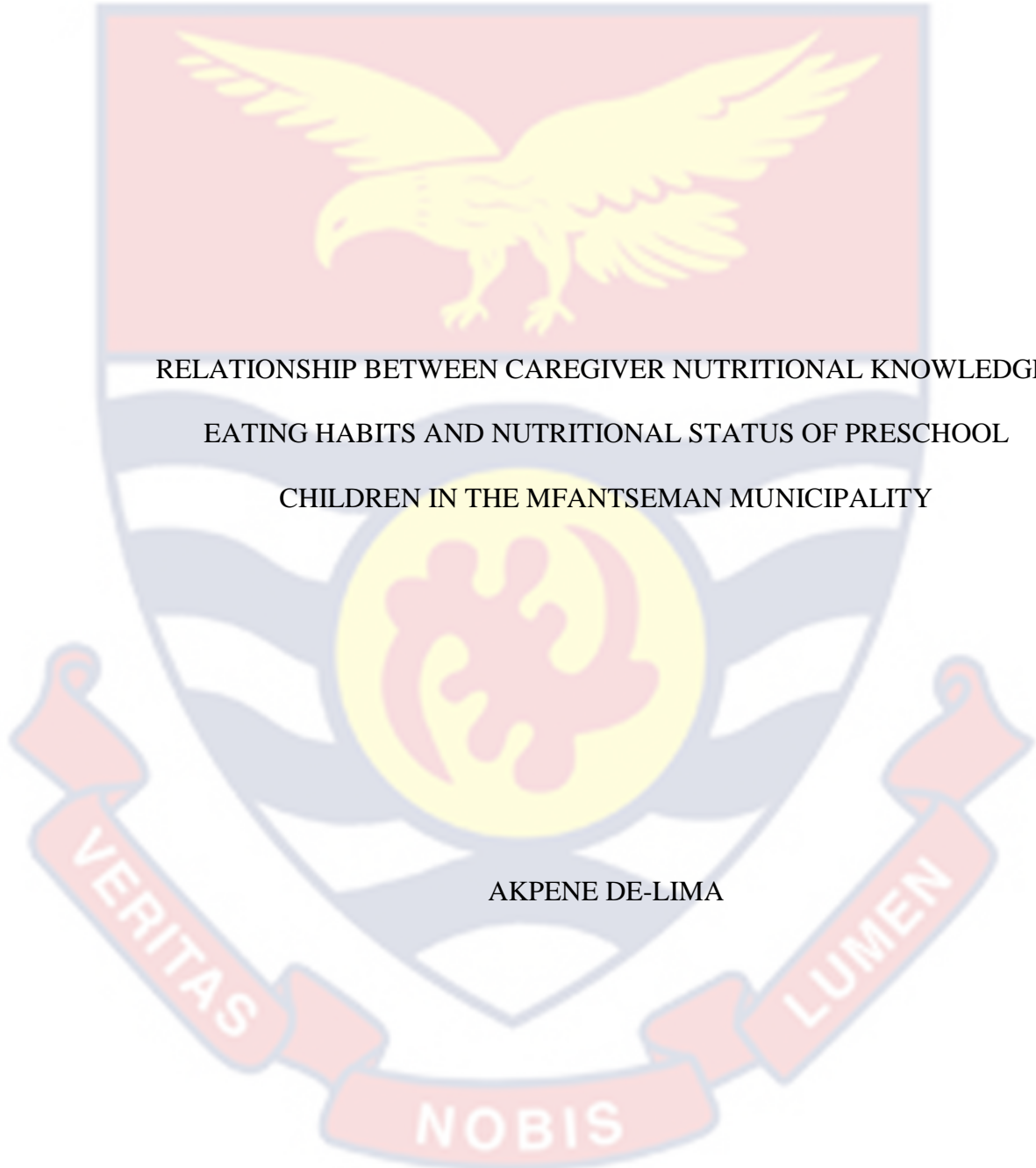


UNIVERSITY OF CAPE COAST



RELATIONSHIP BETWEEN CAREGIVER NUTRITIONAL KNOWLEDGE,  
EATING HABITS AND NUTRITIONAL STATUS OF PRESCHOOL  
CHILDREN IN THE MFANTSEMAM MUNICIPALITY

AKPENE DE-LIMA

2023

UNIVERSITY OF CAPE COAST



RELATIONSHIP BETWEEN CAREGIVER NUTRITIONAL KNOWLEDGE,  
EATING HABITS AND NUTRITIONAL STATUS OF PRESCHOOL  
CHILDREN IN THE MFANTSEMAN MUNICIPALITY

BY

AKPENE DE-LIMA

This thesis submitted to the Department of Vocational and Technical Education of the  
Faculty of Science and Technology Education, College of Education Studies,  
University of Cape Coast, in partial fulfilment of the requirements for the award  
of Master of Philosophy degree in Home Economics

FEBRUARY 2023

## DECLARATION

### Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:..... Date:.....

Name: Akpene De-Lima

### Supervisors' Declaration

I hereby declare that the preparation and presentation of this dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Principal Supervisor's Signature:..... Date:.....

Name: Dr. Christina Boateng

Co-Supervisor's Signature:..... Date:.....

Name: Prof. Jacob Setorglo

## ABSTRACT

Many children continue to be afflicted by under nutrition and hidden hunger while the numbers who are overweight are rising rapidly. However, studies on nutritional knowledge, eating habits and nutritional status of children aged 24-59 months are scarce. The aim of this study was to determine the relationships among caregiver nutritional knowledge, eating habits and nutritional status of children aged 24-59 months old in the Mfantseman Municipality of Ghana. The quantitative approach was employed and the correlational design was used. Percentages, frequencies, WHO Child Growth Standard Z – scores and Pearson product moment correlation coefficient were employed to analyze the study research questions. A total of 180 child-caregiver pairs were selected for the study using the simple random sampling technique. The results revealed that children aged 24-59 months in the Mfantseman Municipality practice healthy eating habit and have healthy nutritional status except that they are at risk of becoming overweight. Further, the overall, results indicated that caregivers in the Mfantseman Municipality have a good level of nutritional knowledge. Finally, nutritional knowledge of caregivers was found to correlate positively with children's eating habits, children's nutritional status correlated positively with their eating habits and children's nutritional status showed a positive association with caregiver nutritional knowledge. It was concluded that caregivers with enhanced nutritional knowledge would ensure healthy nutritional status and eating habits of children. Suggestions were then made for future studies.

## KEY WORDS

Caregiver nutritional knowledge

Eating habits

Mfantseman Municipality

Nutritional status

Preschool children



## ACKNOWLEDGEMENTS

The successful completion of this thesis would not have been a reality had it not been for the diverse contributions of many selfless individuals. For that matter, I wish to express my sincere gratitude to them for their unflinching support throughout the course of carrying out the investigation.

I first and foremost, would like to thank my supervisors, Dr. Christina Boateng (Principal Supervisor) and Prof. Jacob Setorglo (the Co-supervisor), for they deserve a great deal of gratitude for their encouragement at my breaking points, patience in directing me as to what to do at every step of the way, their invaluable contributions, suggestions and constructive criticism.

Worth mentioning is the unwavering support of Mabel Selasi Quashigah for showing me the way at the end of the tunnel when I almost gave up, Mary... for all the sacrifices she made anytime I had to call on her to print and submit the work on my behalf and members of the department of Home Economics at Methodist High School - Saltpond, especially Henrietta Oppon. my then head of department for helping me to manage the limited time that I had to pay attention to my duties as a teacher.

I also would like to thank my husband, Bernard Kofi Asafo-Duho immensely, for his love, prayers and support in helping to care for the needs of our lovely children Boaz, Berthrine and Bryce throughout the entire period of the Mphil programme. It had not been an easy journey for us.

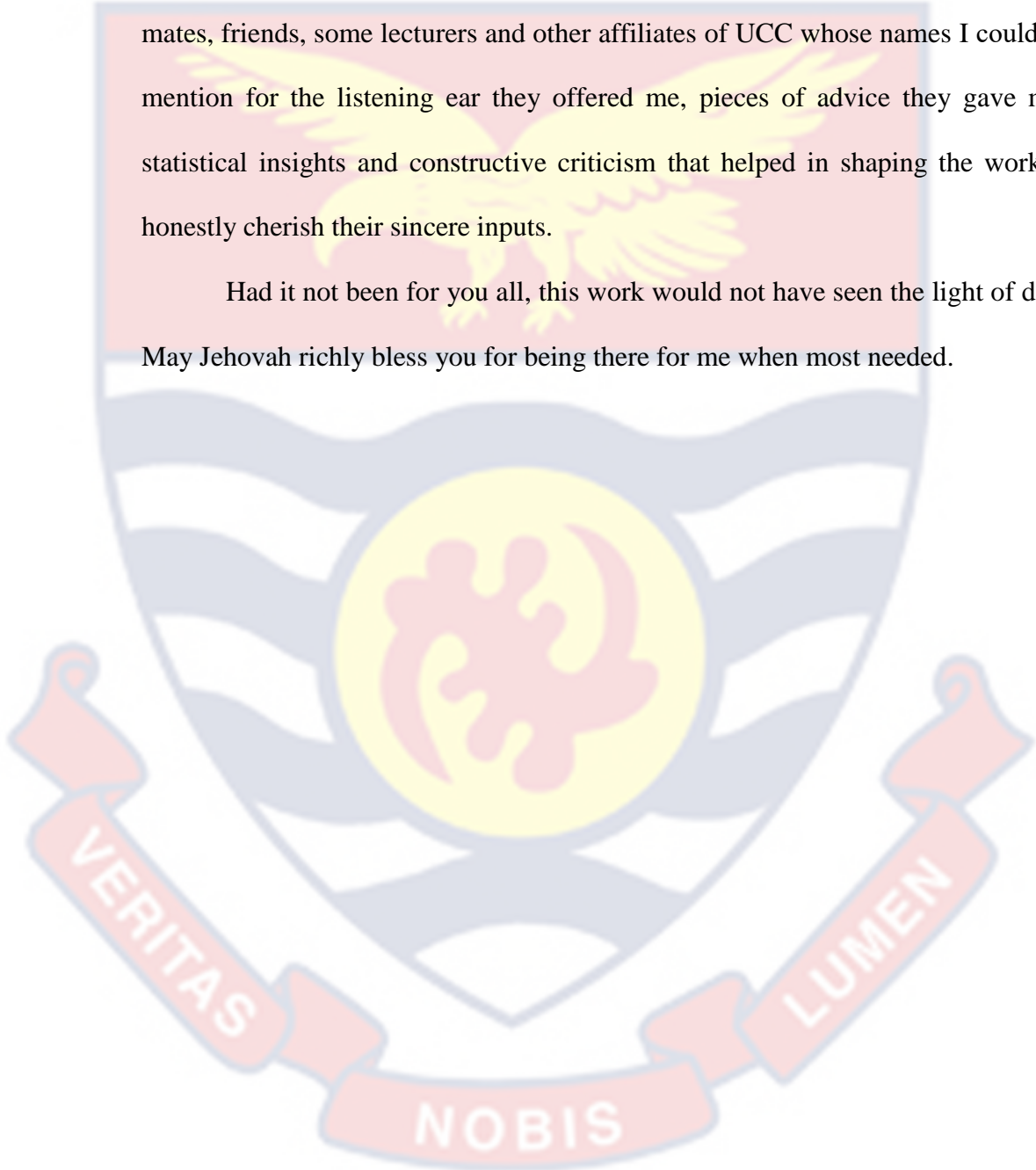
I also acknowledge the moral, emotional, financial and loving support of my siblings Mawuli, Kofi, Elorm and Morkporpor that made it possible for me



to withstand the many challenges that come with carrying out an M.Phil. programme.

Last but not least, I cannot fail to appreciate the efforts of my course mates, friends, some lecturers and other affiliates of UCC whose names I couldn't mention for the listening ear they offered me, pieces of advice they gave me, statistical insights and constructive criticism that helped in shaping the work. I honestly cherish their sincere inputs.

Had it not been for you all, this work would not have seen the light of day. May Jehovah richly bless you for being there for me when most needed.



## DEDICATION

To my father, Philip Mensah De-Lima of blessed memory and mother, Rosemary

Geraldo.





## TABLE OF CONTENTS

	Page
DECLARATION	ii
ABSTRACT	iii
KEY WORDS	iii
TABLE OF CONTENTS	viii
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF ACRONYMS	xiii
CHAPTER ONE: INTRODUCTION	
Background to the Study	1
Statement of the Problem	8
Purpose of the study	10
Objectives of the Study	10
Research Questions	10
Research Hypothesis	11
Significance of the Study	11
Delimitation of the Study	12
Limitations of the Study	13
Definition of Terms	13
Organisation of the Study	14

Chapter Summary	14
-----------------	----

CHAPTER TWO: LITERATURE REVIEW

Introduction	16
--------------	----

Theoretical Framework	16
-----------------------	----

Childhood Nutrition	18
---------------------	----

Eating Habits	19
---------------	----

Nutritional Status of Children	25
--------------------------------	----

Nutrition Knowledge of Caregivers	34
-----------------------------------	----

Empirical Review	36
------------------	----

Conceptual Framework	48
----------------------	----

Chapter Summary	49
-----------------	----

CHAPTER THREE: RESEASRCH METHODS

Introduction	50
--------------	----

Research Design	50
-----------------	----

Study Area	52
------------	----

Population	54
------------	----

Sample Size and Sampling Procedure	55
------------------------------------	----

Data Collection Instrument	57
----------------------------	----

Instrument Validity and Reliability	58
-------------------------------------	----

Data Collection Procedure	59
---------------------------	----

Data Processing and Analysis	61
------------------------------	----

Ethical Considerations 62

Chapter Summary 63

CHAPTER FOUR: RESULTS AND DISCUSSION

Introduction 65

Socio-Demographic Information of Respondents 65

Major Results 69

Discussion 87

Chapter Summary 96

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND

RECOMMENDATIONS 98

Introduction 98

Summary 98

Key Findings 100

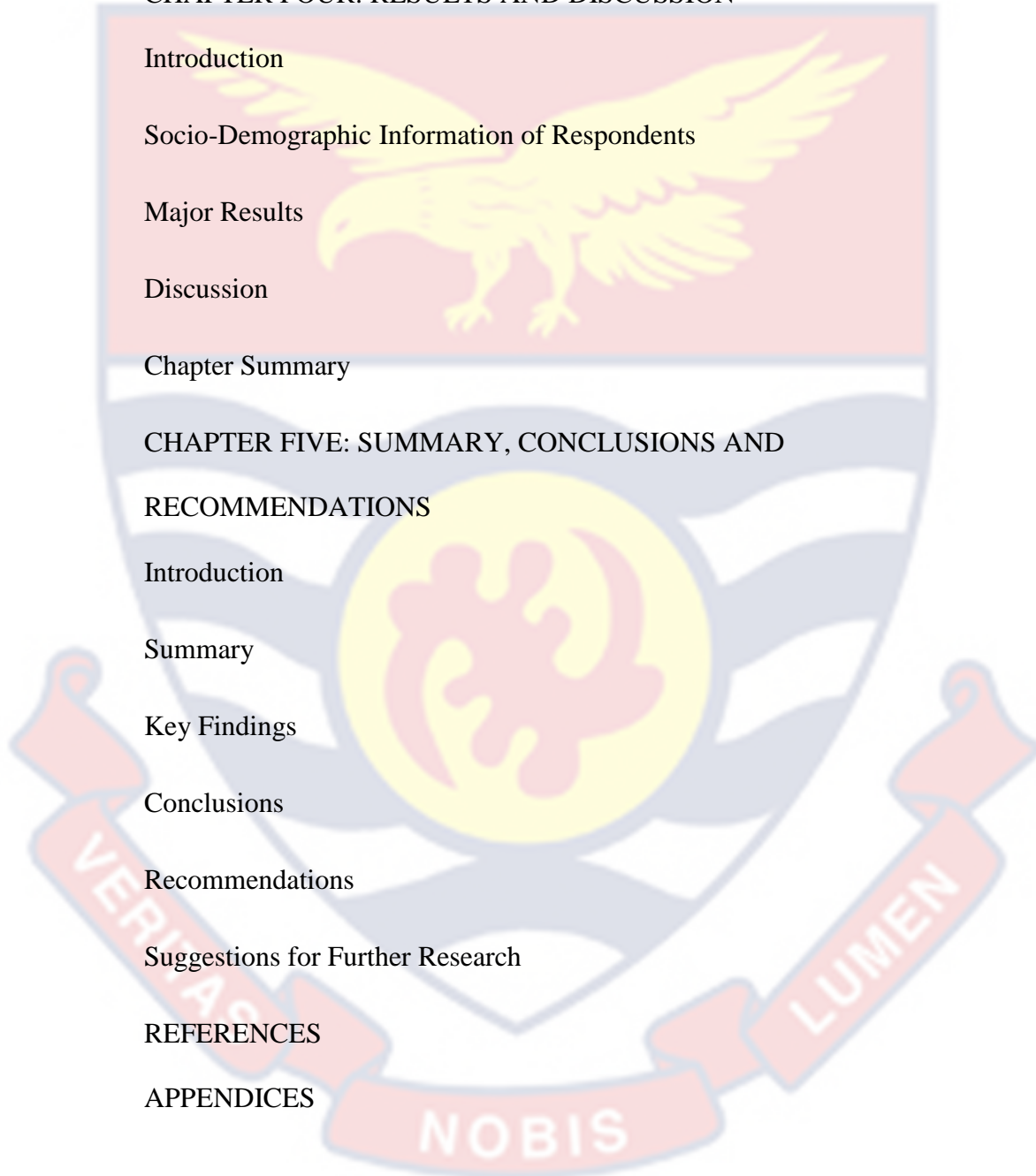
Conclusions 101

Recommendations 102

Suggestions for Further Research 104

REFERENCES 105

APPENDICES 113

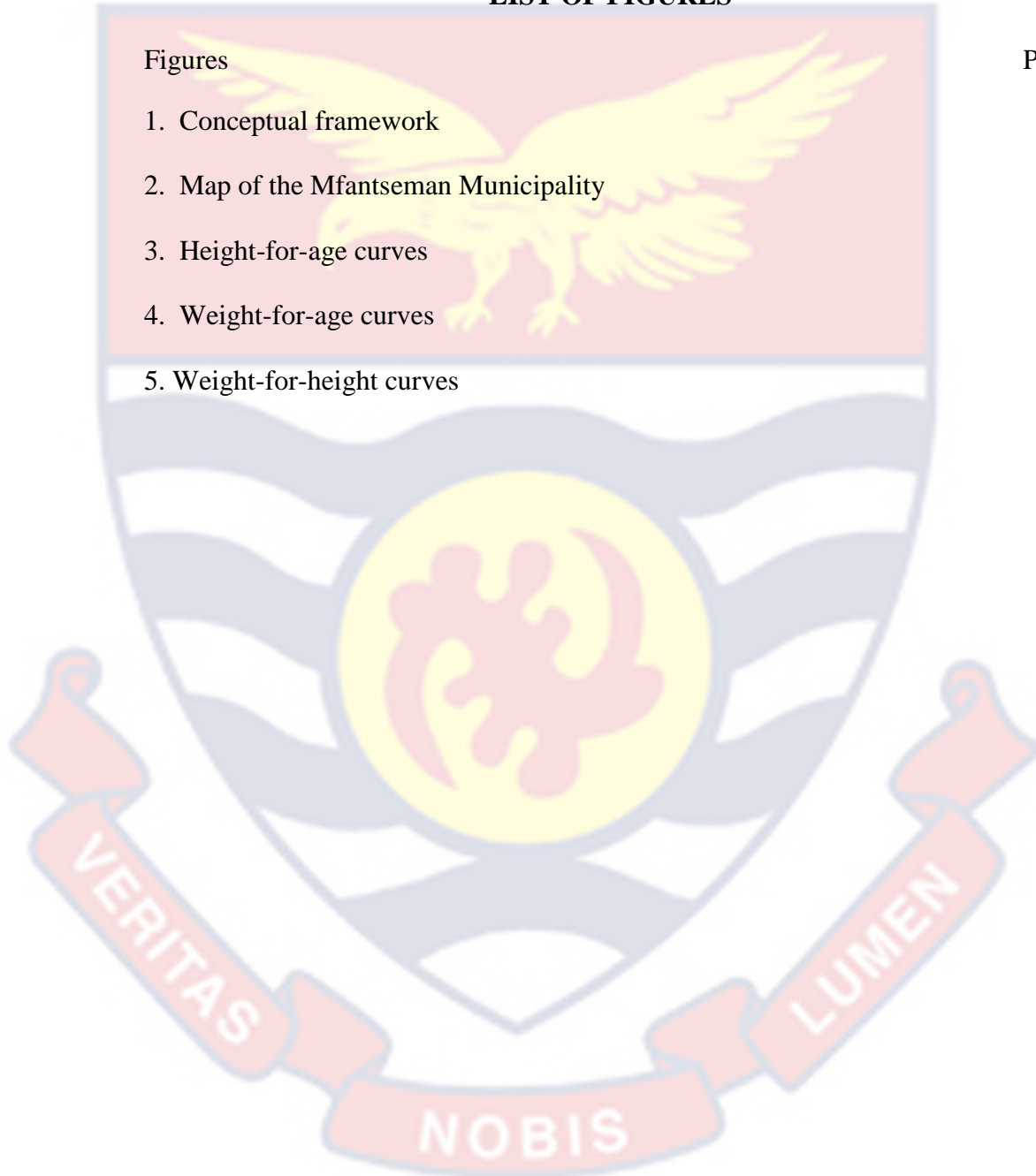


**LIST OF TABLES**

Tables	Page
1. Population Distribution	55
2. Sample Size Distribution	57
3. Socio-demographic Information of Respondents	66
4. Eating Habits of Children Aged 24-59 months	70
5. Nutritional Status of Children Aged 24-59 months	75
6. Nutrition Knowledge Level of Caregivers of Children Aged 24-59 Months in the Mfantseman Municipality of Ghana	83
7. Correlation Coefficients of Relationship among Caregiver Nutritional Knowledge, Children's Eating Habit and Children's Nutritional Status	85
8. Summary of Hypotheses Tested, Results and Conclusions	86

**LIST OF FIGURES**

Figures	Page
1. Conceptual framework	48
2. Map of the Mfantseman Municipality	54
3. Height-for-age curves	80
4. Weight-for-age curves	81
5. Weight-for-height curves	81



**LIST OF ACRONYMS**

BECE	Basic Education Certificate Examination
CDC	Centre for Disease Control and Prevention
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organisation
NACS	Nutrition Assessment, Counselling, and Support
NCHS	National Centre for Health Statistics
PEPFAR	President's Emergency Plan for AIDS Relief
SPSS	Statistical Package for the Social Sciences
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
WASSCE	West African Senior School Certificate Examination
WFP	World Food Programme
WHO	World Health Organisation



## CHAPTER ONE

### INTRODUCTION

The issue of eating habits and nutritional status is very crucial, especially among children of ages 24 months to 59 months as mishandling of children's nutrition may have implication for their overall wellbeing and growth. This study focused on this topic due to its relevance to a wide range of stakeholders within the domain of food and nutrition. This chapter presents the background to the study, statement of the problem, purpose of the study, research objectives, questions and hypothesis. Further, the chapter brings forth the significance of the study, delimitations and limitations, definition of terms and organisation of the rest of the study.

#### **Background to the Study**

Children are precious gifts to humankind and ought to be nurtured to acquire habits that are appropriate for healthy living. Habits are formed at infancy and adults seem to love foods they enjoyed as children and shun foods that were introduced to them later in life. Eating habit is one of the fundamental habits that humans form very early in their lives and becomes lifelong habits that are very difficult to change (Rachael, & Jane, 2004). Thus, Zugravu (2012) posited that, it would be important to teach healthy habits to children right from their childhood, as food is one thing that can be influenced at a personal level with huge consequences. Therefore, paying attention to eating habits, nutritional status, and nutrition knowledge of caregivers is of paramount importance when children's wellbeing is being considered (Kurotani et al., 2016; Mishra et al., 2017).

Eating habits can be said to revolve around the way an individual or a group of people eat, what they eat, how they eat and when they eat; this include meal frequency, diet composition and food choices. According to Larson and Story (2012), an individual's eating habit develops over time and results from interplay of various factors. Rossi (2013) defined habit as an act, use and custom or standardised reaction that originates from the frequent repetition of an activity; thus, the foods or kind of foods that people habitually and repeatedly eat every day characterise their eating habits or behaviours.

Rossi (2013) further explained that the repeated ingestion of food alone does not form eating habit so there must be a series of interrelated factors, internal or external to the organism, which influences the formation of such a habit. This implies that children who continue to ingest unhealthy food may be doing that not simply because that is what is available to them, but because their parents or caregivers are also in the habits of eating foods classified as unhealthy. Besides, elements of factors of culture may also play a major role in eating habits of an individual.

Cultural aspects of eating habits are summarised into the word "culinary", which refers to specific dishes and how these are prepared, ingredients involved, and characteristic tastes (Rossi, 2013). Specifically, Rossi asserted that culinary is concerned with the combination of foods or their processing at domestic and industrial level, adapting them in order to keep their nutritional value, and meeting people's biological and metabolic requirements. The selection of foods used in culinary varies according to different social classes determined by rules

with cultural and economic specificities, represented in different ways (Rossi, 2013; Konwea et al., 2016). The psychological reasons for accepting or rejecting foods, to be fed to children aged 24 months to 59 months, for instance, are included in these rules (Rossi, 2013).

Referring to nutritional status, FAO (2007) stated that it is the condition of the body of an organism as influenced by the diet it eats, the levels of nutrients in its body and the ability of these levels to promote growth, reproduction and to maintain health. This is to say that the nutritional status of children is greatly influenced by the food they are fed, as the level of nutrients contained in these food items are responsible for the children's growth and sustenance. Taking this into account, there is the need to look at issues about nutritional status of preschool children under 59 months.

Nutritional status of under 59 months children is causing great concern among social scientists and planners nowadays because the child is the principal victim of interaction of nutritional, social, economic and health related factors that lead to malnutrition, indicating bad nutritional status (Senthilkumar, Chacko, & Suvetha, 2018). Due to the importance placed on nutritional status of children under the age of 59 months, scholars all around the world view assessment of nutritional status as very important for public health as it can give a clue to the nutritional status of an entire population (Shrivastava, Shrivastava, & Ramasamy, 2014; Lemchi, & Opara, 2015). Usually, children under 59 months are at risk of malnutrition and vulnerable to external shocks such as debilitating conditions and diseases; hence, the common practice to use nutritional status of the under 59

months population to draw conclusions about the situation of a whole population (WFP, & CDC, 2005).

Because the assessment process is a highly complex and quite an individualised one, nutritional status assessment can be directed at a wide variety of aspects of nutrition (WHO, 2020). Popularly, methods known as anthropometric measurement, biochemical or laboratory tests, clinical evaluation, dietary assessment (Johnston, & Ouyang, 1991; Eto, 2014; Lemchi, & Opara, 2015) and environmental assessment (Tripathi, 2017) are used to assess the nutritional status of children, other individuals and groups. They are commonly summarised by the mnemonic “ABCDE”. Interpretation of data collected by these methods helps to determine whether an individual or a group of people is well nourished or malnourished.

Another concept of importance is nutritional knowledge of caregivers. Nutrition knowledge can range from an understanding of the chemical structure of nutrients to knowledge of low-fat cooking methods (Smolin, & Grosvenor, 2013). Rogers (2014) identified three types of knowledge about nutrition: One, awareness, which includes diet-disease relationships; two, knowledge of principles, which revolves around assertions such as cholesterol is found in animal foods only, lemons are a good source of vitamin C, high intakes of fruits and vegetables can prevent hypertension, milk contains psychotropic peptides, among others; and three, how-to knowledge, which includes how to select foods with less fat, salt and sugar or how to read a food label accurately. Thus, it is not



surprising for Mbithe (2018) to have posited that nutritional knowledge impacts attitude and eating habits in society.

It should be pointed out that healthy eating habits initiated early in life translate into improved nutrition and influence the individual's nutritional status and choice of foods in future (Allagulova, 2016). Evidence suggests that improved childhood nutrition enhances educational achievement, learning abilities, health, physical growth and mental development of a child (WHO, 2006; Jukes, Drake, & Bundy, 2007), as poor nutritional status of children is among the most common causes of low school enrollment, high absenteeism, early school dropout and unsatisfactory classroom performance (Jukes et al., 2007).

Over the world; especially in developing countries, children are suffering from the double jeopardy of malnutrition; that is, urban children are being afflicted with problems of over-nutrition while rural and slum children are suffering from effects of under-nutrition (Chatterjee, 2002). Under-nutrition in childhood has been one of the reasons behind the high child mortality rates observed in developing countries whereas chronic under-nutrition in childhood is linked to slower cognitive development and serious health impairments later in life that reduces the quality of life of individuals. Also, Ezzati, Lopez, Rogers and Murray (2004) and World Cancer Research Fund/American Institute for Cancer Research, (2007) posited that overweight was a major risk factor for non-communicable diseases, such as attention deficit hyperactivity disorder (ADHD), cancers and autoimmune diseases; thus, implying that if measures were not put in place to check the results of possible risk of overweight among children, non-

communicable diseases might become diseases the children may suffer in their future lives.

Nevertheless, despite the fact several local studies have looked at eating habit, nutritional status and nutritional knowledge as separate constructs, most of the studies done on the interplay between eating habits, nutritional status, and nutritional knowledge level were in the context of developed countries, thus, causing paucity of empirical studies in developing countries; especially, countries in the sub-Saharan Africa of which Ghana is part (Sogari, Velez-Argumedo, & Mora, 2018; Wong, & Murata, 2017). For instance, a study conducted in the United States revealed that overweightness and obesity had increased astronomically over the past few decades due to unhealthy dietary habits (Sogari et al., 2018). These findings were not different from the findings of a study conducted in Japan which revealed that a whooping number of school children were practising unhealthy and unhealthy eating habits (Wong, & Murata, 2017). Also, a study conducted using some selected North African countries revealed that nutritional knowledge had direct influence on eating habits, and nutritional status (Beegum, 2013).

An empirical study closely related to the present study investigated the nutritional status of junior high school students in the Mfantseman Municipality of Ghana which revealed that there was high prevalence of malnutrition amongst the junior high students (Awere, Kwaw, & Sackey, 2013). Awere et al. (2013) attributed their findings to poor eating habits, among other related factors. Also, it was averred that school children were highly likely to suffer from eating habit



issues because school children within a particular geographical area are either members of the same household or they live very close to one another; hence, may be eating from the same pot or have the habit of eating from the same sources of food (Awere et al., 2013).

Following from the foregoing, it is worth noting that it is periodic assessments that help to gain knowledge about children's nutritional status within a population that potentially reveals the existence of malnutrition cases of under-nutrition (such as wasting, stunting, underweight) and over-nutrition (such as overweight or obesity) among children (Ezzati et al., 2004). Understanding children's nutritional status has far-reaching implications for better development of future generations, and this is closely related to the level of development of the communities in which the children live, and can directly influence future potentialities of the communities (Jukes et al., 2007).

Therefore, what and how people who constitute the same household eat influences their eating habits and its resultant nutritional status. Since Awere et al. (2013) revealed high prevalence of malnutrition among junior high school students and stated improper eating habit as a contributory factor, an extensive investigation into the eating habits of children in their early childhood – aged 24 months to 59 months – within the Mfantseman Municipality to see how it relates to the children's nutritional status and caregivers' nutritional knowledge. Beside Awere et al.'s (2013) study which focused only on nutritional status, no study has looked at eating habits in relation to nutritional status and nutritional knowledge of caregivers. That way, children found to be most nutritionally vulnerable would

be helped with appropriate eating habits that promote good nutritional status, as stated by UNICEF (2019).

### **Statement of the Problem**

The world is faced with the burden of malnutrition that threatens the survival, growth and development of children and of nations (UNICEF, 2019). Many children continue to be afflicted by under nutrition while the numbers who are overweight are rising rapidly (UNICEF, 2019). The phenomena, according to the UNICEF, could be ascribed to intake of poor diets in early childhood. Unfortunately, at early childhood, children mostly have no control over the kind of foods they have to eat; parents or caregivers feed them what is available or what they presume to be nutritious or what is widely preferred by children (UNICEF, 2019).

Inferring from the foregoing, it appears that many children under 59 months around the world are eating too little fruits and vegetables and too many unhealthy foods high in sugar and saturated fats (UNICEF, 2019). This phenomenon is not different from what is being experienced in the Mfantseman Municipality of Ghana, as Awere et al. (2013) showed that preschool children under the age of 59 months in the Municipality consume sugar-sweetened foods and beverages daily, both at home and at school. These habits could lead to one or more forms of diet related diseases and or malnutrition. These health conditions could affect academic performance and lifelong economic opportunities of children, and present health risks as the child grows into adulthood (UNICEF, 2019; Konwea, Ogunbile, & Olowoselu, 2016).

However, only few prior studies have considered either eating habits, or nutritional status, or caregiver knowledge but not the associations between these them (Natekar, & Mhaske, 2015; Amos, Boateng, & Intiful, 2012; Awere, et al., 2013). For instance, Natekar and Mhaske (2015) focused on food myths and eating habits, and found food myths to have influence on eating habits of pregnant women. Also, Amos et al. (2012) reported that eating habits have impact on growth and development. Further, Awere et al. (2013) found nutritional knowledge to have played major role in eating habits of people.

From the above, it could be seen that majority of the prior studies did not explore the correlation between eating habits, nutritional status and caregiver nutritional knowledge, taking cognisance of preschool children under 59 months. Besides, majority of the prior related studies focused on concept combination other than eating habits, nutritional status and caregiver nutritional knowledge. Also, most of the prior related studies were purely descriptive in nature, and the focus had not been on the relationship between caregiver nutritional knowledge, eating habits and nutritional status of preschool children aged 24 months to 59 months (Awere et al., 2013; Konwea et al., 2016). It is, therefore, against this background that the current study assessed the relationship among caregiver nutritional knowledge, eating habits and nutritional status of children aged 24 months to 59 months in the Mfantseman Municipality of Ghana, using the correlation design.

### **Purpose of the study**

The purpose of this study was to assess the relationship between caregiver nutritional knowledge, eating habits and nutritional status of children aged 24 months to 59 months in the Mfantseman Municipality of Ghana.

### **Objectives of the Study**

Specifically, the study sought to achieve the following objectives.

1. Describe the eating habits of children aged 24-59 months in the Mfantseman Municipality of Ghana.
2. Examine the nutritional status of children aged 24-59 months in the Mfantseman Municipality of Ghana.
3. Determine the nutrition knowledge level of caregivers of children aged 24-59 months in the Mfantseman Municipality of Ghana.
4. Analyse the relationship between caregiver nutritional knowledge, eating habits and nutritional status of children aged 24-59 months in the Mfantseman Municipality of Ghana.

### **Research Questions**

The following research questions were formulated to help achieve research objective one, two and three.

1. What is the eating habit of children aged 24-59 months in the Mfantseman Municipality of Ghana?
2. What is the nutritional status of children aged 24-59 months in the Mfantseman Municipality of Ghana?



3. What is the nutrition knowledge level of caregivers of children aged 24-59 months in the Mfantseman Municipality of Ghana?

### **Research Hypothesis**

To assess the significance of the relationship among the concepts in the fourth objective, the following hypothesis was formulated and tested.

$H_0^1$ : There is no statistically significant relationship between caregiver nutritional knowledge, eating habits and nutritional status of children aged 24-59 months in the Mfantseman Municipality of Ghana.

$H_1^1$ : There is a statistically significant relationship between caregiver nutritional knowledge, eating habits and nutritional status of children aged 24-59 months in the Mfantseman Municipality of Ghana.

### **Significance of the Study**

The study was based on the assumption that children in the age group of 24-59 months are vulnerable and their eating habits and nutritional status depends on factors that children do not have control over. Even within a given geographical area, rural and urban disparities exist and may influence eating habits and nutritional status. In view of this, the study would contribute to the growing body of knowledge on child nutrition, and will promote growth and development of healthy children. The study would also serve as reference for further studies, in contributing to literature.

Further, young women and all caregivers responsible for children's nutrition would benefit from the findings to enable them inculcate healthy eating habits in children, hence, helping eliminate malnutrition. They would learn not to

wait until their children became malnourished but gradually help them to form eating habits that are healthy right from the time they start to eat family foods.

The Mfantseman Municipal Health and Education directorates would also be informed to formulate appropriate educational and health promotion measures that would help address problems of child nutrition, their eating habits and the subsequent eradication of malnutrition among children within the municipality.

In terms of contribution to theory, the study has extended the cognitive-behavioural theory of eating disorder by applying it to the study of the relationship between caregiver nutritional knowledge, eating habits and nutritional status of children aged 24-59 months, which has by far been limited to only developed economies and the study of only eating habits. Again, the finding of the study has further explained the cognitive-behavioural theory by elaborating the building concepts of the theory and stretching them to incorporate possible related concepts such as nutritional knowledge of caregivers and nutritional status of preschool children.

### **Delimitation of the Study**

The study was delimited to children aged 24-59 months old and their caregivers or parents. The study included only children who fell within the stated age group, and were living and schooling in selected rural and urban communities of the Mfantseman Municipality at the time of the current study. Thus, children who came to the Municipality during or after the study were not considered. Also, the study focused only on eating habits of children, nutritional status of children



within the age bracket defined, and the nutrition knowledge levels of those who give care to these children.

### **Limitations of the Study**

Adopting the quantitative approach, the questionnaire was used for the data collection. Some of the respondents (caregivers) seemed to have difficulty in understanding the English Language used on the questionnaire; thereby, making the researcher spend more time explaining concepts to some of the respondents in order to ensure that they provided candid responses to the items on the instrument. Also, the researcher could not get access to the total sample size determined as some of the households had either travelled or refused to avail themselves for the study; however, the researcher managed to get a representative sample for the study. Further, analysing respondents' responses only quantitatively might not represent the full view of the respondents, as supporting the approach with qualitative technique would have averted, to some extent, the inherent limitations of using just a single approach. However, objectivity was achieved considering the scope defined by the researcher.

### **Definition of Terms**

**Nutritional knowledge:** The knowledge of parents or caregivers about balanced diet, foodborne diseases, and nutrition.

**Eating habit:** The way a person or group of people eat in terms of what types of food are eaten.

**Nutritional status:** Refers to the nutritional health of the children.

**Preschool children:** Early childhood children who are 24-59 months old.

Caregivers: Any individual such as mother, father, grandmother, aunty or any guardian solely responsible for feeding and caring for the child.

### **Organisation of the Study**

The rest of the study would be organised into four chapters, starting with Chapter Two. In Chapter Two, literature related to the study would be reviewed. This would cover the theoretical framework, empirical review and conceptual framework of the study. Chapter Three would describe the methods employed for the study. The Chapter would identify the research design adopted for the study, describe the study area, the population, the sample size and sampling procedures. It would also indicate instruments for data collection, pre-testing of instruments, validity and reliability of the instruments, issues of ethical procedures, data collection procedure, and data processing and analysis. Chapter Four of the study would concentrate on results and discussion. The final chapter, Chapter Five, would present the summary, key findings, conclusions and recommendations of the study.

### **Chapter Summary**

This chapter presented the background to the study where background issues concerning the research topic were discussed. The problem the study sought to solve was also broadly looked at under this section of the chapter. The research problem was also stated and discussed, bringing forth gaps in literature and motivation for the current study. The purpose of the study was also presented, stating the main aim of the study. The chapter also stated the research objectives; four research objectives were stated. Research questions and hypothesis were

formulated to help achieve the study objectives. Further, significance of the study, delimitations, limitations, definition of terms, and organisation of the rest of the study were discussed.



## CHAPTER TWO

### LITERATURE REVIEW

#### **Introduction**

This chapter presents a review of the literature on eating habits of children aged 24-59 months, nutritional status of children aged 24-59 months, and the nutrition knowledge of caregivers of these children. The chapter reviewed the cognitive-behavioural theories of eating disorders. The empirical review discusses previous studies relating to eating habit, nutritional status, and nutrition knowledge of caregivers. Also, a focus is placed on the relationship among these three concepts. The chapter also presents a conceptual framework, as well as a chapter summary.

#### **Theoretical Framework**

The study, considering the importance of employing underlying theory, utilised the cognitive-behavioural theory of eating disorder. The cognitive-behavioural theory of eating disorder by Williamson, White, York-Crowe and Stewart (2004) combined concepts which revolve around body concerns such as overweightness, fatness, and other characteristics, occasioned by dietary habits, that can be cognitively or physically associated with an individual.

#### **Cognitive-behavioural theory of eating disorder**

Cognitive and behavioural theorists (Polivy, & Hermann, 1985; Fairburn, 1997; Williamson, White, York-Crowe, & Stewart, 2004) brought forth theories and hypotheses that focused on fatness and disturbances of one's body to have

association with eating habits. Theories pooled under this umbrella include the dietary restraint theory (Polivy, & Hermann, 1985), and information-processing theories of eating disorders (Fairburn, 1997; Williamson, White et al., 2004).

These theories posit that the body size of individuals, being height or weight, influences the eating habits of the individual. People eat less because they feel fat already, or eat more because they feel empty (Hermans, 2015). However, interestingly, the same individuals would want to starve to reduce weight after exposure to improper and unhealthy dietary behaviour.

Linking the position of the cognitive-behavioural theory of eating disorders to the current study, it can be said that eating habit of children is influenced by their body sizes. This in turn determines their nutritional status. However, these theories did not draw any line between nutrition knowledge level and nutritional status, and nutrition knowledge level and eating habits. Nevertheless, it could be inferred that the eating habits are informed by the nutrition knowledge level of the eater, and hence a line of association could be drawn between the eating habits of a child and nutrition knowledge level. In addition, the disorders associated with eating which could be captured under nutritional status, per the cognitive-behavioural theories of eating disorders.

Just as the present study, Lemchi and Opara (2015) applied the cognitive-behavioural theory of eating disorder to the study of preschool children nutrition, and the findings of their study were supported by the assertions of the theory. Similarly, Rossi (2013) employed this theory in the study of eating habits and the findings were in alignment with the position of the theory. These made the choice



of the cognitive-behavioural theory of eating disorder appropriate for the present study. This is not to say that the cognitive-behavioural theory of eating disorder is devoid of limitations, as Hermans (2015) had argued that the theory was too skewed to eating behaviour than how this behaviour could influence other aspects humans. Nonetheless, Hermans' (2015) argument was said to have held only to the point where the theory was not pooled to include dietary restraint theory and information-processing theories of eating disorders (Senthilkumar et al., 2018; Tripathi, 2017). Taking these into account, the cognitive-behavioural theory stands appropriate for this study.

### **Childhood Nutrition**

The early childhood age is a stage of life when the body tissues and cells are growing rapidly. Thus, proper nutrition is required at this time to help children grow physically, mentally, socially or otherwise. Sekumade (2013) reported that physical growth and cognitive development in children are faster during the early years of life and that by the age of four, 50% of the adult intellectual capacity has been attained. Therefore, where inadequate nutrition occurs in childhood, it has irreversible consequences on human body growth such as low height for age (Dewey, & Begum, 2011). Throughout a lifespan, inadequate nutrition is related to several chronic diseases that greatly impact morbidity, mortality, and quality of life (Trude, 2015). Adequate nutrition is essential for a healthy life and healthy aging has good impact on an individual, as well as on a society at large. However, there is moderate awareness about this issue worldwide (Szabolcs, 2015).

Children, especially those of pre-school age (24-59 months) are vulnerable nutritionally, and this is mainly due to their easy susceptibility to malnutrition and infection (Lemchi, & Opara, 2015). Malnutrition at this stage can pose serious threats to the intellectual development, health and academic performance of the child (Lemchi, & Opara, 2015). A good diet is crucial for the growth and development of children (Karkee, 2014). Reproductive and antenatal women, young children and breastfeeding mothers require various forms of nutritious food and diets which include essential nutrients such as proteins, fats, vitamin A, iodine and iron, among others (Victora, 2008). Apart from nutritious foods and diets, parents or caregivers' nutritional knowledge has also been cited to have influence on childhood nutrition (Trude, 2015), and thus, should be given attention by nutritionists.

### **Eating Habits**

Eating habit can be defined as the way an individual or a group of people eat, what they eat, how they eat and when they eat; it includes meal frequency, diet composition and food choices (Larson, & Story, 2012). An individual's eating habit develops over time and results from interplay of various factors (Larson, & Story, 2012). Eating habits are the determinants of an individual's or a group's nutritional status and the risk factor for chronic diet related diseases. Rossi (2013) defined habit as an act, use and custom or standardised reaction that originates from the frequent repetition of an activity (learning). Therefore, the foods or kind of foods that people habitually and repeatedly eat every day characterise their eating habits or behaviours (Rossi, 2013). Rossi (2013)

explained that the repeated ingestion of food alone does not form eating habit so there must be a series of interrelated factors, internal or external to the organism, which influences the formation of such a habit.

The cultural aspects of eating habits may be summarised into the word “culinary”, which refers to specific dishes and how these are prepared, involving ingredients, characteristic tastes and preparation (Rossi, 2013). Rossi asserted that culinary is concerned with the combination of foods or their processing at domestic and industrial level, adapting them to keep their nutritional value, and thus meeting people’s biological and metabolic requirements. The selection of foods used in culinary varies according to different social classes, and is determined by rules with cultural and economic specificities of their own, represented in different ways (Rossi, 2013; Konwea et al., 2016). The psychological reasons for accepting or rejecting foods are included in these rules (Rossi, 2013).

Foods are categorised through sensorial suggestions (good taste, bad taste, or tasteless), consequences of eating certain foods (good, harmful), ideational factors (use of the food, adequate or inadequate, appearance, hygiene), which influence the selection of foods (Konwea et al., 2016). Eating habits or behaviours cover a multiplicity of distinct behaviours from ‘simple’ chewing of food to food shopping, food preparation, etiquette, and food policy decision-making (Wardle, 2014). Wardle (2014) argued that eating habit can be general (e.g., doing the weekly grocery shopping) or quite specific (e.g., choosing brand A over brand B

according to their saturated fat contents). Much knowledge is required for these behaviours, only a little of which is related to nutrition (Wardle, 2014).

However, in the specific case of preschool children, eating habits are basically characterised by their food preferences (Wardle, 2014). Children in this age group end up eating just the foods they like, or which are available in their environment. Wardle discovered that, among the interrelated factors present in the formation of eating behaviour, the psychosocial factors stand out. They are responsible for the conveyance of food culture and influence food experience from childbirth, allowing the opportunity for initial learning about the sensation of hunger and satiation and also perception of different tastes. Furthermore, it was revealed that adequate introduction of new foods during the first year of life, and from this point on, by means of proper food socialisation, and availability of a varied number of healthy foods in a pleasant environment, allow children to develop food preferences that will determine their pattern of consumption (Al-Shookri, Al-Shukaily, Hassan, Al-Sheraji, & Al-Tobi, 2011).

For example, preschool children tend to have preferences that include foods with high concentration of carbohydrates, sugar, fat and salt, and low intake of foods such as vegetables and fruits if compared to the recommended amounts (Mennella, 2012). This tendency originates from children's food socialisation and greatly depends on the patterns of the food culture to which they belong (Rossi, 2013). The dietary guidelines for preschool children not only include an adequate intake of the main foods such as fruits and vegetables, but also encourage



moderation, especially intakes of poor energy-dense foods (Al-Shookri et al., 2011). In all, the focus should be healthy eating.

Foods that constitute healthy eating are difficult to determine due to individual differences. What one individual deems healthy may be seen as unhealthy by another. However, there is always a clue to what is generally regarded as standard or acceptable. According to the World Health Organisation, recommendations are available to offer advice on maintaining healthy dietary practices (WHO, 2020). The World Health Organisation stated that intake, in the right proportion, of fruits, vegetables, legumes (e.g., lentils, beans), nuts, and whole grains (e.g., unprocessed maize, millet, oats, wheat and brown rice) form healthy eating habit.

Also, fish and lean meat are recommended for healthy eating style. Individuals, especially, children are expected to be fed with foods low in fat (less than 30% of total energy intake), as well as low intake of sugars and salt (Hooper, Abdelhamid, Bunn, Brown, Summerbell, & Skeaff, 2015). Due to the fact that individuals may have conditions that may preclude them from taking some food items in order to maintain healthy life, what constitutes healthy eating is, to some extent, subjective (Lemchi, & Opara, 2015). However, whatever is recommended to constitute healthy eating should be taken in moderation and balanced manner (WHO, 2020), as this will help understand the importance of healthy eating habits among children.

The first year of life is characterised by rapid developmental changes related to eating (Black, & Kurley, 2013). Healthy eating habits in children are



important in preventing under nutrition, growth retardation, and acute child nutritional problems. In addition, it is important to preventing chronic, long term health problems such as; obesity, coronary heart disease, type-2 diabetes, and stroke (Al-Shookri et al., 2011). These imply that it is imperative to form the habits of healthy eating in order to avoid and prevent these diseases.

To form the habit of eating a healthy diet, one may need to make some changes irrespective of their age, remembering that one can change his/her eating habits a little bit at a time. Small changes are easier to make and can lead to better health. Here are some ways to make healthy changes in children's eating habits (Black, & Kurley, 2013):

- Parents or caregivers should keep more fruits, low-fat dairy products, vegetables, and whole-grain foods at home for children under 24-59 months. Parents should focus on adding healthy food to children's diet, rather than just taking unhealthy foods away from them.
- Children should be fed or made to eat a family meal every day at the kitchen or dining table; this will help focus on making them eat healthy meals.
- Pack healthy lunch and snacks for the school-going children; this lets them have more control over what they eat whilst away from home.
- Parents or caregivers should ensure that children do not skip or delay meals.
- Parents or caregivers should make children relax and enjoy their meals, and not allow them to eat too fast.

- Children should be made to drink water instead of high-sugar drinks (including high-sugar juice drinks).

### Assessment of eating habits

Further, it should be pointed out that, to obtain detailed information about all foods and beverages consumed, dietary assessment instruments are used. These instruments include the 24-hour dietary recall, food record, food frequency questionnaire, and screeners, among others (Dietary Assessment Primer, 2021). The 24-hour dietary recall is a structured interview purposed to capture detailed information about all foods and beverages, and possibly dietary supplements, consumed by a respondent in the past 24 hours; mostly, from midnight to midnight the previous day. Also, the food record or food diary is used to obtain detailed information about all foods and beverages consumed over a period of one or more days; it is a self-reported account of all foods and beverages consumed by a respondent over one or more days.

Food frequency questionnaire is also used to obtain frequency and, in some cases, portion size information about food and beverage consumption over a specified period of time, usually, the past month or year. The questionnaire consists of a finite list of foods and beverages with response categories to indicate usual frequency of consumption over the time period queried. To assess the total diet, the number of foods and beverages queried typically ranges from 80 to 120. Further, screeners, or short dietary assessment instruments, are used to obtain basic information about a limited number of foods and beverages consumed or dietary practices over a period of time, typically the past month or year. In all, the

choice of a dietary assessment instrument depends on the purpose a researcher intends achieving.

### **Nutritional Status of Children**

Nutritional status of under-five children is causing great concern among social scientists and planners nowadays because the child is the principal victim of interaction of nutritional, social, economic and health related factors that lead to malnutrition (Senthilkumar, Chacko, & Suvetha, 2018). The term malnutrition indicates a bad nutritional status (FAO, 2007). The term nutritional status refers to the condition of the body of an organism as influenced by the diet he/she eats, the levels of nutrients in his/her body and the ability of these levels to promote growth, reproduction and to maintain health (FAO, 2007).

Scholars all around the world view assessment of nutritional status of individuals, families and communities as very important for public health as it gives a clue to the nutritional status of the entire population (Shrivastava, Shrivastava, & Ramasamy, 2014; Lemchi, & Opara, 2015). Children under five years are more at risk of malnutrition and more vulnerable to external shocks. It is therefore common practice to use the nutritional status of the under-5-years population to draw conclusions about the situation of the whole population (WFP, & CDC, 2005). Because this process is a highly complex and quite an individualised one, nutritional status assessment can be directed at a wide variety of aspects of nutrition (WHO, 2020).

Popular methods known as anthropometric measurement, biochemical or laboratory tests, clinical indicators, dietary assessment (Johnston, & Ouyang,

1991; Eto, 2014; Lemchi, & Opara, 2015) or demographic factors and environmental or social or economic factors (Tripathi, 2017) are mostly used to assess the nutritional status of children, other individuals and groups. They are commonly summarised by the mnemonic “ABCDE”. Interpretation of data collected by these methods help to determine whether an individual or groups of people are well nourished or malnourished (over-nourished or under-nourished) (nutrition module).

Assessment of children’s nutritional status is key to assessing their growth pattern, to identifying those at-risk or malnourished so that they can be referred to the appropriate care, to tailoring nutritional counselling and treatment to the individual child’s nutritional status, to obtaining information about the prevalence and geographic distribution of nutritional disorders in children within a community (Shrivastava, Shrivastava, & Ramasamy, 2014; Cashin, & Oot, 2018) and to aid in developing educational programmes which encourage children and people to improve their eating habits (Eto, 2014).

The nutritional status assessments identified play major role in policy-making, nutritional recommendations, determining fund allocations anticipated in surveyed areas to programme managers and evaluating the effectiveness of implemented corrective measures (Shrivastava et al., 2014). Continual assessment of nutritional status helps to detect health or nutrition problems in children, individuals and populations early. Early detection in turn permits quick response and intervention which can prevent further deterioration and help re-establish sound nutritional status (Cashin, & Oot, 2018).



### Nutritional anthropometry

Nutritional anthropometry has to do with the physical measurement of the human body. It is defined as measurements of the variations of the physical dimensions and the gross composition of the human body at different age levels and degrees of nutrition (Lemchi, & Opara, 2015). It is used to assess growth or change in the body composition of children in a community. To assess growth in children 24-59 months old, several different body measurements including height, weight and head circumference can be used (Lemchi, & Opara; Shrivastava et al., 2014; Cashin, & Oot, 2018). Once a child's height and weight have been correctly measured and their age recorded, a clinician or researcher can assess the child's growth and general nutritional status (Mei, & Grummer-Strawn, 2007). Head circumference is useful in assessing chronic nutritional problems in children two years old and below as the brain grows faster during the first two years of life (Cashin, & Oot).

In developed and developing countries, however, assessing nutritional status, especially in children, has been widely and successfully carried out using anthropometric measures (Mei, & Grummer-Strawn, 2007; WHO, 2006). This is not only because they are non-invasive, cheap, rapid and inexpensive to obtain but also because they are easy to use and above all presents quite satisfactory results when compared with the other methods of assessing nutritional status (Ferreira, 2020). The potential difficulty associated with using this assessment method is about access to the children under the required age for a particular research purpose.



### Assessing growth in children

Timely detection of poor growth is paramount in helping children at risk. If this is not done, it can lead to adverse factors like poor cognition, low educational performance, poor wages in adult life, loss of productivity and increased chances of suffering nutrition related diseases. One can thus not underestimate the need to consistently assess the growth in children (De Onis et al., 2012), as growth is one of the most commonly used and most valuable tools for assessing the general well-being of infants and children. The assessment of growth in children is important for monitoring their health status, identifying those children deviating from normality and determining the effectiveness of interventions (De Onis, Onyango, Borghi, Siyam, & Lutter, 2012). Successful assessment and interpretation of a child growth trajectory is highly dependent on the use of internationally acceptable growth standards (De Onis et al., 2012).

Although the National Center for Health Statistics/World Health Organisation (NCHS/WHO) reference has been extensively used internationally since the late 1970's to assess growth in children, the World Health Organisation (WHO) in April 2006, released a new child growth standard, and recommended that these standards be used internationally. Consequently, it became the new standard for assessing growth of infants and children under five years worldwide. The National Center for Health Statistics/World Health Organisation (NCHS/WHO) reference was regarded as inappropriate for assessing children's growth mostly because the reference was based on a sample of predominantly

formula-fed children whose growth patterns substantially deviated from the patterns of healthy breastfed children (WHO, 2020).

However, the WHO Child Growth Standards are based on an international sample of breastfed children selected to represent optimum growth. They are designed to be used as a standard for how children should grow rather than just a reference. They are meant to be used for both individual diagnoses and international comparisons. These standards provide a tool to monitor and assess growth in early infancy in ethnically diverse populations as well as a valuable tool for research and cross-national comparison. Because a standard defines how children should grow, deviations from the pattern it describes are evidence of abnormal growth.

The World Health Organisation child growth standard (WHO, 2006) has been used to assess growth of children aged 24-59 months. It classifies children under 5 years as malnourished according to the anthropometric indices of nutritional status. The three most commonly used indexes in developing countries include weight-for-age, height-for-age and weight-for-height (Ferreira, 2020). Each of the indices provides different information about growth and body composition. It allows identification of subgroups of the child population that are well-nourished or at increased risk of faltered growth, disease, impaired mental development and death. These marked differences in the physical growth and development of the child can be assessed using the anthropometric indices. These anthropometric indices can be interpreted as follows:

### *Height-for-age*

It is an index used for assessing stunting or shortness (chronic malnutrition in children). Stunting is defined as a low height for age of a child compared to the standard child of the same age and sex, or it is the slowing down of the skeletal growth of a child and the end result of a reduced rate of linear growth (Ferreira, 2020). The prevalence of stunting is usually highest in the second or third year of life (Gibson, 2005). Stunting of children in a given population indicates the fact that children have suffered from chronic malnutrition so much so that it has affected their linear growth (Ferreira, 2020). According to the World Health Organisation, the tallest child of 60months old should be about 120cm tall, and average for children aged 24-59 months old ranges between 65cm and 120cm.

The condition of stunting results from poor health; that is, increased risk of frequent and early exposure to illness (Nordang, 2011; De Onis, et al., 2012), inappropriate feeding practices or long periods of inadequate food intake and increased morbidity which is generally found in countries where economic conditions are poor (Eto, 2014; De Onis, et al., 2012). Stunted children have poor physical and intellectual performance and lower work output leading to lower productivity at individual level and poor socioeconomic development at the community level. A high level of stunting in a society might reflect poor socioeconomic conditions, health and nutrition (Nordang, 2011). However, a decrease in the national stunting rate is usually indicative of improvements in overall socioeconomic conditions of a country (De Onis, et al., 2012).

### ***Weight-for-age***

Weight-for-age reflects body weight relative to the child's age on a given day (WHO, 2018). A series of weights can tell you whether or not a child's weight is increasing over time, so it is a useful indicator of growth. As an index for growth monitoring, it is used to assess whether a child is underweight or severely underweight, but not used to classify a child as overweight or obese (WHO). It reflects past (chronic) and present (acute) under nutrition. The prevalence of malnutrition in children can be estimated if weight-for-age is used. Because weight is relatively easily measured, this index is commonly used, but it cannot be relied upon in situations where the child's age cannot be accurately determined.

Also, it cannot distinguish between acute malnutrition and chronic low energy and nutrient intake (Konwea, Ogunbile, & Olowoselu, 2016). Low weight-for-age is an index used in growth monitoring for assessing children who may be underweight and it reflects past (chronic) and present (acute) under nutrition. Weight-for-age, an acute index for malnutrition, is widely used to assess protein-energy-malnutrition and over nutrition especially in childhood (UNICEF, 2019). The prevalence of malnutrition in children can be estimated if weight-for-age is used (Admassu, 2017).

### ***Weight-for-height***

When weight is combined with height, it provides a sensitive index of current nutritional status which is relatively independent of age, hence, useful in situations where children's ages are unknown (for example in refugee settlements)



(Natekar, & Mhaske, 2015). Weight-for-height reflects body weight in proportion to attained growth in height. It is used as an index to identify children who may be wasted or severely wasted (low weight-for-height) and children who may be at risk of becoming overweight or obese (high weight-for-height) (Natekar, & Mhaske, 2015).

Wasting or thinness (acute malnutrition) in a child refers to the condition in which a child has a weight that is low for his/her height as compared to the standard child of the same height (Torres, 2013). In most cases, it indicates a recent and severe process of weight loss, which is often associated with acute starvation and/or severe disease. It may, however, also be the result of a chronic unfavourable condition (Konwea et al., 2016). The prevalence of low weight-for-height typically shows a peak in the second year of life. Provided there is no severe food shortage, the prevalence of wasting is usually below 5%, even in poor countries (Konwea et al., 2016). Lack of evidence of wasting in a population does not imply the absence of current nutritional problems: stunting and other deficits may be present. Wasted children are vulnerable to infection and stand a greater chance of dying (Admassu, 2017).

Even though there is a strong correlation between high weight-for-height and obesity as measured by adiposity, overweight is the preferred term for describing high weight-for-height because greater lean body mass can also contribute to high weight-for-height (Konwea et al., 2016). On an individual basis, “fatness” or “obesity” should not be used to describe high weight-for-height except on a population-wide basis where high weight-for-height can be



considered as an adequate indicator of obesity as majority of individuals with high weight-for-height are obese. Strictly speaking, the term obesity should be used only in the context of adiposity measurements; for example, skinfold thickness (Admassu, 2017).

In conclusion, it could be seen that nutritional status is far reaching and revolves around a number of issues, as it has implications for overall healthy living among children. With respect to its assessment, the literature has shown that children should be within some defined standards, according to the World Health Organisation, in terms of weight-for-height, weight-for-age, and height-for-age. The present study therefore relies on these assessment measures to describe the nutritional status of preschool children involved in this study.

### **Malnutrition among children**

Malnutrition among children is a well-known public health problem occasioned by inadequate nutrition. According to the World Health Organisation, malnutrition is defined as a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients (WHO, 2018). Malnutrition is the biggest contributor to child mortality where 70%, 26% and 4% of malnourished children live in Asia, Africa and Latin America, respectively (WHO, 2018). The term malnutrition indicates a bad nutritional status. Malnutrition refers to all deviations from adequate nutrition, including under-nutrition, over-nutrition and specific deficiencies (or excesses) of essential nutrients such as vitamins and minerals (FAO, 2007). Malnutrition arises either

from deficiencies or excesses of specific nutrients, or from undiversified diets (wrong kinds or proportions of foods).

Malnutrition may arise from imbalance, excesses or deficiency of specific nutrients, for example, iodine, vitamin C, iron and vitamin A (FAO, 2007; Onimawo, 2001; Sibeko, 2005; WHO, 2006). Malnutrition can be avoided by improving diets in addition to continuous nutritional education by simple and cost-effective measures such as special food supplements and nutrient supplementation of vulnerable populations or food fortification with micronutrients for the general population (Szabolcs, 2015). Regrettably, poor nutrition is a very common condition among under-five aged children in poor and developing countries, as malnutrition is associated with more than half of all deaths of children in these countries (Ahmed, & Mesbah, 2017; UNICEF, 2006).

### **Nutrition Knowledge of Caregivers**

Nutrition knowledge can range from an understanding of the chemical structure of nutrients to knowledge of low-fat cooking methods (Smolin, & Grosvenor, 2013). Rogers (2014) identified three types of knowledge about nutrition: (i) awareness (e.g., diet-disease relationships); (ii) knowledge of principles (e.g., cholesterol is found in animal foods only, lemons are a good source of Vitamin C, high intakes of fruits and vegetables can prevent hypertension, milk contains psychotropic peptides, etc.); and (iii) how-to knowledge (e.g., how to select foods with less fat, salt and sugar, or how to read a food label accurately). Nutritional knowledge impacts attitude and eating habits in society (Mbithe, 2018). The nutritional knowledge can be obtained from many

sources including magazines, internet, and dietician at community health centres, among others.

Nutrition was defined as the process of getting food into your body and using it as raw materials for growth, fuel for energy, vitamins and minerals that keep your body healthy and functioning properly (Gropper, 2016). Therefore, good nutrition means a healthy diet. It gives your body the right amount of energy, enough raw materials and all of the “little helpers” you need to stay healthy (Gropper, 2016). Good nutrition will also provide photochemical and antioxidants that will help keep you feeling young, looking great, and perhaps even disease-free (Gropper, 2016).

Parents, or caregivers, have significant influence on the development of children’s eating behaviour and food choices. Their knowledge and attitudes towards nutritional status play an important part in childhood growth as parents become role models in shaping children’s eating habits (Mushonga, 2017). Parental nutrition knowledge forms the basic strategy for preventing and managing childhood overweight, thereby, improving the nutritional status of children. Further, nutritional knowledge of parents or caregivers are usually assessed based on parents or the caregivers’ knowledge about food experts’ advice on healthy eating for children, knowledge about food nutrients, and knowledge about health problems or diseases associated with quantity of food consumed (Smolin, & Grosvenor, 2013), among others.

All in all, it could be seen from the discussion that caregiver nutritional knowledge is important to nutritional status and eating habits among preschool

children. Considering this, the need to study to interplay between caregiver nutritional knowledge, nutritional status and eating habits cannot be overemphasised. Moreover, it has been realised that nutritional knowledge can be obtained from several sources, making it easy for caregivers and parents to ensure that preschool children under 59 months are well fed and taken care of, in terms of nourishment.

### **Empirical Review**

This section reviews related empirical studies on eating habits, nutritional status, and the relationship between eating habits, nutritional status of children, and nutritional knowledge level of caregivers. This is to ensure that replication or repetition of studies is avoided.

#### **Eating habits of children**

Eating habit has been one of the contributory factors of non-communicable diseases. Children have always been found to be victims of poor eating habits. For instance, Mozaffarian et al. (2014) carried out a study to investigate sodium consumption and death from cardiovascular causes, using a cross-sectional survey from 66 countries. The results revealed poor eating habits whereby salt is consumed in high quantities causing high blood pressure, among other deadly diseases. This finding showed that fruits and vegetables, and other foodstuffs low in salt are taken rarely by the majority of the adults and children surveyed in the 66 countries. This study focused only on sodium intake. Therefore, no in-depth information was provided on the individuals' eating habits concerning other food items considered in the formation of balanced diet. The



current study expands beyond only sodium and considered other important food items relevant in preparing a balanced course.

On comprehensive implementation plan on maternal, infant and young child nutrition, WHO (2014) took into consideration recommendations made by the World Health Organisation concerning eating habit that was considered appropriate such as eating full grains, vegetables, fresh fruits, foods low in sugar and fat, and legumes, among other healthy foods. WHO (2014) then surveyed mothers, infants and young children to ascertain whether these recommendations were being met in order to implement a comprehensive plan. The observational technique was used to obtain data from the participants. The findings showed that mothers were not consistent, in terms of the food they fed their children.

The outcome of the study was linked to economic factors and high rates of illiteracy. It was recommended that mothers are given education on eating habits of their children so that the right contents are followed and at the right time. WHO's (2014) study was observational. The present study would take a quantitative approach by using both open and close-ended questionnaire for data collection. This means that there is a gap to fill as far as the data collection and data analysis is concerned and considering, specifically, eating habits.

#### **Nutritional status of children**

A global survey by the WHO (2018) showed that the number of overweight children under the age of five years was over 43 million, and was expected to increase to 60 million in 2020. The data assessed by WHO showed that eating habits of children under the age of five years were poor and below standard, thereby, causing poor nutritional status in children. The Organisation



recommended extensive education for caregivers as well as parents on food and nutrition for children at their early stage of life. Though the findings of the organisation seemed authoritative, the study was too broad in nature and the figures produced might be average results which could not be linked to a particular country or a study setting. Thus, this will make it difficult to know the actual nutritional status of a specific area in a particular country surveyed as part of the Organisation's survey.

The current study is, therefore, of great importance in ascertaining the nutritional status of the children in the current study locale. This would help in specific policy formulation for the current study area. Also, the Organisation's study did not focus specifically on children aged 24-59 months old. This also shows a gap in literature as far as children under the stated ages are concerned. The current study is, therefore, imperative to fill the gap left in literature and also make recommendations that can help improve the nutritional status of children.

To assess the nutritional status of preschool children, De Onis et al. (2012) undertook a spatial survey in some selected countries in Africa and studied the results with global data made available by the WHO in order to ascertain trends and patterns. The survey revealed that overweight was prevalent among preschool children, and the rate increased from 4.2% to 8.5% in 2011 and the trend was expected to increase to 12.7% by 2020. The conclusion drawn was that, most obesity results from unhealthy eating habits, inactivity, and poor lifestyle choices. However, issues of stunting were found to be on the low.

This study is really an insightful one as it brought forth clearly the potential relationship between nutritional status and eating habits. This really set the grounds for further studies to be conducted to investigate, further, whether there is actually a relationship between nutritional status and eating habit of children. However, the study only considered preschool children in general with no special focus on children aged 24-59 months old. Thus, there is a spot for the current study to fill in. Also, De Onis et al.'s (2012) study did not actually focus on a specific location; rather, a sweeping analysis was carried out. The current study focuses on a specific locale.

In another study, Awere et al. (2013) assessed the nutritional status of Junior High School (JHS) students in the Mfantseman Municipality in the Central Region of Ghana with the objectives of estimating the body mass index (BMI) of the students through anthropometric measurements and used the BMI to determine their nutritional status, as well as found out factors contributing to their nutritional status. The study used purposive, convenient and random sampling techniques to select 7320 school children. Data was collected on the students' age, height and weight. The Body Mass Index (BMI) for age was calculated and compared with the 2007 WHO reference to identify their nutritional status.

The study revealed that overall prevalence of malnutrition in the community was high with 25.9% of the children being overweight, 5.5 and 5.8% being lean or severely lean while 39.0% were normal. The incidence of malnutrition was prevalent among boys than girls. The high incidence of malnutrition was attributed to improper dietary habits, unawareness of balanced

diet, poor prenatal nutrition and low family income. Though an insightful study, the authors did not underpin their study with any relevant theory to enhance the quality of the study. Besides, the age ranges of the students involved were outside that of preschool children age ranges being considered in the present study.

### **Nutritional knowledge of caregivers**

Nutrition knowledge of parents, especially mothers who are taking care of children, is very crucial to the wellbeing of children. For instance, Gropper (2016) conducted a study to assess the nutrition knowledge level of caregivers of children under the age of five years old. The study employed the quantitative research method, and used the descriptive design. Fifty (50) caregivers were involved in the study. The respondents' knowledge on balanced diets, acceptable level of fat, and sugar that a diet for a child should contain was sought. The findings revealed that over 60% of the total respondents had appreciable knowledge in nutrition. This implied that about 40% had less knowledge in nutrition, and therefore, do not know what constitute balanced diet. This meant that children taken care of by these caregivers were likely to develop poor eating habits causing nutritional status related complications.

Gropper (2016) attributed the outcomes to the education level of the respondents; as those with higher education demonstrated more knowledge in nutrition as opposed to those with less education. This study seems straightforward; especially, considering the sample size used. Perhaps a higher sample size might produce a different result. Considering this, it was obvious that a further study using a higher sample size could be recommended to enable

generalisation among a bigger population, hence the need to undertake the current study.

Other studies were also conducted to ascertain the level of knowledge of maternal mothers, or related, on nutrition (Gropper, 2016; Rogers, 2014; Mbithe, 2018). For instance, Mushonga (2017) assessed mothers' knowledge on low sugar and high fibre levels in children's diets. The study employed the cross-sectional survey strategy, using seventy mothers. The data collected were analysed using descriptive statistical tools such as mean, mean of means and standard deviation. The results revealed that majority of the mothers involved in the study did not really understand the benefit of fibre in diet. However, they pointed out that too much intake of sugar was bad for children's system. The implication was mothers do not really pay attention to the contents of the foods they feed their children with. Mushonga (2017) recommended that maternal mothers were given training in nutrition and dietary knowledge.

This study focused only on maternal mothers. Meaning, all other caregivers were not included in the sample used. The results might be different if all other caregivers of children under the age of five years had been included in the study. The current study would respond and fill this gap by including all kinds of caregivers of children aged 24-59 months. Considering this, there is no doubt that current study is in the right direction to contribute to literature and serve as a reference for further studies to be done in this area. Therefore, the current study considered caregivers in general, as the main focus is on the children aged 24-59 months.



## **Association between children's eating habits, their nutritional status and nutrition knowledge level of caregivers**

To find the association between eating habits and nutritional status, and to assess how these are influenced by knowledge in nutrition, Beegum (2013) conducted a study on eating habits of children in selected countries in North Africa. The study employed the quantitative research method, using the correlational design. The sample size was five (5) countries purposely selected. These were Algeria, Egypt, Morocco, Sudan and Libya. The data were analysed using the inferential statistical tool, Pearson product moment correlation coefficient. The results showed nutrition knowledge correlates positively with eating habits and nutritional status of children. This implied that children would suffer from overweight, obesity, stunted growth, wasting, among others in environments where parents or caregivers have less or no nutrition knowledge because the right nutritional needs would not be met.

Beegum (2013) proceeded to assert that parents needed to understand the benefits of having correct nutritional knowledge and positive attitude towards healthy eating habits that promote good nutrition in children. Parental nutrition knowledge forms the basic strategy for preventing and managing childhood overweight. Though Beegum (2013) considered eating habits, the study was silent on what constituted good eating habits or otherwise. Also, the fact that parents or caregivers had appreciable nutritional knowledge did not mean children's eating habits would automatically improve as the study did not state the category, in terms of education level, of parents or caregivers who made up the knowledgeable



group as far as nutrition was concerned. This meant that a further study was needed to clarify these assertions. Also, the study was carried out outside the current study locale, hence, of the need for a similar study in the setting being considered now.

Employing the mixed research method, Mushonga (2017) conducted a study to investigate how eating habits influenced nutritional status in children. The study was purely experimental; hence, experimental designs were adopted. Children under the age of five were randomly selected from various economic backgrounds, and studied, following some recommendations, that various socio-economic backgrounds should be taken into consideration, from the WHO. The results revealed that eating habits had direct association with body size of children, either overweightness or underweightness. It was shown that children who followed healthy eating habits determined by experts were less likely to develop cardiovascular diseases, diabetes, cancers, among others. Improved nutritional status was witnessed among children with good eating habits. The conclusion drawn was that parents' understanding of nutrition might have influenced the eating habits of children, hence their nutrition status.

The study, though considered how eating habits relate to disorders suffered by children, did not study the kind of foods that constituted required food items needed to improve eating habits and then improve nutritional status, or the kind of foods to avoid to improve nutritional status in order to avoid eating disorders and other associated health conditions. This meant that no single study could be exhaustive; therefore, it was necessary for this study to look at eating

habits, nutritional status, and the nutrition knowledge level of parents or caregivers of children, as well as determine the associations among them.

In another study, Sedek and Yih (2014) looked at dietary habits and nutrition knowledge among athletes and non-athletes in National University of Malaysia (UKM). The study specifically aimed to determine the relationship between the body mass index (BMI), dietary habits and nutrition knowledge. The total number of respondents was 200 people with 100 athletes selected from 7 types of sports and 100 non-athletes selected at random from non-athletes in UKM. Anthropometric measurement included height and weight. Questionnaire was used to assess the socio demographic variables, nutrition knowledge and dietary habits. It was revealed that dietary habit for athletes was significantly lower, compared to non-athletes.

With the nutrition knowledge, the overall knowledge was good, and the athlete nutrition knowledge was not significantly different from that of non-athletes. The main sources of nutrition information for athletes were from the internet, newspapers or magazines, families or friends or neighbours, television and coaches. This was quite similar to non-athletes but they did not choose coaches as a source of information. The BMI of athletes and non-athletes did not show a significant relationship with dietary habits and nutrition knowledge. However, it was found that there was a weak significant positive relationship between nutrition knowledge and dietary habits of athletes but had no significant relationship to non-athletes. In conclusion, non-athletes displayed healthier

dietary habits than athletes but no significant difference in nutrition knowledge between both groups.

In another study, Niba, Atanga and Navti (2017) set out to determine the prevalence of overweight/obesity, examine variations in dietary habits and assess the relationships between some dietary factors and overweight/obesity in university students. University students, including 434 males and 472 females, were recruited using a simple random sampling technique from six departments in two universities in a cross sectional study in the North West Region of Cameroon. Weight and height were measured and body mass index calculated. Eating habits and weekly consumption of selected food items were self-reported by the students using a pre-tested questionnaire.

The results of the study showed that overweight and obesity were prevalent. A majority of the students had less than three meals a day. Also, whilst most ate fried foods, some had sweets/chocolates, and few had sugar sweetened beverages twice or more times in a week. Skipping/rarely having breakfast and having snacks in-between meals three or more times a day (were associated with overweight/obesity after controlling for confounding variables. In addition, skipping/rarely having breakfast independently predicted overweight/obesity in a model that included confounding variables and selected dietary behaviours.

Natekar and Mhaske (2015) assessed the dietary habits of preschool children in order to know the nutritional status of children. The focus was to find the correlation between dietary pattern and nutritional status of preschool children and find out the association between dietary habit scores and nutritional status

scores with selected demographic variables. The study was quantitative in nature, and employed the correlational design. Dietary habit of preschool children was assessed by rating scale and used interview method for data collection with preschool children parents. Nutritional status was identified by measuring the weight and height and compared nutritional status with Indian Academy of pediatrics classification.

The results showed that 93.10% of the preschool children had average dietary habits, whilst 5.17% had poor habit. Regarding nutritional status, 27.58% was found to have grade I malnutrition, 13.79% had grade II, 17.24% had grade III malnutrition. Moreover, the correlation showed a perfect positive correlation between dietary habits with nutritional status. Also, there was a significant association between dietary habits scores with education of father, and nutritional status of preschool children with occupation of mother. It was concluded that improved dietary habits of preschool children, as well as educating the mothers regarding importance of diet, could reduce the malnutrition status. Though the author considered the link between dietary habits and nutritional status, the study was silent on caregiver nutritional knowledge. Besides, the study was not anchored by any relevant theory, such as the cognitive-behavioural theory of eating disorder (Polivy, & Hermann, 1985; Fairburn, 1997).

Amos et al. (2012) sought to find out whether factors such as parental, peer, and media influences predict Ghanaian adolescent students' eating habits. A random selection of 150 students from a population of senior high school students in Ghana were asked to complete the Eating Habits Questionnaire for



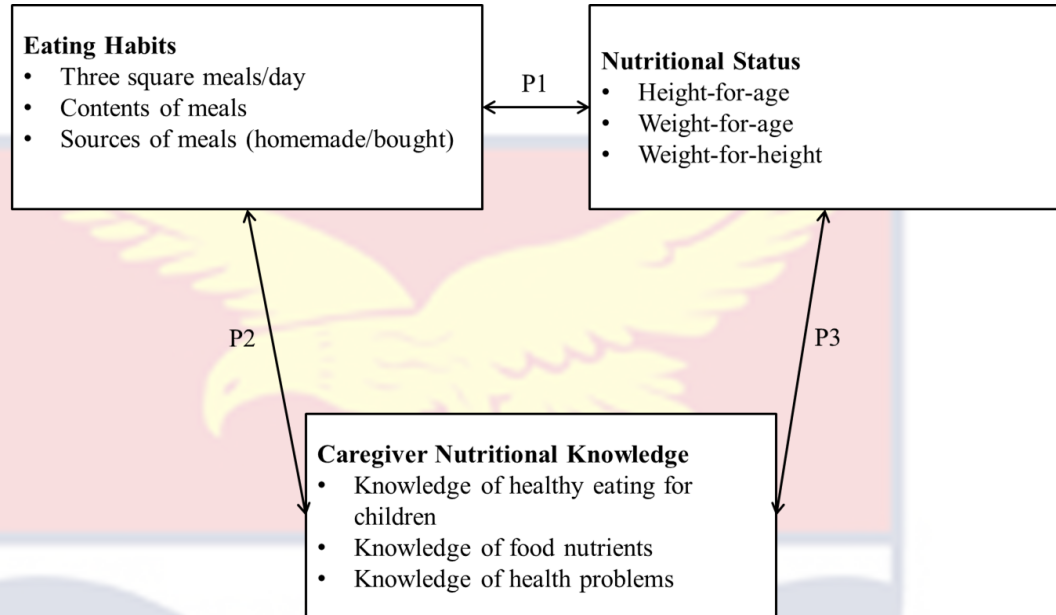
Adolescents. Data were analysed by the use of bivariate correlation, t test, and multiple regression analytical techniques using SPSS version 16. The findings revealed a significant positive relationship between peer influence and eating habits suggesting that the higher the peer pressure, the more unhealthy the students' eating habits.

Counter intuitively, parental and media influences did not significantly correlate with students' eating habits. Gender difference in eating habits suggested that girls had more unhealthy eating habits than boys. Finally, multiple regression analysis revealed that peer influence was a better predictor of students' eating habits than parental and media influences. Like Natekar and Mhaske (2015), no relevant theory was employed for the study. Also, the scope of the study did not include preschool children and their eating habits as related to their caregiver nutritional knowledge and nutritional status.

From the forgoing studies, it could be seen that eating habits, nutritional knowledge, and some indicators of nutritional status have been considered. However, the participants included were not parents or caregivers and children between the ages of 24months and 59months. Thus, findings obtained from these studies could not be applied to the current participants being considered by the current study, due to the differences in economic and social conditions of prior research settings, as well as disparities in demographics of the study participants used by prior studies. This, therefore, creates a gap in literature which requires a study of this nature to fill as caregivers and children between the ages of 24months and 59months are being considered.



### Conceptual Framework



*Figure 1: Conceptual framework*

Source: Amos et al. (2012), Natekar and Mhaske (2015)

Having reviewed literature, taking cognisance of the research hypothesis formulated, the researcher became aware of the relationship among eating habits, nutritional status, and nutrition knowledge of caregivers. It has been deduced that the more knowledgeable caregivers get, the more likely eating habits are to be influenced positively as well as nutritional status of children aged 24-59 months old. Figure 1 represents the relationships among these three concepts. The path labelled “P1” represents a relationship between eating habits and nutritional status. Also, “P2” shows the relationship between eating habits and nutrition knowledge. Further, the path labelled “P3” signifies the link between nutrition status and nutrition knowledge level of caregivers.

## Chapter Summary

This chapter reviewed the cognitive-behavioural theory of eating disorder (Williamson et al., 2004) and studies related to the current study. The chapter presented the theoretical framework, conceptual review, empirical review, as well as the conceptual framework. The cognitive-behavioural theory of eating disorder (Williamson et al., 2004) was reviewed. The empirical studies reviewed showed that the issue of eating habits is of global interest; thus, studies considering eating habits are considered important as eating habits have implications for nutritional status and the general wellbeing of children. Also, nutrition knowledge level of parents or caregivers has been identified to have influence on children's eating habits and nutritional status.

Nevertheless, a number of gaps were identified. First, most of the related studies conducted focused on contexts other than Mfantseman Municipal of Ghana (Konwea et al., 2016), and used concept combination other than eating habits, nutritional status, and nutrition knowledge (Natekar, & Mhaske, 2015); thus, a gap in the local literature. Second, the sample size used in most of the prior studies was not adequate to enable generalisation of study results. Thirdly, no single study has yet been seen to have considered the three concepts – eating habits, nutritional status, and nutrition knowledge level – being studied by the current study. To the best of knowledge of the current researcher, no study has analysed the relationships among the three concepts. Therefore, the current study is important in this regard to help fill the lacunae identified in literature.

## CHAPTER THREE

### RESEARCH METHODS

#### Introduction

This chapter presents information on the following: research design, study area, population of the study, sample size and sampling procedure, data collection instruments, data collection procedure, reliability, validity, data processing and analysis, ethical issues, and chapter summary. The research design focused on research paradigm employed, research approach and methods. The study area focused on the research setting.

#### Research Philosophy

The study adopted the positivism research philosophy or view. This view was adopted because the study sought to analyse correlational relationships among study concepts. According to the positivism research philosophy, trustworthiness of facts is only achieved through observation and measurements (Ramanathan, 2015). It also makes sure that objectivity is upheld by limiting the researcher to only data collection and interpretation (Wilson, 2017). The researcher's interference is minimised, and the results obtained, using this philosophy, are observable and quantifiable. These characteristics made the choice of the positivism philosophy more appropriate, compared to other philosophies, for this study considering the hypotheses. Nevertheless, the research results in positivism researches are limited to descriptions and lack deep insight into issues (Saunders, Lewis, & Thornhill, 2019).

## Research Approach

The study utilised the quantitative research approach as it sought to use quantitative data to describe phenomena. Quantitative approach lays emphasis on measurements, and data are analyzed numerically to provide descriptions (Creswell, 2018). The quantitative approach was employed for the reason that the data collected from the respondents using questionnaires could be analyzed easily by utilizing standard statistical tools like percentages and frequencies, and inferential statistics among others (Creswell, 2018). Similarly, quantitative approach has techniques, measures and designs that come up with numerical and quantifiable data. The design also depends on the principles of verifiability of proof, substantiation and confirmation utilising the correct measurement of variables being studied (Creswell, 2018).

## Research Design

The correlation design was employed for this study. The design helps to explain the association between or among given phenomena (Saunders, Lewis, & Thornhill, 2019). According to Saunders et al., the correlational design also helps to account for relationships between or among variables. This design was adopted because the researcher sought to examine the relationship among the study concepts – eating habits, nutritional status, and nutrition knowledge level of caregivers of children aged 24-59 months old at the Mfantseman Municipal. This design also has imbedded in it the descriptive techniques which seek to describe data sets before inferential statistics are performed (Saunders et al., 2019).



## Study Area

The study area was Mfantseman Municipality in the Central Region of Ghana. Most of these communities are predominantly rural with only five of them having attained the status of an urban community. Respondents for the study were drawn from both communities. The study was carried out in the Municipal's rural communities of Akobima, Edumanu-Onyaapa, Dominase, Kyeakor and Hinii as well as its urban communities of Anomabo, Biriwa, Mankessim, Saltpond and Yamoransa.

Economically, fishing is the major activity along the coastal towns and villages. Additionally, effective interactions among climate, soils and rivers/streams have also made farming possible, especially, in the inland areas. Crop farming is done in almost all parts of the Municipality. Among the crops cultivated are cocoa, oil palm, pineapples, oranges, plantain and cocoyam. The main food crops grown are cassava, maize, vegetables, plantains, cocoyam and beans (Mfantseman Municipal Assembly, 2020).

There are in the Municipality an appreciable number of private and public educational facilities such as nursery, kindergarten, primary, junior and senior high schools. The available record at the Ghana Educational Directorate of the Municipality on basic schools showed that there are, in total, seventy-four (74) public basic schools with nineteen (19) of them having nurseries attached to them. Forty-four of the public basic schools are situated in the rural communities across the Municipality as the remaining thirty (30) are found in the urban centres. Notable among the second cycle schools are Mfantseman Girls Senior High



School of Saltpond, and Biriwa Technical, Vocational and Training Institute (NVTI) which trains students in vocational, technical and commercial skills.

In spite of the educational facilities available, it is, however, sad to note that continuing gender imbalance in access to education is a factor that is limiting most of the women's access to employment and productivity. In urban areas of the Municipality for instance, lack of qualifications and narrow range of skills limits a female's access to formal employment where as in the rural areas, lack of female education limits farm productivity. Three quarters of the female farmers currently have no education (Mfantseman Municipal Assembly, 2020). On water supply, many of the communities in the Municipality are connected to pipe-borne water system from Baifikrom and Bremsu Water Works in Cape Coast. The map of the Mfantseman Municipal is shown in Figure 2 below.

The Municipal is bounded to the West and Northwest by Abura-Asebu-Kwamankese District, to the East by Ekumfi District and to the South by the Gulf of Guinea. The Municipal has population of 144,332 people made up of 64,923 males and 79,409 females, and a total land area of 533km<sup>2</sup> (World Gazetteer, 2020). This study focused on the Mfantseman Municipal because the researcher observed that there are many children under 24-59 months in the Municipal who might be suffering from issues related to eating habits and, also, no such study has been conducted in this area.

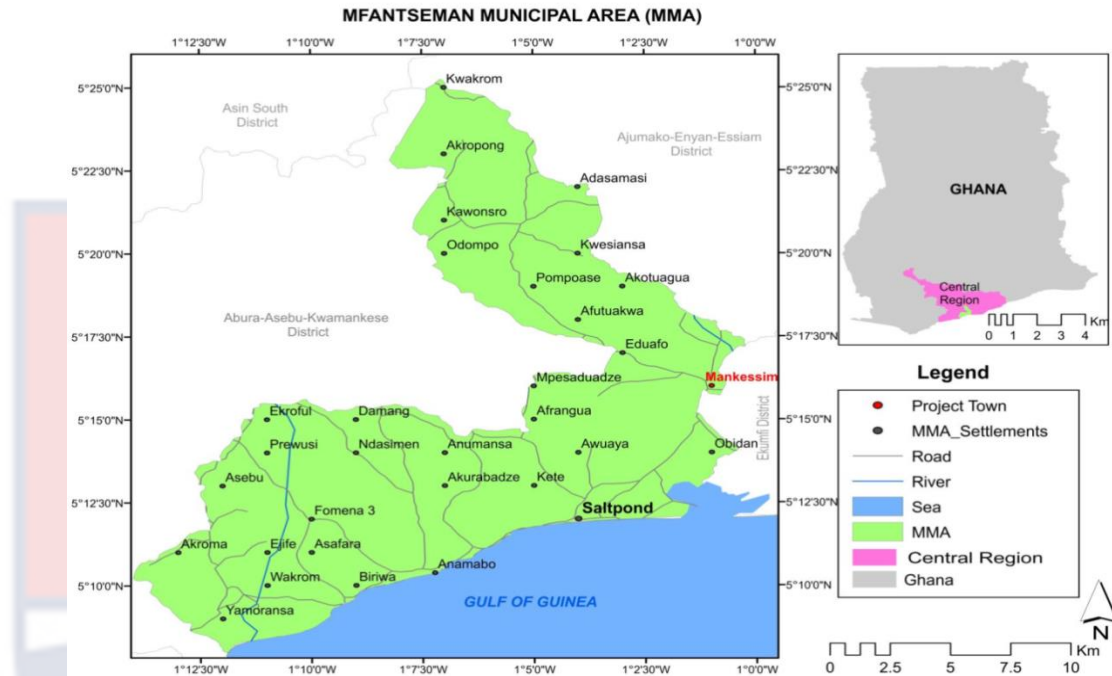


Figure 2: Map of the Mfantseman Municipality

Source: World Gazetteer (2020)

### Population

The target population for the study was 2,077 children aged 24-59 months old (GSS, 2021). Target population refers to individuals within the general population who the researcher targets to draw a sample from for a study (Cohen, Manion, Morrison, & Morrison, 2007). Also, research population, according to Frankel and Wallen (2006), refers to the general group from which a researcher wishes to draw sample for a study. The population for this study was drawn from both the rural communities and the urban communities of the Mfantseman Municipality. The population distribution is shown in Table 1.

**Table 1: Population Distribution**

Community type	Community name	No. of children (aged 24- 59months)
Rural	Akobima Edumanu-Onyaapa Dominase Kyeakor Hinii	717
Urban	Anomabo Mankessim Biriwa Saltpond Yamoransa	1,360
Total		2,077

Source: (GSS, 2021)

Caregivers or parents of the children were included in the study to assist in providing information, on behalf of the children, on eating habits of the children, and nutrition knowledge levels of caregivers or parents. This was a necessary step in finding answers to questions on the eating habits of the children because at age 24-59 months, children depend mainly on their caregivers or parents for their meals. The researcher also engaged the caregivers in order to ascertain information on their level of nutritional knowledge. Therefore, the study used child-caregiver pair as respondents.

### **Sample Size and Sampling Procedure**

The study adopted the sample size formula for finite population proposed by Krejcie and Morgan (1970). With a population proportion of 50 percent and a confidence level of 95 percent, a sample size of 322 out of 2,077 was determined, and was deemed appropriate for a finite or known target population of 2,077.

Krejcie and Morgan (1970) argue that there is no need using sample size determination formula for 'known' population since the table has all the provisions a researcher requires to arrive at the required sample size (Appendix A). From the Table, the nearest whole number of the population was used to determine the sample size.

With respect to sampling method, the researcher adopted the simple random sampling technique. Firstly, the population was classified into rural and urban locations. As shown in Table 2, 34.52 percent of the participants were located in the rural communities while 65.48 percent were in urban communities. In application of the sampling technique, child-caregiver pairs in each household were assigned numbers which were subsequently drawn randomly until the computed sample size was reached. The child-caregivers corresponding to the randomly drawn numbers were followed up for data.

Nonetheless, it should be pointed out that though the sample size determined using the Krejcie and Morgan (1970) table was 322 child-caregiver participants, the researcher had access to only 180 child-caregiver participants during actual field work in the Mfantseman Municipality, as many of the households had either travelled out of the Municipality or simply refused to avail themselves for the survey. Specifically, 12 (6.7%) of the caregivers are males, whilst 168 (93.3%) are females. Eighty child-caregivers, representing (44.4%), were in the rural communities, and the remaining 100 (55.6%) were found in the urban centres within the Mfantseman Municipality. The accessible number of



180, to a considerable extent, was very representative as it was more than 50% of the original sample size determined (Hair et al., 2018).

**Table 2: Sample Size Distribution**

Community type	Community name	No. of children (aged 24- 59months)	Sample size
Rural	Akobima	717 (34.52%)	111
	Edumanu-Onyaapa		
	Dominase		
	Kyeakor		
	Hinii		
Urban	Anomabo	1,360 (65.48%)	211
	Mankessim		
	Biriwa		
	Saltpond Yamoransa		
Total		2,077	322

Source: Mfantseman Municipal Education Office (2021)

### Data Collection Instrument

The study employed the questionnaire to collect data on caregiver nutritional knowledge, the 24-hour dietary recall (a checklist) to solicit data on eating habits of children, and the anthropometry record sheet to record age in months, height and weight of children for the determination of nutritional status (Appendix B). The caregiver nutritional knowledge instrument whose items were scored out of 100% was adapted from Sedek and Yih (2014). The 24-hour recall instrument was adapted from the Dietary Assessment Primer (2021). The anthropometry record sheet was constructed based on Nutrition Assessment, Counseling and Support (NACS) (2016) guidelines.



The questionnaire was divided into two sections – A and B. Section A focused on caregivers' and children's socio-demographic information. This contained 18 items on caregivers and children. Section B was on caregiver nutritional knowledge which was further broken down into three parts: Part I – knowledge about food experts' advice on healthy eating for children; Part II – knowledge about food nutrients; Part III – knowledge about health problems or diseases associated with quantity of food consumed. The 24-hour dietary recall focused on the time of day respondents (the children) ate breakfast, lunch, supper, and snacks, name of food consumed, ingredients of composite foods, and sources of food consumed (whether bought or homemade) as well as place these foods were consumed. Finally, the anthropometry record sheet was used to collect data on anthropometric measurements of age in months, sex, weight (in kg) and height (in cm) of the children. The anthropometric measurements of height and weight were measured using a secca stadiometer (with 0.1cm calibrations) and a kinlee weighing scale (with 0.1kg calibrations), respectively.

### **Instrument Validity and Reliability**

Validity is about the fact that the instrument and its measurements accurately measure what they are intended to measure, and reliability focuses on consistency (Hair, & Risher, 2018). To ensure validity, the researcher made sure that the measures used were accurate. Also, the measures and indicators used for the current study were widely used in prior studies, and the fact that the instruments were adapted, validity achieved by prior researchers could be applicable here (Sedek, & Yih, 2014). Further, the instruments were subjected to

face validation and all suggestions and modifications were taken into consideration to come out with the final instruments used.

Also, due to the fact that all the instruments were adapted from prior researchers, reliability checks had already been conducted; however, the current researcher further computed reliability scores, and the caregiver nutritional knowledge instrument produced a Cronbach alpha of 8.03. For the 24-hour dietary recall guide and the anthropometry record sheet, considering the manner in which the data were collected – being more of researcher-completed, the researcher followed Guba and Lincoln's (1994) principles of trustworthiness, as well as credibility or truth, dependability or consistency, transferability or applicability and confirmability or neutrality to ensure both validity and reliability were achieved.

### **Data Collection Procedure**

Before data were collected, consent and permission from the relevant institutions and respondents were sought. An introductory letter introducing the researcher to the Institutional Review Board (IRB) was obtained from the VOTEC Department of University of Cape Coast, and ethical clearance obtained from the IRB (Appendix C). The IRB reviewed the methods for the study to make sure the study met all the needed ethical guidelines before issuing clearance to collect data. The ethical clearance in addition to the introductory letter was used to seek permission from the needed stakeholders in the Mfantseman Municipality.

Two knowledgeable health aides, who were qualified dieticians, were recruited and trained to assist the researcher during the data collection process.

They were trained for two days, and each training session lasted three hours. Recruiting health aides as research assistants was deemed necessary to ensure that technical measurement errors that were likely to occur in the data collection of anthropometric measures were eliminated or reduced to the barest minimum (de Onis, 2012).

The attendance registers of the nursery and kindergarten classes in the public primary schools in the identified communities were used as the sampling frame for the children of school going age (48-59months). Those below 48-59 months were identified in private preschools, and included in the sampling frame. From the sampling frame, the children were randomly sampled. Their names were compiled and a follow up made to meet their caregivers. The intention of the study was made known to the caregivers of the children chosen for the study. The caregivers who agreed to take part in the study with their children were given a consent form to fill and either thumb print or sign. Codes were then assigned to the children and their caregivers who agreed to participate in the study.

The assessment tools for the data collection were sent to the caregiver's homes by the researcher and the research assistants. Each person had a role to play to make the data collection faster. The questionnaires were administered on the spot to the caregivers. For those who could not read and write, the questionnaire items were translated for them in the local language that the caregivers understood so as to expedite ease of response from them. On each data collection day, the researcher and assistants collected data from not less than 20 respondents.

The weight (kg) measurements of the participating children were taken by asking them to stand on the kinlce weighing scale (Figure A in Appendix D), as 24-59 months old children could stand without difficulty. The children were made to remove any foot wear and heavy clothing before standing on the scale. The weights (kg) were taken correct to the nearest kilogramme. Also, the height (cm) of the participating children was measured using the secca stadiometer. Each child was asked to stand upright with hands by their sides and back towards the stadiometer (Figure B in Appendix D). The exact height (cm) of each child was recorded to the nearest centimetre. Both the stadiometer and the kinlce weighing scale were placed on a firm flat ground to ensure accuracy. The height (cm) and weight (kg) measurements were taken in duplicates and the average recorded on the anthropometric record sheet. The actual ages of the children were verified and determined by the assessment of their growth monitoring or weighing cards or birth certificates.

### **Data Processing and Analysis**

First and foremost, descriptive statistics of frequencies and percentages were used to analyse the demographic information of the respondents. Also, the first study objective was analysed using frequencies and percentages.

Further, the second objective was analysed using the WHO Anthroplus which used WHO child growth standards Z-scores, that is, Height-for-age Z-scores (HAZ), Weight-for-height Z-scores (WHZ) and Weight-for-age Z-scores (WAZ) – as references against which the measurements collected on the children



were measured to determine whether the participating children were growing normally or were underweight, stunted, wasted, overweight or obese.

The third objective was analysed using percentages and frequencies. Following the technique used by Sedek and Yih (2014), the caregiver nutritional knowledge levels were classified as: Very good (85% - 100%), Good (70% - 84%), Sufficient (55% - 69%) and Poor (<55%).

Finally, to achieve the fourth objective of the study which sought to analyse the relationship between eating habits, nutritional status and nutrition knowledge level of caregivers of children aged 24-59 months in the Mfantseman Municipality of Ghana, the Pearson product-moment correlation coefficient was used, as it helps to determine bivariate relationship between variables (Saunders et al., 2019), and since the fourth objective sought to determine the relation between caregiver nutritional knowledge, eating habits and nutritional status, the Pearson product-moment correlation was deemed appropriate. The hypotheses were tested at significant level of ( $\alpha = 0.05$ ). A correlation co-efficient of (+1) represents a perfect positive correlation whilst a value of (-1) represents a perfect negative correlation. A correlation value of (0) shows no relationship. The SPSS (v22) and the WHO Anthroplus were the software used for the data processing.

### **Ethical Considerations**

Each caregiver of a participating child was fully informed about all aspects of the study and was given a chance to ask any question they had prior to agreeing to participate in the study. The participating caregivers signed a consent form indicating that they were willing to take part in the study. They were made

to understand that participation was voluntary and they had the right to withdraw from participating in the study with their child without any consequences and if they decide to stop somewhere along the line they would not be marginalized in any form. The exclusion criteria were children who were below 24 months and those above 59 months. Permission to have access to the class registers was obtained from the heads of the selected schools for the study.

Moreover, due to the prevalence of Covid-19, the researcher ensured that all those who assisted in the data collection exercise and the respondents followed the preventive measures put forth by the Ghana Health Service and the Government of Ghana. This involved ensuring that data collectors correctly put on their facemasks, and also carried their hand sanitizers with them. The respondents, including the children, were also made to properly put on their facemasks, and the researcher got their hands sanitised before and after the data collection exercise. Though the researcher did not have temperature gun to ensure respondents' temperatures were in range, the researcher ensured that any respondent, including the children, showing signs of feverishness were excluded from the study. Nevertheless, no respondent was identified to have shown signs of feverishness.

### **Chapter Summary**

This chapter presented the design, population of the study, sample size and sampling procedure, data collection instrument, validity and reliability of instrument, data collection procedure, data processing and analysis, and ethical considerations. The study employed the quantitative research approach as well as

the correlational research design. The study area was the Mfantseman Municipal Assembly. The multistage sampling technique was used to select 180 child-caregiver respondents to form the sample for the study. Questionnaire, 24-hour dietary recall and anthropometric record sheet were used for data collection. Both descriptive and inferential statistics were employed for data analysis, and SPSS (v22) and WHO Anthroplus used for data processing.

Having adopted the quantitative approach, using the questionnaire, some of the respondents (child-caregiver pair) seemed to have difficulty in understanding the language, English, used on the questionnaire; thereby, making the researcher spend more time explaining concepts to some of the respondents in order to ensure that they provided candid responses to the items in the instrument. Also, analysing respondents' responses quantitatively only might not represent the full view of the respondents, as supporting the approach with qualitative technique would have averted, to some extent, the inherent limitations of using just a single approach. However, objectivity was achieved considering the scope defined by the researcher.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### **Introduction**

The results and discussion of the study are presented in this chapter. The IBM SPSS software (v22) and the WHO Anthroplus were used in data processing. The processed and analyzed data were presented in tables and discussed. The first section of the chapter presents results on the demographic information of the respondents. The second section presents result on the first, second, third and the fourth research objectives. The third section presents discussion on the first, second, third and the fourth study objectives. A chapter summary is presented as well.

#### **Socio-Demographic Information of Respondents**

This section of the findings covered the respondents' socio-demographic information. Both caregivers and children's demographic information was collected. Information collected included the caregivers' relationship with the child, their age, number of children being taken care of, marital status of caregivers, employment status, average monthly income, and educational qualification. Information directly relating to the children includes gender and age. Though, apart from the age of the children, the rest are not that central to the study, the personal data helped in the contextualization of the findings and the formulation of appropriate recommendations to enable promotion of good eating habits and nutrition knowledge; especially, information presented by educational



qualifications, monthly income levels, as well as marital status. The results were presented in Table 3.

**Table 3: Socio-demographic Information of Respondents**

Variables	Indicators	n (%)
Age	Less than 18	1 (0.6)
	18-24	20 (11.1)
	25-31	61 (33.9)
	32-38	52 (28.9)
	39-45	29 (16.1)
	46-52	8 (4.4)
	53-59	5 (2.8)
	More than 60	4 (2.2)
Marital status	Never married	18 (10.0)
	Married	66 (36.7)
	Co-habitation	81 (45.0)
	Separated	4 (2.2)
	Divorced	4 (2.2)
	Widowed	7 (3.9)
Highest educational qualification	None	37 (20.6)
	Primary	52 (28.9)
	Basic school	70 (38.9)
	High school	15 (8.3)
	Technical/vocational certificate	1 (0.6)
	Diploma	3 (1.7)
	Degree	1 (0.6)
	Post-graduate degree	1 (0.6)
	Sex of child	Male
Female		93 (51.7)

**Table 3: Continued**

Age of child(months)	24-59	180 (100)
Relationship	Own child (father/mother)	147 (81.7)
	Guardian (other than father and mother)	33 (18.3)
Employment	Full time	140 (77.8)
	Part-time	13 (7.2)
	Unemployed	21 (11.7)
	Student	6 (3.3)
Income	Less than GHs 500.00	142 (78.9)
	GHs 500.00 – GHs 999.00	29 (16.1)
	GHs 1,000.00 – GHs 1,499.00	3 (1.7)
	GHs 1,500.00 – GHs 1,999.00	3 (1.7)
	GHs 2,000.00 – GHs 2,499.00	1 (0.6)
	GHs 2,500 and above	2 (1.1)
Health / nutrition related qualification	Caregiver with nutrition/health qualification	2 (1.1)
	Without nutrition/health qualification	178 (98.9)
Number of children per caregiver	1	25 (13.9)
	2	31 (17.2)
	3	41 (22.8)
	4	29 (16.1)
	5	21 (11.7)
	6	33 (18.3)

Source: Field survey (2021)

N = 180

The results in Table 3 showed that only one (1) caregiver was below the age of 18 years; 20 (11.1%) were from the ages of 18years to 24years; 61 (33.9%)

were from the ages of 25years to 31years; 52 (28.9%) were from ages of 32years to 38years; 29 caregivers, representing (16.1%), were from the ages of 39years to 45years; 8 (4.4%) were from the ages of 46years to 52years, and 5 (2.8) caregivers were from the ages of 53years to 59years; only 4 (2.2%) caregivers were above the age of 60years.

Also, with regard to marital status, 18 (10.0%) of the caregivers were never married; 66 (36.7%) were married; majority (81, 45.0%) were co-habiting; whilst 4 (2.2%), 4 (2.2%) and 7 (3.9%) were separated, divorced and widowed, respectively. Thirty-seven (20.6%) had no academic qualification; 52 (28.9%) completed just primary education; 70 (38.9%) had basic school certificates; 15 (8.3%) obtained high school certificates; one (0.6%) had technical/vocational certificate; three (1.7%) had diplomas; only one (0.6%) and one (0.6%) had a bachelor's degree and a postgraduate degree, respectively.

Further, two (1.1%) of the caregivers reported that they had health / nutrition related qualification whilst 178 (98.9%) reported to have no health / nutrition related qualification. Majority (140, 77.8%) of the caregivers were in full-time employment; 13 (7.2%) were in part-time employment, whilst 21 (11.7%) were unemployed and six (3.3%) were still students. The work engagements earned 142 (78.9%) of the caregivers less than GHS500.00 per month; earned 29 (16.1%) of them between GHS500.00 and GHS999.00 per month; earned three (1.7%) caregivers between GHS1,000.00 and GHS1,499.00 per month; three (1.7%) of them also earned between GHS1,500.00 and

GHS1,999.00 per month. Only one (0.6%) and two (1.15) were earning between GHS2,000.00 and GHS2,499.00, and GHS2500 and above, respectively.

Furthermore, when asked whether the children they were taking care of are their own children or not, 147 (81.7%) claimed the children were their own whilst 33 (18.3%) reported to have been taking care of relative's children. All the children were between the ages of 24months and 60months, with 87 (48.3%) being males and 93 (51.7%) being females. It should also be stated that 25 (13.9%) of the caregivers were taking care of only one (1) child each; 31 (17.2%) were taking care of two (2) children each; 41 (22.8%) were taking care of three (3) children each; 29 (16.1%) were taking care of four (4) children each; 21 (11.7%) were giving care to five (5) children each; and finally, 33 (18.3%) were taking care of six (6) children each.

### **Major Results**

This section presents results from the analyses of the study objectives. Results are presented on eating habits of children aged 24-59months in the Mfantseman Municipality of Ghana, nutritional status of children aged 24-59months in the Mfantseman Municipality of Ghana, nutritional knowledge level of caregivers of children aged 24-59months old in the Mfantseman Municipality of Ghana, and the relationship among children's eating habits, children's nutritional status and nutritional knowledge level of caregivers.



## Eating habits of children aged 24-59 months in the Mfantseman Municipality of Ghana

The first study objective sought to assess the eating habits of children aged 24-59 months old in the Mfantseman Municipality of Ghana. To achieve this objective, caregivers were made to respond to a 24-hour dietary recall interview questions. The responses obtained were then analyzed using frequencies and percentages. The focus was on whether the children eat breakfast, lunch, supper and snacks or not, and whether these were homemade, bought or eaten outside the home; and also to assess the number of times a child eats in a day, as well as which food groups a child eats from within a day. The results are presented in Table 4.

**Table 4: Eating Habits of Children Aged 24-59 months**

Variables	Responses	n (%)
Breakfast	Homemade	91 (50.6)
	Bought	89 (49.4)
	Eaten at home	180 (100.0)
	Eaten outside home	0 (0.0)
Lunch	Homemade	89 (49.4)
	Bought	91 (50.6)
	Eaten at home	109 (60.6)
	Eaten outside home	71 (39.4)
Supper	Homemade	161 (89.4)
	Bought	19 (10.6)
	Eaten at home	174 (96.7)
	Eaten outside home	6 (3.3)
Snacks	Homemade	180 (100.0)
	Bought	0 (0.0)
	Eaten at home	89 (49.4)
	Eaten outside home	91 (50.6)
Number of meals per	One	4 (2.2)

day	Two	6 (3.3)
	Three or more	170 (94.4)

**Table 4, Continued**

Food groups eaten from	Cereal foods	109 (60.6)
	Roots, tubers and plantain foods	63 (35.0)
	Vitamin A rich vegetable and dark leafy vegetables; and any other vegetables	118 (65.6)
	Vitamin A rich fruit; and any other fruits	41 (22.8)
	Flesh foods and organ meat	22 (12.2)
	Egg	10 (5.6)
	Fresh or dried fish or shellfish and sea foods	64 (35.6)
	Beans and peas	13 (7.2)
	Nuts and seeds	24 (13.3)
	Milk and milk products	10 (5.6)
	Fats and oil	107 (59.4)
	Sweets	110 (61.1)
	Beverages, spices and condiments	51 (28.3)

Source: Field survey (2021)

N = 180

*Note:* Breakfast – 6-8am; Lunch – 12-3pm; Supper – 5-8pm

From the results presented in Table 4, it could be seen that majority of the respondents made breakfast at home (91, 50.6%), and all the children involved in the study were reported to have eaten their breakfast at home (180, 100%). On the other hand, 89 (49.4%) caregivers indicated that though they bought their breakfast from vendors, none of the children ate the food outside the home (0, 0.0%). With regard to lunch, 89 (49.4%) made it at home whilst 91 (50.6%) bought from food vendors. Majority (109, 60.6%) ate their lunch at home, and 71

children, representing 39.4%, ate their lunch outside the home. Only six (6) children ate supper outside home, against 174 (96.7%) who ate supper at home; 161 (89.4%) made the supper at home as 19 (10.6%) bought it from food vendors outside the home. All the respondents 180, (100.0%) also made their own snacks and 89 (49.4%) of the children ate the snacks at home; 91 (50.6%) ate their snacks outside the home, though none (0, 0.0%) of the caregivers bought snacks from outside.

The results also indicated that majority 170 (94.4%) of the children had three meals per day; six (6) (3.3%) had two meals per day, and only four (4) (2.2%) reported to have had one meal per day. However, it should be mentioned that these applied to only the 24hours prior to the data collection. The number of times the children in the Mfantseman Municipality ate within the days before the data collection exercise for this study was not taken into consideration. Also, considering the cooking and buying habits of caregivers in the Mfantseman Municipality, as far as food is concerned, it was evident, as shown in the table, that majority of caregivers prepare their own food, mostly in the evening – supper. This implies that caregivers might be busy mostly during mornings and afternoons, compared to evenings.

Furthermore, with regard to food groups the children ate from within the 24-hour period, the records showed that 109 (60.6%) included food items from the cereal food group in their diet; 63 (35.0%) children ate foods containing roots, tubers and plantain; vitamin A rich vegetable, dark leafy vegetable and other vegetables were included in the diet of 118 (65.6%) children in the Mfantseman

Municipality. Forty-one (41) children, representing 22.8%, within the Mfantseman Municipality ate foods which included vitamin A rich fruits and other nutrient-rich fruits; implying that majority (139, 77.2%) of children in the Mfantseman Municipality were not fed fruit-rich foods.

Results in Table 5 again showed that only few (22, 12.2%) children ate meals containing flesh foods and organ meat. With respect to those who took eggs within the 24-hour period, the records indicated only 10 children, representing 5.6% of the total number of children surveyed. Sixty-four (35.6%) children were fed by their caregivers with meals containing fresh/dried/shellfish and sea foods. Only 13 (7.2%) children ate foods from the beans and peas food group, whilst 24 children, representing 13.3%, ate foods containing items from the nuts and seeds food group. In respect of the number of children who took milk and milk products, the results showed 10 children, indicating 5.6% of the total number of children involved in the study. One-hundred and seven (59.4%), 110 (61.1%) and 51 (28.3%) children ate foods containing fats and oil; sweets; beverages, spices and condiments, respectively.

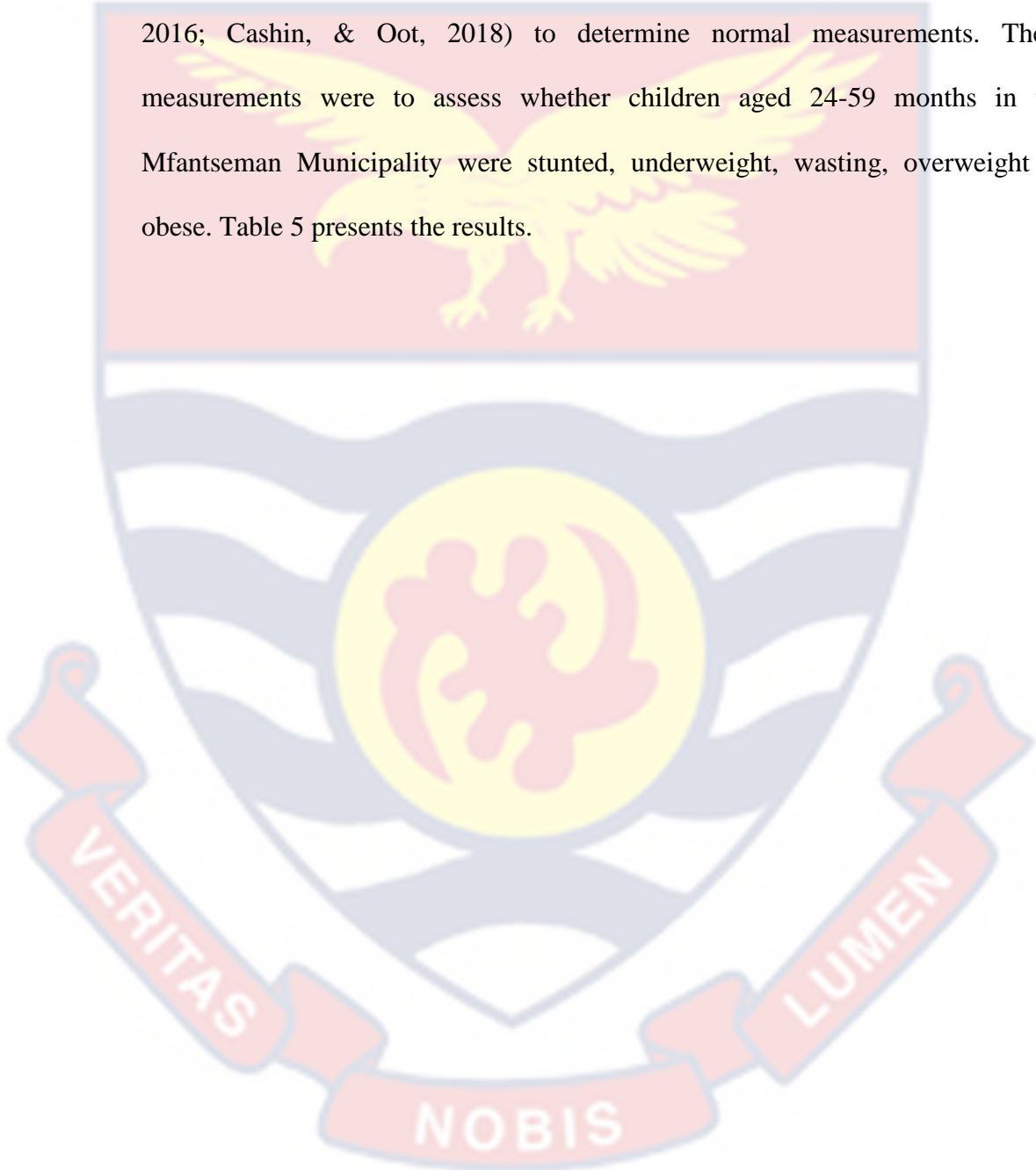
#### **Nutritional status of children aged 24-59 months in the Mfantseman**

##### **Municipality of Ghana**

The second study objective sought to investigate the nutritional status of children aged 24-59 months old in the Mfantseman Municipality of Ghana. To achieve this objective, the anthropometric measurements (heights and weights) of the children were taken. From the measurements, z-scores of height-for-age, weight-for-age and weight-for-height for each age range and sex category were



computed. The z-scores computed were compared to that of a reference population sourced from the Module 1 Anthropometry Basics and Module 2 Nutrition Assessment and Classification (USAID, FANTA, fhi360, & PEPFAR, 2016; Cashin, & Oot, 2018) to determine normal measurements. These measurements were to assess whether children aged 24-59 months in the Mfantseman Municipality were stunted, underweight, wasting, overweight or obese. Table 5 presents the results.



**Table 5: Nutritional Status of Children Aged 24-59 months**

Anthropometric indicator	Age (months)	Z-scores for sexes combined	Z-scores for the individual sexes	
			Males (n=87)	Females (n=93)
Height-for-age <i>Stunting</i>	24-35	+1.36	0	+1.62
	36-47	+0.76	+0.83	+0.74
	48-59	+0.88	+0.78	+0.86
Weight-for-age <i>Underweight</i>	24-35	+0.72	0	+0.88
	36-47	+0.69	+0.59	+0.70
	48-59	+0.58	+0.47	+0.62
Weight-for-height <i>Wasting, overweight, obesity</i>	24-35	+1.47	0	+1.76
	36-47	+1.83	+1.79	+1.81
	48-59	+1.47	+1.61	+1.11

Source: Field survey (2021)

*Plus or minus two suggests, stunting, wasting or underweight*

*Plus or minus three suggests severe stunting, wasting or underweight*



Table 5 presented results on the nutritional status of children aged 24-59 months in the Mfantseman Municipality of Ghana. Results were presented for males and females, and both sexes combined. The results showed that 55 of the children (both sexes combined) aged 24-35months, which was made up of 15 males and 40 females, had normal height-for-age as indicated by the z-scores. The results also showed that children (both males and females) aged between 36-47months and 48-60months too have recorded normal height-for-age.

Further, considering the female children, the results showed that 40 female children aged between 24-35months old in the Mfantseman Municipality had normal height-for-age and normal weight-for-age, but were at possible of risk overweight. These results imply that female children within the age bracket of 24-35months in the Municipality were not stunted or extremely tall, or underweight, but were at possible risk of overweight. They had the right weight and height for their current ages of between 24-35months; however, they did not have the right weight for their height. This might be as a result of the female children being fed foods that did not favour healthy weight. This result, as far as their height and weight for age are concerned, might have also been influenced by the caregivers' nutritional knowledge, making them ensure proper eating habits of the female children, leading to healthy height-for-age and weight-for-age.

Furthermore, results showed that female children aged between 36-47months old in the Mfantseman Municipality had normal height-for-age, normal weight-for-age, and normal weight-for-height. These results imply that female children within this age bracket in the Mfantseman Municipality were not stunted



or extremely tall, or overweight or underweight. They also had the right weight and height for this age bracket of 36-47months (12 of them). This might be as a result of the children being fed the right foods at the right portion sizes. It might have also been influenced by the caregivers' nutritional knowledge, making them ensure high dietary quality and proper eating habits of the female children.

For female children aged between 48-59months (40, 43%), the results showed that female children in the Mfantseman Municipality had normal height for age, normal weight for age, but at a possible risk of overweight as the z-score for weight-for-height is above the reference score for a healthy female child (Awere et al., 2013; Konwea et al., 2016). These results imply that female children within the age bracket of 48-59months in the Mfantseman Municipality were not stunted or extremely tall, or underweight, but were at possible risk of overweight. Their weight and height were right for their current ages; nevertheless, same could not be said of their weight-for-height. Table 5 also presented results on the nutritional status of male children aged between 24-59months in the Mfantseman Municipality of Ghana.

From the Table, the results showed that male children in the Mfantseman Municipality had normal height for age, normal weight for age, and normal weight for height for only male children aged between 24-35months (15, 16%). These results imply that male children within the age bracket of 24-35months in the Mfantseman Municipality were not stunted or extremely tall, or underweight or overweight. They had the right weight and height for their ages, and right weights for their heights. With regard to male children aged between 36-

47months (43, 51%), the results showed that they had normal height for age, normal weight for age, but at a possible risk of overweight as the z-score for weight-for-height is above the reference score for a healthy male child, according to the USAID et al. (2016) and Cashin and Oot (2018).

These results imply that male children within the age bracket of 36-47months in the Mfantseman Municipality were not stunted or extremely tall, or underweight, but were at possible risk of overweight. Their weight and height were right for their current ages; nevertheless, same could not be said of their weight-for-height. Further, the results revealed that male children aged between 48-59months (30, 33%) had normal height for age, normal weight for age, but at a possible risk of overweight as the z-score for weight-for-height is above the reference score for a healthy male child, according to the USAID et al. (2016) and Cashin and Oot (2018).

These results imply that male children within the age bracket of 36-47months in the Mfantseman Municipality were not stunted or extremely tall, or underweight, but were at possible risk of overweight. Their weight and height were right for their current ages; nevertheless, same could not be said of their weight-for-height. This might be as a result of the male children being fed foods that did not favour healthy weight. This result, as far as their height and weight for age are concerned, might have also been influenced by the caregivers' nutritional knowledge, making them ensure proper eating habits of the male children, leading to healthy height-for-age and weight-for-age.

Overall, with all the age groups combined, the results, as displayed in Figure 3, showed that, on the average, children in the Mfantseman Municipality had abnormal height-for-age as the curve (green) seems flatter compared to the WHO normal bell-shaped child growth reference curve (red). However, the overall weight-for-age and weight-for-height curves seem closer to normality as shown in Figures 4 and 5, respectively.

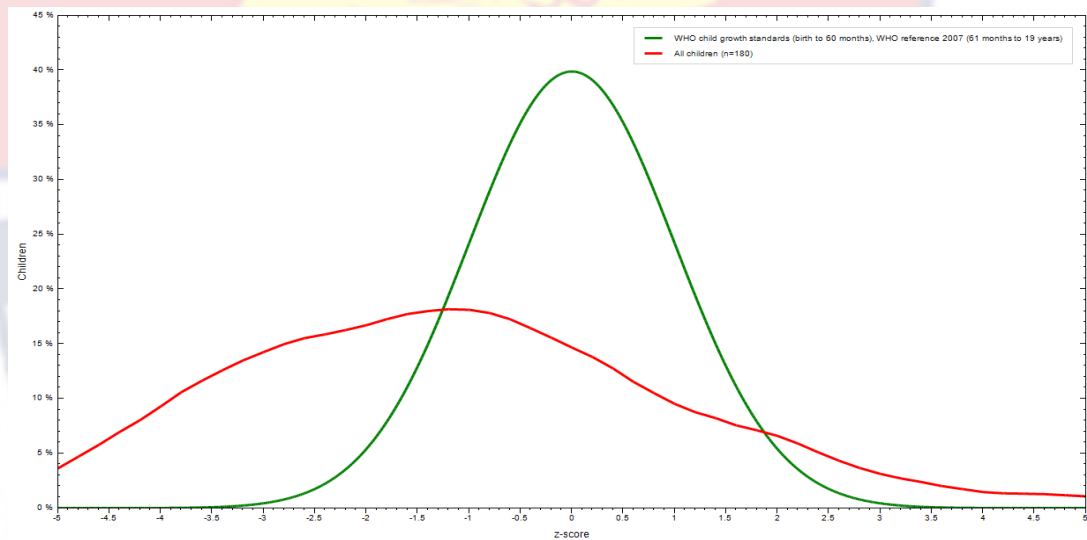


Figure 3: Height-for-age curves

*Green curve: WHO normal bell-shaped height-for-age curve*

*Red curve: Height-for-age curve for children aged 24-59months in Mfantseman Municipality*

Source: Field survey (2021)

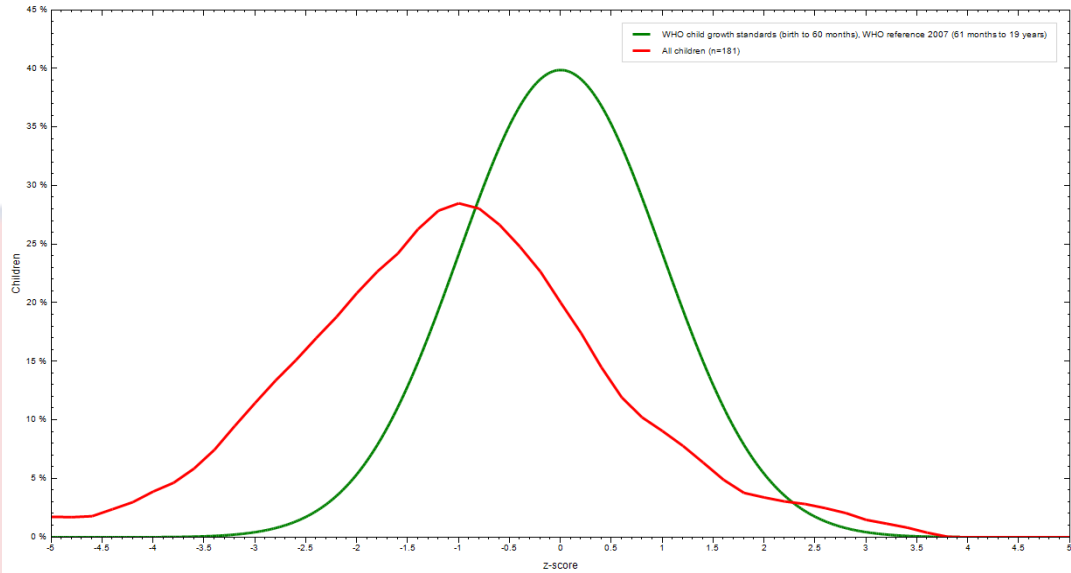


Figure 4: Weight-for-age curves

Green curve: WHO normal bell-shaped weight-for-age curve

Red curve: Weight-for-age curve for children aged 24-59 months in Mfantseman Municipality

Source: Field survey (2021)

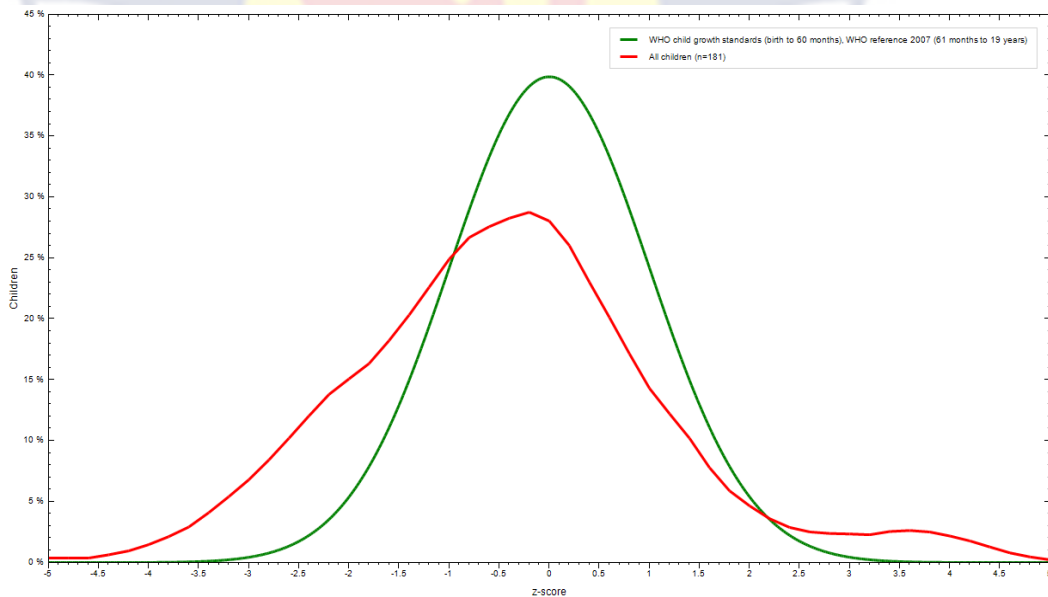


Figure 5: Weight-for-age curves

Green curve: WHO normal bell-shaped height-for-age curve

Red curve: Height-for-age curve for children aged 24-59 months in Mfantseman Municipality



Source: Field survey (2021)

**Nutrition knowledge level of caregivers of children Aged 24-59 months old  
in the Mfantseman Municipality of Ghana**

The third study objective sought to determine the nutrition knowledge of caregivers of children aged 24-59 months old in the Mfantseman Municipality of Ghana. To achieve this objective, the caregiver nutritional knowledge levels were classified as: Very good (85% - 100%), Good (70% - 84%), Sufficient (55% - 69%) and Poor (<55 %), and frequencies and percentages were used to indicate the number of caregivers who fell within a given class. It should also be pointed out that the “knowledge” was broken into “Knowledge about food experts’ advice on healthy eating for children”, “Knowledge about food nutrients”, “Knowledge about health problems or diseases associated with quantity of food consumed” and “Overall caregiver nutritional knowledge”. The results are displayed in Table 6.

**Table 6: Nutrition Knowledge Level of Caregivers of Children Aged 24-59 Months in the Mfantseman Municipality of Ghana**

Knowledge	Score (%)	Knowledge level	Frequency (%)
Knowledge about food experts' advice on healthy eating for children	0-54	Poor	104 (57.8)
	55-69	Sufficient	44(24.4)
	70-84	Good	25(13.9)
	85-100	Very good	7(3.9)
Knowledge about food nutrients	0-54	Poor	11(6.1)
	55-69	Sufficient	37(20.6)
	70-84	Good	83(46.1)
	85-100	Very good	49(27.2)
Knowledge about health problems or diseases associated with quantity of food consumed	0-54	Poor	22(12.2)
	55-69	Sufficient	10(5.6)
	70-84	Good	82(45.6)
	85-100	Very good	66(36.7)
Overall caregiver nutritional knowledge	0-54	Poor	20(11.1)
	55-69	Sufficient	20(11.1)
	70-84	Good	86(47.8)
	85-100	Very good	54(30.0)

Source: Field survey (2021)

N = 180

Score classification: 0-54% - poor knowledge; 55-69% - sufficient knowledge; 70-84% - Good knowledge; 85-100% - very good knowledge

Results presented in Table 6 showed that majority of the caregivers had poor knowledge about food experts' advice on healthy eating for children (104, 57.8%); 44 (24.4%) had sufficient knowledge about food experts' advice on healthy eating for children; 25 of the caregivers, representing 13.9%, had good knowledge about food experts' advice on healthy eating for children; whilst only seven (3.9%) had very good knowledge about food experts' advice on healthy eating for children. In other words, majority of the caregivers of children aged 24-59months in the Mfantseman Municipality had poor knowledge about what experts say concerning what constitutes healthy eating for children. Meaning, this poor knowledge could be responsible for some of the children being at possible risk of overweight.

Also, results revealed 11 (6.1%), 37 (20.6%), 83 (46.1%) and 49 (27.2%) of the caregivers had poor, sufficient, good and very good knowledge about food nutrients, respectively. This is to say that majority of caregivers of children aged 24-59months had at least sufficient knowledge about food nutrients; implying that the caregivers were aware of the various nutrients needed by the children aged between 24-59months in the Mfantseman Municipality, and the food items that contain these nutritional needs. Further, the results revealed that majority (82, 45.6%) of the caregivers had good knowledge about health problems or diseases associated with quantity of food consumed; 66 (36.7%) were reported to have very good knowledge about health problems or diseases associated with quantity of food consumed; 10 (5.6%) had sufficient knowledge, and 22 (12.2%) were recorded to have poor knowledge about the health problems or diseases associated with quantity of food consumed.

This is to say that majority of the caregivers of children aged 24-59months understand the fact that too much intake of foods filled with trans-fats and sugars can be harmful to the health of the children. Overall, majority (86, 47.8%) of the caregivers in the Mfantseman Municipality of Ghana had good knowledge in nutrition. Fifty-four (30.0%) of the caregivers had very good knowledge in overall nutrition; whilst 20 (11.1%) and 20 (11.1%) had poor and sufficient overall nutritional knowledge, respectively.

## Relationships among eating habits, nutritional status and nutrition knowledge level of caregivers

The fourth objective of the study sought to analyse the relationship among eating habits, nutritional status and nutrition knowledge level of caregivers in the Mfantseman Municipality. Therefore, the association between eating habits and nutritional status was analysed; relationship between eating habits and nutrition knowledge of caregivers was also assessed; and finally, the link between nutritional status and nutrition knowledge was determined. To achieve this objective, the Pearson correlation coefficient was used to obtain the relationships among eating habits, nutritional status and nutrition knowledge of caregivers. The results were presented in Table 7

**Table 7: Correlation Coefficients of Relationship among Caregiver Nutritional Knowledge, Children’s Eating Habit and Children’s Nutritional Status**

Variables		Caregiver nutritional knowledge	Eating habit	Nutritional status
Caregiver nutritional knowledge	r	1	0.8074	0.6098
	p		0.003	0.000
Children’s Eating habit	r	0.8074	1	0.8058
	p	0.003		0.000
Children’s Nutritional status	R	0.6098	0.8058	1
	P	0.000	0.000	

Source: Field survey (2021)

The results in Table 7 showed that there is a strong and statistically significant positive relationship between nutritional knowledge and eating habits ( $r = 0.8074$ ,  $p < 0.05$ ). Implying that as nutritional knowledge of caregivers



improves, children's eating habits are likely to improve as well. Also, the results revealed that there is a strong and statistically significant positive correlation between nutrition knowledge and nutrition status ( $r = 0.6098$ ,  $p < 0.05$ ); indicating that nutritional knowledge and nutritional status improves in the same direction. Results further showed that there is a strong and statistically significant positive relationship between eating habits and nutritional status ( $r = 0.8058$ ,  $p < 0.05$ ); meaning, improved children's eating habits associate positively with children's nutritional status. Table 8 presents summary of hypotheses tested.

**Table 8: Summary of Hypotheses Tested, Results and Conclusions**

Hypotheses statement	Results <i>Correlation coefficients</i>	Decision	Conclusions
<i>H<sup>1</sup><sub>0a</sub>: There is no statistically significant relationship between nutrition knowledge and eating habits.</i>	$r = 0.8074$ $P = 0.003$	H <sup>1</sup> <sub>0</sub> rejected	Statistically significant positive relationship
<i>H<sup>2</sup><sub>0b</sub>: There is no statistically significant relationship between nutrition knowledge and nutrition status.</i>	$r = 0.8058$ $P = 0.000$	H <sup>2</sup> <sub>0</sub> rejected	Statistically significant positive correlation
<i>H<sup>3</sup><sub>0c</sub>: There is no statistically significant relationship between nutritional status and eating habits.</i>	$r = 0.8058$ $P = 0.000$	H <sup>3</sup> <sub>0</sub> rejected	Statistically significant positive association
Source: Field survey (2021)		(N=180)	

As can be seen in Table 8, the p-values ( $p < 0.05$ ) are all less than the alpha value ( $\alpha = 0.05$ ); thus, the researcher rejected the null hypotheses that “There is no statistically significant relationship between nutrition knowledge and eating habits.”, “There is no statistically significant relationship between nutrition knowledge and nutrition status.” and “There is no statistically

*significant relationship between nutritional status and eating habits.*” This implies that the alternative hypotheses that there is statistically significant relationship among caregiver nutritional knowledge, eating habit and nutritional status of children aged 24-59months in the Mfantseman Municipality are upheld.

### **Discussion**

This section of the chapter presents discussion of results on each of the four research objectives. These are discussion of results on eating habits of children aged 24-59months in the Mfantseman Municipality of Ghana, nutritional status of children aged 24-59months in the Mfantseman Municipality of Ghana, nutritional knowledge level of caregivers of children aged 24-59months old in the Mfantseman Municipality of Ghana, and the relationship among children’s eating habits, children’s nutritional status and nutritional knowledge level of caregivers.

#### **Eating habits of children aged 24-59 months in the Mfantseman Municipality of Ghana**

The results presented on the first research objective imply that majority of caregivers in the Mfantseman Municipality are aware of the nutritional values of the various foods they feed their children, know when and how often to feed the children within a given day, and understand the health benefits of cooking and eating at home. This could be due to the fact that most of the caregivers had been to school, as presented in Table 4; therefore, they understand proper eating habits. It could, thus, be said that, to a considerable extent, majority of children aged 24-59 months in the Mfantseman Municipality were fed the right foods rich in vitamins, proteins and other nutrients, such as fish, whole grains and cereals, fresh

fruits and vegetables, among others. This is to say that majority of the children in the Municipality eat balanced diets.

According to Nutrition Assessment, Counselling, and Support (NACS) (2016), children's eating habits and dietary quality are determined not only by the nutritional values of the foods they eat but also the quantity and the number of times they eat in a day. Per this finding, children aged 24-59 months in the Mfantseman Municipality's eating habits and dietary quality is consistent with the assertions of the NACS. However, this finding is not consistent with the findings of Senthilkumar et al. (2018) which reported that, overall, pre-school children have poor eating habits and low dietary quality. Further, the researcher's expectation that, overall, the children would have a poor eating habit, in terms of fruits and sweets, has been upheld, and this supports the assertion that children are eating too little fruits and too many unhealthy foods (UNICEF, 2019).

The foregoing finding was possible due to the fact that majority of the caregivers who were taking care of the children had at least basic education, making them understand, to some extent, dietary quality and proper eating habits. Also, children learn from the people they are close to, and since these children are close to their caregivers who seem to have knowledge about dietary quality and proper eating habits, the children involved in this study might have been eating from their (caregivers) plates which are supposedly filled with healthy food items.

Generally, majority of the caregivers were unable to provide homemade food for their children. The reason being they did not have enough money to buy foodstuffs to cook at home for the family. The results showed that breakfast for

children was mostly rice and stew which was bought from food vendors. The researcher wanting to know why most households fed their children rice and stew, some caregivers explained that because they are fisher folks, *gari* (granulated cassava) is the most convenient food they eat almost always; so, rice becomes a delicacy that the children enjoy very much anytime they are served. It was also noticed that the rice and stew served to the children was with no fish, meat nor egg because they could not afford it.

Further, even though, caregivers explicitly acknowledged that it was harmful for children to consume sugar sweetened foods and beverages, it was noticed that they had the habit of allowing their children to consume these foods on a daily basis. As to why they allow their children to eat a lot of toffees, biscuits, chewing gum, carbonated and flavoured fruit drinks, among others, they mentioned that it was the only way they could deal with the discomfort that came with the children crying and throwing tantrums to have the sweets. Some said the children buy with floating coins the children find in their rooms. One caregiver said that because all the children around eat, she did not want her child to be begging her friends for it, which may cause someone to see it as an opportunity to bewitch or poison her child so she allows her child to also eat.

All in all, children aged 24-59months in the Mfantseman Municipality had a habit of eating outside made food; habit of eating a lot of rice dishes; habit of eating sugar sweetened foods and beverages; habit of skipping some meals even though there was a conscious effort to feed the children three times daily; habit of not eating enough fruits and vegetables; and habit of not eating food cooked with



healthy and nutritious herbs and spices as most of the caregivers confessed they did not use spices in food preparation, and those who said they used spices said they used little amounts of ginger or garlic.

### **Nutritional status of children aged 24-59 months in the Mfantseman Municipality of Ghana**

The results from the analysis implied that children within the age bracket of 24-59months in the Municipality were not stunted or suffering from disorders that might lead to extreme tallness. All the children also had the right weight for their current age of 24-59months. However, on the average, all the children (both sexes combined) involved in this study were at risk of being overweight, as the z-score for weight-for-height of the children in the Mfantseman Municipality was beyond the threshold for a healthy child (USAID et al., 2016; Cashin, & Oot, 2018). This might be as a result of the children being fed too much processed food, and lack of physical activities.

More specifically, overall, both male and female children aged between 24-59months in the Mfantseman Municipality seem to have the right nutritional statuses, except for female children aged between 24-35months and 48-59months and male children aged between 36-47months and 48-59months, respectively, who were likely to suffer overweight, possibly due to the fact these children were being fed foods that did not favour healthy weight. This means female children aged 36-47months old might have nutrition related disorders such as wasting, stunting, underweight, overweight, or obesity. In similar manner, male children aged 24-35months old did not have any nutrition related disorders such as



wasting, stunting, underweight, overweight, or obesity, possibly due to the fact that these children were being fed the right foods at the right portion sizes by caregivers with good nutritional knowledge.

The finding is consistent with the findings of De Onis et al. (2012) which revealed that overweight was, to some extent, prevalent among some preschool children. This meant that all preschool children might not be overweight or suffer any nutrition related defects but the issue of overweight existed among the children in the Mfantseman Municipality. The researcher, on the other hand, expected prevalence of nutritional status issues such as stunting, wasting, underweight and overweight among others, among children aged 24-59 months old in the Mfantseman Municipality. However, the results showed otherwise.

This might be due to the availability of information on dietary quality and proper eating habits. Caregivers are able to use available information to ensure that children are well taken care of. Also, the Cognitive and Behavioural theorists' (Polivy, & Hermann, 1985; Fairburn, 1997; Williamson et al., 2004) assertion that the body size of individuals, being height or weight, influences the eating habits of the individuals might explain why the children were not suffering from any major nutritional problems as the caregivers might have realised changes in body sizes of their children and then better their eating habits and dietary quality.

Also, female children aged between 24-35months and 48-59months and male children aged between 36-47months and 48-59months who were at possible risk of overweight might be due to the seasonal nature of the work farmers and fishermen within the Mfantseman Municipality do. It was noticed that children in

the farming communities eat fruits only when they were in season or as and when their caregivers harvested some from their farms whilst those in the fishing communities buy when they felt the need to give it to their children or as and when they had the money to buy some; as a result, fruit intake among the farming folks was low. The fisher folks also believed their kids must eat fish in excess in times when fish was in season so that there will be no need to feed them with fish during lean seasons. This shows that in times of bumper harvest, food and money is available and the children may eat relatively well. However, because of the prolonged periods of scarcity, the children are likely to lose their nutritional stores before the next bumper harvest, resulting in abnormal nutritional statuses.

#### **Nutrition knowledge level of caregivers of children Aged 24-59 months old in the Mfantseman Municipality of Ghana**

The results showing majority of caregivers to have good overall nutritional knowledge might be due to the educational background of most of the caregivers, and availability of information on various subjects these days. This finding is consistent with the findings of a study conducted by Gropper (2016) to assess the nutrition knowledge level of caregivers of children under the age of five years old, which showed that majority of the respondents had high knowledge in nutrition and dietary quality. On the contrary, this finding does not correlate with the findings of Mushonga (2017) who finds that majority of mothers did not understand the benefits of fibre in diet, and that overall, only few of these mothers had some knowledge about nutrition. This inconsistency could be attributed to

differences in the study settings and the educational background of the study participants.

Also, the researcher noticed that the caregivers' sources of nutritional knowledge were predominantly through informal transmission of information. For example, some caregivers said they got their nutritional knowledge from their pillow (translated from "sundze na odze adwen no ma me"), from God, their own experience, from their grandmother and mother, among others. These results demonstrate a lack of formalised systems of information; thereby, giving way to health and nutrition information coming from old wives' tales and misinformation to be passed on from generation to generation. Our civic society and organisations need to fill the gap.

Nevertheless, some of the caregivers reported that they were aware of the fact that eating too much or too little of certain food items, such as sugar and salt, among others could be harmful to the body; yet, they could not mention the specific or associated diseases. They mentioned health conditions such as malaria, fever, goitre, elephantiasis, blood becoming light, and blood clotting, among many others which are actually not the related diseases. A very high number of the caregivers demonstrated that they had no idea about any associated diseases.

### **Relationships among eating habits, nutritional status and nutrition**

#### **knowledge level of caregivers**

This result suggests that children are likely to cultivate a proper eating habit if caregivers have knowledge about nutrition. This means that children are likely to engage in proper eating habits if their caregivers are knowledgeable in

nutrition and dietary quality. This finding is consistent with findings of Beegum (2013) who found that nutritional knowledge of parents (caregivers) is a strong indicator of eating habits of children. This may imply that children would suffer from overweight, obesity, stunted growth, wasting, among others in environments where parents or caregivers have less or no nutrition knowledge, because the right nutritional needs might not be met.

This result is possible as caregivers' knowledge in nutrition will help them make the right choices as far as food is concerned, and also know the right portion sizes for their children, as well as know how frequent their children need to be fed. Going by this will likely influence the child's eating habits in a positive manner. This means that caregivers' nutrition knowledge is very crucial to a child's proper eating habit development. Caregivers or parents with good knowledge in nutrition will likely be practising proper eating habits which may possibly reflect in the eating habits of the children; hence, resulting in proper eating habits of the children.

This result suggests that as individuals' nutrition knowledge increases, nutritional status improves. This is to say that children aged 24-59 months are likely to be prevented from nutritional status conditions such as overweight, obesity, stunted growth, wasting, among others in an environment where parents or caregiver have enough knowledge in nutrition. This finding is consistent with the findings of Mushonga (2017), Mbithe (2018) and Beegum (2013) who find nutritional knowledge of parents (caregivers) to have a positive association with nutritional status of children, as they stated that children in an environment where



there are nutrition experts are less likely to develop cardiovascular diseases, diabetes, cancers, among others occasioned by overweight, obesity, to mention but a few.

This finding may be possible as sufficient knowledge can lead to making of right choices. In today's world, information is common; on the internet, on the streets, and easily accessible. This has made it even easier as people are not required to pay before having access to good and reliable information. This may lead caregivers to use recipes or follow good food frequencies leading to healthy nutritional status in children. Knowledge gained through good and reliable information available on the internet can make a caregiver practise a particular eating habit that their children can be exposed to and, eventually, culminate in children being saved from nutrition related deficiencies.

This result suggests that children are likely to enjoy healthy nutritional statuses if they cultivate a proper eating habit. This means that children in the Mfantseman Municipality are likely to benefit from healthy nutritional statuses if they engage in proper eating habits. This finding is consistent with findings of Beegum (2013) who found that eating habit of children is a strong indicator of children's nutritional statuses. This implies that children in the Mfantseman Municipality might suffer from overweight, obesity, stunted growth, wasting, among others, when they engage in poor eating habits. Similarly, Aganah (2014) reported quality of eating habits as a determinant of obesity and diabetes, among others. Also, Amos et al. (2012) stated that eating habits have impacts on growth and development.

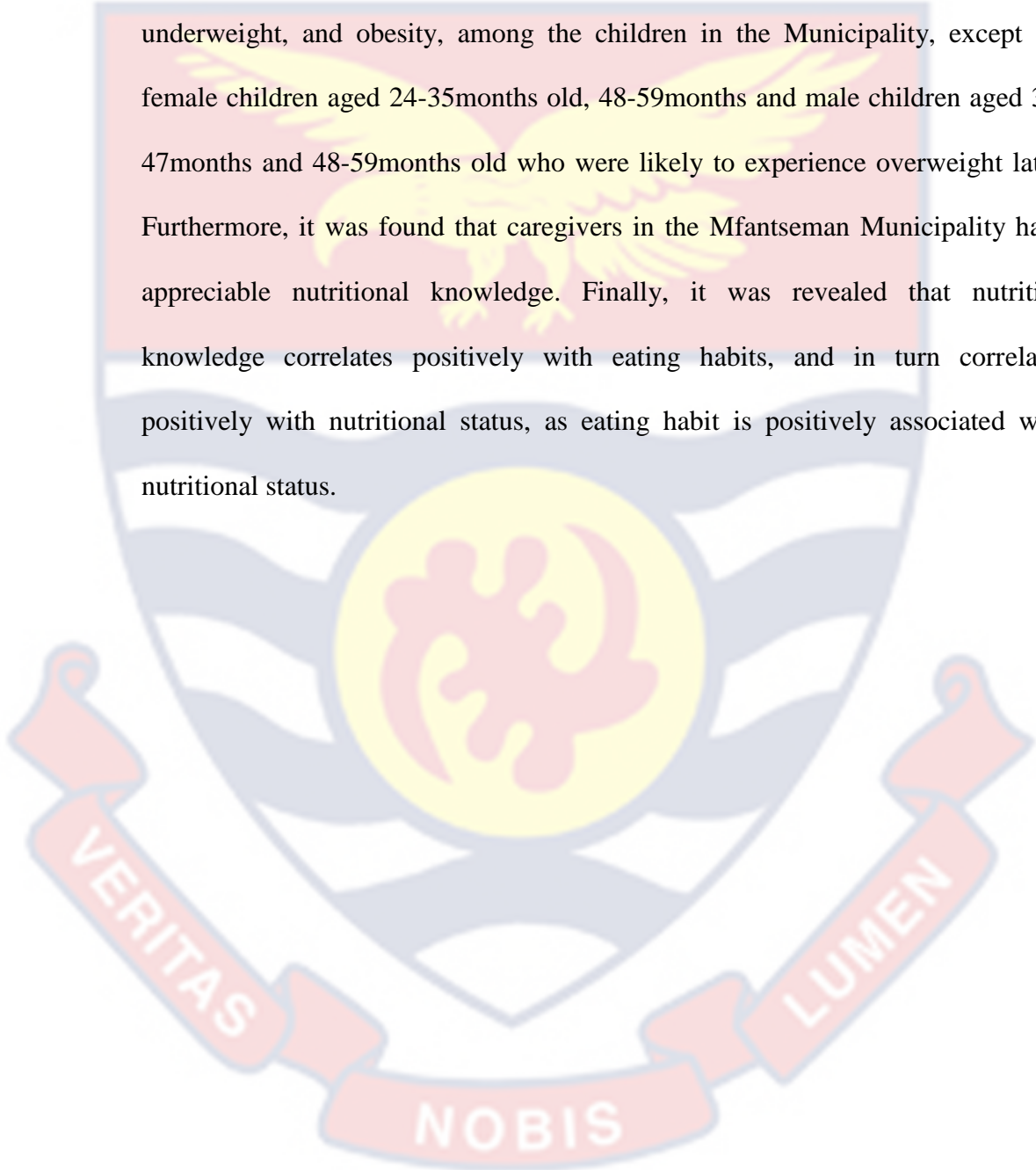


This finding is possible as humans are likely to maintain, to some extent, doing the right things as they begin seeing results from doing same right things. In an attempt to maintain a particular health status, individuals may start practising in particular good eating habit which may improve or help maintain healthy nutritional statuses. Also, just as asserted by the cognitive-behavioural theorists (Fairburn, 1997; Williamson et al., 2004; Polivy, & Hermann, 1985), the body size of individuals, being height or weight, influences eating habits of the individuals. People eat less because they feel fat already, or eat more because they feel empty (Hermans, 2015). Thus, after shedding off the fat and maintaining the right nutritional status through proper eating habit, there is likelihood that the individual may continue practising proper eating habit which will ensure maintenance of healthy nutritional statuses.

### **Chapter Summary**

The chapter focused on the presentation and discussion of the study results. It covered the socio-demographic information of the respondents, the study research questions and the formulated hypotheses. The descriptive statistics such as percentages and frequencies, and the Pearson correlation coefficient were employed for data analysis. The SPSS (v22) and the WHO Anthroplus were the analytical tools used for processing the data. The study sought to determine the eating habits and nutritional status of children aged 24-59months, as well as the nutrition knowledge level of caregivers in the Mfantseman Municipality of Ghana.

Results showed that, on the average, children aged 24-59 months in the Mfantseman Municipality practise proper eating habits. Results further revealed there were no nutritional status concerns, such as wasting, overweight, underweight, and obesity, among the children in the Municipality, except for female children aged 24-35months old, 48-59months and male children aged 36-47months and 48-59months old who were likely to experience overweight later. Furthermore, it was found that caregivers in the Mfantseman Municipality have appreciable nutritional knowledge. Finally, it was revealed that nutrition knowledge correlates positively with eating habits, and in turn correlates positively with nutritional status, as eating habit is positively associated with nutritional status.



## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### **Introduction**

This chapter aims at presenting the summary, key findings, conclusions, and recommendations of this study. The summary presents a brief overview of the problem, objectives, research methods and analytical techniques employed. Key findings section focuses on the summary of the main findings of the study. On the other hand, the conclusions summarise the overall outcomes regarding the findings of the study, taking cognisance of the research objectives. The recommendations also present specific remedies to be applied by specific concerned individuals and institutions. The chapter also offers suggestions for further research in the area of the current topic.

#### **Summary of the research process**

Far too many children continue to be afflicted by under nutrition while the numbers who are overweight are rising rapidly (UNICEF, 2012). Poor diet drives malnutrition in early childhood. Yet, at early childhood, children mostly have no control over the kind of foods they have to feed on. Parents or caregivers give to the children what they presume to be nutritious or offer what is widely preferred for children to enable them develop well (UNICEF, 2012) without really seeking the right knowledge first. Considering this, it was just in the right direction to conduct a study to investigate the eating habits of children aged 24-59 months in the Mfantseman Municipality where many children seem susceptible to issues of

malnutrition and its related dangers. Caregivers' nutrition knowledge was also investigated as well as the children's nutritional statuses.

The main purpose for conducting the study was to determine the eating habits and nutritional status of children aged 24-59 months, as well as the nutrition knowledge level of caregivers in the Mfantseman Municipality of Ghana. The study employed the quantitative research approach, and the correlation design was adopted.

Children aged 24-59 months and caregivers of these children served as the main respondents for the study. One hundred and eighty (180) respondents were sampled out of a total of 2,077 children, using multistage sampling method. However, it should be noted that the caregivers were not treated separately as their inputs were to augment the data collected on the children to enable in-depth analyses, as the same children sampled had their caregivers respond to the survey instruments where necessary. WHO Anthroplus software, percentages, frequencies and Pearson correlation coefficient were used for the data analysis.

Results showed that children aged 24-59 months in the Mfantseman Municipality, on the average, practise proper eating habits. Results further revealed there were no nutritional status concerns, such as stunting, wasting, overweight, underweight and obesity among the children in the Municipality except for female children aged 24-35 months old, 48-59 months and male children aged 36-47 months and 48-59 months old who were at possible risk of overweight. Further, it was found that caregivers in the Mfantseman Municipality had good nutritional knowledge and, therefore, were able to check children's eating habits



and nutritional status. Finally, it was revealed that nutrition knowledge correlates positively with eating habits and nutritional status, and nutritional status also has positive association with eating habits.

### **Key Findings**

The results revealed that majority of the children aged 24-59 months in the Mfantseman Municipality of Ghana, on the average, practice proper eating habits. In other words, the children eat the appropriate foods necessary for their nutritional needs; take the right portion sizes, and follow a healthy and proper eating pattern.

The results showed that children aged 24-59 months in the Mfantseman Municipality of Ghana, on the average, do not have nutritional status concerns. There were no issues of stunting, wasting, overweight, underweight and obesity among the children in the Municipality except for female children 24-35months, 48-59months and male children 36-47months and 48-59months who were at risk of becoming overweight.

Further, the results showed that, overall, caregivers in the Mfantseman Municipality have good level of nutritional knowledge. The caregivers, mostly parents of the children, seem to understand what constitutes balanced diets, what not to give to a child aged 24-59 months old to eat, the right portion sizes for the children, and how frequent these children need to feed on daily basis.

Finally, the findings showed that nutrition knowledge of caregivers correlates positively with eating habits and nutritional status, and eating habit showed a significant positive correlation with nutritional status.



## Conclusions

Considering the findings of the study, the following conclusions could be drawn. Firstly, it was revealed that children aged 24-59 months in the Mfantseman Municipality of Ghana, on the average, practise proper eating habits. It could, therefore, be concluded that caregivers have enough education that helps them make the right dietary choices for their children. Also, they might be quite well economically as shown by the demographic data that majority earn, on the average, some income close to an amount of GHs500 per month; thereby, making caregivers able to purchase the right food items at the right portion sizes and frequencies for their children, hence leading to proper eating habits among the children.

Secondly, it was found that children aged 24-59 months in the Mfantseman Municipality of Ghana, on the average, do not have bad nutritional status. It could then be safely concluded that availability of information on dietary quality and proper eating habits is the reason behind the children's good and improved nutritional status in the Mfantseman Municipality of Ghana. Also, it may imply that caregivers are able to use available nutrition information on the internet to ensure that children are well taken care of nutritionally; thereby, leading to improved nutritional status.

Thirdly, the findings showed that, averagely, caregivers in the Mfantseman Municipality have sufficient nutritional knowledge. This means that caregivers have access to nutrition information. Also, their educational background might be the reason behind their sufficient knowledge level in

nutrition. Caregivers might be able to use resources on the internet to improve their knowledge base due to their ability to read, write and use technological devices such as phones and computers to browse the internet.

Last but not least, since the findings revealed that as nutrition knowledge of caregivers improves, eating habits of children aged 24-59 months is likely to improve, and as well, the nutritional status of the children improves, it could be concluded that caregiver's nutritional knowledge is the basic key to proper eating habits and improved nutritional statuses among children in the Mfantseman Municipality.

### **Recommendations**

Having considered the findings, and the conclusions drawn, it is imperative to make suggestions or recommendations which may have bearing on eating habits of children aged 24-59 months, nutrition knowledge of caregivers, as well as nutritional status of children aged 24-59 months. The researcher, therefore, made the following recommendations based on the current findings and conclusions.

1. Though, on the average, children aged 24-59 months in the Mfantseman Municipality practise proper eating habits, it may be improved if the schools the children attend use parent teacher association (PTA) platforms or institute a programme that continually trains parents and caregivers to maintain proper eating habits among children. It is, therefore, recommended that preschools in the Mfantseman Municipality give training, occasionally, on how to maintain or improve proper eating habits

and dietary quality of children to parents and caregivers in the Municipality.

2. It is also recommended that female children aged 24-35months old, 48-59months and male children aged 36-47months and 48-59months be fed food rich in fibre and low in fats, sugar and salt as the children within these age brackets in the Municipality stand the possibility of suffering from overweight and its associated complications. Nevertheless, all other children, irrespective of gender, aged 24-59months should also be fed foods low in salt, sugar, fats, and one high in fibre in order to maintain the right nutritional status.
3. Though the findings showed that, on the average, caregivers have appreciable knowledge in nutrition, it is recommended that the Municipal Health Directorate formally organise food and nutrition training sessions for all parents or caregivers who have children aged 24-59 months in the Mfantseman Municipality. This is to equip them with substantiated and standardised nutrition information and facts to enable them continually ensure proper eating habits and healthy nutritional status of their children.
4. Considering the findings on the relationships among eating habits, nutritional status and nutrition knowledge, the suggested recommendations one, two and three above may be applicable. Parents and caregivers should ensure dietary quality and proper eating habits by avoiding too much fats, sugar and salt, including more fibre in foods, and also making sure right portion sizes and food frequencies are followed. Preschools in the

Municipality should also take the responsibility of training parents whose children are in their schools on how to maintain proper eating habits of children. Finally, the Health Directorate of the Municipality should, occasionally, organise health and nutrition workshops for all parents or caregivers in the Municipality.

### **Suggestions for Further Research**

Many gaps in previous studies, as far as this area of study is concerned, were spotted during the review of literature. Some of the gaps had been addressed by prior studies whilst the rest remained unattended to. The current study sought to address some of those gaps. Nevertheless, the study focused on only the children and caregivers in the Mfantseman Municipality of Ghana. Also, only children aged 24-59 months were considered in this study. Moreover, just as this study, prior studies had used quantitative approach which appeared to be limiting as the present researcher identified, during the field survey, issues could have better been addressed if a mixed approach had been employed. Therefore, it is suggested that further studies are conducted on the nutritional status, nutritional knowledge and eating habits of preschool children in Ghana, using the mixed methods research approach.



## REFERENCES

- Aganah, C. A. (2014). *Dietary practices and nutritional status of adolescent girls in Ko Senior High Boarding School in the Upper West Region*. Unpublished dissertation. University of Ghana. Legon, Ghana.
- Admassu, B. (2017). Comparative study on nutritional status of under five children with employment status of mothers in Adama Town, Central Ethiopia. *Maternal and Pediatric Nutrition Journal*, 3 (1), 1-8.
- Ahmed, M., & Mensah, A. (2017). Preoperative fasting in children. *Bja Education*, 12-30.
- Allagulova, C. R. (2016). Salicylic acid-induced protection against cadmium toxicity in wheat plants. *Environmental and Experimental Botany*, 122, 19-28.
- Al-Shookri, A., Al-Shukaily, L., Hassan, F., Al-Sheraji, S., & Al-Tobi, S. (2011). Effect of mothers nutritional knowledge and attitudes on Omani children's dietary intake. *Oman Medical Journal*, 26(4), 253.
- Amos, P. M., Intiful, F. D., & Boateng, L. (2012). Factors that were found to influence Ghanaian adolescents' eating habits. *Sage Open*, 2(4), Article 2158244012468140.
- Arthur, D. D. (2016). Examining the Effects of Governance Challenges in Ghana's Local Government System: A Case Study of the Mfantseman Municipal Assembly. *Journal of US-China Public Administration*, 13(7), 454-465.
- Awere, E., Kwaw, E., & Sackey, A. S. (2013). Assessment of the nutritional status of junior high school students – evidence from Mfantseman municipality of Ghana. *Science Journal of Public Health*, 1(5), 222-226.
- Beegum, S. N. (2013). Eating habits of children in selected countries in North Africa. *Science Journal of Public Health*, 1(5), 246-254.
- Black, A. M., & Kurley, E. L. (2013). An in-home intervention to improve nutrition, physical activity and knowledge among low-income teen mothers and their children: Results from a pilot study. *Journal of Developmental and Behavioral Pediatrics: JDBP*, 34(8), 23-50.
- Cashin, A. J., & Oot, M. N. (2002). ARBITER: Arterial Biology for the Investigation of the Treatment Effects of Reducing Cholesterol: a



randomized trial comparing the effects of atorvastatin and pravastatin on carotid intima medial thickness. *Circulation*, 106(16), 2055-2060.

Cashin, K., & Oot, L. (2018). *Guide to anthropometry: A practical tool for program planners, managers, and implementers*. Washing DC: FANTA/FHI360/USAID.

Chatterjee P. (2002). India sees parallel rise in malnutrition and obesity. *Lancet*, 360 (23), 19- 28.

Cohen, L., Manion, L., Morrison, K., & Morrison, R. B. (2007). *Research methods in education*: Routledge.

Creswell, J. W. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. *American Psychologist*, 73(1), 26-42.

De Onis, M., Onyango, A., Borghi, E., Siyam, A., Blössner, M., & Lutter, C. (2012). Worldwide implementation of the WHO child growth standards. *Public Health Nutrition*, 15(9), 1603-1610.

Dewey, K. G., & Begum, K. (2011). Long-term consequences of stunting in early life. *Maternal & Child Nutrition*, 7, 5-18.

Dietary Assessment Primer. (2021). *Dietary assessment instruments*. National Institutes of Health, National Cancer Institute. Retrieved from <https://dietassessmentprimer.cancer.gov/>

Eto, E. F. (2014). *Nutritional status assessment of children (0-5 years) of female head porters (kayayei) in agboghloshie market Accra, Ghana*. Department of Dietetics School of Allied Health Sciences, College of Health Sciences, University of Ghana.

Ezzati, M., Lopez, A. D., Rogers, A., & Murray, C. J. L. (Eds.). (2004). *Comparative quantification of health risks. Global and regional burden of disease attributable to selected major risk factors*. Geneva: World Health Organization.

FAO. (2007). *Evaluation of certain food additives and contaminants: sixty-eighth report of the Joint FAO/WHO Expert Committee on Food Additives (Vol. 68)*. World Health Organization.

Fairburn, C. G. (1997). Risk factors for bulimia nervosa: A community-based case-control study. *Archives of General psychiatry*, 54(6), 509-517.

- Ferreira, D. S. (2020). Management of severe asthma: a European respiratory society/american thoracic society guideline. *European respiratory journal*, 55(1), 12-31.
- Frankel, J. R., & Wallen, N. E. (2006). *How to design and evaluate research in education*. 6 Baski: McGraw Hill.
- Gibson, R. S. (2005). *Principles of nutritional assessment*. USA: Oxford University Press.
- Gropper, S. (2016). Traditional and new composite endpoints in heart failure clinical trials: Facilitating comprehensive efficacy assessments and improving trial efficiency. *European Journal of Heart Failure*, 18(5), 482-489.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of Qualitative Research*, 2(163-194), 105-116.
- Hair, J. F., & Risher, J. J. (2018). When to use and how to report the results of PLS-SEM. *European Business Review*, 01-10.
- Halmi, K. A. (2017). Food portion size area mediates energy effects on expected anxiety in anorexia nervosa. *Appetite*, 112, 17-22.
- Hermans, R. C. (2015). Social modeling of eating: A review of when and why social influence affects food intake and choice. *Appetite*, 86, 3-18.
- Hooper, L., Abdelhamid, A., Bunn, D., Brown, T., Summerbell, C. D., & Skeaff, C. M. (2015). Effects of total fat intake on body weight. *Cochrane Database of Systematic reviews*, (8), 23-51.
- Johnson, S., & Ouyang, Y. (1991). Human growth, physical fitness and nutrition. Edited by RJ Shephard and J. Pařízková. Basel: Karger. 1991. viii+ 172 pp., \$140 (cloth). *American Journal of Physical Anthropology*, 87(1), 124-126.
- Jukes, M. C. H., Drake, L. J., & Bundy, D. A. P. (2007). *School health, nutrition and education for all: Leveling the playing field*. Wallingford: CABI Publishing.
- Karkee, R. (2014). Factors associated with the utilisation of postnatal care services among the mothers of Nepal: analysis of Nepal demographic and health survey 2011. *BMC Women's Health*, 14(1), 1-13.
- Kogi-Makau, W., Macharia, W. C., & Muroki, N. M. (2005). A comparative study on the nutritional status of children (6-59 months) in a world vision

project area and a non-project area in Kathonzweni division. *African Journal of Food Agriculture, Nutrition and Development*, 3(1), 45-67.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.

Konwea, P. E., Ogunbile, S. E., & Olowoselu, M. F. (2016). Assessment of eating habit and nutritional status of nursing and midwifery students in Ekiti State Nigeria. *Journal of Scientific Research & Reports*, 12 (2), 1-7.

Kurotani, K., Akter, S., Kashino, I., Goto, A., Mizoue, T., Noda, M., & Japan Public Health Center based Prospective Study Group. (2016). Quality of diet and mortality among Japanese men and women: Japan Public Health Center based prospective study. *Bmj*, 352, 23-40.

Larson, N. I., & Story, M. (2012). Does involvement in food preparation track from adolescence to young adulthood and is it associated with better dietary quality? Findings from a 10-year longitudinal study. *Public Health Nutrition*, 15(7), 1150-1158.

Lemchi, M., & Opara, S. K. (2015). Nutritional Status of Primary School Children in Ilorin-West LGA, Kwara State, Nigeria. *Journal of Community Medicine and Primary Health Care*, 32(1), 103-115.

Mbithe, H. L. (2018). Body mass index vs deuterium dilution method for establishing childhood obesity prevalence, Ghana, Kenya, Mauritius, Morocco, Namibia, Senegal, Tunisia and United Republic of Tanzania. *Bulletin of the World Health Organization*, 96(11), 772-783.

Mei, Z., & Grummer-Strawn, L. M. (2007). Standard deviation of anthropometric Z-scores as a data quality assessment tool using the 2006 WHO growth standards: a cross country analysis. *Bulletin of the World Health Organization*, 85, 441-448.

Mennella, J. A. (2012). The proof is in the pudding: children prefer lower fat but higher sugar than do mothers. *International Journal of Obesity*, 36(10), 1285-1291.

Mfantseman Municipal Assembly. (2020). *Medium term report*. Saltpond, Mfantseman, Central Region of Ghana.

Ministry of Education, Culture and Human Resources (2009). *A New Strategy Built on Partnerships*. Mauritius.



- Mishra, G. D., Pandeya, N., Dobson, A. J., Chung, H. F., Anderson, D., Kuh, D., & Lee, J. S. (2017). Early menarche, nulliparity and the risk for premature and early natural menopause. *Human Reproduction*, 32(3), 679-686.
- Mozaffarian, D., Fahimi, S., Singh, G. M., Micha, R., Khatibzadeh, S., Engell, R. E., ... & Powles, J. (2014). Global sodium consumption and death from cardiovascular causes. *New England Journal of Medicine*, 371(7), 624-634.
- Mushonga, B. (2017). Seasonal prevalence, body condition score and risk factors of bovine fasciolosis in South Africa. *Veterinary and Animal Science*, 4, 1-7.
- Natekar, D. S., & Mhaske, A. (2015). Nutritional status and dietary habits of preschool children. *International Journal of Pharmaceutical Science Invention*, 4 (9), 34-54.
- NACS. (2016). *Module 2: Nutrition assessment and classification*. USA: USAID.
- Niba, L. L., Atanga, M. B., & Navti, L. K. (2017). A cross sectional analysis of eating habits and weight status of university students in urban Cameroon. *BMC Nutrition*, 3, 1-8.
- Nordang, S. (2011). *The nutritional status among children below 5 years of age related to children's diet and mothers' workload in agriculture: A study among farmers in rural Rukwa, Tanzania* (Unpublished master's thesis, University of Oslo).
- Onimawo, I. A. (2001). Nutrition for the vulnerable group. *International Journal of Pharmaceutical Science Invention*, 4 (1), 13-34.
- Polivy, L., & Hermann, E. (1985). Effects of lifestyle on nutrient requirements. In *Modern Lifestyles, Lower Energy Intake and Micronutrient Status* (pp. 3-19). Springer, London.
- Ramanatha, W. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6), 244-256.
- Rachael, B., & Jane, O. (2004). Children's eating attitudes and behaviour: a study of the modelling and control theories of parental influence. *Health Education Research*, 19 (3), 261-271.
- Rogers, A. (2014). *A sociology of mental health and illness*. McGraw-Hill Education (UK).



- Rossi, B. (2013). Signatures of mutational processes in human cancer. *Nature*, 500(7463), 415-421.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research Methods for Business Students* (8th ed.). Harlow.
- Sedek, R., & Yih, T. Y. (2014). Dietary habits and nutrition knowledge among athletes and non-athletes in National University of Malaysia (UKM). *Pakistan Journal of Nutrition*, 13(12), 752-759.
- Sekumade, A. B. (2013). Determinants of Children's Nutritional Status among Primary School Children of Farming Households in Ekiti State, Nigeria. *Journal of Biology Agriculture and Healthcare*, 3(12), 24-33.
- Senthilkumar, S. K., Chacko, T. V., & Suvetha, K. (2018). Nutritional status assessment of children aged 0-5 years and its determinants in a tribal community of Coimbatore district. *International Journal of Community Medicine and Public Health*, 5(7), 28-35.
- Shrivastava, S. R., Shrivastava, P. S., & Ramasamy, J. (2014). Exploring the dimensions of doctor-patient relationship in clinical practice in hospital settings. *International journal of health policy and management*, 2(4), 159.
- Sibeko, L. (2005). Beliefs, attitudes, and practices of breastfeeding mothers from a periurban community in South Africa. *Journal of human lactation*, 21(1), 31-38.
- Smolin, L. A., & Grosvenor, M. B. (2013). *Basic nutrition (Healthy eating: A guide to nutrition)*. Pergamon.
- Sogari, G., Velez-Argumedo, C., Gómez, M. I., & Mora, C. (2018). College students and eating habits: A study using an ecological model for healthy behavior. *Nutrients*, 10(12), 18-23.
- Szabolcs, M. (2015). Kinase and BET inhibitors together clamp inhibition of PI3K signaling and overcome resistance to therapy. *Cancer cell*, 27(6), 837-851.
- Taylor, T., & Geldenhuys, S. (2019). Using partial least squares to measure tourism students' satisfaction with work-integrated learning. In *Tourism-Perspectives and Practices*. IntechOpen.
- Torres, M. F. (2013). A comparative study on nutritional status and body composition of urban and rural school children from Brandsen District-Argentina. *Journal Pone*, 8(1), 35-46

- Tripathi, D. K. (2017). Uptake, accumulation and toxicity of silver nanoparticle in autotrophic plants, and heterotrophic microbes: A concentric review. *Frontiers in Microbiology*, 8, 7-20.
- Trude, T. (2015). The gender revolution: A framework for understanding changing family and demographic behavior. *Population and Development Review*, 41(2), 207-239.
- UNICEF (2019). *The state of the world's children*. New York: UNICEF
- UNICEF. (2006). *Progress for Children: A report card on nutrition*. New York:
- UNICEF. (2012). Knowledge, practice and perception of taking soft drinks with food and the metabolic effects on high school students in Ghana. *Endocrinol Metab.*,1(1), 45-55.
- USAID, FANTA, fhi360, & PEPFAR. (2016). *Nutrition assessment and classification*. USAID.
- Victoria, S. (2008). *An analysis of under-five nutritional status in Lesotho: The role of parity order and other socio-demographic characteristics* (Unpublished doctoral dissertation, University of Witwatersrand).
- Wardlaw, G. M., Hampl, J. S., & Disilvestro, R. (2007). Energy balance and weight control. *Wardlaw GM and Hampl JS. Perspectives in Nutrition. 7th ed. New York: McGraw-Hill*, 465-78.
- Wardle, J. (2014). Perceived weight discrimination and changes in weight, waist circumference, and weight status. *Obesity*, 22(12), 2485-2488.
- WFP, & CDC. (2005). Looking beyond food aid to livelihoods, protection and partnerships: strategies for WFP in the Darfur states. *Disasters*, 31, S40-S56.
- World Gazetteer. (2020). Digital charts of the world. Retrieved, 23<sup>rd</sup> March, 2022, from <https://www.arcgis.com/home/item.html?id=346ce13fa2d4468a9049f71bc250f37#!>
- WHO. (2006). WHO child growth standards based on length/height, weight and age. *Acta Paediatr Suppl*, 450, 76-85.
- WHO. (2014). Comprehensive implementation plan on maternal. *Infant and Young Child Nutrition*, 7-9.

WHO. (2020). *A tool for the development of school nutrition programmes in the European region programme for nutrition and food security*. Washington DC: WHO.

WHO. (2018). *WHO child growth standards based on length/height, weight and age*. Washington DC: WHO.

Williamson, D. A., White, M. A., York-Crowe, E., & Stewart, T. M. (2004). Cognitive-behavioral theories of eating disorders. *Behavior modification*, 28(6), 711-738.

Wilson, L. (2017). *European cardiovascular disease statistics 2017*. Washington DC: AICR.

World Cancer Research Fund/American Institute for Cancer Research (2007). *Food, nutrition and the prevention of cancer: A global perspective*. Washington DC: AICR.

Wong, L. N., & Murata, L. A. M. (2017). Vasopressin Regulation and Potassium Homeostasis Following Recovery from Severe Blood loss in a Conscious Rat Model of Hemorrhagic Shock. *The FASEB Journal*, 31, 1027-5.

Zugravu, C., (2012). Eating habits and influential factors for mothers and children in Romania. *International Journal of Collaborative Research on Internal Medicine & Public Health*, 12(3), 12-25.

## APPENDICES

## APPENDIX A: SAMPLE SIZE DETERMINATION TABLE

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

*Note: N is Population Size; S is Sample Size* *Source: Krejcie & Morgan, 1970*



APPENDIX B:



**APPENDIX C: QUESTIONNAIRE**

**UNIVERSITY OF CAPE COAST  
DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION  
CAPE COAST  
QUESTIONNAIRE ON ASSESSMENT OF CAREGIVER NUTRITION  
KNOWLEDGE, EATING HABITS AND NUTRITIONAL STATUS OF  
CHILDREN AGED TWO-FIVE YEARS IN THE MFANTSEMAM  
MUNICIPALITY**

This questionnaire aims to collect data on your nutritional knowledge as well as your demographic information. This questionnaire is strictly for an academic exercise and you are please requested to provide accurate information that will assist the researcher in obtaining correct data for this exercise. Your responses will be treated with strict confidence.

Thank you.

**Instructions:** Please, tick (√) as applicable to you.

**SECTION A: SOCIO - DEMOGRAPHIC INFORMATION**

1. What is your sex?

- (a) Male
- (b) Female

2. How old are you?

- (a) Less than 18
- (b) 18-24
- (c) 25-31
- (d) 32-38
- (e) 39-45
- (f) 46-52
- (g) 53-59
- (h) More than 60

3. What is your marital status?

- (a) Single
- (b) Married
- (c) Living as married
- (d) Separated
- (e) Divorced
- (f) Widowed

4. What is your ethnic background? Please, specify below.  
.....

5. What is the highest level of education you have obtained?

- (a) None
- (b) Primary
- (c) Basic school
- (d) High school
- (f) O level
- (g) A level
- (h) Technical/vocational certificate
- (i) Diploma
- (j) Degree
- (k) Post-graduate degree
- (l) Middle school

6. Which of your children is between 2 – 5 years?  
.....

7. How many months old is he/she?  
.....

8. What is his/her sex?

- Male
- Female

9. What is your relationship with the child under study?

- Own child
- Relative's child

10. How many other children do you have?

- (a) None
- (b) 1
- (c) 2
- (d) 3
- (e) 4
- (f) More than 4

11. What is your employment status?

- (a) Full time
- (b) Part-time
- (c) Unemployed
- (d) Full time homemaker
- (e) Retired
- (f) Student
- (g) Disabled or too ill to work

12. If employed, what is your job?

.....

13. If you are not working now, what is the usual job you do for a living? Please, be specific.

.....

14. If you have a partner, what is his/her job?

.....

15. If he or she is not working now, what is his/her usual job? Please, be specific.

.....

16. Within which range of income does your monthly income fall?

- (a) Less than GHs 500.00
- (b) GHs 500.00 – GHs 999.00
- (c) GHs 1,000.00 – GHs 1,499.00
- (d) GHs 1,500.00 – GHs 1,999.00
- (e) GHs 2,000.00 – GHs 2,499.00
- (f) GHs 2,500 and above

17. Do you have any health or nutrition related qualification?

- Yes
- No

18. What is the source of your nutritional knowledge?

.....



**SECTION B: CAREGIVERS' NUTRITIONAL KNOWLEDGE****PART I: KNOWLEDGE ABOUT FOOD EXPERTS' ADVICE ON HEALTHY EATING FOR CHILDREN**

The following is a list of questions concerning your Knowledge on Child Nutrition. Read each statement carefully and answer it as accurately as possible. Thick (✓) appropriately the answer that best describes your view on each of the items. Thank you.

SN	Question	Agree	Disagree
1	Balanced diet contains all food nutrients		
2	A balanced meal for children should be low in fat, salt and sugar but high fibre.		
3	Children must eat meals that contain most grains, more vegetables and moderate meat or meat alternatives.		
4	It is recommended that children 2 – 5 years eat 2 servings of fruit each day.		
5	It is recommended that children 2 – 5 years eat 3 bowls of cooked vegetables each day.		
6	Children should be encouraged to drink pure fruit juice instead of eating whole fruit.		
7	Milk and milk products are a major source of calcium for children.		
8	<i>Low fat milk</i> is the recommended milk for children aged between 2-5 years.		
9	Eating cakes and biscuits on a daily basis is harmful to children.		
10	Children who eat food items that are mostly <i>high in fat, sugar or salt</i> may suffer from childhood obesity and other food related problems in future.		
11	Children must be served <i>snack</i> only once in a day.		
12	If children <i>skip</i> breakfast often they become overweight.		

13	If children eat a <i>variety of food items</i> it helps them develop good eating habits.		
----	--	--	--

**PART II: KNOWLEDGE ABOUT FOOD NUTRIENTS**

*Experts classify foods according to nutrients. The following is to assess whether you are aware of the food sources for each nutrient. Please tick the right food source for the listed food nutrients.*

Food Nutrients	Food Sources		
14. Fats and oils	Cabbage	Margarine	Bread
15. Carbohydrates	Beans	Rice	Banana
16. Protein	Fish	Maize	Kontomire
17. Vitamins	Orange	Oat	Kenkey
18. Mineral salts	Asana	Beef	Iodated salt

**PART I11: KNOWLEDGE ABOUT HEALTH PROBLEMS OR DISEASES**

**ASSOCIATED WITH QUANTITY OF FOOD CONSUMED**

Are you aware of any major health problems or diseases that are related to

19. low intake of fruits and vegetables?

(a) Yes

(b) No

(c) Not sure

If yes, what disease or health problem is it?

.....  
 .....

20. low intake of fibre?

(a) Yes

(b) No

(c) Not sure

If yes, what disease or health problem is it?

.....  
.....  
21. high intake of sugar?

(a) Yes

(b) No

(c) Not sure

If yes, what disease or health problem is it.....  
.....

22. high intake of salt or sodium chloride?

(a) Yes

(b) No

(c) Not sure

If yes, what disease or health problem is it?

.....  
.....  
23. high intake of fat and oils?

(a) Yes

(b) No

(c) Not sure

If yes, what disease or health problem is it?

.....  
.....

24. low intake of protein?

(a) Yes

(b) No

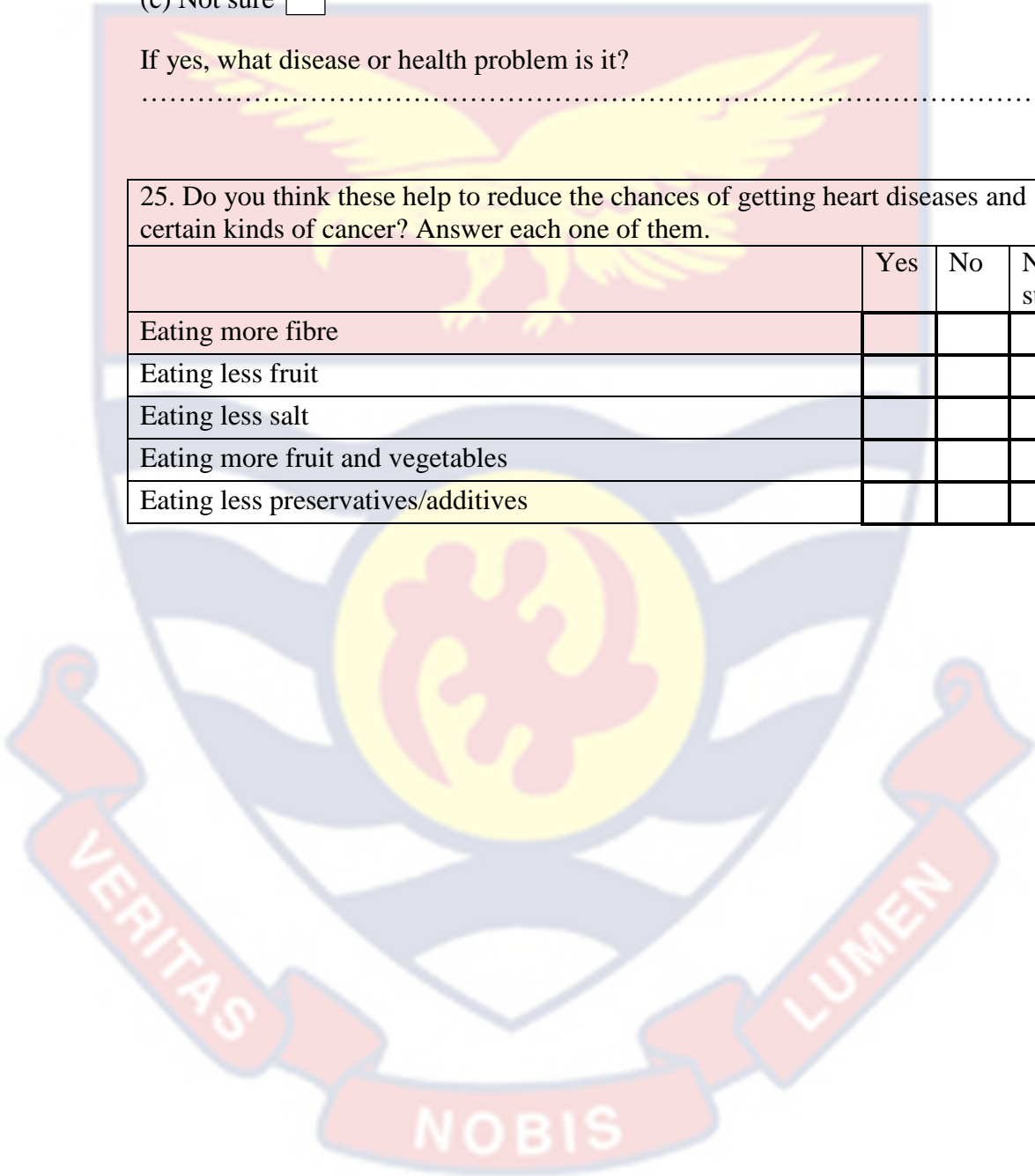
(c) Not sure

If yes, what disease or health problem is it?

.....

25. Do you think these help to reduce the chances of getting heart diseases and certain kinds of cancer? Answer each one of them.

	Yes	No	Not sure
Eating more fibre			
Eating less fruit			
Eating less salt			
Eating more fruit and vegetables			
Eating less preservatives/additives			





**INTERVIEW GUIDE: A 24-HOUR DIETARY RECALL**

**Instruction:** *This guide is to collect information on all the foods and drinks fed to your child the whole of yesterday no matter what it was or how small it was. You will please start with the first thing he/she ate from the time s/he woke up yesterday to the time s/he went to bed. I will also want to know for each meal the time it was eaten along with the place it was consumed, the ingredients some of the foods your child ate yesterday were made of and finally the kind of food preparation methods used as well as the source of food.*

Time of day ..... am/pm	Name of Food Consumed	Ingredients of composite foods	Food preparation method	Source of food 1 = bought 2 = homemade	Place consumed 1 = Home 2 = School 3 = Others ( Please specify with the numbers)
1. Breakfast					
2. Lunch					
3. Supper					
Snack (foods eaten between meals)					

Any sweets, drinks, biscuits etc. Eaten					
--	--	--	--	--	--

**RECORD SHEET FOR OBTAINING DATA ON CHILDREN'S NUTRITIONAL STATUS**

Instruction: *Please record the average weight and height of the children in the spaces provided below.*

Date	Age in months	Gender (M/F)	Weight (Kg)		Height/Length (cm)		Remarks
			1 <sup>st</sup> Reading	2 <sup>nd</sup> Reading	1 <sup>st</sup> Reading	2 <sup>nd</sup> Reading	
			Average		Average		

