of capturing mothers with undernourished children for a more comprehensive picture.

5.7 DISSEMINATION OF FINDINGS

The study findings of this research will be disseminated by distributing copies to the Department of Nursing Sciences and the University of Zambia Medical Library. The results will be published in journals and also disseminated to the Ministry of Health, Kabwe District Health Office.

5.8 LIMITATIONS OF THE STUDY

1. The study was limited by its scope because it was conducted only in one urban District at two clinics.
2. Another limitation of this research was related to methodology, as the sample size drawn from Kabwe Urban District was too small to be a representative sample of the whole population of Zambia.
3. Being a clinic based study, only mothers of children who were brought to the facility for under-five clinic were captured and missed out on the mothers out there in the community with malnourished children.

5.9 CHALLENGES

1. Some of the mothers were reticent because they might have been fatigued by previous researches.
2. Another challenge was bias in data collected from mothers about practices, since there was no chance of verifying with the actual practices due to resource constraints.

REFERENCES

Acharya. J. R, (2017). Knowledge, attitudes, beliefs and behaviour of mothers of young children related to healthy eating: Comparing rural and urban perspectives, **Faculty of Health and Social Sciences,** Bournemouth University, Nepal.

Alderman. H, Behrman. J.R, Glewwe. P, Fernald. L, and Walker. S, (2017). **International Food Policy Research Institute**, Washington, DC, United States.

Akombi, B.J. Agho, K.E.; Merom, D. Renzaho, A.M. and Hall, J.J, (2017). Child malnutrition in sub-Saharan Africa:A Meta-analysis of Demographic and Health Surveys: Accessed at https://sph.med.edu.au.publication.child maln

Bagilkar. V. V. and Savadatti. B.B, (2015). A Descriptive Study on Malnutrition, **ANV Publications,** Karnataka, Belgaum.

Basavanthappa B.T, (2007). **Nursing Research**, 2nd Edition, Jaypee Brothers Medical, Publishers Ltd, New Delhi, India.

Boatbil. C, Guure. C, Ayoung. A. D, (2014). Impact of Belief Systems on the Management of Child Malnutrition, **Journal of Food Studies**, Talensis, Northern Ghana.

Boumslag, (2017), Breastfeeding: **Cultural Practices and Variations;** accessed at https://link.springer.com/chapter/10.1007/.

Chanda. D.M.M, (3rd October, 2017). Zambia's Malnutrition Levels Among Highest, **Times of Zambia**; accessed on 18/12/2018: 02; 20hrs.

Chanda D. O. (2004), Infection Prevention Manual for Developing Countries: ISBN 9982-12-001-8, (pp-271). Maiden Publishing House, Lusaka, Zambia.

Chege. P. M, Kimiywe. J. O and Ndungu. Z. W, (2015). Influence of culture on dietary practices of children under five years among Maasai pastoralists, **International Journal of Behavioral Nutrition and Physical Activity, volume 12,** Kajiado, Kenya.

Collins. H, (2014). **Thesaurus of English Language**, Complete and Unabridged, 2nd Edition, London UK.

Copenhagen. C, (2012). Expert Panel Findings; available at: http://www.copenhagenconsensus.com/sites/default/files/outcome : 24/10/2019: 2200.

Cozby, P.C. (2001). Measurement Concepts, **Methods in Behavioral Research**, 7th edition,

Mayfield Publishing Company, California.

Crossman. A, (2018). **How Systematic Sampling Works, Accessed at;** https://www.thoughtco.com/systematic-sampling-3026732 ; on 13/10/2018: 14:26.

Central Statistics Office (CSO), (2016). Malnutrition in Zambia, **published by Save the Children**, St John's Lane, London UK, accessed at; http://save thechildren.org.uk/content/dam/, (accessed on 12/4/2018: 2013hrs).

CSO, (2018). Key Indicators, **Zambia Demographic and Health Survey**, Lusaka, Zambia.

CSO (Central Statistical Office). (2015). **2013-14 Zambia Demographic Health Survey Report**. Central Statistical Office, Lusaka, Zambia.

Daverport T. and Prusak L. (2000). **Working Knowledge**, Harvard Business Review press, USA, ISBN: 0-87584-655-6.

Das. S and Gulshan. J, (2017).**BMC Nutrition BMC series** – open, inclusive and trusted; accessed at; https://doi.org/10.1186/s40795-016-0122-2.

Engle. P. L, Menon. P. and L and Haddad. L, (2012). **Care and nutrition: Concepts and measurement,** International Food Policy Research Institute, Washington, D.C. Mimeo.: **http://www.irinnews.org/IndepthMain.aspx?InDepthID=83&ReportID=87469**

FAO, (2018). Assessing and Planning the City Region Food System**, Food and Agriculture Organization, Lusaka,** Zambia.

FAO, IFAD, UNICEF, WFP and WHO. (2017). The State of Food Security and Nutrition in the World 2017. Building resilience for peace and food security. Retrieved from https://docs.wfp.org/api/documents/WFP-0000022419/download/?_ga=2.58209514.1314642926.1528665631-1013504369.1528665631

Guyatt. H, Muiruri. F, Mburu. P and Robins. A, (2020). Prevalence and Predictors of Under-weight and Stunting Among Children Under 2 years of age in East Kenya, **Public Health Nutrition,** Cambridge University Press, U.K.

Hasegawa.J, Ito. M. Y. and Yamauchi. T, (2017). Development of a Screening Tool to Predict Malnutrition Among Children Under Two Years Old, **Global Health Action**, Sinazeze, Sinazongwe, Zambia.

Higgins. J.P, Soares-Weiser. K, Lopez-Lopez. J.A, Kakourou. A, Chapli. K, Christensen. H., Martin. N.K, Sterne. J.A, and Reingold. A.L. (2016). Association of BCG, DPT and Measles Containing Vaccines With Childhood Mortality: A Systematic Review; Pediatric Reports: Available at; https://www.bmj.com/content/355/bmj.i5170/rapid-responses ; (3/4/2021: 04;35).

Imera. J, (2016). **Knowledge, Attitude and Practices of mothers with malnourished children less than thirty-six months regarding Breastfeeding and Complementary feeding, K**itui County Hospital, The University of Nairobi, Kenya.

International Food Policy Research Institute (IFPRI, 2015). **Global Nutrition Report**: Actions and Accountability to Advance Nutrition and Sustainable Development. Washington, DC: IFPRI.

Khunga. H. and Okop. K, (2019). Perceptions of mothers and caregivers regarding the detection and treatment of severely malnourished children in Kanchele, Kalomo District, Zambia, **African Journal of Nursing and Midwifery**; Available at; **10.25159/2520-5293/27**

Kimiywe, J & Chege, P.M. (2015). Complementary Feeding Practices and Nutritional Status of Children 6–23 Months in Kitui County, Kenya. *J Appl Biosci* 85, 7881–7890.CrossRefGoogle Scholar

Kismul. H, Acharya. P, Mapatano. A. M. and Hatloy. A, (2018). Determinants of Childhood Stunting in the Democratic Republic of Congo; further analysis of Demographic and Health Survey, **BMC Public Health**, Article 74.

Kizilyildiz.B. S, Sonmez. B, Karaman. K, Beger. B, Mercen, A. Alioglu. S and Cecer. Y, (2018). Demographic Characteristics and Associated Risk Factors of Malnutrition Among 0-5 Aged Children: A Cross-Sectional Study from Eastern Turkey, **Pediatric Reports**: Available at; https://www.mdpi.com/2036-7503/8/4/6112 (3/4/2021:19:15).

LaMorte. W. W, (2016). Behavioral Change Models, **The Theory of Planned Behavior,** Boston University School of Public Health, USA.

Lija . R. N and Kanniammal, (2017). **International Journal of pharmaceutical and Clinical Research**, Department of Community Health Nursing, accessed at: http://www.ijpcr.com/10.25258; 12/06/2018: 23:13.

Manjunath. R, Kumar. J. K, Kulkarni. P, et al, (2014). Malnutrition Among Under-Five Children of Kadukuruba, **Journal of Clinical and Diagnostic Research, accessed** at: http://www.nlm.nih.gov/pmc/journals/pmc/articles/PMC4149088/ (on 4/5/2018: 2030hrs).

MCNamara and Wood, (2019). Food taboos, health beliefs, and gender**: understanding household food choice and nutrition,** rural Tajikistan, India**.**

Memon. Z, Khan. M. I and, Soofi. S, (2019). **BMC Pregnancy and Childbirth**, volume 19, Article number: 329 available at: https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-019-2479-0#auth-1.

Merriam Webster, 2015). **Collegiate Dictionary**, Revised Edition, Port Harcourt, USA.

Mifflin, H. (2016). **American Dictionary of English Language**, 5th Edition, Harcourt publishing Company, USA.

Mkhize. M. and Sibanda. M, (2020). A Review of Selected Studies on Factors Associated with the Nutrition Status of Children Under the Age of Five Years in South Africa**, International Journal of Environmental Research and Public Health**, University of Zululand, S. A.

Mukuka. R. M and Mofu. M, (2016). The Status of Hunger and Malnutrition in Zambia,**Indaba Agricultural Policy Research Institute (IAPRI),** Lusaka, Zambia; at: http://www.iapri.org.zm or http://www.aec.msu.edu/fs2/zambia/index.htm. (Accessed on 15/4/2018: 2200hrs).

Muraya. K. W, Jones. C, Berkleys. J. A and Molyneux. S, (2016). Perceptions of childhood undernutrition among rural households, **BMC Public Health**, Volume 16, Kenya.

Nicoli, F. and Appay, V. (2017). Immunological considerations regarding parental concerns on pediatric immunizations, **PubMed**, Vaccine 35(23): 3012–3019. doi:10.1016/ j.vaccine.2017.04.030.

Oberle, (2018).**The Role of Culture in Child Nutrition**: **http://www.irinnews.org/IndepthMain.aspx?InDepthID=83&ReportID=87469**; (accessed on 20/07/2018: 23:10).

Quinn. V, Guyon. A, and Martin. L. (nd). **Nutrition and Breast Feeding Promotion**, available at:

https://www.who.int/pmnch/media/publications/aonsectionIII_6.pdf, (accessed on 9/10/2019: 0410).

Perez. G. M. and Garcia. A. P, (2015). Nutritional Taboos among the Fullas in Upper River Region,**ResearchArticle, OpenAccess,**Gambia; https://doi.org/10.1155/2013/873612.

Pettigrew. S. and Roberts. M, (2015). Mothers' perceptions of their control over Their children's diets, **Maternal and Child Health Journal**; https://www.researchgate.net/publication/244481825.

Reddy. S and Anitha. M, (2015). Culture and its Influence on Nutrition and Oral Health, **Biomedical and Pharmacology Journal**, Department of Public Health Dentistry, Rathimanangalan, India.

Reinsma. K, Bolima. N, Fonteh. F, Okwen. P, Yota. D and Montgomery, (2016), Incorporating cultural beliefs in promoting exclusive breastfeeding, **Afr J Midwifery Women's Health; accessed at; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4788465/.**

Richards. K and Bellack. S, (2016). Malnutrtion in Zambia: Harnessing Social Protection for the Most Vulnerable, **Save the Children**, London, UK.

Shaker. M, Elder. L, Harold Alderman et al, (2017). A World Bank Report**, Improving Nutrition Through Multi-sectoral Approaches**: Accessed at; https://www.savethechildren.org/us/what-we-do/health/nutrition; (on 2/4/2021: 07:00).

Sahu, et al, (2015). Journal of Natural Science, Biology and Medicine, National Library of Medicine, National Institute of Health, US at: https://dx.doi.org/10.4103/0976-9668.149072 .

Samiak. L and Ameto. T. I, (2017). **Vaccination and nutritional status of children,** Department of Public Health, School of Medicine and Health Sciences, University of Papua, New Guinea.

Sankoh. A and Byass. P, (2014), **Relationship between vaccination and nutritional status of children**, The Lancets Global Health, Seirra Leone.

Saaka, M. and Galaa, S.Z, (2016). Relationships between wasting and stunting and their concurrent occurrence in Ghanaian preschool children. **Journal of Nutrition and Metabolism 2016(4654920); https:**//doi:10.1155/2016/4654920 .

Sarika. Y, (2016). Knowledge and practice of mothers regarding prevention of PEM among mothers of under five children, **IOSR Journal of Nursing and Health Sciences**, 4(4): 27-35, New Delhi, India.

Prendergast. A. J, (2015). **Malnutrition and Vaccination in Developing Countries:** accessed at; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4527386/ .

Shubh. K, et al., (1997). **International Food Policy Research Institute,** Seventeenth Street, N.W.Washington DC, U.S.A.

Solis-Soto.M.T, Paudel. D & Nicoli. F, (2020). Relationship between vaccination and nutritional status in children, Analysis of recent Demographic and Health Surveys, **Demographic Research,** Vol. 42 ; accessed at**:** https://www.jstor.org/stable/26936781 .

Sönmez. B, S Karaman. K , Beger. B, Mercen, A. Alioglu. S and Cecer. Y. (2016). Pediatric Reports; accessed at; https://www.ncbi.nim.nih.gov/pubmed/; on 12/06/2018: 22 05hrs

Tette. E, Sifah. E, Tete-Donkor. P, et al, (2016). **Feeding practices and malnutrition, BMC Nutrition volume 2**, Article number: 42, Princess Marie Louise Children's hospital, Accra,Ghana.

Tidey. C, (2020). A Press Release, UNICEF**, Research and Reports**, New York, U.S.A.

UNICEF, (2019). The State of the World's Children, accessed at; https://www.unicef.org/media/60806/file/SOWC-2019.pdf/: 2/4/2021; 12: 00.

UNICEF, (2016). Nutrition and children**, progress for children;** accessed at: http://www.unicef.org/videoaudio/ramfiles/60921 (accessed on12/4/2018: 22;19hrs).

USAID, (2018).Zambia Nutrition Profile: Accessed at; https://www.usaid.gov/sites/default/files/documents/1864/Zambia-Nutrition-Profile-Mar2018-508.pdf; on 2/4/2021: 11:00.

van der Velde. L. A, Schuilenburg. L. A, Thrivikraman. J. K, et al, (2019), Needs and perceptions regarding healthy eating among people at risk of food insecurity: a qualitative analysis, **International Journal for Equity in Health,** volume 18, Article number: 184.

Wanjohi M, Griffiths. P, Wekesah. F, et al, 2016). Factors influencing breastfeeding practices in two slums, **International Breastfeeding Journal volume 12**, Article number: 5, Nairobi, Kenya.

Wayne, W, (2016). Behavioral Change model, **Boston University School of Public Health.** Available at:

http://sphweb.bumc.bu.edu/otlt/MPHModules/Behavioralchangetheories/Behavioralchangetheories4,html

WHO, (2016). Global Database on Child Growth and Malnutrition, **WHO Global Database**; accessed at:

http://siteresources.worldbank.org/NUTRITION/Resources/28184612719638237772/Kenya.pdf , (accessed on 21/5/2018: 1300hrs).

WHO, (2017). Action Against Hunger, Nutrition and health, **Hunger News Categlories**; Retrieved from https://www.actionagainsthunger.org/impact/nutrition: (2/4/2021:12:04).

World Health Organisation (2015). Available at: http://www.who.int/gho/maternal_health/mortality/maternal_mortality_text/en/.(accessed on 12/5/2018: 22:15).

WHO, (2018). World health statistics 2018: monitoring health for the SDGs, sustainable development goals; https://apps.who.int/iris/handle/10665/272596.

Zambia Nutrition Profile, (2017). Reducing Malnutrition in Zambia, **Food and Nutrition Technical Assistance (FANTA)**, Washington DC, USA.

13,0: APPENDICES

APPENDIX: I: PARTICIPANT INFORMATION SHEET

Assessment of Knowledge, Cultural Behaviours and Perceptions of Mothers of Under-five Year Old Children towards Prevention of under Nutrition.

Introduction

I **Lufunda B. Chilombo,** a student pursuing a Master of Science in Clinical Nursing at the University of Zambia is kindly requesting for your participation in the study mentioned above. Before you decide whether or not to participate in this study, I would like to explain to you the purpose of the study, any risks or benefits and what is expected of you if you participate. Your participation in this study is entirely voluntary. You are under no obligation to participate; you may choose to participate or not to participate. If you choose not to participate, no privileges will be taken away from you. If you agree to participate, you will be asked to sign this consent in front the questionnaire. Agreement to participate will not result in any immediate benefits.

Procedure

After you have signed the consent form, and have had a chance to ask questions, you will be asked questions relating to **Assessment of Knowledge, Cultural Behaviours and Perceptions of Mothers of Under-five Year Old Children towards Prevention of under Nutrition.**The questions will be asked to you individually and you will also be given a chance to make suggestions on how you think knowledge on infection prevention, attitude and cultural practices can prevent development of puerperal sepsis.

Risks and discomforts

Your participation in this study involves no risk to you or any other person. However, part of your time will be utilized to answer some questions. Care will be taken not to embarrass you as some of the questions may seem to be sensitive and personal.

Benefits

There is no direct benefit to you by participating in this study. No monetary favors will be given in exchange for information obtained but education will be given on the benefits of **Knowledge, Cultural Behaviours and Perceptions of Mothers of Under-five Year Old Children towards Prevention of under Nutrition** and it will be a forum for you to express your concerns on the prevention of under nutrition.

Confidentiality

Your research records and any information you will provide will be confidential to the extent permitted by law. You will be identified by a number, and personal information will not be released without your written permission except when required by law. In the event that the Ministry of Health, the University of Zambia Research Ethics Committee or the School of Medicine reviews your records, confidentiality will again be upheld.

APPENDIX II**: CONSENT FORM**

Dear Respondent,

My name is **Lufunda C. Beatrice**, a Master of Science in Clinical Nursing Student at The University of Zambia, School of Medicine, Department of Nursing Sciences.

During the second year of study, it is a requirement that I conduct a research as partial fulfillment for the award of Master of Science Degree in Nursing Sciences. Our topic of study is: **Assessment of Knowledge, Cultural Behaviours and Perceptions of Mothers of Under-five Year Old Children towards Prevention of under Nutrition.**

You have been selected to participate in this study and I wish to inform you that participation in this study is voluntary and therefore, you are free to withdraw at any stage of the study if you so wish. You will answer questions on infection prevention and what you have been practicing since you delivered. Any information given will be kept in confidence and no name will be written on the questionnaire.

There are no monetary benefits from the study. However, the study results will be of value to the health workers giving information education and communication to other women as a way of reducing preventing under nutrition.

I, ……, as a Respondent understand the guidelines and purpose of this study and I accept……../do not accept…… to participate in this study.

Date: ……/……..…/2018. Signature: ……

Witness: …… Date……/……/2018

Researchers contacts: …… ……

For further information contact:

UNZABREC

Telephone: 256067 Telegrams: UNZA, LUSAKA

APPENDIX III: QUESTIONNAIRE

THE UNIVERSITY OF ZAMBIA

SCHOOL OF NURSING SCIENCES

SEMI-STRUCTURED QUESTIONNAIRE

RESEARCH TOPIC: Assessment ofKnowledge, Cultural behaviors and Perceptions of Mothers with Under Five-year-old Children towards Prevention of under Nutrition in Kabwe District.

Date…….....

Venue …….

Name of researcher…….

INSTRUCTIONS TO RESPONDENTS

1. Do not write your name on this questionnaire.
2. Tick [√] in the box next to the chosen response, for questions with alternatives.
3. Write your response in the space provided for the open-ended questions.
4. Do not omit any questions.
5. Write all responses clearly.

Keep the questionnaire safely.

Section A: Socio demographic Information

Mother's bio data

1. Mother's age (years)……

2. Marital status:

Single……. Married ……. Separated…… Divorced……. Widowed……

3. Mothers religion:

Christian……. Muslim……. others……. Specify …….

4. Number of children in the family……

5. Number of living children including the current one: …….

6. What was the highest educational level you attained?

a) No formal education [ ]

b) Incomplete primary education [ ]

c) Complete primary education [ ]

d) Secondary education (G9) [ ]

e) Secondary education (G12) [ ]

f) Tertiary education [ ]

7. Employment

a). Employed (formal) [ ]

b).Employed (self) [ ]

c).Unemployed [ ]

Child's bio data

8. Age of the child (months)……...

9. MUAC…… Length (cm)…….. Weight (kg)……. Height (cm)……...

10. Sex of the child

a) male……. [ ]

b) female……. [ ]

11. Birth order……

B: Knowledge on nutrition

12. At what time should the newborn be initiated to breastfeeding?

a. Within one hour after birth [ ]

b. After one hour following birth [ ]

c. After one day after birth [ ]

d. Other. Specify ….. [ ]

d. I don't know/Not sure [ ]

13. How often should you breastfeed your baby?

a) On demand [ ]

b) According to the timetable [ ]

c) Not sure [ ]

14. When should a mother start adding foods to breastfeeding? ……. months.

15. After introducing other solid foods, how long should you continue breast feeding? …..months

16. After weaning the child from the breast, describe the types of food you should give in a day…

17. How often should you feed your child after weaning? ……..

18. What is your source of information on feeding your child?

a) Family members [ ]

b) Relatives [ ]

c) Medical staff [ ]

d) Media [ ]

e) Other (specify) [ ]

D: Perceptions/Attitudes

	Statement	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
19	First milk (colostrums) is very nutritious to the baby.					
20	It is not possible for a baby to survive on breastfeeding for six months.					
21	3 It is important to give the baby some water, honey and other solid foods during the first six months after birth.					
22	Poor/thin breast milk makes the child prone to malnutrition.					
23	Nutritious foods are expensive.					
24	Malnutrition is caused by witchcraft and evil eye.					
25	Some foods are too heavy for the children to digest e.g. eggs.					
26	When pregnant you should stop breastfeeding.					
27	Does breast milk protect your					

	child from illnesses?					
28	Feeding should be stopped during illness.					

Cultural Behaviors

29. Are there any foods that culture forbids you to give to the child? If so mention them……

30. What does your culture say about breast feeding immediately after birth?

31. What does your culture say about breast feeding while pregnant?

32. Who should take care of the child when the mother falls pregnant?

C: Child care Practices/ activities

33. When did you initiate breastfeeding? [ ]

a) Within one hour after birth [ ]

b) After one hour following birth [ ]

c) After one day after birth [ ]

d) Other (Specify) [ ]

e) Doesn't know/Not sure [ ]

34. Did your baby receive anything else before receiving breast-milk (any food or liquid other than breast milk)?

a) Yes [ ]

b) No , If yes, specify …… [ ]

35. Did the baby receive the first milk (colostrum)?

a) Yes [ ]

b) No [ ]

36. At what age did you start feeding the baby on complimentary foods? …..

37. If introduced earlier than six months, what were the reasons for introducing complementary foods…….

a) Baby was crying a lot [ ]

b) Work

c) Mother didn't have enough milk [ ]

d) Illness [ ]

e. Others (specify) [ ]

38. Are you still breastfeeding?

a) Yes [ ]

b) No …. If no, at what age did you stop breastfeeding your child? ……..

39. What were the reasons for stopping breastfeeding before twenty-four months?

40. Describe the types and amounts of food eaten by the child in the previous 24-hour period……

41. Do you add anything to the child's food when preparing it or after cooking ……...?

If yes specify what is added……

42. How many times per day do you feed your child…….?

43. What do you use to give semi solid food e.g. milk…….?

a) Bottle [ ]

b) Cup and spoon [ ]

c) Others (specify) [ ]

44. Do you boil or treat drinking water?

a) Always [ ]

b) Sometimes [ ]

c) Never [ ]

45. Do you wash your hands with soap before feeding the baby? ….

a) Always [ ]

b) Sometimes [ ]

46. Who takes care of baby when you are away from home/work?

a) Mother takes her child with her..... [ ]

b) Husband..... [ ]

c) Older children..... [ ]

d) Grandmother …… [ ]

e) Other relative (specify).....…..... [ ]

f) Neighbours/friends..... [ ]

g) Shared care arrangement.…… [ ]

h) Other (specify)..... [ ]

47. Is your child fully immunized?

a) Yes [ ]

b) No [ ]

s

APPENDIX IV: **LETTER OF PERMISSION TO CONDUCT A RESEARCH STUDY**

The University of Zambia,

School of Medicine,

P.O. Box 50110,

LUSAKA

1st November, 2018

The Community Medical Officer,

Kabwe District Medical Officer,

Po Box 80788,

Kabwe.

U.F.S: The Head of Department,

Department of Nursing Sciences,

School of Medicine,

P. O Box 50110,

LUSAKA.

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT A RESEARCH STUDY

I am a Student pursuing a Master's Degree in Clinical Nursing at the above-mentioned institution, carrying out an academic research study is one of the conditions required for us to be awarded the Master's degree in nursing sciences. It is for this reason that we sincerely request

the assistance of your office to carry out a pilot study on our topic which is: **Assessment of Knowledge, Cultural Behaviours and Perceptions of Mothers of Under-five Year Old Children towards Prevention of under Nutrition.**

I intend to carry out this Research study at **Mahatma Gandhi Memorial and Kasanda Clinics** in February, 2019. Your assistance will highly be appreciated.

Yours Faithfully,

LUFUNDA BEATRICE CHILOMBO

MScNRS Student

APPENDIX V: ETHICAL APPROVAL

THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

(UNZABREC)

APPLICATION FORM FOR LOCAL STUDENTS FOR ETHICAL APPROVAL OF PROPOSED RESEARCH INVOLVING HUMAN PARTICIPANTS

The Application package should be completed electronically, printed and submitted to the Secretary of ***UNZABREC****. A complete Application package is made up of 25 copies of the completed application form (one should be the signed original) and four spiral-bound copies of the full proposal and all supporting documents. Below is a checklist to assist the researcher in preparing the application package. The checklist is part of the application form. Applicant should tick in the applicant column as appropriate. Name of PI and Title should by typed and check boxes can be ticked by pen or can be typed using tick or X.*

Name of Candidate/Investigator (Title, First name and Surname in full)	**Lufunda Beatrice Chilombo**
Title of Proposed Research	Assessment of Factors Influencing Child Care Activities of Mothers with Under-five year old Children towards Under nutrition Prevention in Kabwe District

EXPEDITED REVIEW **(PI to tick appropriate box and ensure that appropriate fee is paid)**		**FULL COMMITTEE REVIEW**	

Date accepted by UNZABREC (to be completed by UNZABREC Secretary	

	ITEM	Applicant	BREC
1.	COMPLETED APPLICATION FORM FOR ETHICAL REVIEW		
	a)Original completed and signed Application form (1 stapled Copy)		
	b) Copies of Completed Application Form (24 stapled Copies)		
	EACH OF THE FOLLOWING DOCUMENTS SHOULD BE SUBMITTED IN THE FOUR (4) SPIRAL BOUND FOLDERS		
	• Proof /evidence of fee paid for ethical review (4)		
	• Full research proposal (4)		

	• Informed consentforms in *English (tick): Adults___Parental/Guardian__, Assent___* (4)		
	• Translated informed consentforms*(tick): Adults___Parental/Guardian__, Assent___* (4)		
	• Data collection tools in English (tick):- *Questionnaires___, FGD Guides___, IDI guides___, Other___* (4)		
	• Translated data collection tools in (tick):- *Questionnaires___, FGD Guides___, IDI guides___, Other___* (4)		
	• Graduate Proposal Presentation Forum clearance (4)		
	• Letter of support/endorsement from Academic Supervisor (4)		
	• CV of academic supervisor (4)		
	• Recruitment materials in English (tick): Flyers__, Posters__, Radio ads__, TV ads___, Other___ (4)		
	• Translated recruitment materials (tick): Flyers__, Posters__, Radio ads__, TV ads___, Other___ (4)		
	• Permission letter from head of institution where data is to be collected (*For research in schools, a letter from Ministry of Education is a requirement).* (4)		
	• Detailed Study Budget (4)		
	• Proof of availability of funding (4)		
	• Approval from other relevant Research Ethics Committee(s) (4)		
	• Other supporting documents (specify): _____ (4)		
	• Complete references list (as part of full proposal)		

1. STUDENT & SUPERVISOR'S DETAILS

	CANDIDATE'S SURNAME	FIRST NAME	STUDENT No.

1.1	[Please Print] Lufunda	Beatrice Chilombo	2017013579
	CURRENT QUALIFICATIONS Bachelor of Science in Nursing		
	CONTACT DETAILS:		
	TEL: 0955461916/ 0975193845	E-MAIL ADDRESS lufundabeatrice@yahoo.com	FAX:
	DEGREE FOR WHICH PROTOCOL IS BEING SUBMITTED: Masters of Science in Clinical Nursing		
	INSTITUTION & DEPARTMENT: The University of Zambia, School of Nursing Sciences		
1.2	SUPERVISOR'S NAME: Dr, Dorothy Chanda		
	SUPERVISOR'S QUALIFICATION(S):		

	PHD, MPH, BSC, CPHN, SRN, SCM, OTTM
	SUPERVISOR'S CONTACT DETAILS: PHONE #: 0977847323 e-mail address: Dorothy.chanda@unza.zm/ chandadorothy@gmail.com
1.3	CO-SUPERVISOR'S NAME: Ms. Carol Zulu
	CO-SUPERVISOR'S QUALIFICATION: MSC, BSC
	CO-SUPERVISOR'S CONTACT DETAILS: PHONE#: 0977691684 e-mail address: carolinezulu482015@gmaim.com

2. DETAILS OF RESEARCH PROPOSAL

*This section requires a **SUMMARY** of the proposed research and should be in simple terms and section should be less than three (3) pages in length. All parts of this section should be completed*

*electronically. Refer to UNZABREC Guidelines for details on what is required under each sub-section. To improve readability, ensure that only sub-headings are in **"bold".***

Title of proposed research:

Assessment of Knowledge, Cultural Behaviours and Perceptions of Mothers' with Under-five year old Children towards Under nutrition Prevention in Kabwe District

Purpose of the research:

To add knowledge to the body of existing knowledge

Statement of the problem:

Despite all the interventions by the Government through Ministry of Health in conjunction with Ministry of Agriculture, to abolish malnutrition by increasing house hold food security, including the interventions through Information Education and Communication (IEC) undertaken in under five children clinics on feeding and care of the children, Kabwe District is still recording high numbers of severe cases of under nutrition. This is reflected in Kabwe General Hospital **Statistics Office Records (2015),** for which the numbers of under nutrition remains unacceptable despite a 5.86% reduction in morbidity and 3.41% mortality in the number of children admitted with severe malnutrition between 2015 and 2016. It is worthy to note that in this data, children that were stunted and those that were under weight for their ages were not captured in the register for malnourished children. The probable causes of malnutrition could be due to socio-cultural traditions and behaviors that force mothers to reserve better food portions for the father and denying certain nutritious foods like eggs, as they are considered harmful to children. Under nutrition has potential to devastating short- and long-term effects on the child, the family and the nation as a whole. These include stunting and reduced intelligence quotient in the child, reduced production and neglect to the other children by the mother due to long stay in hospital, and congestion on the ward and resource depletion for the nation. These effects of malnutrition could lead to poor family and national development. To this effect, there is need to investigate mothers' knowledge gaps, inappropriate attitudes and practices, as cardinal care givers, that may be contributing to the perpetual under nutrition in children in the district.

Rationale/Justification for the study: Combating under nutrition could bring great gains for Zambia and the investment case is strong. Research implies that money invested in nutrition interventions has a 17:1 ratio on

average for return on investment in Zambia. Also, research shows gross domestic product (GDP) totals in Africa are less than 90% of what they would be without under nutrition, (CSO, 2016). Malnutrition in Zambia has numerous adverse consequences. Malnourished children are ill more often than children who are not malnourished and consequently at increased risk of death. They have delayed cognitive development and are therefore likely to complete fewer years of schooling, which results in lower economic productivity in adulthood (Black et al., 2013). Therefore, this study will provide very useful information that will be used in implementing better ways of preventing malnutrition. The identified knowledge gaps will be used to design an appropriate information, education and communication (IEC) tool for educating mothers on appropriate perceptions and practices in preventing malnutrition. There by aiding in the reduction of child morbidity and mortality due to malnutrition. The findings of this study will add knowledge to the existing body of knowledge and serve as a stepping stone for future research.

Research questions:

Do knowledge, perceptions and cultural behaviours of mothers with under-five children affect their child care activities towards prevention of under nutrition?

Main Aim:

To identify knowledge gaps, perceptions and behaviours of mothers with under-five children towards preventing malnutrition.

Specific objectives:

I. To assess the knowledge gaps of mothers with under-five children regarding the prevention of under nutrition

II. To determine the perceptions of mothers with under-five children towards prevention of under nutrition

III. To identify the behaviours of mothers with under-five children towards prevention of under

nutrition

Methodology (design, sampling, data collection methods and tools):

A quantitative, non-interventional cross section descriptive design will be used in this study. It is quantitative because it involves assigning numerical values to responses and proceedings/situations. Knowledge, perceptions and cultural practices are the independent variables that will be quantified one at a time in this study.

Proposed study sites:

This study will be conducted in a natural setting at Mahatma Gandhi memorial clinic and Kasanda clinics.

Data management issues (data management plan, analysis and storage):

Data Analysis will be done by use of the Statistical Package for Social Sciences (SPSS 20.0) software. The statistical method which will be used to test the association between the variables is the Analysis Of Variance (ANOVA).

Participants to be recruited and inclusion criteria:

The inclusion criterion in this study will be mothers with under-five children seeking child health services who are willing to participate.

The study will not include Mothers who have not consented, those with sick children, the mentally challenged and care takers other than mothers.

Ethical considerations:

Nonmaleficence will be upheld by ensuring that participants will not be subjected to any harm, as the research will not involve any invasive procedures. They will also be protected from psychological harm by allowing them to answer questions in a natural setting.

In this study, participants will be given the freedom to choose to participate or not to participate in the study.

They will be assured of confidentiality and that no names will appear in the questionnaire. If they choose to take part in the study, they will be asked to sign a consent form. Justice will be upheld by ensuring that all participants are treated equally, selected randomly using systematic sampling method and asked the same questions by way of questionnaire. Beneficence will be upheld, as the outcome of the research will add to a body of knowledge in helping increase mothers' knowledge towards prevention of under-nutrition in under-five year old children. Clearance will be sought from the University of Zambia Biomedical Research Ethics Committee and from the National health Research Authority. Written permission to conduct the research will be obtained from the Kabwe District Health office.
Timelines: October 2018 – July 2019
Plans to disseminate research findings: The study results will be disseminated by distributing copies to the following; School of Nursing Sciences, School of Medicine Medical Library (UNZA), Ministry of health and Kabwe district health office.

3	ARE THE PARTICIPANTS DEPENDENT ON ANY OF THE INVESTIGATORS?	
	(a) As Patients	Yes/No*x
	(b) As Students	Yes/No*x
	(c) As Employees	Yes/No*x
	(d) In other ways	Yes/No*x

	(e) If 'Yes" to any of (a), (b), (c), (d) above, give details:
4	POSSIBLE BENEFITS TO PARTICIPANTS: Increase of knowledge of mothers towards prevention of malnutrition.
5	POSSIBLE RISKS TO PARTICIPANTS: Participants will not be subjected to any harm, as the research will not involve any invasive procedures. They will also be protected from psychological harm by allowing them to answer questions in a natural setting.
6	POSSIBLE BENEFITS TO THE COMMUNITY: Increase mothers' knowledge towards prevention of under-nutrition in under-five year old children will lead to reduction in admission to Hospital, hence increase production in the community.
7	BUDGET (State amount and currency): This research proposal budget has taken into consideration the aspects of stationary, human resource expenses, essential services and contingency in order to facilitate for the smooth running of the study. It is based on the quotations which were collected in Kabwe, bringing the total to Three Thousand Eight Hundred and seventy-Eight Kwacha sixty Ngwee.
	(a) Financial support requested_____ or granted_____ (Tick as appropriate)
	(b) Provide name of Funding Agency/Funder**:**

	(c) Are there costs which will be carried by other institutions (e.g. the Hospital)? Yes/No*x
	(d) Are there costs which will be carried by the participants involved (e.g. travel, accommodation, meals, treatment)? Yes/No*x
	(e) Will the care or the time spent in hospital be prolonged? Yes/No*x
	(f) If 'Yes' to any of (b), (c), (d) and (e) give details:
8	**DECLARATION:** *(This Declaration including signatures should be on single typed page)*

I Lufunda Beatrice Chilombo (Full Name)

Apply to the University of Zambia Biomedical Research Ethics Committee (UNZABREC) for approval of the above research proposal involving human participants, as conforming with recognized ethical standards and as not impinging on the rights of the individuals. I certify that the information given by me is correct to the best of my knowledge, I am familiar with and understand the UNZA Research Policies and international expectations concerning research involving human participants (CIOMS Guidelines or Helsinki Declaration) and I agree:

1. to accept responsibility for the scientific and ethical conduct of this research study;
2. to obtain prior approval from the relevant REC before amending or altering the research protocol or implementing changes in the approved consent form;
3. to immediately report to the REC any serious adverse reactions and/or unanticipated effects on participants which may occur as a result of this study;
4. to complete and submit the Continuing annual Review Form annually (when due) as well as the Final/Study report at the end of the proposed study.
5. to submit the final study report to the UNZABREC.

Signed: B.C. Lufunda…… Date: ……..

STUDENT/CANDIDATE

Full name of Supervisor: ……

Signed: ……. Date: …….

	SUPERVISOR
	Full name of Head of Department: …… Signed: ……. Date: …… HEAD OF DEPARTMENT