

UNIVERSITY OF EDUCATION, WINNEBA

**CHILD WEANING PRACTICES AMONG NURSING MOTHERS IN SUHUM
MUNICIPALITY**

MONICA BOATENG



**A thesis in the Department of Home Economics Education, Faculty of Science
Education, submitted to the School of Graduate Studies, in partial fulfilment**

**of the requirements for the award of degree of
Master of Philosophy
(Home Economics Education)
in the University of Education, Winneba**

OCTOBER, 2019

DECLARATION

Students' Declaration

I, Monica Boateng, hereby declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and that it has not been submitted, either in part or whole, for another degree elsewhere.

Signature:

Date:

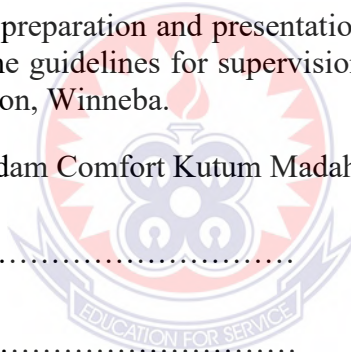
Supervisor's Declaration

I hereby declare that the preparation and presentation of this work was supervised by me in accordance with the guidelines for supervision of Dissertation as laid down by the University of Education, Winneba.

Name of Supervisor: Madam Comfort Kutum Madah

Signature:

Date:



DEDICATION

This work is dedicated to my Husband, Mr. William Brako Adjepong, for making sure that I never give up on my dreams. With his love, companionship, confidence, discernment, sacrifices, judgment and encouragement.

To my daughters, Nelly Sarpomaa Adjepong and Awurakua Korkor Adjepong, my brothers, Kwame and wife Rose, Kofi and wife Linda and more especially to my late brother, Mr. Eric Agyepong Boateng and family.



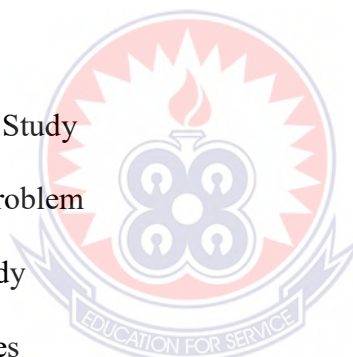
ACKNOWLEDGEMENTS

I am highly indebted to my supervisor, Madam Comfort Kutum Madah of the Department of Home Economics Education, University of Education, Winneba for the love and patience shown towards me from the beginning of this work to a logical conclusion with synergy. Indeed, without her constructive criticism I would not have come this far.

I am also very grateful to Dr. Adelina Effie Arkhurst for her support and encouragement. I wish to acknowledge the following persons for their guidance, support and encouragement during the period of the study: Mr. William Brako Adjepong, Mrs. Ekoa Abedi-Boafo and family, a true friend indeed, Mrs. Jacinta Hinson, Ms. Abena Abokoma Asemanyi, Ms. Esther Nyarko of Suhum Government Hospital, the entire staff of the Child Welfare Department at the Hospital and all lecturers at the Department of Home Economics Education, University of Education, Winneba. Finally, I sincerely express my thanks and appreciation to all and sundry that assisted me in diverse ways to complete this study successfully. May the good Lord reward you tremendously.

TABLE OF CONTENTS

Content	Page
DECLARATION	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Overview	1
1.1 Background to the Study	1
1.2 Statement of the Problem	5
1.3 Purpose of the Study	6
1.4 Research Objectives	6
1.5 Research Questions	6
1.6 Significance of the Study	7
1.7 Delimitation of the Study	7
1.8 Limitations to the Study	7
1.9 Operational Definition of Terms and Abbreviations	7
1.10 Organization of the Study	8
CHAPTER TWO: LITERATURE REVIEW	9
2.0 Introduction	9
2.1 Introspection into Weaning	9



2.2 Weaning Foods	19
2.3 Infant Nutritional Needs	26
2.4 Importance of Balanced Diet during the Weaning Period	30
2.5 Main Meals of the Day	35
2.6 Factors Affecting the Choice of Weaning Foods	37
2.7 Infant Feeding Patterns	43
2.8 Weaning Challenges	47
2.9 Weaning Practices and Composition	55
2.10 Theoretical Framework	62
2.11 Conceptual Framework on Weaning Practices	64
2:12 Summary of Literature Review	65
CHAPTER THREE: RESEARCH METHODOLOGY	66
3.0 Overview	66
3.1 The Study Area	66
3.2 Study Design	67
3.3 Study Population	68
3.4 Sample and Sampling Technique	68
3.5 Instruments for Data Collection	69
3.6 Validity and Reliability of Research Instruments	71
3.7 Data Collection Procedure	72
3.8 Data Analysis Procedure	73
3.9 Ethical Considerations	73



CHAPTER FOUR: RESULTS AND DISCUSSION	75
4.0 Overview	75
4.1 Demographic Characteristics of Mothers	75
4.2 Research Question One	80
4.3 Research Question Two	87
4.4 Research Question Three	88



4.5 Research Question Four	90
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTION FOR FUTURE RESEARCH	92
5.0 Overview	92
5.1 Summary of findings	92
5.2 Conclusions	94
5.4 Recommendations	95
5.4.1 Suggestions for Future Research	95
REFERENCES	96
APPENDICES	107



LIST OF TABLES

Table	Page
1: Age of Respondents	75
2: Level of Education of Respondents	76
3: Occupation of respondents	77
4: Ethnic Background of respondents	77

5: Ethnic Groups in Suhum	78
5: Religious Affiliation of Respondents	78
6: Marital Status	79
7: Number of Children of Respondents	79
8: Age of Respondents' Babies	80
9: First Baby Food introduced	80
10: Age of given First Baby Food	81
11: Food Given To Child at Mealtimes (Breakfast) – 6 to 24months	82
12: Lunch Given to Infants – 6 to 24month	83
13: Supper Given to Infants-6 to 24 months	83
14: Iron Rich Foods Eaten Infants	84
15: Snack between Meals for Infants	85
16: Food Served as Snack for Infants	85
17: Consumption of Foods by Infants	86
19: Number of Feeding Times in a Day for Infants	88
20: Feeding Interval for Infants	89
21: Feeding On Demand by mothers	89
23: Challenges during the Weaning Period of Infants	90

LIST OF FIGURES

Figure	Page
1 Arthur's Own Construct.	64



ABSTRACT

The purpose of the study was to investigate Child Weaning Practices among Nursing Mothers in Suhum Municipality in the Eastern Region of Ghana. In line with the aim of the study, the objectives were to find out weaning foods mothers in Suhum give to their infants after 6 - 24 months, identify factors that influence the choice of weaning foods in Suhum, find out how mothers feed their infants with weaning foods and to find out mothers challenges during the weaning period, using the descriptive research design. Purposive and convenience sampling techniques were used to sample a total of sixty nine (69) respondents. Structured interview guide data gathering tools was used to document the findings. The instrument was pilot tested at the Kibi Government hospital in the Eastern Region of Ghana. The instrument was validated by two of my colleagues and my supervisor. After that it was pretested using five mothers, the Cronbach alpha yielded 0.732, showing reliability of the instrument. The

Statistical Package for Social Science (SPSS) version 20 was used for the analysis. Statistics included mean, frequencies, percentages and standard deviations. Based on the research questions, the frequency tables were used to make summaries of respondents' responses and for drawing conclusions. The study revealed that weaning foods mothers in Suhum give to their infants are locally prepared dishes that the whole family eats. During feeding, these foods are mashed with fingers before given to them. It was also discovered that the factors that influence mothers' choice are availability and acceptability of food. Some challenges were that infants refuse to eat, cry, vomit, experience diarrhoea, and sometimes allergy. It was recommended that mothers should prepare weaning foods separately to meet the standard of infants and feed them 5 – 6 times in a day, also select weaning foods based on acceptability of the child.



CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter discusses the background to the study, statement of the problem as well as the purpose and objectives of the study. In addition, it deals with research questions for the study, the significance of the study, limitations of the study, delimitation of the study, operational definitions of terms and organisation of the study.

1.1 Background to the Study

Growth of all infants from the age of 6 months onwards depends largely upon the provision of additional materials supplied through infant foods in order to help them grow into healthy and active adults. Infants need to be fed on a diet that provides all the nutrients and energy required for normal growth; vitamins and minerals to alleviate their hidden hunger and keep them strong. Weaning performs a foremost function in determining the nutritional status of a child (Vyas, Jaynti, Sandhya & Vipul 2014). The first few years of a child's life is very significant in the laying of a foundation for good health. To achieve this, good nutrition is very vital at the early stages of life. A new born baby depends mainly on milk from human breast and infant milk formula for survival. It is the simplest, healthiest and least expensive feeding methods that meet the infants' nutritional needs. Research has established the fact that, Breast milk is the natural and original first food for babies, it provides all the nutrients that the infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year, and up to one-third during the second year of life (Danso, 2014).

However, at around 6 months of age, solid foods are needed to provide extra energy and nutrients for the baby (Women's Hospital, Australia, 2012). Poor infant feeding and faulty weaning practices and their consequences including malnutrition of their children are one of the World's major public health problems (Lal, 2015). Hence, World Health Organization (WHO), the United Nations International Children Education Fund (UNICEF) and the Ministry of Health (MoH) (2010). Ghana recommends exclusive breastfeeding for the first six months of the infant's life. After six months of exclusive breast feeding, appropriate weaning is an important factor in preventing many health and development problems in babies, children and throughout life such as obesity, faltering growth and stunting, iron deficiency, specific nutrient deficiencies, dental caries and developmental delay which is characterized by improper weaning practices. According to Kambli (2014), improper weaning will increase the mortality and morbidity rate of infants. In view of this, proper weaning foods should be introduced at around this time to fill the gap between the nutrient needs provided by milk and those foods that infants require to maintain normal growth and development.

Children are precious resources to every nation; therefore, neglecting them would be a great disadvantage to the nation's future. The investment in child health is a direct entry point to the social development, productivity and better quality of life. It is necessary to reduce causal factors of malnutrition for the improvement of the health status of children.

Childhood mortality is a very tragic phenomenon of the world. It is still high in most developing countries. According to Mohammed (2014), poor quality of weaning foods and improper weaning practices predispose infants to malnutrition, growth retardation, infection, diseases and high mortality rate.

As a result, United Nations (UN) set Millennium Development Goals (MDG) to reduce the childhood mortality by two-thirds by 2015. Unfortunately, the Director in-charge of Family Health Division of Ghana Health Service (GHS), revealed at Sunyani during a review of the 2015 annual performance that the MDG target which was to reduce under-5 mortalities to 40 per 1,000 live births and reduce maternal mortality to 185 per 100,000 live births did not materialize before the close of 2015. According to United Nations International Children's Emergency Fund (UNICEF) (2011), each year, under-nutrition contributes to the deaths of about 5.6 million children under- 5 in the developing world. UNICEF (2011), reports that, in the least developed countries, 42% of children are stunted and 36% are underweight as a result of poor nutrition or under nutrition. This was confirmed by a nutrition specialist with UNICEF Ghana, when she indicated that, the problem of malnutrition was a serious one for which a clear policy direction and a national action plan and strategy were needed to deal with it.

Research conducted over the years have shown that, by six months of age, iron stores from birth are diminishing and it is therefore appropriate to begin food containing iron in addition to breast milk up to two years. Besides, towards the end of the first year of life, breast milk no longer supplies enough protein for the infant, therefore an additional source such as meat, fish, egg yolk, soya beans must be provided in the infant diet. Also in the light of available scientific evidence, by the age of 6 months the kidneys have developed sufficient maturity to handle the additional osmolar load provided by solid food. Ingestion of solids also requires developmental readiness. For most infants the extrusion reflex has disappeared by age 6 months, and there is sufficient muscle control to transfer foods from the front of the tongue to the back.

It is transitional to change from liquid to solid diet, the feeding behaviour changes from sucking to biting and chewing. Each weaning phase is age-specific and aims to achieve several nutritional and developmental milestones. The overall aim of the weaning process is to gradually accustom the infant to a range of foods, flavours and consistencies and meet their nutritional requirement commencing with thin purees, to a diet based around family foods and meals. To achieve these, mothers and caregivers should provide variety in the infant diet.

Available literature reveals that, malnutrition rises sharply during the period from six months to 24 months of age in most countries. At the age of six months, most infants show signs that they are ready to start other foods. They may have one or two teeth and begin chewing. Even though they are getting plenty of breast milk, they seem extremely hungry and reach out for the food their mothers are eating. If a mother does not start giving weaning foods at this stage, the child may stop gaining weight at a healthy rate and become underweight.

The deficits acquired at this age are difficult to compensate for later in life. This happens due to the fact that, from six months onward, breast milk alone is no longer sufficient to meet all the nutritional requirements, therefore infants enter a particularly vulnerable period of complementary feeding during which they make a gradual transition to eating family foods (WHO, 2013).

Ashworth (2006) outlined some guidelines in the use of complementary foods. Complementary foods should be clean, safe, and rich in energy, protein, minerals, and vitamins, easy to prepare, locally available, affordable, easy and enjoyable for the child, spoon fed and not bottle fed, used within two hours of preparation if not in a refrigerator. WHO (2010) advised that a baby should be fed with cup/plate and spoon. Feeding bottles and pacifiers should not be used. The

consistency and adequacy of the complementary or weaning food during the stages of weaning and the style of feeding throughout the stages are also very paramount to the growth and development of the infant.

In this regard, mother's proper knowledge on weaning practices plays a vital role in enhancing the health status of children especially from 6 - 24 months old. It is against this background that the study was conducted.

1.2 Statement of the Problem

One of the most critical factors for children's health and development is their nutritional status which depends on intake of food. The choice of food for infant should be nutritionally adequate to provide all the nutrients the infant needs to grow well. Hence children who are undernourished are less able to fight off infections and more likely to die young. At birth, breast milk provides the nutritional needs of infants until they are 6 months old. From the literature after 6 months, breast milk alone does not provide all the nutrients that a growing baby needs, and infants are also mature enough to be introduced to family foods. Therefore, parents and caregivers should be ready to gradually introduce varieties of semi- solid or solid foods from all the food groups to babies under strict hygienic conditions. Proper weaning practices provide the child a nutritional balance and a hygienic environment for proper growth and development. However, it has been observed that most nursing mothers at the Suhum Municipality have difficulties with choosing, preparing and feeding their infants with weaning foods. Yet what factors account for these difficulties have been inadequately researched. It is therefore expected that a study carried out in a heterogeneous community like Suhum would give insights into the weaning practices of mothers with infants from 6 - 24 months.

1.3 Purpose of the Study

The purpose of the study was to investigate the weaning practices among nursing mothers with in Suhum Municipality.

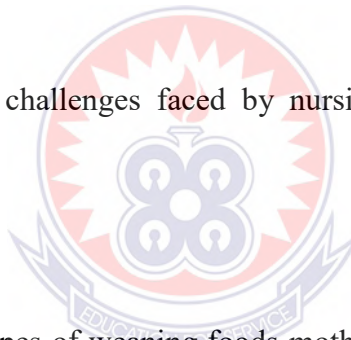
1.4 Research Objectives

The study was guided by the following objectives. This study sought to:

1. find out the type of weaning food mothers in Suhum give to their infants from 6 - 24 months.
2. Identify factors that influence the choice of weaning foods given by nursing mothers to their infants in Suhum.
3. find out how often nursing mothers in Suhum feed their babies with weaning foods.
4. investigate the challenges faced by nursing mothers during the weaning period.

1.5 Research Questions

1. What are the types of weaning foods mothers in Suhum give to their infant from 6-24 months?
2. What factors influence the choice of weaning food given by nursing mothers in Suhum?
3. How often do nursing mothers in Suhum feed their babies with weaning foods?
4. What are the challenges faced by nursing mothers during the weaning period?



1.6 Significance of the Study

This study will serve as a literature for reference to nursing mothers who are weaning their infants and Ghana Health Service to have a fair idea of weaning practices in Suhum when the material is published and utilized. Fellow researchers will also fall on it as reference for literature review. It is therefore hoped that the results of this study will add to existing knowledge on appropriate weaning practices in our communities.

1.7 Delimitation of the Study

This study was delimited to mothers with infants 6-24months old attending post-natal clinic at the Suhum Government Hospital.

1.8 Limitations to the Study

The researcher encountered the challenge of having to convince respondents that the information they give would not be used against them at the hospital since they were being educated on every visit on how best they can feed their infants. Interviewing respondents who had come for post-natal care and were in a hurry to go and at same time attending to a crying baby was very tedious and time consuming; hence a lot of time was spent in collecting the data.

1.9 Operational Definition of Terms and Abbreviations

The following terms are defined in the study to help readers better understand what they read.

Weaning is the process of gradually introducing family foods to the child.

Weaning foods are foods that are given to the child after six months of exclusive breast feeding.

Exclusive breastfeeding is feeding a baby with breast milk alone not even water till

the baby is 6 months old.

Commercial weaning foods: They are convenience weaning foods sold in shops.

Home -made weaning foods: They are weaning foods prepared and cooked at home.

Infant: A child between the ages of 0-2 years.

1.10 Organization of the Study

The study consists of five chapters. Chapter one deals with the introduction, the background to the study, the statement of the problem, purpose of the study, research objectives and questions, significance of the study, limitation, delimitation and organization of the study.

In the chapter two, literature relating to the topic under study is reviewed accordingly. The review is mainly focused on weaning, weaning foods, factors that determine the choice of weaning foods, how weaning foods are fed and the challenges during the weaning period.

Chapter three presents the methodology for data collection including; the research design, study population, sample size and sampling techniques, instrumentation, data collection and the statistical tool for data analysis. In chapter four, data collected are presented and discussed using. Chapter five presents the summary of the findings, conclusions drawn on the findings, recommendations and areas for future research are suggested.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter of the research work deals with the reviewing of relevant literature, thus, various articles, journals, published books. For the sake of easy reference and better understanding, literature is reviewed under the following headings with the relevant sub-headings: Introspection into weaning, practices and approaches to weaning, infant nutritional needs. Other areas looked at are; Food Choices, Factors Affecting Food Choices, Infant Feeding, Challenges of Weaning, Theoretical framework and Conceptual framework.

2.1 Introspection into Weaning

The term “wean” comes from an ancient phrase that means “accustom to”. To accustom an infant to a diet containing foods rather than just milk (Bredbenner, C., Abbot, J, M., & Cussler, E, 2009). Kambli (2014) added that, child weaning refers to the period during which an infant gradually becomes accustomed to food other than milk. Weaning means addition or introduction of semi-solid foods along with continuation of breast feeding. The term ‘Weaning’ describes the process by which baby moves or shifts from having breast milk to consuming semi-solid or solid foods with a gradual reduction in the intake of breast milk and or baby formula

The British Dietetic Association (2013) in their policy statement also explains weaning as the process of expanding the diet to include foods and drinks other than breast milk or infant formula.

Infant and young child feeding is critical for child health and survival. Based on well-established evidence, the World Health Organization (WHO, 2013) and the United Nations Children’s Fund (UNICEF, 2016) recommend that mothers put

newborns to the breast within one hour of birth, breastfeed infants exclusively for the first six months and continue to breastfeed for two years and beyond.

The WHO/UNICEF defined breastfeeding as child receiving breast milk direct from the breast or expressed. Likewise exclusive breastfeeding means the infant has received only breast milk from the mother or a wet nurse, or expressed breast milk, and no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines. Exclusive breastfeeding is encouraged and recommended to all mothers worldwide with efforts being made both in the private and public sector as a way of achieving the Millennium

Development Goal (MDG) on improving maternal health. These efforts are also directed at reducing infant morbidity and mortality related to mixed-feeding as breast milk is very vital for the newly born babies. According to UNICEF (2010), exclusive breastfeeding is giving baby breast milk only and nothing else, not even sips of water except for medicines prescribed by the doctor or nurse for the first six months of life.

Breast milk is the natural and original first food for babies, it provides all the nutrients that the infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year, and up to one-third during the second year of life. Danso (2014).

Types of Breastfeeding

There are a number of ways in which an infant can receive breast milk, either directly from the mother or from another woman. The following are some types of breastfeeding.

Exclusive breastfeeding - This is defined as "an infant's consumption of human milk with no supplementation of any type (no water, no juice, no non-human milk and no foods) except for vitamins, minerals and medications.

Mixed feeding - Predominant or mixed breastfeeding means feeding breast milk along with infant formula, baby food and even water, depending on the child's age.

Expressed milk – A mother can "express" (produce) her milk for storage and later use. Expression occurs with massage or a breast pump. It can be stored in freezer storage bags, containers made specifically for breast milk, a supplemental nursing system, or a bottle ready for use. Using someone other than the mother/wet nurse to deliver the bottle maintains the baby's association of nursing with the mother/wet nurse. According to Breastmilkguidelines.com, breast milk can be stored in room temperature for 4 -6 hours, in the refrigerator for 3-8 days and in a freezer for 12 months (www.breastmilkGuidelines.com).

Wet nurse - When more than one woman breastfeeds a child. In the absence of the mother, these women can also breastfeed the baby.

Tandem nursing - Feeding two children at the same time who are not twins or multiples is called tandem nursing.

Induced lactation - Induced lactation, also called adoptive lactation, is the process of starting breastfeeding in a woman who did not give birth. This usually requires the adoptive mother to take hormones and other drugs to stimulate breast development and promote milk production.

Re-lactation- Re-lactation is the process of restarting breastfeeding after a break for some days, weeks or months. This normally happens when circumstances are beyond the mother's control.

Extended breastfeeding- Extended breastfeeding means breastfeeding after the age of 12 or 24 months.

Process of Breast Milk Production

The hormonal endocrine control system drives milk production during pregnancy and the first few days after the birth. From the twenty-fourth week of pregnancy (the second and third trimesters), a woman's body produces hormones that stimulate the growth of the breast's milk duct system. Progesterone influences the growth in size of alveoli and lobes; high levels of progesterone, estrogen, prolactin and other hormones inhibit lactation before birth; hormone levels drop after birth, triggering milk production. After birth, the hormone oxytocin contracts the smooth muscle layer of cells surrounding the alveoli to squeeze milk into the duct system. Oxytocin is also necessary for the milk ejection reflex, or let-down to occur. Let down occurs in response to the baby's suckling, though it also may be a conditioned response, for example, to the cry of the baby.

Lactation can also be induced by a combination of physical and psychological stimulation, by drugs or by a combination of these methods. It must be noted that the size of a woman's breast does not have any effect on the production of milk in the breast. The size of the breast is based upon the amount of fatty tissues that is contained within them.

Properties of Breast Milk

Breast milk is made from nutrients in the mother's bloodstream and bodily stores. Breast milk has an optimal balance of fat, sugar, water, and protein that is needed for a baby's growth and development. Breastfeeding triggers biochemical reactions which allows for the enzymes, hormones, growth factors and immunologic substances to effectively defend against infectious diseases for the infant. The breast milk also has

long-chain polyunsaturated fatty acids which help with normal retinal and neural development.

Composition of Breast Milk

There are different types of breast milk depending on the stage of lactation. Breast milk is constantly changing, even throughout a single feed. An infant can have varying degrees of appetite and thirst, and so breast milk can also vary to meet the infant's individual nutrition and fluid requirements. Breast milk composition can vary depending on the time of day and also significantly between mothers. Due to this variability, the nutritional content of breast milk is typically provided as average values of nutrients in mature breast milk.

The Different Stages of Lactation

Colostrums

Colostrums is the yellowish, sticky secretion produced during the first few days (1-7 days) after birth and differs from both transitional and mature milk. It contains a higher amount of protein, less fat and a number of immunizing factors for the newborn.

Transitional Milk

It is the transition from colostrum to mature milk, where lactation is established and production of milk begins in the breast tissue. Transitional milk is produced from approximately day 8 – 20.

Mature Milk

Mature milk is produced from 20 days after birth onwards. It can vary in and between individuals and the energy can vary between 270 and 315 kJ per 100mL. This is largely due to the variation in the fat content, as the fat of the milk received by the

infant increases as the feed progresses. Mature milk continues to provide immune factors and other important non-nutritional components to the infant.

Research has established the fact that, human milk is the most appropriate of all available milk for the human infants due to the superiority of breast milk to other kinds of milk; it is also uniquely adapted to the infant's needs.

However, at around 6 months of age, solid foods are needed to provide extra energy and nutrients for your baby (Women's and Children's Hospital, Australia, 2012). The introduction to solid feeding and the gradual replacement by solid food as the main source of nutrients is the process known as weaning (Tarrant, Fong Lee, Wong, Sham, & Dodgson, 2010).

The introduction to solid feeding and the gradual replacement by solid food as the main source of nutrients is the process known as weaning (Tarrant *et al.*, 2010).

Others like Cooke, McCrann and Higgins (2013) also expanded weaning to mean the transitional process from exclusive milk feeding to the consumption of family foods. This is an area characterized by strongly held beliefs, and guaranteed to inspire heated debate amongst parents and health professionals alike. The timing, the type and the quantity of foods offered and the extent to which an infant should be in control of their own intake are all hot topics currently.

It is essential to provide for the increasing nutritional requirement during an infant's first year. The World Health Organization (WHO) and the Department of Health and Children in Ireland recommend exclusive breastfeeding during the first six months postpartum (Tarrant *et al.*, 2010). It is important that weaning is not delayed much beyond six months. This is because stores of essential nutrients such as iron need to be replenished after six months. A baby's increased requirements of these nutrients cannot be provided by milk alone. Also, delays in the introduction of new

flavours and textures at this stage may make it more difficult for your baby to accept new foods (British Nutrition Foundation, 2015).

Weaning an infant from breast feeding to complementary food is a common cultural practice which plays vital role in the child's milestone for growth and development. The right practice of weaning is necessary to prevent infants from various health related complications like allergy, diarrhoea and choking (Cameron, Heath, & Taylor, 2012) furthermore delayed weaning may result in nutritional deficiency, protein energy malnutrition, childhood illness.

Meaningfully, weaning food is intended to bridge the wide gap between an infant breast feeding and an 'adult' family feeding (Nout, 2013). During the weaning period, the young child's diet changes from milk alone to another, based on the regular family meals (Hofvander, 2013). So weaning period is ultimately defined as the whole period during which breast milk is being replaced by other foods and it usually starts when the infant is 4-6 months old and is extended to the age of 2 to 3 years (Annon, 2010). Additionally, mothers hold the overall responsibilities for the child's health and mothers' knowledge can be the barrier for weaning practice (Dandeker, Shafee, & Kumar, 2014).

Once the infant is about five to six months of age, their teeth begin to erupt and feeding behavior changes from sucking to biting and chewing. In the full-term infant, the swallowing reflex is fully developed by 9 –12 weeks of age. Before this age, bolus formation, required for controlling swallowing, may not be achieved. Until an infant is four to six months of age they may not have sufficient co-ordination of their swallowing movements to deal with semi-solid foods (Barness 1990). While some digestive enzymes are fully developed at birth, pancreatic amylase levels are low before six months of age (Lebenthal, 1985).

Weaning is a progressive process, conducted in stages. It is widely advocated that weaning is commenced from approximately the age of 6 months (approximately 24 weeks) [World Health Organization (WHO) 54th World Health Assembly, 2001] or between 17 and 26 weeks (ESPGHAN, 2008, cited in Agostoni, Decsi, Fewtrell, Goulet, Kolacek, Koletzko, & Shamir, 2008) to enable infants to meet their energy and nutrient requirements and to facilitate the transition to solid foods. By this age, infants are developmentally able to accept and swallow solid foods; sit with support with adequate head control; use hand–eye coordination to pick up food and put it into their mouth; and they have a mature digestive system able to process food other than milk (Department of Health, 1994). Although some foods may be initially refused, such preferences can be overcome by early repeated exposure (Schwartz, Issanchou, & Nicklaus, 2009). It has been shown that infants fed on formulas with a bitter taste (i.e. infant formulas based on hydrolyzed protein) from birth, eat more savoury, bitter and sour-tasting foods after weaning than those given sweeter tasting milk-based formulas or breast milk (Mennella, & Ventura, 2011).

Weaning is a complex process and research is lacking about the overall significance of all the individual and contextual factors that facilitate or impede successful weaning (Birch., McPhee, Steinberg & Sullivan, 1990).

It requires competent parenting skills and for many months infants may be partly fed by their main care-giver and partly fed by themselves and the extent of each is variable from meal to meal (Young & Drewett, 2010). There is rarely a ‘one size fits all’ resolution to all weaning issues and so it is understandable that many inexperienced parents require more information about child-rearing processes (Douglas & Bryon, 2012; Young *et al.*, 2010). Therefore, all new care-givers need support and practical advice to guide them through this challenging stage of feeding

The introduction of solid food to an infant's diet should take place at about 6 months of age. The time to introduce solid foods is important - not before 17 weeks and not after 26 weeks (for both breastfed and formula-fed babies). This timeframe is recommended by health experts as before 17 weeks, a baby's kidneys and digestive system are immature and may not be able to handle food and drinks other than milk. Delaying the introduction of solid foods beyond 26 weeks is not recommended because babies that are 26 weeks old need solid food to meet all their energy and nutrient requirements and the baby is now ready to develop important skills for eating a mixed diet. Babies who are breastfed can continue to be breastfed while they are starting family foods and up to 2 years of age and beyond. There is no need to move from breastmilk to formula milk when introducing solid food.

Other important advice for parents who are introducing their babies to solid foods is to: always stay with your baby when he / she is eating to make sure he/she does not choke.

- Never add any foods to your baby's bottle (this includes rusks) as this can cause choking and can damage teeth.
- Avoid foods and drinks high in fat, salt or sugar as they encourage unhealthy food preferences which persist through life
- From six months, babies should be introduced to drinking from a cup or beaker. Tap water can be offered to your baby in a cup at meal and snack times. Cow's milk (full fat) can be offered as a drink from one year onwards
- Use foods that you would normally eat as a family - there is no need to go out and buy special weaning foods, however be mindful of the salt content when making family meals especially when adding stock or gravy granules to dishes.

- While commercial baby foods can be convenient for when you are out and about, these should be the exception and not every day.
 - Allow plenty of time for feeding, particularly at first. Until now your baby has only known food that comes in a continuous flow from a nipple or teat. Your baby needs to learn to move solid food from the front of the tongue to the back in order to swallow it. The food tastes and feels different – it's bound to take time so don't be surprised if baby initially spits the food out or appears to dislike it. It will take time for baby to become used to new tastes and textures.
 - Encourage babies to be involved at mealtimes, eat a variety of foods, hold finger foods and spoons and encourage them to try and feed themselves.
 - Avoid distractions at mealtimes such as televisions, phones or tablets.
- Mealtimes are an ideal opportunity to interact with baby. (WHO,2001)

Advice for Parents and Caregivers on Introducing Solid Foods to Babies

- Commercial baby foods are baby foods sold in jars and pouches. Try not to rely on these foods every day as they are more expensive and less nutritious than preparing food at home. Check the sugar and salt content as this may be high.
- Try to offer your baby the same foods as the rest of the family, provided it's suitable for their stage but leave out added gravies, sauces, sugar or salt. This way, you know exactly what your baby is eating.
- Many ready-made baby foods have a similar flavour base so taste the same to your baby. If you are using these foods, it's a good idea to add in some of your own homemade food to make the taste, texture and appearance more interesting – this helps your baby get used to different flavours and textures.

- Supermarket - bought baby foods often come in pouches. Sucking food from a pouch does not teach the same eating skills as eating from a spoon or with your fingers. If your baby sucks food from a pouch they will not get the aroma or know the colour or shape of the food.
- If you are offering a food pouch it is important to put the food into a bowl and feed it from a spoon to your baby.
- Allow your baby to get used to having food on their hands and around their mouth. (WHO, 2001).

2.2 Weaning Foods

The American Academy of Paediatrics (2012), after a careful consideration of all the factors involved, recommends that the optimal time for introducing solid foods into the infant's diet is 6 months of age.

During the first feeding, many parents find it beneficial to offer semi-solid foods after breast or formula feeding, when the infant may be more likely to experiment with new foods. The sequence of new foods is not critical, but iron-fortified rice cereal mixed with breast milk or formula is a good first choice. In the beginning, it may be best to introduce single-ingredient foods one at a time at weekly intervals. This process helps identify any food sensitivities the child might have. Gradually add vegetables, fruits, and meats to the infant's diet one at a time. Serving mixed foods is not recommended in the beginning. A very good first food to give a baby, along with breast milk, is a soft, thick, creamy porridge, from the staple food of the community. Every community has a main staple food. It is often the first food that people think of when asked about their diet. The staple food contains starch, and it is eaten by most of the people in the community at most meal. It is usually less expensive than other types of food. The staple varies from country to country. It may be rice, wheat maize, cassava

yam, potato etc. In rural areas, families will probably spend a lot of their time growing and storing and cooking the staple food. The staple is an excellent base for preparing babies' first weaning foods because it is usually cheaper than other types of food, is easily available, and provides most of the carbohydrates (starch) and often other nutrients needed for growth. A soft, thick, creamy porridge can be made from any staple food, and can be given to the baby along with breast milk (WHO, 2000).

The semi-solid foods given to the child at this stage are generally called weaning foods. Weaning foods are adult foods, modified by processing the ingredients to make them easily digestible by the infant (Sajilata, Rekha & Pushpa, 2002). They further stated the characteristics needed in a weaning food as follows;

- The food should be rich in calories and adequate in good-quality protein, vitamins, and minerals.
- The food, when stirred with cold or warm water or milk, should form a slurry or semi-solid mass of soft consistency, enabling the child to swallow it easily.
- The prepared food should have low dietary bulk.
- The food should be precooked or processed in such a way that it needs minimum preparation prior to feeding and is easily digested by the child.
- The food should be free from antinutritional factors and low in indigestible fibre content.
- It is advisable not to add artificial colours and flavours to weaning foods

Other important advice for parents who are introducing their babies to solid foods is to:

- Always stay with your baby when he/she is eating to make sure he/she doesn't choke.

- Never add any foods to your baby's bottle (this includes rusks) as this can cause choking and can damage teeth.
- Avoid foods and drinks high in fat, salt or sugar as they encourage unhealthy food preferences which persist through life
- From six months, babies should be introduced to drinking from a cup or beaker. Tap water can be offered to your baby in a cup at meal and snack times. Cow's milk (full fat) can be offered as a drink from one year onwards
- Use foods that you would normally eat as a family - there is no need to go out and buy special weaning foods, however be mindful of the salt content when making family meals especially when adding stock or gravy granules to dishes.
- While commercial baby foods can be convenient for when you are out and about, these should be the exception and not every day.
- Allow plenty of time for feeding, particularly at first. Until now your baby has only known food that comes in a continuous flow from a nipple or teat. Your baby needs to learn to move solid food from the front of the tongue to the back in order to swallow it. The food tastes and feels different – it's bound to take time so don't be surprised if baby initially spits the food out or appears to dislike it. It will take time for baby to become used to new tastes and textures.
- Encourage babies to be involved at mealtimes, eat a variety of foods, hold finger foods and spoons and encourage them to try and feed themselves.
- Avoid distractions at mealtimes such as televisions, phones or tablets. Mealtimes are an ideal opportunity to interact with baby.

Advice for Parents on Introducing Solid Foods to Babies

- Commercial baby foods are baby foods sold in jars and pouches. Try not to rely on these foods every day as they are more expensive and less nutritious than preparing food at home. Check the sugar and salt content as this may be high.
- Try to offer your baby the same foods as the rest of the family, provided it's suitable for their stage but leave out added gravies, sauces, sugar or salt. This way, you know exactly what your baby is eating.
- Many ready-made baby foods have a similar flavour base so taste the same to your baby. If you are using these foods, it's a good idea to add in some of your own homemade food to make the taste, texture and appearance more interesting – this helps your baby get used to different flavours and textures.
- Supermarket-bought baby foods often come in pouches. Sucking food from a pouch does not teach the same eating skills as eating from a spoon or with your fingers. If your baby sucks food from a pouch they will not get the aroma or know the colour or shape of the food.
- If you are offering a food pouch it is important to put the food into a bowl and feed it from a spoon to your baby.
- Allow your baby to get used to having food on their hands and around their mouth.
- If you do use commercial baby foods, choose savoury meals rather than desserts or puddings, as deserts and puddings can be high in sugar. Corn snack /vegetable puff finger foods for babies are widely available to buy. These melt in your baby's mouth so they do not have to chew. It is important to offer

textures from a range of different finger foods such as fruit or vegetable, toast, breadsticks, cheese, cooked pasta so that your baby learns how to chew.

The first weaning foods need not be bland in taste in order for infants to accept and enjoy them. Research suggests infants will accept flavours they were exposed to in the womb and in breast milk via the mother's diet (for example, curry and other spices) when they are presented as flavours in complementary foods (Mennella *et al* 2001).

At six months of age, infants can be offered foods with more of a semi-solid texture. The texture of the food should be gradually increased over the next few months. Meats such as beef, lamb, game, poultry, and fish as well as alternatives such as eggs, tofu, and legumes, can be easily and inexpensively prepared at home by cooking until tender and mashing with a fork or mincing finely with a knife or food grinder. Both meat and cereal were shown to have similar acceptability and tolerance when offered to infants as first complementary food (Krebs, Westcott, Butler, Robinson, Bell, & Hambidge, 2006).

Most Ghanaian mothers start weaning by the third month of life. A few mothers, however, start after one month. On the basis of interviews with breastfeeding Ghanaian mothers, Armar-Klemesu and Wheeler reported that the main weaning food for infants up to six months of age was a traditional fermented maize porridge (*koko*). From six months onwards, the infants were given the family diet with complementary breastfeeding. The family foods on which the infants were weaned included dishes made from cereal, starchy tubers, legumes, and vegetables.

The quality of weaning foods use to feed a baby has been found to be very crucial to physical and mental development of that baby. The most rapid growth of the brain occurs from 5 months before birth to 10 months after birth. At the end of the

first year of life, the brain, the first organ to attain full development has achieved 70% of its adult weight (Wardlaw & Insel, 2000). Poorly nourished babies have fewer and smaller brain cells than those well nourished.

Most authors have indicated early and severe malnutrition is an important factor in deficiencies in late mental development apart from social and hereditary influences (Wardlaw & Insel, 2000). There are two forms of weaning foods commercially processed and home prepared (Hofyander, 2013). Both home-made and manufactured baby foods are suitable as weaning foods. The 2008 UK Department of Health (DH) infant feeding survey found that manufactured baby foods were more often used between four and six months. Manufactured baby foods are convenient, have to adhere to strict European compositional regulations including nutritional content and are easier to prepare. However, an infant fed a diet of commercial foods may be reluctant to change later to home-prepared foods.

The nutrient content of home-prepared foods varies considerably and reflects that of the ingredients used. Limited analyses have found the nutrient content very variable, with a tendency for sampled foods to be low in fat, protein and iron. Using home-made foods can introduce more varied tastes and textures and seems to provide an easier transition to family foods. Home-made foods can be cheaper and the parent knows what ingredients are used in the food, but parents and care givers should be cautioned to avoid adding salt and sugar and using adult convenience foods such as gravy mixes, instant potato, soups, sauces and ready meals because of their high salt content. Appropriate advice and support is essential to encourage parents to use suitable family foods.

According to WHO (2010), between 4-6 months of age, the mature suck is refined and munching movements begin. Infant cereal is usually introduced first

because it offers a good source of iron. Thereafter, a variety of commercially or home prepared foods may be offered. To securing maximum food utilization Hofyander (2013) has recommended that an infant must be well trained to chew and eventually accustomed to a new food thus, food must be introduced to the child when he is hungry and the quantities should be increased gradually. Since special foods are rarely available for the children, they have to depend on the same type of foods eaten by adults. In poor countries, these foods are mainly starchy tubers, like cassava and sweet potato, or cereals like maize, rice, wheat, sorghum and millet. Infant are normally given these staple varieties in the form of gruels i.e. boiled water when prepared in this, the starch structure binds large amounts of water, which results in gruels of high viscosity. Such gruels need to be diluted with water in order to give a consistency that is appropriate for children feeding. This dilution, however, decreases the energy and nutrient density of the gruel and the child has to eat large amounts of it to satisfy his basic requirements (Snehalatha *et al.*, 2010).

The nutritional content of weaning foods becomes of increasing importance as infancy progresses. The most pertinent concerns are the nutrient densities of the foods and the bioavailability of essential micronutrients therein. When compiling weaning guidelines, the following recommendations should be particularly considered:

1. Energy density should be greater than that of breast milk and ideally around 4.2 kJ/g.
2. Meat or iron fortified weaning foods should be introduced early to increase iron intake.
3. Meat, pulses, dairy products, wheat, and rice should be included as appropriate to increase zinc intake.
4. Phytate levels should be kept relatively low to enhance mineral absorption.

5. The change from breast milk/formula to cows' milk should be delayed until after 1 year of age.
6. Drinks, other than breast milk, formula, and water, should be discouraged.

Good nutritional practice, incorporating all of the above, would be compatible with guidelines that include the initial use of baby rice mixed with the infant's normal milk, followed by the gradual introduction of vegetables, then fruits, cheese, yoghurt and lean meat, all in pureed form. At 7 - 8 months of age, more texture could increasingly be introduced into all foods, together with soft finger foods and wheat and soy products. After 9 months of age, egg and fish could be offered to the child, but nut products would not be included in the diet until beyond 1 year of age. It is essential that accurate information about appropriate weaning foods and practice is disseminated to prevent infant malnutrition, problems with development, or longer term eating and health problems. (Fleisher, Weaver, & Branca, 2000; Anon, 1994).

Infants can be introduced to new tastes and textures as they transition from baby food to "real" food. Keep in mind that toddlers have very small stomachs. It may be better to feed them 5-6 small meals a day, rather than three large ones. (Samour & King, 2005).

Depending on age, size, and activity level, your toddler needs between 1,000-1,400 calories a day. It is perfectly normal for your child to be ravenous one day and shun food the next. Do not worry if your child's diet is not up to par every day—as long as he or she seems satisfied and is getting a well-rounded diet.

2.3 Infant Nutritional Needs

Good nutrition is essential for the growth and development that occurs during an infant's first year of life. When developing infants are fed the appropriate types and amounts of foods, their health is promoted. Positive and supportive feeding

attitudes and techniques demonstrated by the caregiver help infants develop healthy attitudes toward foods, themselves and others.

During the weaning period semi-solid and then solid foods are introduced, while breast feeding continues (Latham, 2000). The infant may be weaned without fear from breast feeding after only 6 months, unless another pregnancy or illness of the mother occurs. Infancy is characterized by rapid growth and development. Both are determined by genetic and environmental factors. An important environmental factor is nutrition, because an inadequate diet can compromise growth and the full utilization of an individual's genetic potential (Reyes, 2008). Nutrition is important throughout childhood, but especially during the first 2 years of life, as the growth rate during this period is high and less dependent on growth hormones than in later periods of childhood. The rapid rates of growth and development of infants impose unique nutritional needs upon their already high maintenance needs (Heird, 1996). Cowbrough (2010) added that infants have very different nutritional needs from adults. They double their birth weight in the first six months and triple it by the end of the first year and therefore have higher requirements for energy and certain key vitamins and minerals than adults, relative to their size. For proper growth and development, an infant must obtain an adequate amount of essential nutrients by consuming appropriate quantities and types of foods. During infancy, a period of rapid growth, nutrient requirements per pound of body weight are proportionally higher than at any other time in the life cycle.

The quantity and quality of nutrient supply during early life modulates the differentiation of tissues and organs and has short- and long-term consequences for health (Koletzko, 2008). The Dietary Reference Intakes (DRIs), developed by the Institute of Medicine's Food and Nutrition Board, are four nutrient-based reference

values intended for planning and assessing diets. They include the Estimated Average Requirement (EAR), the Recommended Dietary Allowance (RDA), the Adequate Intake (AI), and the Tolerable Upper Intake Level (UL).

Recommendations for feeding infants, from infant formula to complementary foods, are based primarily on the DRIs. The DRIs for infants are based on the nutrient content of foods consumed by healthy infants with normal growth patterns, the nutrient content of breast milk, investigative research and metabolic studies. It is difficult to define precise nutrient requirements applicable to all infants because each infant is unique. Infants differ in the amount of nutrients ingested and stored, body composition, growth rates, and physical activity levels. Also infants with medical problems or special nutritional needs (such as metabolic disorders, chronic diseases, injuries, premature birth, birth defects, other medical conditions, or being on drug therapies) may have different nutritional needs than healthy infants.

The DRIs for vitamins, minerals, and protein are set at levels thought to be high enough to meet the nutrient needs of most healthy infants, while energy allowances, referred to as Estimated Energy Requirement (EER), are based on average requirements for infants (Lucas, & Feucht, 2003). Alnwick, Moses, & Schmidt (1988), classify weaning into first, second and third stages. Children in the first stage of weaning get almost all nutrients from breast milk but start other foods. The first foods given to the baby are called ‘weaning foods’. These foods must be specially prepared and they must be rich in energy, clean and safe, soft and easy to eat, easy for a family to obtain and easy to prepare. In the second stage, the child continues to get the same amount of breast milk and he gets increasing amounts of other foods. The type of food slowly changes from soft weaning foods to the usual family foods. The child in the third stage takes slowly decreasing

amounts of breast milk and eats increasing amount of family foods. A family may eat up to three meals a day, possibly with snacks in between. Weaning age children need something to eat about every two hours when they are awake. The smaller the child the more often he or she needs to be fed. The food the family eats is often filling and bulky. A child of weaning age needs food that is concentrated in energy, Takyi, Kido, Rikimaru, & Kennedy, (1991) suggested that alfalfa could be incorporated into the weaning diet of infants. This legume was found to contain higher levels of protein, minerals, and carotene and could support child growth better than weanimix. Weaning is completed when a child gets all her nutrients from family foods.

Weaning is a dangerous time for infant and young children. In many developing countries, feeding cause nutritional problems. Consequently, it was recommended that a special attention must be paid to the low energy content of many vegetation weaning foods, caused by the low fat and high fibre content as small infants may have difficulty consuming the necessary volume of diet to achieve an adequate energy intake.

For social and economic reasons, the raw materials used in supplementary foods should preferably be purchased from locally available ingredients wherever possible (Hofvander & Underwood, 2010). Ingredients must therefore be locally available from staple cereals or starchy tubers. The protein quantity and quality of the starchy staple can be optimized by adding legumes (Oyeleke, Odedeji, Ishola, & Afolabi, 2015) on the basis of their lysine content, which is deficient in most staples. For environmental purposes soya, cowpeas, pigeon peas, groundnut and kidney beans are invariably suitable

2.4 Importance of Balanced Diet during the Weaning Period

A balanced diet for a baby is very different from ours. Unlike our diets, which ideally should be low in fat and high in fibre, your baby needs a diet relatively high in fat and low in fibre. Although fibre is a good thing, it's very filling and too much of it may leave your baby too full to eat other foods that contain the energy and nutrients they need at this stage.

A baby's nutritional needs change as they grow so at each stage of their development they need the right balance of nutrients and energy to support healthy growth. A baby's stomach is around ten times smaller than an adult's, so it's important that every small spoonful your baby eats is packed full of the right nutrients and goodness. This is also a reason why babies need to eat small portions regularly throughout the day, rather than having a few larger meals.

During the first year of life, an infant's birth weight is doubled by 6 months and tripled by 1 year, with an increase in length of 50% (Thomas & Bishop, 2007), a process that is not repeated at any other phase during the life cycle. This rapid growth rate necessitates adequate nutrition and the correct balance of nutrients to match this increasing growth velocity. Relative to their size, infants have a high requirement for energy and nutrients. For instance at 6- months of age the daily estimated average energy requirement of a 6- month old (95kcal/kg/body weight) can be almost 3- fold daily energy requirement of an adult male (19-49 year: 34kcal/kg/body weight) per kilogram of body weight, while an infant's estimated daily iron requirement (4.5mg/day) is 45% that of the iron requirement of an adult male (18-64 years: 10mg/day). Furthermore, in the term infant (born >37 week gestational age), the total haemoglobin mass doubles during the first year life from 180mg at birth to 340mg at 1 year (Whartson, 1999). To achieve these requirements, careful consideration of the

weaning diet becomes essential.

A child of weaning age has a small stomach, but needs plenty of food for growth and activity. There are two main ways of making sure these children get enough. These are very frequent feeding and using food with a high concentration of nutrients (WHO, 2000).

It is important infants get foods from the main food groups and are eating plenty of fruit, vegetables, carbohydrates, meat, fish, dairy and (cooked) egg. Your goal is to get them enjoying a balanced meal with the rest of the family by the time they are 9 to 12 months old, so you can all enjoy the lovely bonding experience of everyone eating together (www.bounty.com, 2018).

Traditional weaning foods in West Africa are known to be of low nutritive value and are characterized by low protein, low energy density, and high bulk. Maize pap or *koko* has been implicated in the aetiology of protein-energy malnutrition in children during the weaning period. Cereal-based diets have lower nutritional value than animal-based ones. Cereals form the primary basis for most of the traditional weaning foods in West Africa. The protein content of maize and guinea corn is of poor quality, low in lysine and tryptophan. These two amino acids are indispensable to the growth of the young child.

Hofvander (2013) has established that the simplest recipe for weaning food is that which has only 2 ingredients of which one is a cereal or root mixed with legume which is called a basic-mix; however, other foods must be added to make a complete meal. Recipes which are more suitable for the weaning period and for feeding are called multi-mixes which have four basic ingredients firstly is a staple as the main ingredient-preferably a cereal; secondly a protein supplement from a plant or animal food (beans, milk, meats, etc.); thirdly vitamin and mineral supplement

(vegetable and/or fruit) and lastly, an energy supplement fat, oil or sugar to increase the energy concentration of the mix. If energy intakes are low, then protein is used as an energy source and not for growth and tissue repair. With most foods it is not difficult to satisfy human protein requirements even in infancy if energy need is met. This is simply because human beings have very low protein requirements compared with other mammalian species.

An important part of a toddler's diet is calcium (they need about 500 mg/day), and the best source of this nutrient is whole milk. If your kids are lactose intolerant or don't like dairy, incorporate calcium-rich foods like fortified soy products, cereals, and orange juice into their diet.

In infancy, breast-milk has a readily absorbed type of iron, and baby formula and food is usually iron-fortified, so babies don't need to worry about getting enough iron. After switching to "real" food, it's important to ensure that your child is eating good sources of iron like fortified cereals, red meat (like soft meatballs) or eggs (Sagan, & Druyan, 1994).

British Nutrition Foundation (2016) states it clear that, Iron – rich foods should be the first foods you give to your baby. Most healthy full- term babies are born with enough iron in their body to last until they are six months old. At that age, they need iron rich foods. Iron is important for continued healthy growth and brain development. Recommended iron rich food include meat and alternatives (beef, chicken, fish, eggs, kidney beans, lentils) and fortified infant cereals.

Objectively in weaning foods cereal grains can be considered to be protein source, although the percentage of protein is low because of deficiencies in lysine and tryptophan (Bressani, & Elias, 2013). The combined use of cereals and pulses takes advantage of the fact that cereals are relatively deficient in lysine while

pluses have a high lysine content accordingly the protein quality is definitely improved (Hofvander, & Underwood, 2013).

Hofvander (2010) reported that there is no difficulty at all in preparing home-made weaning foods. Such foods can either be specifically prepared for the baby and stored in the freezer of a household refrigerator, or can be made from foods used in meals by the rest of the family. When cooked, cereals absorb different amount of water. Rice and wheat increased about two times in volume and maize flour about six times greater than when raw. These changes in volume must be taken into account because a small child is unable to consume more than about 200-300 ml of solid foods at one time.

Industrial manufacture of cereal "based weaning foods often includes operation intended to reduce the dietary bulk, example enzyme (amylase) treatment, pre-cooking, or extrusion. This process modifies the starch structure and hence results in lower water binding in the gruels. Such sophisticated technologies make rather expensive products even when low-cost alternatives are developed (Orr, 2012). Additionally, commercial weaning foods are priced beyond the reach of the majority of the population in less developed countries. These foods are mostly manufactured using high technology and are sold in sophisticated fancy packaging (Brandtzaeg, Kiyono, Pabst, & Russell, 2008). Low cost processing techniques must be employed, using simple equipment and energy conserving operations. These should include roasting, germination and fermentation. A combination of such operations would therefore be a promising approach to optimize product quality at fairly minimum cost (Nout, 2013).

Different Food Groups and Their Benefits

The different food groups and how often should you give them to your baby has been summarized;

Starchy Foods: these include bread products, cereals (including pasta and rice) and potatoes. These foods provide your baby with the energy they need to grow and develop. Offer your baby a portion with each meal and at some snack times.

Fruit and Vegetables: Foods in this group include fresh, frozen, tinned and dried fruit and vegetable. Fruit and vegetables contain a whole range of vitamins and minerals which are important for your baby's development. Ideally you should offer some at each meal and for snacks, with a variety of different colours.

Milk, Cheese and Yogurt: These foods are rich in protein, calcium and some vitamins and minerals. Milks fortified with vitamin D can help keep your baby's nutrition levels topped up. They will need at least three servings of dairy products a day, either to drink or in cooking as part of the main meal.

Meat, Fish and Alternatives: These include meat, fish, eggs, nuts and pulses such as lentils, kidney beans, chickpeas and dhal. These are a valuable source of protein, iron and omega 3 fats, while oily fish like herring, mackerel and salmon provide vitamin D, as do liver and eggs. These foods may be offered once or twice a day to meat-eaters or two to three times a day to people who are vegetarians.

Foods High in Fat and Sugar – examples of foods high in fat and sugar are oils, butter, cakes and biscuits. Fats and sugar provide lots of energy, which is what your baby needs, but they often contain only small amounts of vitamins and minerals. So these may be included in your baby's diet, but make sure they are given as an extra, and do not use them to replace one of the other food groups.

2.5 Main Meals of the Day

Breakfast

Breakfast is often described as the most important meal of the day, providing as it does sustenance and energy (i.e., calories) for whatever activities lay ahead. As nutritionist Adelle Davis famously put it back in the 1960s: “*Eat breakfast like a king, lunch like a prince and dinner like a pauper*” (Sifferlin, 2013 in Spence, 2017). He further explained that, what we consume first thing in the morning is as much about mental alertness as it is about providing fuel for the body.

The first meal of the day has to be nourishing. It should have ample calories to give your infant a good start for the day. A breakfast recipe for babies should be a healthy mix of taste and nutrition. While there are several breakfast ideas for babies, it can get a bit challenging to make a new breakfast menu every day. Apart from providing us with energy, breakfast foods are good sources of important nutrients such as calcium, iron and B vitamins as well as protein and fibre. The body needs these essential nutrients and research shows that if these are missed at breakfast, they are less likely to be compensated for later in the day. Fruit and vegetables are good sources of vitamins and minerals so try to include a portion of your daily five at breakfast, whether that being a banana or glass of fruit juice (Garoo, 2019).

Lunch

Lunch is an important meal of the day it raises your blood sugar level in the middle of the day, making you be able to focus for the rest of the afternoon. Lunch is a meal eaten in the middle of the day, typically one that is lighter or less formal than an evening meal (Oxford Living Dictionary, 2017).

Lunch is even more important because this is when they get their vitamins and nutrients for the day. If they do not get the supplements their bodies need, their mental

and physical developments could suffer. When children do not eat a healthy lunch, it is harder for them to concentrate at school and to muster the energy for after school activities. They are also more likely to reach for unhealthy snacks later in the afternoon. By offering a healthy school Lunch may have even more importance for school-aged children than it does for adults. Since most kids do not get breakfast or dinner at school and may not have any snacks until they get home, lunch is the only meal they have to power them through the day. According to ChoiceUSA.net, school lunch makes up one third to one half of a child's nutritional intake for an entire day and is essential for helping children succeed in school as well as grow and develop successfully and healthfully.

A child will get the energy he needs to power through the afternoon. A study published in 2008 in the "Journal of School Health" examined the eating habits of nearly 5,000 school children. Children who ate more fruits, vegetables and protein and fewer calories from fat, performed better on literacy tests compared to children with a high-fat, high-salt diet.

Dinner / Supper

Technically, the word "supper" refers to a light evening meal, and "dinner" is a more formal, hearty meal. In colonial days, farmers were too busy to eat three meals a day, so they only had breakfast and dinner, and the wealthy had three meals a day: breakfast, dinner, and supper. Back then, dinner was a hearty meal that one ate in the middle of the day, and supper was a lighter meal that one ate before retiring for the evening.

You should eat dinner approximately four to five hours after eating lunch. If that falls in the 5 p.m. to 6 p.m. window, you hit the last hour of your body's heightened metabolic rate before it starts to slow.

2.6 Factors Affecting the Choice of Weaning Foods

Although food habits are not stable and unchanging during a person's lifetime, a base for healthy food habits can be created in early childhood. Children's food habits can be assumed to be influenced by their parents' food habits and choices. The aim of this article is to review factors influencing food choice in children as well as in adults. The results demonstrate that the development of children's food habits is influenced by a multitude of factors. Parents play an important role in the formation of food habits and preferences of young children. They can influence their children's food choice by making specific foods available, by acting as models for their children and by their behaviour in specific situations. Children tend to be afraid of new foods and do not readily accept them. However, experience is known to enhance preference, and earlier experiences of a particular food are the major determinants of the development of children's food acceptance patterns. Thus, parents should be encouraged to make healthy foods easily available to the child and serve these foods in positive mealtime situations in order to help their child to develop healthy food habit (Hursti, 1999).

Taste Preferences (Acceptability)

One of the most important individual influences on food choice is taste, which also is influenced by the aroma and texture of food. Research has consistently shown that children, adolescents, and adults all report that taste is the most important influence on their food choices (Barr, 1994; French, Story, Hannan, Breitlow, Jeffery, Baxter, & Snyder, 1999).

In the first 2 years of life when learning is constantly taking place food preferences are also forming. Most are learned, but some are innate. A child's food preferences directly affect eating behaviour, which in turn is linked to overall health, wellness, and the formation of obesity.

Taste preferences often are cited as a primary motivator of individuals' food choices (Drewnowski & Levine, 2003; Drewnowski, Henderson, Levine, & Hann, (1999). et al., 1999). While preferences for sweet and salty flavour appear to be innate, other preferences are clearly influenced by early exposure. Evidence reviewed by the committee included both social and environmental factors that can influence taste preferences. A review of research on taste preferences includes evidence that foods eaten by a woman during pregnancy and lactation can influence the infant's early flavor experience (Birch, 1999). It is not clear, however, that such exposure has a lasting impact on the infant's subsequent taste preferences, given the number of social and environmental factors that can influence the development of those preferences during infancy and childhood (Birch, 1999; Devine, & Connors, 1999). .Increasing food variety can also increase food and energy intake and in the short term alter energy balance (Sorensen, Moller & Martens., 2003).

Children tend to be afraid of new foods and do not readily accept them. However, experience is known to enhance preference, and earlier experiences of a particular food are the major determinants of the development of children's food acceptance patterns.

Social Factors

Food deprivation and irregular availability of food during childhood have been found to contribute to the development of poor eating behaviours (e.g., overeating and bingeing and having an emotional attachment to food), as well as to less healthful food choices in general. Olson and colleagues (2007) propose early food deprivation in childhood and associated attitudes and behaviours toward food as a possible mechanism for the association between childhood poverty and adult obesity.

Food choices also are influenced by personal and cultural ideas, constrained by resources and present contexts. Family structure, including single head of household versus married/partnered heads of household, the presence of children, the health of family members, and the roles of each family member in food choices all influence the household's ability to be food secure and have access to a healthy diet (Devine et al., 1999; Evans, Chow, Jennings, Dave, Scoblick, Sterba & Loyo, 2011; Wiig & Smith, 2009). For example, children and other family members may influence the food decisions of the individual(s) procuring and preparing food to the detriment of the bottom-line cost, as well as the nutritional quality of what is purchased. As financial resources and consequent food security decline, low-income populations increasingly focus on price and quantity instead of preference and quality (Dachner, Ricciuto, Kirkpatrick, & Tarasuk, 2010; Wiig & Smith, 2009).

They make use of a variety of family and community resources (Mammen, Bauer, & Richards, 2009). even resorting to strategies such as attending events where food is offered (e.g., church events), selling or pawning items, and eating discarded and out-of-date foods (Kempson, Keenan, Sadani, & Adler, 2003). Specific strategies that impact nutritional quality include giving priority to meat above other foods; limiting fruits and vegetables because of cost and the short shelf life of fresh produce, combined with poorer flavour acceptance of canned varieties; limiting milk because of cost; and consuming more filling starches (Wiig & Smith, 2009) and on their motivation to improve the nutritional quality of their families' diets even though they are constrained by cost and family members' preferences (Evans *et al.*, 2011). Recently, however, Laroche and colleagues (2012) analyzed data from the Coronary Artery Risk Development in Young Adults study to examine whether the percentages of saturated fat and energy intake and the daily intake levels for fruits and vegetables

changed when children were present in the home. This longitudinal study of more than 2,500 adults found no relationship between becoming a parent and changes in the household's eating habits, regardless of employment status.

Employment Status

Work life can influence food choices in several different ways. Qualitative and quantitative research by Devine and colleagues (2003) examining the “spillover” of work into food choices among low- and moderate-wage workers revealed that long hours, inflexible schedules, shift work, and multiple jobs have an impact on the time and energy available for food procurement and preparation. Strategies used by workers for acquiring food under these conditions involved compromises viewed as unsatisfactory for maintaining a healthy diet, such as skipping meals, eating take-out meals, eating away from home, and limiting time to meet family needs and skipping family meals. Those who reported managing well had flexible work schedules, support from others for family responsibilities, and personal resources that included planning and cooking skills. The results of these studies were confirmed in a much larger cross-sectional study of a population of more than 3,700 diverse parents of adolescents participating in Project F-Eat (Bauer, Hearst, Escoto, Berg, & Neumark, 2012).

Full-time working mothers reported spending less time in meal preparation, preparing fewer family meals, and consuming fewer fruits and vegetables. When work-life stress was higher, the outcome was a less healthful food environment overall, exemplified by even fewer family meals and more frequent consumption of fast foods and sugar-sweetened beverages. These effects did not differ between mothers and fathers. O’Connell and Brannen (2014) describe the above statement as a fallacy as they said “The research that is reported in the books debunks five

fallacies. A central fallacy is that employed parents and in particular, mothers' working hours are to blame for deteriorating children's diets because of lack of time, use of convenience foods and failing to create regular meal routines". The study's analysis of the National Diet and Nutrition Survey (NDNS) shows that socio-economic status is more important than mothers' employment. Children whose parents are in higher socio-economic groups have higher nutritional scores and consume more portions of combined fruit and vegetables than children in families in households from lower socio-economic groups.

Cost and Accessibility

There is no doubt that the cost of food is a primary determinant of food choice. Whether cost is prohibitive depends fundamentally on a person's income and socio-economic status. Low-income groups have a greater tendency to consume unbalanced diets and in particular have low intakes of fruit and vegetables (De Almeida, et al, 1997). However, access to more money does not automatically equate to a better quality diet but the range of foods from which one can choose should increase.

Accessibility to shops is another important physical factor influencing food choice, which is dependent on resources such as transport and geographical location. Healthy food tends to be more expensive when available within towns and cities compared to supermarkets on the outskirts (Donkin, Dowler & Stevenson, 2000) However, improving access alone does not increase purchase of additional fruit and vegetables, which are still regarded as prohibitively expensive (Dibsdall, Lambert, Bobbin, & Frewer, 2003). Santiago-Torres (2014) added the home food environment and familial eating habits play a key role in children's diet given that they impart examples of eating habits and influence access to foods at home.

Religion and food

A number of religions have dietary guidelines which might be observed more or less closely. Different denominations within the same religion may have slight differences in food guidelines.

Islam/Halal

Meats should be slaughtered under Halal guidance; pork is not allowed. Generally, foods that are kosher are also accepted under Halal. The major exception is alcohol, which is banned under Halal. For strict observers, this may mean not eating foods cooked with vanilla extract. There are numerous guidelines for fasting, particularly during Ramadan (Hammond, 2012).

Judaism/Kosher

This extremely complex set of guidelines includes restrictions on how meat is slaughtered, which animals/birds/seafood may be eaten (most famously pork and shellfish are not allowed), the part of the animal that can be eaten, who makes certain foods, combinations of foods, avoiding contamination, what can be eaten on religious holidays, and more. Many non-Jewish people prefer foods labeled kosher because they believe them to be cleaner / more strictly prepared.

Hinduism

A lacto vegetarian diet is followed by many Hindus – no meat, poultry or fish, no eggs, but milk products are allowed and encouraged. Beef is prohibited, as the cow is considered sacred. Brahmins may have restrictions on who prepares their food and how it is stored. There are many fasting days and periods in the calendar, with restrictions such as eating only plant foods.

Buddhism

There are no set prescriptions for food restrictions in Buddhism. Under the concept of ahimsa or doing no harm, a lacto-vegetarian diet is followed by many Buddhists. Buddhist monks have additional restrictions such as fasting and not eating solid foods in the afternoon.

Christianity

Christians may belong to Catholicism, Pentecostalism, Charismaticism and protestants. Devout Catholics fast on holy days and periods.

Eastern Orthodox

Practicing orthodox Christians follow a number of fasts. Weekly fasts include abstention from meat, fish, eggs, dairy, and sometimes other foods such as olive oil and alcohol as well. Other fasts are longer and exclude some or all of the foods avoided in the weekly fast (Hammond, 2012).

Seventh-Day Adventist

Seventh-Day Adventists are lacto-ovo-vegetarian – they avoid meat, poultry and fish but eat eggs and milk products. Alcohol is also prohibited.

2.7 Infant Feeding Patterns

A baby feeding pattern is the routine in which an infant chooses to eat. The World Health Organization, the American Academy of Paediatrics, the Centre for Disease Control and the Surgeon General recommend that all babies be breastfed to give them the healthiest start possible. No matter how you choose to feed your baby, breast milk or formula should be the only foods offered to infants for the first six months of life.

Feeding Patterns

It is normal for an infant to eat every 1 to 4 hours. Breast fed babies may eat more frequently because breast milk is more easily digested than formula. Sometimes babies will follow normal feeding patterns, but it is important not to force an infant to eat on a strict schedule. Letting a baby to choose when he or she eats allows for self-regulation and healthy weight gain.

Feeding amount

Many mothers worry their baby is not getting enough to eat. The best way to know your baby is getting enough feed is to count his wet diapers. Babies should have 6 or more wet diapers every day. Your baby should also be gaining weight when you take him to the doctor's office. It is normal for a baby to regain his birth weight in the first two weeks and gain up to an ounce a day for the first four months. Feeding your baby "on-demand" simply means not worrying about the clock. You feed your baby whenever he/she shows you that he/she is hungry. Common ways your baby will show you these include licking his/her lips, sticking out his/her tongue, rooting around, sucking on his/her hands, etc. Feeding your baby on-demand also means that you do not "time" the feedings, but that you allow your baby to feed until he/she is satisfied. Scheduled feedings are when a parent chooses a timed feeding interval based on things like baby's weight or age, and only feeds baby at these intervals, regardless of baby's cues or readiness (Ashley, 2014). When we let babies determine the timing and the length of their own feeds, they are more likely to get what they need: Not too little, and not too much. Interfering in this process by imposing an infant feeding schedule does not help babies develop their own intuitions about food (Tylka, Lumeng & Eneli, 2015). And it may lead to problems.

Starting solids

The American Academy of Paediatrics (1998) suggests starting solid foods between the ages 6 and 12 months. Even when solid foods are introduced, most of the baby's calories should be from breast milk or formula for the first year. No baby should be given whole cow's milk until she is over 1 year old. After 6 months, it is considered safe to give infants baby cereals and strained or blended baby foods. New foods should be introduced one at a time. This allows you to see any allergic response in your baby. Begin with pureed foods and move gradually toward solids.

Guidelines for Feeding a Baby:

1. Start with a spoonful or less of each food. Increase the food gradually to 1-2 spoonful, advancing slowly over several days. The goal for feeding is 1 small jar (4 ounces or a cup) of strained baby food per meal.
2. Always introduce one new "single-ingredient" food at a time. Wait 3-5 days before introducing another new food to assess for possible allergic reactions, such as diarrhoea, vomiting, or a rash. If any reaction occurs, stop feeding the new food and call your paediatrician.
3. There is no evidence on which single-ingredient food to start with. Many people start with infant cereal. If breastfeeding, consider starting with a vegetable, then advance to meat to provide nutrients that are lower in breast milk.
4. If making your own baby food, it is recommended to use pureed peas, pureed corn, and Sweet potatoes. Do not add salt, sugar, or other flavourings. It is recommended to avoid homemade spinach, beets, green beans, squash, and carrots, since they contain nitrates, which can cause anaemia (low blood

count) However, commercially prepared versions have been tested for nitrate content. Fresh foods spoil faster than commercially pre-packaged baby food.

5. Meats and vegetables contain more nutrients per serving than fruits or cereals.
6. Four ounces of 100% pasteurized fruit juice can be started in a Sippy cup once the baby turns 7 months old, with no more than 4 ounces of juice per day. Fruit juice offers no benefit over eating a piece of fruit.
7. When your baby can bring his or her hands and objects to the mouth (typically around 9-12 months), you can slowly decrease mashed/baby foods and offer more finger foods. A child will typically self-feed from 9 to 12 months, and will not use a fork or spoon typically until after 12 months of age. Cut food into small pieces to prevent choking.
8. Limit meal time to 15-20 minutes and reduce distractions such as watching TV.
9. Most infants should eat 3-6 times a day (3 meals and 2-3 snacks).

The caregiver's behaviours and the child's temperament influence the feeding relationship. The parent who allows her infant to determine timing, amount and pacing of a meal helps her infant develop self-regulation and secure attachment. The parent who allows her toddler to explore the environment while providing structure and appropriate limits helps her child develop motor and social skills. The effective parent adjusts and responds appropriately to her child's temperament — the child's emotional reactivity, adaptability and response to change. Temperament can affect how a child approaches and responds to new foods and to a parent's feeding patterns (Liu & Stein, 2013).

Healthy feeding behaviours by infants and toddlers according to (WHO, 2011) are needed for healthy growth as well as social, emotional, and cognitive

development. This is a crucial time period because food preferences, dietary patterns, and the risk of obesity are rapidly developing between birth and 2 years of age. In fact, the strong and consistent relationship between rapid weight gain during infancy and later childhood obesity indicates the importance of identifying factors that can lead to excessive caloric intake and thus accelerated growth during infancy.

Weaning patterns in the country were found to vary widely due to regional differences in food supplies and food habits; several studies on weaning practices and diets in the different parts of the Sudan are reported. A baby's age or weight alone does not determine his or her readiness for solid foods. Each baby develops at a different rate. Babies begin to show their desire for food by opening their mouths and leaning forward, hold their necks steady and sit with support, drawing in their lower lips as a spoon is removed from their mouths and keep food in their mouths and swallow it rather than push it back out on their chins (Blum-Kemelor, 2002).

2.8 Weaning Challenges

Children in West Africa are at high risk of infection during weaning. Malnutrition increases susceptibility to infectious diseases and affects child mortality from diseases such as diarrhoea, whooping cough, and acute respiratory infection. It reduces the capacity of the host to resist the consequences of such infection, making death inevitable for some. As solid foods are introduced, infection with germs that cause diarrhoea or other diseases is more likely to occur. The food is often contaminated because of poor handling, use of dirty water and utensils, and poor storage by rural and poor urban mothers. The story is similar for working mothers, who leave infants in the care of maids who are usually ignorant and inexperienced, and sometimes very unhygienic. Because of its poor nutritional status, the infant can hardly resist these infections. The frequent occurrence of such infections leads to

malnutrition because of increased energy and nutrient requirements coupled with poor absorptive capacity. This in turn affects the nutritional status of the child and further lowers resistance to infection. Researchers have concluded that up to one in 12 children are allergic to certain foods. The figure has been rising for the past 40 years, although no one quite knows why. The most common foods that are likely to cause an allergy are peanuts, milk, eggs, fish and tree nuts like hazelnuts and walnuts. Wheat, soy, sesame and kiwi fruits are also common problem foods.

An allergy happens when your little one's immune system gets confused. Instead of ignoring the proteins contained in certain foods, it triggers a reaction and the body starts producing a chemical called histamine. It is the histamine that produces typical allergy symptoms such as itchy, swollen mouth/tongue/lips/throat, itchy and watery eyes, wheezy breathing, and skin problems like wheals, hives, raised itchy areas and rashes.

Other symptoms may include vomiting, constipation and diarrhoea. If your child is going to have a serious allergy, it is likely to start by the age of one or two. Allergies to eggs and milk may disappear as your little one grows up. But nut and fish allergies tend to stay. If you have a history of allergies in your family, your little one is more likely to have a food allergy. They are also more likely to have other allergic problems like asthma and hay fever. And babies with eczema (especially if it started before three months and is severe) are particularly likely to suffer from food allergies. Different allergies cause different symptoms, but a severe reaction is very rare among the under fives. However, if they are struggling to breathe, call an ambulance immediately. If you suspect your little one has a food allergy - especially if their symptoms come on very soon after eating a particular food, make an

appointment to see your doctor. They may refer you to a specialist who will carry out a skin-prick test with a tiny amount of the suspected allergen.

Your child may also have a blood test or a skin patch test. If your little one has a severe allergy and is at risk of anaphylaxis (a life-threatening sudden allergic reaction), you may be given an Adrenaline Auto-injector Pen (EpiPen is one brand name) which will inject adrenaline into their system quickly to tackle the allergy.

Food intolerances are more common than food allergies. They also produce symptoms such as stomach ache and bowel problems, but the symptoms are not instant. It can be difficult to work out what is causing them and the process may take some time, but make an appointment to see a doctor if you suspect a problem.

Tips for Parents

- Keep a box of treat foods at home that are safe for your little one so they will not miss out when everyone else is having fun food. For parties, make sure they have alternative safe foods
- Always have some spare food in the car in case you are out longer than you thought
- Keep a list of safe and unsafe foods in the house and make sure childminders/nursery and pre-school know about your child's allergy
- Adapt recipes to cut out problem foods.
- Life will be easier if you can cook/bake multiple meals/food at once and freeze extra portions, carefully labelled.
- Get your little one used to the idea of not sharing food with their friends. Encourage them to tell you when they have been given a food they should not eat. Promise them they will not get into trouble for telling you

- Teach them to resist any pressure from their friends to try new foods they are unsure about.

Other symptoms may include vomiting, constipation and diarrhoea. Introducing a research Foley-Nolan (2018) said; the first two years in a child's life is a critical time for growth, development and establishing healthy eating habits for the child and for the whole family. We carried out this research to hear from parents about their experiences of weaning their babies on to solid foods. A worrying factor is the reliance on commercial baby foods rather than confidence in their own home cooking. In the research parents were open about the many challenges that they faced:

- Choosing baby foods to introduce at the weaning stage can be confusing
- Varying opinions and advice from grandparents, family and friends about what to do
- Practical advice needs to be available when the time is right, not in the new born period

Taylor (2018) continued to explain that weaning can be an exciting and sometimes daunting time for parents as they introduce their baby to the world of solid food. Advice is often conflicting with lots of opinions thrown in to the mix, so take your time. It is recommended to breastfeed exclusively for the first six months and then continues with demand-breastfeeding as solid food is introduced.

It is well known fact that there, is a relatively high rate of infection, particularly of diarrhoea diseases during weaning than at any other period in life. This is because the diet changes from clean breast milk, which contains anti-infective factors, to foods, which are often prepared, stored and fed in unhygienic environments (Hofvander, 1983). According to, Smith, Thompson, and Ellwood, (2002). inadequate

feeding practices during the weaning period also causes a high m Children in West Africa are at high risk of infection during weaning.

Malnutrition increases susceptibility to infectious diseases and affects child mortality from diseases such as diarrhoea, whooping cough, and acute respiratory infection. It reduces the capacity of the host to resist the consequences of such infection, making death inevitable for some. As solid foods are introduced, infection with germs that cause diarrhoea or other diseases is more likely to occur. The food is often contaminated because of poor handling, use of dirty water and utensils, and poor storage by rural and poor urban mothers. The story is similar for working mothers, who leave infants in the care of maids who are usually ignorant and inexperienced, and sometimes very unhygienic. Because of its poor nutritional status, the infant can hardly resist these infections. The frequent occurrence of such infections leads to malnutrition because of increased energy and nutrient requirements coupled with poor absorptive capacity. This in turn affects the nutritional status of the child and further lowers resistance to infection.

According to the available statistics from Nigeria, infant mortality is responsible for almost 50% of all deaths in children up to 14 years of age, and under-five mortality accounts for 93% of these deaths, 70% of which are attributed to preventable diseases mortality among infants and young children in Sudan.

From such studies, it has been concluded that the average period of weaning was 3 months (ICN-International Conference on Nutrition, 1993). ICN (1993) mentioned that the diet is based on cereal grain or root crops (sorghum, wheat are the main staple foods, while millet constitutes the main staple in the west and root crops such as cassava, yam and sweet potatoes predominate in the south). Foods and vegetables are considered only as supplements to the regular diet. Those who keep

livestock depend on their products (milk, cat and egg).

Malnutrition is widespread among infants and children particularly of Protein Energy Malnutrition due to the scarcity of protein foods and the prevailing food habits and weaning practice which do not allow for the preparation of special weaning diet for children. The diversity in food production and the various ethnic groups in the different regions of the country, each having their own food habits and tradition have ultimately resulted in the consumption of varied type of diet.

Many issues need to be addressed to solve the problems of weaning foods in West Africa. These include improving the quality of traditional weaning foods, ensuring household food security, providing nutrition education, and improving the income-generating activities of women.

Armar-Klimesu and Wheeler (1992) studied feeding practices and nutritional status of breast fed infants and young children in the Upper East region of Ghana in order to gain an insight into factors affecting nutritional status. More than half the mothers gave water as the first food to their infants, after delivery. Only 40% gave breast milk About 20% of the mothers started supplementation before 3 months but by the sixth month, the proportion increased to 72%. In most cases (70%) porridge, mainly from millet, was the food given. The majority of children aged 6 months were found to be well nourished. However, about 20% were mild to moderately malnourished and 5% were severely malnourished. Only a third of the children aged more than 6 months were well nourished. Nutritional status of the children appeared to deteriorate as they grew older, there was no indication that this was related to the age at which supplementation was initiated.

Armar-Klimesu and Wheeler (2011) reviewed the background to the current recommendations for the initiation of weaning on the basis that factors such as

variations in infant nutritional requirements, breast milk adequacy and the relevance of traditional infant feeding practices, have not adequately been taken into account. It was found that the main weaning food for infant aged up to 6 months is the traditional fermented maize porridge, which is introduced by the third month for the majority of infants.. Though the majority of infants are introduced to the family diet from 6 months onwards, some are still exclusively breast fed. The majority of children were well nourished but 30% of those exclusively breast fed as well as 30% of those aged less than 3 months, 6-12 months, and 12-18 months, respectively could be classified as being malnourished. It was also found that growth faltering could begin earlier than otherwise thought. The author concluded that breast milk inadequacy in the younger infants and inadequate supplementation of breast milk in the older infants could account for the observed prevalence rates of malnutrition and further that timely and effective supplementation of breast milk could ensure satisfactory growth.

Among other things the author recommended that measures aimed at alleviating malnutrition in the preschool age group should also be directed at early infancy for timely intervention since it appears that part of the problem could begin during that period Grant (1955) carried out a dietary study in two zones of Gold Coast and found that there was little variety in diet, with foods high in starch content predominating. With the exception of a moderately well to do group, the diets appeared to be poor or inadequate to the extreme in terms of usual western concept Gyebi-Ofosu (1990) studied the nutritional status of children of both sexes in peri-urban and a village in the Ashanti region of Ghana.. It was found that there was no difference between the sexes in terms of mild to moderate under nutrition, and less than 5% were severely under nourished. One and half times as many females as

males were well nourished. With wasting, two fifths of all the children were well nourished. Ghana Demographic and Health survey (1993) examined the nutritional status of children in Ghana. About one in four children aged 0 to 35 months were chronically undernourished. It was found that feeding patterns and diarrhoeal diseases were important determinants of under nutrition. The risk of diarrhoea could be reduced by improving water supply and also heating and reheating before feeding infants and children younger than two years (Decher, 1993).

Inappropriate weaning practices and lack of maternal knowledge on optimum growth of a child, as Commey (1991) noted were major causative factors in underweight children. Parental education especially maternal, Gardiner (1991) demonstrated to be a consistent factor influencing infant and child survival. Ocloo (1993) studied the problem of chronic under - nutrition. It was found that, socio-economic, cultural, environmental, political, technological, low agricultural productivity and other factors have direct and indirect effects on under nutrition, especially in Africa.. The author recommended that the structures which bring about this problem, particularly in terms of increased agricultural productivity should have higher priority. Soboti and Addy (1980) noted that, socio-economic, nutritional or infective factors contribute to a high incidence of PEM from 6 months to 3 years, with a marked drop in incidence after the latter age. The peak age range for Marasmus was from 6 months to 2 years, and for kwashiokor 1 to 3 years for both sexes.

Saaka (2014) reviewed a five-year feeding programme for poor rural communities in the Upper West Region of Ghana. It was found that the programme succeeded in reducing child malnutrition. (PEM) from 13% to 5.6% with most of the communities reducing their PEM to 3%. The available literature shows that a lot of

work has been done both internationally and locally, on the topic. However, Alnwick, Moses and Schmidt (2012), describe under nutrition as a condition where by children do not grow as well as they could, they have less energy to do things to learn, they have less interest in the world around them and less resistance and immunity against infection. Many children are mildly undernourished for a short time. If their nutrition improves and there is more stimulating play with adults, their development usually catches up. But their development may not catch up completely if the under nutrition is severe or continues for a long time. The child may appear normal, but may not achieve as much as he could have. A child who is undernourished has difficulty both resisting and fighting infection.

All children get many infections, especially between the ages of 6 months and 3 years. Some diseases, such as cough and colds, malaria, and measles, are equally common in well nourished and undernourished children, but an undernourished child may become more ill, and may take longer to recover than a well nourished child. Other infections, such as diarrhoea and pneumonia, are both commoner and more severe in undernourished children.

2.9 Weaning Practices and Composition

According to WHO (2012), babies up to the age of six months, should gain at least 500g each month. Not growing well from a period of 1 month can be a serious sign at this age. The commonest cause is lack of breast milk or feeding anything other than breast milk at this time. Even water can make the baby suckle less at the breast, and grow more slowly. From 6-12 months, not gaining weight well for 1 month may not be such a serious sign at this age as it is in a younger baby. However, not gaining weight for 2-3 months can be serious. The commonest reason for poor growth between 6 and 12 months are insufficient or bulky weaning

foods and frequent or severe infections. If the mother also stops breast feeding ,it can make the child's nutrition worse. After the age of 1 year, growth naturally slows down. Failure to gain weight for 1 month is not usually important. If the child seems well and has gained at a healthy rate before. Failure to gain weight for 3 months may be the beginning of a problem. The commonest reason for growth failure at this age are insufficient food and frequent or severe infection. If the mother stops breast feeding, it can make the situation worse. Ruel, Habicht & Olson (1992) carried out an evaluation of the impact of a nationwide clinic- based growth monitoring (GM) programme in Lesotho to determine if clinic attendance was associated with improved maternal knowledge of weaning practices and diarrhoea. The results showed that mothers who had attended the clinics knew more about the appropriate timing for introducing animal protein rich foods in the child's diet and about the use of oral re-hydrating salts for diarrhoea, than those who had not. They also found out that, difference in knowledge between previous clinic attendants and new attendants was particularly marked among mothers with less than secondary schooling and mothers with young babies (less than 6 months). The nutritional status of infants up to 6 months was significantly better than that of infants more than 6 months of age. For most of the children family-type food was used as weaning food.

Price was a major determinant influencing the choice of feed given to the infants. Only a few of the mothers (19%) used commercial milk formula, about a quarter fed legume (24%) and fruits and vegetables (30%). The study showed that the mother's educational level and occupation influenced both time and duration of breast feeding and introduction of milk formula. Three-quarters of the mothers used bottle feeding while a quarter used spoon and cup and feeds were improperly stored.

Al-Mazrou, Al-Amoud, El-Gizouli, Khoja, Al-Turki, Tantawi, & Aziz (2014) conducted a national Child Health Survey to establish baseline information about feeding practice on a nationwide basis in Saudi Arabia. Eighty-two percent of the currently breast fed children, were less than 6 months of age, but only 55 per cent of the infants up to 1 year of age were breast fed without supplementation. The mean interval between supplementation and weaning for all age groups of mothers was 7.7 months. The predominant causes of weaning were child reaching suitable age and mother not having enough milk. Hoare (1994) describes a community-based infant weaning program in the Gambia which adapted local foods to improve nutritional content. The project also resulted in the development of a simple but effective demonstration kit. Salih, El Bushra, Satti, Ahmed, M el-F, and Kamil, (1993) investigated infant-feeding and weaning practices among Sudanese mothers. It was found that majority (77.9%) believed that breast milk was best for their babies, emphasizing the previously reported high breast-feeding rate in Sudanese mothers. Food supplementation started by 6 months in 82.5% mainly in urban middle and high classes (UMC and UHC) compared to urban 10 poor class (UPC) and the rural group (RG). A mixture of food items was used for supplementation by 62.1% of the study group, whereas giving one food item was significantly more practiced in RG (54.9%) compared to others. Household food was introduced by 6 months in 35.4%. Weaning started between 6 and 12 months in 27.1% and thereafter in 64.9%.

A greater proportion of rural mothers (36.5%) weaned their babies after the age of 18 months. About half the children (52.8%) were weaned abruptly, mainly among UPPC and RG. The first food item of choices for weaning was fresh goat's or cow milk (77.6%), followed by powdered or formula milk (16.1%). The

commonest second preferred food was a starched gruel (39.1%) made either of rice (24.5%) or fermented sorghum. Guldan, Zhang and Zhang (1993) undertook a study among rural 4-12-month-old infants from two townships of a country in Sichuan, this was done in order to understand some of the factors involved in weaning and growth faltering in rural China.

Feeding practices found to be associated with the better growth of the positive deviant infants included feeding soya bean milk, liver and pork products on a more than weekly basis during the ages of 7-9 months, not feeding rice flour (mifen) before age 7 months, and not giving supplements or tonics. Mothers' nutrition knowledge was also associated with positive deviance status. During the critical period of infancy, breast feeding and weaning practices play an important role in determining the growth of an infant. Rao and Rajpathak (1992) conducted a study in India and found that almost all artificially fed (AF) infants in low socio-economic (LSE) class were malnourished while this was not so in the high socio-economic (HSE) class. However, the proportion of malnourished children in the LSE class for partially breast fed (BF+AF) group was comparable with exclusively breast fed (BF) group and was significantly lower than AF group indicating protective effect of partial breast feeding against risks of contamination associated with weaning foods in such communities.

Fagbule and Olaosebikan (1990) examined the knowledge, attitude and practice of weaning in mothers in Ilorin community, the capital of Kwara State of Nigeria. They found that women with high level of education and family income breast fed for a shorter period, and tended to wean earlier than illiterate and low income group. By age of 3 months 44.2% had commenced weaning and 83.9% by 6 months. Diarrhoea, associated with bottle feeding or cow-pea diet, was the

major cause of morbidity reported during weaning (55.8%). The result showed that 60.0% of the infants were breast-fed, 14.0% were bottle-fed and 25.4% received mixed feeding. The mean duration of breast feeding 5.8 months and varied from 9.5 to 4.3 months among illiterate and educated mothers respectively. The results also showed that older mothers were more likely to breast feed their infants for a longer duration. On the contrary, mothers from high-income families were less likely to practice breast-feeding. In addition, the study revealed that 37.4% of the infants were weaned suddenly; as a result of insufficient milk, new pregnancy, infant reaching age mothers' sickness, infant refusal and mothers' desire.

Dettwyler (1987), studied infant feeding in Mali and found that, patterns of infant feeding, based on cultural beliefs, affect the nutritional status, health, and growth of children in the first two years of life. The results of the study showed that, virtually all women breast fed their infants on demand, for comfort as well as nutrition. Weaning took place at an average age 20.8 months, with a range of 6-32 months. Bottle/formula use was very rare. In contrast to many other populations, however, a number of infant in this community showed improved growth after weaning.

Armar-Klemesu and Wheeler (2011), studied feeding practices and nutritional status of breast fed infants and young children in the Upper East region of Ghana in order to gain an insight into factors affecting nutritional status. More than half the mothers gave water as the first food to their infants, after delivery. Only 40% gave breast milk About 20% of the mothers started supplementation before 3 months but by the sixth month, the proportion increased to 72%. In most cases (70%) porridge, mainly from millet, was the food given. The majority of children aged 6 months were found to be well nourished. However, about 20% were mild to

moderately malnourished and 5% were severely malnourished. Only a third of the children aged more than 6 months were well nourished. Nutritional status of the children appeared to deteriorate as they grew older, there was no indication that this was related to the age at which supplementation was initiated.

Amar-Klemesu and Wheeler (2011) reviewed the background to the current recommendations for the initiation of weaning on the basis that factors such as variations in infant nutritional requirements, breast milk adequacy and the relevance of traditional infant feeding practices, have not adequately been taken into account. It was found that the main weaning food for infant aged up to six months is the traditional fermented maize porridge, which is introduced by the third month for the majority of infants. Though the majority of infants are introduced to the family diet from 6 months onwards, some are still exclusively breast fed.

The majority of children were well nourished but 30% of those exclusively breast fed as well as 30% of those aged less than 3 months, 6-12 months, and 12-18 months, respectively could be classified as being malnourished. It was also found that growth faltering could begin earlier than otherwise thought. The author concluded that breast milk inadequacy in the younger infants and inadequate supplementation of breast milk in the older infants could account for the observed prevalence rates of malnutrition and further that timely and effective supplementation of breast milk could ensure satisfactory growth. Among other things the author recommended that measures aimed at alleviating malnutrition in the preschool age group should also be directed at early infancy for timely intervention since it appears that part of the problem could begin during that period Grant (1955) carried out a dietary study in two zones of Gold Coast.

There was little variety in diet, with foods high in starch content predominating. With the exception of a moderately well to do group, the diets appeared to be poor or inadequate to the extreme in terms of usual western concept Gyebi-Ofosu (1990) studied the nutritional status of children of both sexes in peri urban and a village in the Ashanti region of Ghana.. It was found that there was no difference between the sexes in terms of mild to moderate under nutrition, and less than 5% were severely under nourished. One and half times as many females as males were well nourished. With wasting, two fifths of all the children were well nourished. Ghana Demographic and Health survey (1993) examined the nutritional status of children in Ghana about one in four children aged 0 to 35 months were chronically undernourished. It was found that feeding patterns and diarrhoea diseases were important determinants of under nutrition. The risk of diarrhoea could be reduced by improving water supply and also heating and reheating before feeding infants and children younger than two years (Decher 1993).

Inappropriate weaning practice and lack of maternal knowledge on optimum growth of a child, as Commey (1991) noted were major causative factors in underweight children. Parental education especially maternal, Gardiner (1991) is demonstrated to be a consistent factor influencing infant and child survival. Ocloo (1993) studied the problem of chronic under - nutrition. It was found that, socio-economic, cultural, environmental, political, technological, low agricultural productivity and other factors have direct and indirect effects on under nutrition, especially in Africa. There was a recommendation that the structures which bring about this problem, particularly in terms of increased agricultural productivity should have higher priority.

Soboti and Addy (1980), noted that, socio-economic, nutritional or infective factors contribute to a high incidence of Protein Energy Malnutrition from 6 months to 3 years, with a marked drop in incidence after the latter age. The peak age range for Marasmus was from 6 months to 2 years and for kwashiokor 1 to 3 years for both sexes. Saaka (2012) reviewed a five-year feeding programme for poor rural communities in the Upper West Region of Ghana.

2.10 Theoretical Framework

This study is based on the Random Utility Models theory by Weck-Hannemann (1984). The theory state that consumers choose the product with the most desired set of attribute from a set of alternatives. It is assumed in these models that the preferences of an individual among the available alternatives can be describe by a utility function. The individual chooses the alternatives with highest utility. The utility of an alternative depend on attributes of the alternatives and individual that the analyst observes and attribute that the analyst does not observe.

In the choice of weaning foods, the alternatives are the various food sources available to the mother at any point in time. The attributes represent the factors that determine what we choose as consumers. Mothers have to choose from all the food sources available and prepare foods that are appropriate and suitable for weaning an infant. The attributes are the cost of food, preferences of child, availability of food, social factors and many others.

Random utility theory posits that people generally choose what they prefer, and where they do not, this can be explained by random factors. For example, a person may choose their preferred ice cream 9 out of 10 times and on the 10th occasion they choose something else due to some random factor. The term 'random' in this instance has a very precise meaning. The variations in behaviour due to

randomness must not be explainable. That is, if it is known that the reason that the consumer deviated from their preferred ice cream on the 10th occasion is because it was out of stock then this is not a random phenomenon.

Random utility theory is not an accurate description of human behaviour. Nevertheless, checking that models of behaviour are consistent with random utility theory provides a way of checking that the models do not have silly and inconsistent assumptions. Utility theory, of which random utility theory is a special case, has been criticised on the basis that it implies people are overly rational (i.e., that they have an 'irrational passion for dispassionate rationality'). However, although such an assumption is commonly made in situations where random utility theory is assumed, such an assumption is not a part of utility theory, as utility theory can readily be understood as the idea that people behave in line with self-interest where self-interest reflects peoples' needs to save time and economize on effort (Kahneman, 2011).

In many situations, we need to know the preferences of agents over a set of alternatives, in order to make decisions. For example, in recommender systems, we can compute recommendations of new products for a user based on his reported preferences over some products. In social choice, we need to know agent preferences over alternatives, to make a joint decision.

2.11 Conceptual Framework on Weaning Practices

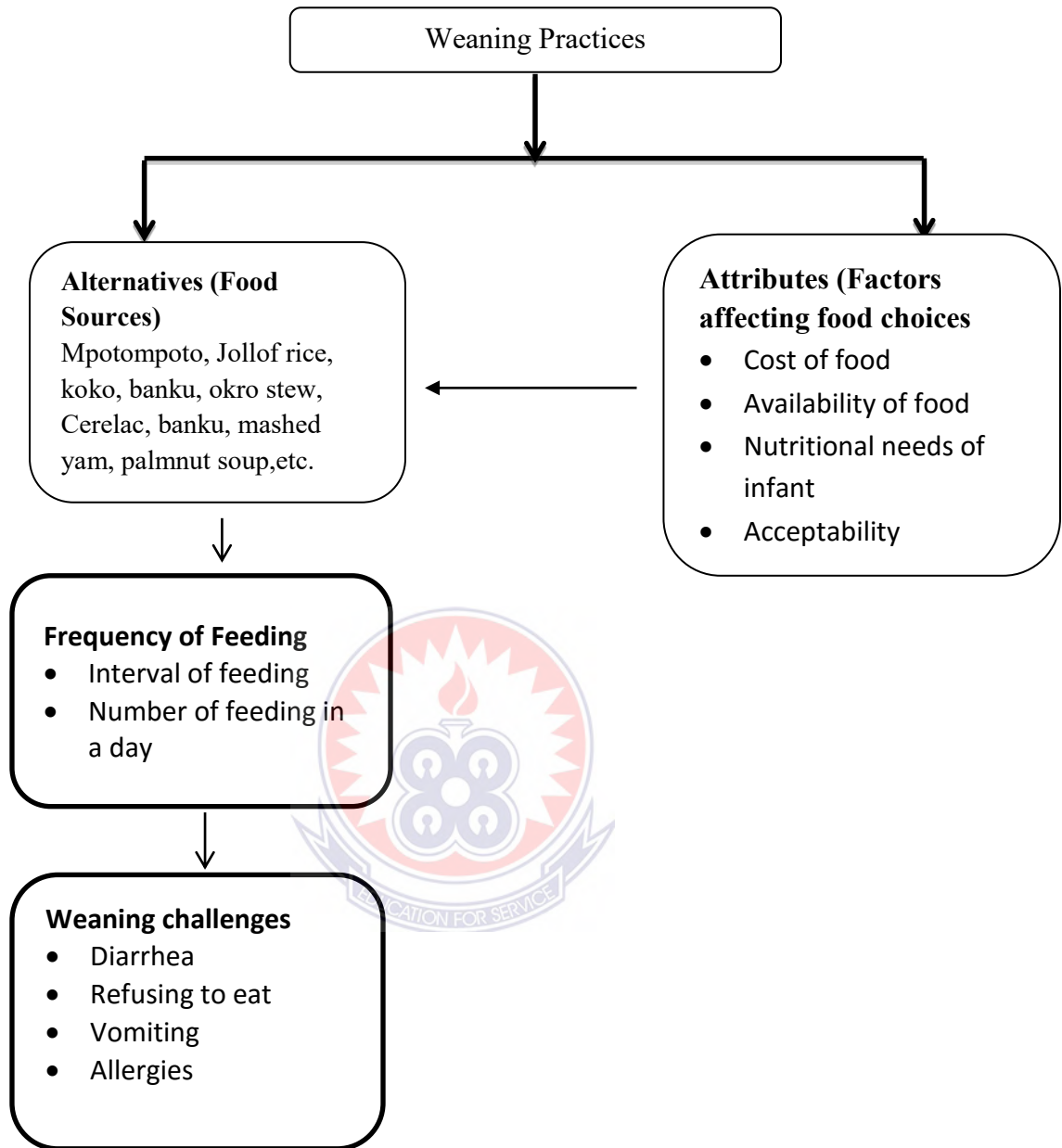


Fig 1 Arthur's Own Construct.

The theory of Random Utility Model state that consumers choose the product with the most desired set of attribute from a set of alternatives. It is assumed in these models that the preferences of an individual among the available alternatives can be describe by a utility function. The individual chooses the alternatives with highest utility. The utility of an alternative depend on attributes of the alternatives and individual that the analyst observes and attribute that the analyst does not observe.

In the choice of weaning foods, the alternatives are the weaning foods mothers can choose from. The attributes represent the factors that determine what mothers choose as weaning foods for their infants. Mothers have to choose from all the food sources available and prepare foods that are appropriate and suitable for weaning an infant. The attributes are the cost of food, preferences of child, availability of food, social factors and many others. A mother intends to choose an alternative that will give the best result. Mothers will therefore choose weaning foods that their infants are not allergic to, do not refuse to eat and they will prepare and feed in a way that will not cause diarrhoea. Mothers in achieving better result after a particular choice will frequently feed their infant with weaning foods.

2:12 Summary of Literature Review

This chapter so far has looked at literature relevant to the topic under study – child weaning practices among nursing mothers in the Suhum Municipality. Various literature on weaning, infant nutritional needs, factors that influence food choices, infant feeding practices and challenges on weaning. The review also discussed the Random Utility Model which states that consumers choose the product with the most desired set of attributes from a set of alternatives.

The literature review revealed that a number of researches have been conducted in the area of weaning practices in other parts of the world and in Ghana. It was revealed that the nutrition of infant during the weaning period has become a very important issue of public concern due to its direct relationship with the health of the infant now and later years. However much has not been done in the Suhum Municipality. Again most of the studies conducted in Ghana were done on only suitable and nutritious foods during child weaning but not on factor that influence the choice mothers make in feeding the infants.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter covers the methodology of this study. It includes the study area, the research design, population of the study, sample and sampling techniques, instrument for data collection, data collection and data analysis procedures. The reliability and validity of the research instrument are addressed. Ethical considerations pertaining to the research are also discussed.

3.1 The Study Area

Suhum Municipality forms part of the thirty three (33) Municipalities and Districts in the Eastern Region of Ghana. The Suhum Municipality is located in the south-central part of the Eastern Region of Ghana and covers a land area of about four hundred square kilometers (400km²). It is bounded the New Juaben South Municipality to the north-east, East Akim Municipality to the north, Ayensuano District to the west and south, and Akwapim North Municipality to the east. The population of the Municipality according to 2010 population and housing census stands at 90,358 with 43,962 males and 46,396 females is essentially a rural district with only Suhum (the capital) is being classified as an urban area (Ghana Statistical Service, 2017). The commercial activities in the town, brings a lot of people from the satellite communities for various activities throughout the week.

Although there are other post-natal care centres in the Municipality, the researcher choose the Suhum Government because of its proximity. It is located at the centre of the town where the main market, the main lorry park, banks, schools and other business activities go on therefore making it easy for mothers to access the facility.

3.2 Study Design

A research design, according to Cohen, Marion and Morrison (2018) is essentially a plan illustrating the strategy of investigation by the research or a research design is described as a plan or blueprint for conducting a research (Babbie & Mouton, 2008). According to Welman, Kruger and Mitchell (2005), it is the overall plan that guides the selection of respondents of a study as well as the means of data collection and analysis. Therefore, a research design is viewed as a functional plan in which certain research methods and procedures are connected together to acquire a reliable and valid data for analyses and conclusions. The research design thus provides the researcher with a clear research framework, guides decisions relating to methods to generate data, interpretation and conclusions.

This research work is a descriptive research design with both qualitative and quantitative analysis of data gathered among nursing mothers on weaning practices in the Suhum Municipality. A descriptive cross-sectional study is carried out to gather information only (Roundy, 2016). He further stated that, Cross-sectional study is straight forward in design and is aimed at finding out the prevalence of a phenomenon, problem, attitude or issue by taking a picture or cross-section of the population. It is called cross-sectional because the information which is gathered represents what is going on at only one point in time. The advantage of this study design is that in general it is quick and cheap. Since there is no follow-up, fewer resources are required to conduct the study. Data was collected at one point from nursing mothers who access post natal care at the Suhum Government Hospital and was willing to participate in the study after it has been explained to them. Data was collected on the weaning foods mothers in Suhum give to their babies; factors that influence the choice of weaning foods; how babies are fed with weaning foods and the

challenges during the weaning period collected once was used to answer research questions therefore there was no need to follow-up.

3.3 Study Population

The study population comprised all mothers with infants from 6-24 months old who access post-natal care at the Suhum Government Hospital. Averagely, fifteen (15) out of twenty (20) mothers who visit the facility daily from Monday to Friday in 2017, have infants who are 6-24 months old according to the senior staff midwife in-charge of the post- natal section of the Suhum Government Hospital. Thus, in one month, approximately 300 mothers with infants from 6-24 old access the facility. According to Kusi (2012), a population can be defined as a group of individuals or people with the same characteristics and in whom the researcher is interested in collecting information and drawing conclusions.

3.4 Sample and Sampling Technique

Babbie (2004: 183) defines a sample as “a small subset of a larger population whose selection is based on the knowledge of the elements of a population and the research purpose”. A sample size of 69 was used for the study. The 69 represent 23% of the total population as recommended by (Airasian & Gay, 2003) as they indicated that 10% - 20% of a population can be sampled in descriptive study.

The sampling techniques for the research work were Purposive and convenience sampling. This two sampling techniques was used to select the mothers in Suhum with babies who are six (6) to twenty four (24) months old who visit the Government Hospital for post-natal care and was willing to participate in the study. Purposive sampling, according to Tannor (2011), is applied where there is a pre-defined subgroup(s) with particular characteristics(s). In purposive sampling, the researcher has sufficient knowledge of topic to select sample of experts and subjects

are chosen in this sampling method according to the type of the topic. Therefore, skills and capabilities of the researcher to find appropriate individuals to contribute to the achievement of research objectives play important role on the outcome of studies using this sampling technique. This sampling method was used because results of purposive sampling are usually more representative of target population compared to other sampling methods. In this study, the sub-group is mothers with babies from six (6) to twenty four (24) months old.

Although there are other post-natal care centres in the town, a lot of mothers prefer to visit the Government Hospital because of its proximity. It is located at the centre of the town where the main market, the main lorry park, banks, schools and other business activities go on therefore it easy to access the facility, hence the choice. The objective of purposive sampling is to choose a group of participants who possess the characteristics of the population of interest so that data that will be collected will answer the research questions.

The researcher conveniently sampled 69 mothers which represents 23% of the total population. The mothers were interviewed as and when they come to the Hospital and willing to participate in the study. Data was collected every day from Monday to Friday within one month till the target sample was reached.

3.5 Instruments for Data Collection

The research instrument employed for data collection in the research was a structured interview guide. It consisted of open, close and partially open ended questions as well as structured statements of the Likert scale. Instruments were developed to find out weaning foods mothers in Suhum give to their infant from six (6) to twenty four (24), factors that influence the choice of weaning foods, how mothers feed their babies with weaning foods and investigate the challenges during

the weaning period. The structured interview, Kusi (2012) notes that this instrument allows the interviewer to ask initial questions, followed by probes meant to seek clarification of issues raised. Probes are either pre-stated or posed in the course of the interview, making the interview process flexible. Schedule comprised the following sections: Section A; Questions related to demographic information of the mothers with babies from 6 - 24 months. Section B looked at questions related to weaning foods mothers give to babies from 6 - 24 months, questions related to factors that influence the choice of weaning foods, questions related to how nursing mothers feed their babies with weaning foods, questions related to challenges mothers face during the weaning period.

These items were developed in English thereafter translated in Akuapem Twi for easy use. Having lived in the area for more than a decade, I can confidently say that majority of the target population speaks and understands Akuapem Twi. This has been observed through my interactions at the hospital, market place and on the street of Suhum. It is also confirmed by the 2010 Population and Housing Census that majority of the people living in Suhum speaks and understands Akuapim Twi. According to the 2010 Population and Housing Census, by Ghana Statistical Service (2013) the population of Suhum is made up of people from almost all the ethnic groups in Ghana as indicated below, Akan -37.4%, Ga-Dangme -25.6%, Guan 17.0%, Ewe 17.0% Grunshi 0.9%, with the others representing 3% of the total population.

The instrument was designed to allow mothers to express their ideas on various issues related to weaning practices as they go through the post- natal care at the Suhum Government Hospital.

3.6 Validity and Reliability of Research Instruments

Validity is defined as a measure of truth or falsity of the data obtained through using the research instrument. It is classified as internal and external validity of the measuring instrument. Validity of an instrument is the accuracy of a measure or the extent to which a score truthfully represents a concept (Zikmund & Babin, 2010). The questions for the interview were assessed for face validity and content validity. Face validity refers to whether the instrument appears as though it is measuring the appropriate construct while content validity is the sampling adequacy of items for the construct that is measured (Polit & Beck, 2004). To ensure face validity, the instrument and the research questions were given to colleagues on the master's degree programme to examine whether the items were in line with the research questions. Their views on grammatical errors, typographical mistakes and ambiguities were considered in re-shaping the instruments. For content validity, the instruments were given to supervisors and other lecturers who have knowledge of the issues under study to determine its content validity. As suggested by Borg and Gall (2003), content validity of an instrument is ensured through expert judgment. These experts made suggestions that were applied in re-shaping the instruments.

Reliability of an instrument is the dependability or trustworthiness of an instrument. This means the degree to which the instrument consistently measures what it is supposed to measure (Amin, 2005). In this study, reliability of the instrument was treated as internal consistency of the question items, where Cronbach alpha coefficient was computed to determine the reliability based on the data collected in a pilot test. The reliability of the instrument for each variable exceeded 0.732 which according to George and Mallery (2003) is acceptable.

According to Gerrish and Lacey (2006), pre-testing of research instruments means “a preliminary study carried out before the full research to test out data collection instruments and other procedures”. Thus, pre-testing a research instrument is to trial-test the instrument, identify potential challenges that might emerge, and resolve them before the actual study is done. Bryman and Bell (2011) suggested that, it is valuable to pre-test a questionnaire before administering to eliminate ambiguities and errors in data collected and to ascertain the validity and reliability of the instruments. A pre-test was carried out at the Kibi Government Hospital at the East-Akim Municipality of the Eastern Region of Ghana. The rationale for carrying out the pre-test in Kibi is in agreement with Kusi that participants in a pilot study should have similar characteristics as those in the study. The internal consistencies of the various items in the interview guide were computed using Cronbach alpha. According to McMillan and Schumacher (2010) Cronbach alpha coefficient should be at least 0.70 to be indicative of internal consistency. The result of the coefficient calculated was 0.732 which was reliable.

3.7 Data Collection Procedure

A letter from the Department of Home Economics Education, Winneba was given to the Administrator at the Suhum Government Hospital to introduce the researcher. Permission was then granted to interact with the nursing mothers after introducing the researcher to the staff at the welfare clinic. The participants were adequately informed on the objectives of the study and their informed consent was sought. Mothers were assured of confidentiality and anonymity. The researcher then carried out one on one interview with a mother who showed interest to participate. The items which were developed in English were conducted in the local dialect (Twi) by the researcher for better understanding and effective communication between

researcher and respondent. This was done in turns from one mother to the other from Monday to Friday with peak periods on Wednesdays for four (4) weeks.

Mothers with infants of this age were selected in accordance with WHO and UNICEF's recommendation that infants should be introduced to solid foods at 6 months together with continued breastfeeding up to 2 years of age or beyond. Mothers visit the facility (child welfare clinic) with their babies once every month, therefore an average of 300 mothers with infants aged 6-24 months visit within one month.

3.8 Data Analysis Procedure

The data collected were categorized and interpreted in terms of the commonness of subject matter. The Statistical Package for Social Science (SPSS) version 20 for windows was used for the analysis. It helped to generate percentages on the data and presented them in frequency tables. Statistics included means, frequencies, percentages and standard deviations. Based on the research questions, the frequency tables were used to make summaries of respondents' responses and for drawing conclusions.

3.9 Ethical Considerations

Approval for the study was obtained from the Ghana Health Service Suhum prior to data collection. Participants were adequately informed on the objectives of the study and their informed consent was sought. The respondents were assured of confidentiality and anonymity.

The respondents were free to stop the interview at any point in time they are uncomfortable with the process. Principles of research ethics observed in this study were in accordance with those stated by Polit and Hungler (1999:153–159), namely the principles for respect of human dignity and of justice.

The principle of beneficence includes freedom from harm, freedom from exploitation and the risk benefit ratio. With regard to the freedom from harm, there was no physical harm involved by participating in the study.

The principle of justice encompasses the right to fair treatment and the right to privacy. The right to fair treatment: the participants were tactfully treated by respecting their beliefs, habits, culture and lifestyle.

Anonymity was adhered to by ensuring that no completed structured interview schedule could be linked to any specific participant. The completed interview schedules were only accessible to the researcher and were kept locked up by the researcher. Data collected was used for the purpose of this study only, and the completed interview schedules would be destroyed as soon as the research report had been accepted.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Overview

This fourth chapter presents the results, analysis and discussion of data collected. The data which is presented in Tables is in two parts. The first part (Section A), deals with the Bio data. The Bio data of the respondents were assessed according to the information provided by respondents. The second part (Section B), presents the results of the study based on the responses from the interview. The analysis was arranged in line with the four research objectives set for the study.

4.1 Demographic Characteristics of Mothers

Table 1: Age of Respondents

Age	Frequency	Percentage (%)
18 years – 25 years	30	43.5
26 years – 35 years	30	43.5
36 years – 45 years	9	13.0
Total	69	100.0

Table 1 presents demographic data on age of respondents in the study. From the Table, it can be noted that the dominant age groups of the respondents were 18 – 25 and 26-35 years. This is because 43.5% of the respondents were within this age range. Mothers who fell within the 26 – 35 age groups were 30 representing 43.5% of the respondents. Thirteen percent (13%) of respondents were within the 36 - 45 age groups. This shows that majority of the mothers were between the ages of eighteen to thirty-five years which represents 97% of the total respondents. The results indicate that the mothers were in their youthful years. This is in conformity with the Ghana Demographic Health Survey report by Blanc and Gray (2000) which reported that the most fertile age of females in Ghana ranges from 15 – 39 years.

Table 2: Level of Education of Respondents

Level of Education	Frequency	Percentage (%)
Tertiary	33	47.8
A/O Level/SHS	12	17.4
Basic/MLSC	12	17.4
None	12	17.4
Total	69	100.0

Table 2 shows that 47.8% respondent had tertiary education. Tertiary education represents all post-secondary institutions, Polytechnics, Colleges of Education, Nursing Training Colleges and University. 17.4% of the respondents had secondary education (A level, O Level and Senior High School), 17.4% had basic education and 17.4% had no formal education; they did not go to school at all. The fact that 82.6% of the respondents had had formal education of some sort was highly commendable and might have contributed to their healthy choices of food for their infant.

From the above, it can be concluded that since a greater proportion of the respondents have formal education, they are likely to be earning income and therefore will be in a capacity to afford highly nutritional foods. Higher education, especially of women, has been reported to be associated with greater knowledge as well as good health and care practices (Guldan, *et al.*, 1993). This position is supported by a study conducted by the National Diet and Nutrition Survey (NDNS) that indicated that children whose parents are in higher socio-economic group have higher nutritional scores and consume or portions of combined fruits and vegetables. This assertion is supported by D'Almeida *et al* (1997) when he opined that cost of food is a primary determinant of food choice. Thus, low income group have a greater tendency to consume unbalanced diet and in particular have low in-takes of fruits and vegetable.

Table 3: Occupation of respondents

Occupation	Frequency	Percentage (%)
Employed	54	78.2
Unemployed	15	21.7
Total	69	100.0

The result on occupation of respondents in Table 3 above shows that 78.2% of the respondents were employed, while 21.7% were unemployed. Work life can influence food choices in several different ways. To Devine and Colleagues (2003) who conducted a qualitative and a quantitative research by examining the “spillover” of work into food choices among low-and moderate-wage workers revealed that long hours, inflexible schedules, shift work, and multiple jobs have an impact on the time and energy available for food procurement and preparation. In sharp contrast, O’Connell and Brannen (2014) in their research debunked these five fallacies. A central fallacy is that employed parents and in particular, mothers’ working hours are to blame for deteriorating children's diets because of lack of time, use of convenience foods and failing to create regular meal routines. The study’s analysis of the National Diet and Nutrition Survey (NDNS) shows that socio -economic status is more important than mothers’ employment. Children whose parents are in higher socio-economic groups have higher nutritional scores and consume more portions of combined fruit and vegetables than children in families in households from lower socio-economic groups.

Table 4: Ethnic Background of respondents

Ethnic Background	Frequency	Percentage (%)
Akan	51	73.9
Ga Adangbe	12	17.4
Ewes	3	4.3
Fulani	1	1.4
Total	69	100.0

From the responses collated, it was made clear that a total of 51 respondents which represents 73.9% were Akans. This was followed by the Ga-Adamgbe tribe who were 12 representing 17.4% of the respondents. Ewes were 3 which represented 4.3% of the respondents. Only one person was from the Fulani tribe; representing 1.4% of the respondents captured for the study. The findings were in conformity with the 2010 Population and Housing Census which reported that the population of Suhum is made up of people from almost all the ethnic groups in Ghana as indicated below:

Table 5: Ethnic Groups in Suhum

Ethnic Group	Percentage
Akan	37.4%
Ga-Dangme	25.6%,
Guan	17.0%,
Ewe	17.0%
Grunshi	0.9%,
Others	3%

Table 5: Religious Affiliation of Respondents

Religion	Frequency	Percentage (%)
Christian	63	91.3
Muslim	6	8.7
Others	0	0
Total	69	100.0

This question was necessary because a number of religions have dietary guideline which must be observed closely. Different denominations within the same religions may have slight differences in food guidelines.

Table 5 presents data on the religious affiliation of respondents. As shown in Table 5, it can be observed that 91.3% were Christians, whilst 8.7% were Muslims. No one indicated that they belonged to other religious groups; all the respondents were either Christians or Muslims. This is clearly indicated in CIA World Fact Book (2018)

which reported that Christianity is the dominant religion in Ghana. According to the report, 71.2% of the Ghanaian population are Christians while the Muslims and other religious groups represent 17.6%.

Table 6: Marital Status

Marital Status	Frequency	Percentage (%)
Married	48	69.6
Divorced	3	4.3
Single	18	26.1
Total	69	100.0

The study sought to find out the marital of respondents and Table 5 presents data on the marital status of respondents. After analysing the data, it came to light that 69.6% of the respondents were married, whilst 4.3% of the respondents were divorced. Eighteen (18) respondents representing 26.1% of the respondents were single. This shows that most of the respondents were married and therefore had relatively stable homes.

Table 7: Number of Children of Respondents

Number of Children	Frequency	Percentage (%)
1-3	57	82.6
4-6	6	8.7
6 and above	6	8.7
Total	69	100.0

The size of a family can be a determinant of the quality of foods that will be served. The study therefore sought to find out the size of families of respondents. The details are presented in Table 7. The Table reveals that 82.6% of the mothers had between 1 - 3 children and 17.4% had 4 children and above. On the number of children, it was obvious that, there is a decline which confirms the estimates derived from the Ghana Demographic Health Survey, which reported that the total fertility rate in Ghana declined in the mid-nineties, a further drop of 0.9 children per woman

to 4.6 Confidence intervals around the estimates do not overlap, indicating that the decline has been statistically significant.

Table 8: Age of Respondents' Babies

Age of Baby	Frequency	Percentage (%)
6 – 12 months	36	52.2
13 – 18 months	27	39.1
19 – 24 months	6	8.7
Total	69	100.0

The age of baby in Table 8 shows that 52.2% of the babies were between the ages of 6 – 12 months, 39.1% were between 13 - 18 months and 8.7% were 19 - 24 months. From the Table above, it can be observed that the densely populated frequency was in the range of 6 - 12 months. This reveals that mothers with babies more than one and half years do not normally attend post-natal clinic to have access to best information on better weaning practices.

4.2 Research Question One

What are the weaning foods mothers give to their infants from 6-24 months in Suhum?

The first research question sought to find out the weaning foods mothers give to their infants aged between 6-24 months. To achieve this objective, frequencies and percentages were used in analyzing each item.

Table 9: First Baby Food introduced

First Baby food	Frequency	Percentage (%)
Convenient weaning foods	24	34.8
Porridge	33	47.8
Wean mix	12	17.4
Total	69	100.0

This item was to find out the first weaning food mothers introduced to their infants. Twenty-four (24) respondents representing 34.8% indicated that the first weaning foods they introduced were commercial weaning foods. Forty-five point eight percent (45.8%) of the respondents indicated that they fed their infants with porridges of any form. The number of nursing mothers who stated that they gave their infants wean mix (cereals + legumes) constituted 17.4% of the total respondents.

Infant cereal is usually introduced first because it offers a good source of iron. Sagan, and Druyan (1994) also agree to this fact by stating that after switching to “real” food, it is important to ensure that your child is eating good sources of iron. A look at weaning at the early stages reveals that during the weaning period semi-solid and then solid foods are introduced, while breast feeding continues (Latham, 2009). . Even when solid foods are introduced, most of the baby’s calories should be from breast milk or formula for the first year. No baby should be given whole cow’s milk until she is over one year old. After 6 months, it is considered safe to give infants baby cereals and strained or blended baby foods. They advised that new foods should be introduced one at a time beginning with pureed foods and moving gradually towards solid foods. This allows you to see any allergic response in your baby.

Table 10: Age of given First Baby Food

Age of First Baby Food	Frequency	Percentage (%)
1 - 2 months	3	4.3
3 - 5 months	12	17.4
6 - 8 months	45	65.2
9 months and above	9	13.0
Total	69	100.0

Table 10 indicates the age at which first foods were introduced by nursing mothers. From the responses, it came out from the study that 21.7% babies were introduced to bottle feeding and other solid foods before the age of 6 months for

reasons such as sickness and insufficient breast milk. Sixty-five point two percent (65.2%) of the mothers indicated that they were able to do exclusive breastfeeding whilst 13% of mothers introduced solid foods from 9 months. This shows that a great number of respondents were adhering to World Health Organization (WHO) recommendation that weaning is a progressive process and is conducted in stages. At the World Health Organization 54th World Health Assembly (2001), it was widely advocated that weaning is commenced from approximately the age of 6 months (approximately 24 weeks) or between 17 and 26 weeks to enable infants meet their energy and nutrient requirements and to facilitate the transition to solid foods.

Table 11: Food Given To Child at Mealtimes (Breakfast) – 6 to 24months

Breakfast	Frequency	Percent
Rice Porridge	13	18.8
Porridge (koko)	37	53.6
Wean mix	9	13.0
Others	10	14.5
Total	69	100

According to Courtney (2018), breakfast is an important part of a healthy, balanced diet and has many benefits that one does not want to miss out on. The researcher wanted to ascertain how the child get fed every day, hence, in respect to everyday, 18% of the respondents made it known that they serve rice porridge in the morning 53.6% of the sample made it clear that they serve koko, another 13.0% of the respondents indicated that they serve wean mix etc for their child. 14.5% indicated they give other foods like rice. This is in line with Garoo (2019) when he concluded that, first meal of the day has to be nourishing. It should have ample calories to give your infant a good start for the day. A breakfast recipe for babies should be a healthy mix of taste and nutrition. While there are several breakfast ideas for babies, it can get a bit challenging to make a new breakfast menu every day. Apart from providing us

with energy, breakfast foods are good sources of important nutrients such as calcium, iron and B vitamins as well as protein and fibre. The body needs these essential nutrients and research shows that if these are missed at breakfast, they are less likely to be compensated for later in the day. Fruit and vegetables are good sources of vitamins and minerals so try to include a portion of your daily five at breakfast, whether that being a banana or glass of fruit juice

Table 12: Lunch Given to Infants – 6 to 24month

Lunch	Frequency	Percent
Rice and stew/soup	15	21.7
Mashed yam and plantain (oto)	27	39.1
Banku	18	26.0
Porridge	9	13.0
Total	69	100
Mean	2.24	
Standard deviation	.995	

The responses retrieved by the researcher for foods served during lunch, indicated that 21.7% of the respondents made it known that they mostly served rice and stew. 39.1% of the respondents indicated that they served mashed yam (oto), whilst the views of 26.0% of the nursing mothers showed that they served soft banku and okro stew or soup to their infants for lunch and 13.0% made it clear that they do serve porridge to their infants for lunch.

Table 13: Supper Given to Infants-6 to 24 months

Supper	Frequency	Percent
Mashed yam	12	17.4
Banku and okro stew/soup	15	21.7
Porridge	27	39.1
Others	15	21.7
Total	69	100
Mean	2.52	
Standard deviation	.981	

From the data gathered, it can be seen that 17.4% of the respondents made it known that they served mashed yam for supper, whilst 21.7% of the mothers made it known that they served soft banku and stew or soup, whilst those who served all kinds of porridges constituted 39.1% of the sample.

Table 14: Iron Rich Foods Eaten Infants

Iron Rich Foods	Agree		Disagree		Mean	Standard Deviation
	F	P (%)	F	P (%)		
Beef	27	39.1	40	60.9	1.61	.499
Chicken	57	82.6	12	17.4	1.17	.388
Lamb/Goat meat	9	13.0	60	87.0	1.87	.344
Pork	0	0	69	100	2.00	.000
Fish	51	73.9	18	26.1	1.26	.449

The respondents were requested to indicate whether they agreed or disagreed to the consumption of the above foods. Twenty-seven (27) of the mothers representing 39.1% of the mothers agreed that they included beef in the diet of their infants. From the data, it was gathered that 60.9% indicated that they did not include beef in the diets of their infants.

From the Table, it was gathered that majority of the respondents fed their infants with chicken. Parents who fed their infants with chicken as a protein of source constituted 82.6% of the respondents. Quite a number of mothers (87.0%) disagreed to the eating of goat meat or lamb. All the mothers sampled indicated that they had never included pork in their infant's diet. When it came to the serving of fish, eating of fish recorded 73.9% agreements and 26.1% disagreement.

This shows that most iron rich food consumed by weaning infants were chicken, beef and fish. This confirms Fleisher *et. al.* (2000) and Anon's (1994) claim that meat should be introduced early to increase iron intake. This view was supported by The British Nutrition Foundation's report in 2015 that it is important that weaning

is not delayed much beyond six months. This is because stores of essential nutrients such as iron need to be replenished after six months.

Table 15: Snack between Meals for Infants

Snacks	Frequency	Percentage (%)
Yes	60	87.0
No	9	13.0
Total	69	100.0

From the data gathered on whether respondents do serve snacks, 87.0% of the sampled respondents made it known that they do serve snacks, whilst 13.0% of the sampled mothers indicated that they did not serve snacks in their child's early life. Serving snacks has been observed to be a practice of the mothers during weaning and this offers them the opportunity to include fruit in their infant's diet as shown in Table 16.

Table 16: Food Served as Snack for Infants

Food Serve at Snack	Frequency	Percentage (%)
Fruits	31	51.7
Mashed kenkey	9	15
Bread	4	6.6
Biscuit	16	26.7
Total	60	100.0

Through the research some mothers made it known that they served snacks for their children, 51.7% of the respondents made it known that they served fruits like banana for snack and 15.0% of the respondents indicated that they served mashed kenkey. It came to light as can be seen from Table 16 that 6.6% served bread for snack and 26.7% served biscuit for snack.

Table 17: Consumption of Foods by Infants

Food items	Daily		Four times a week		Twice a week		Once a week		Mean	Std. Deviation
	F	P (%)	F	P (%)	F	P (%)	F	P (%)		
Animal product	27	39.1	24	34.8	18	26.1	0	0.0	1.87	.815
Fruit and vegetables	51	73.9	18	26.1	0	0.0	0	0.0	1.26	.449
Beans, nuts and oily seeds	51	73.9	15	21.7	3	4.3	0	0.0	1.30	.559
Cereals and grains	51	73.9	18	26.1	0	0.0	0	0.0	1.26	.449
Starchy roots and plantain	3	4.3	33	47.8	24	34.8	3	13.0	2.57	.788
Fats and oils	24	34.8	27	39.1	18	26.1	0	0.0	1.91	.793

Table 17 revealed that 39.1% always ate animal products and 34.8% usually ate it and 26.1% said they sometimes ate animal products. It was noted that fruits and vegetables were always eaten by 73.9% of the infants, whilst 26.1% disclosed that they usually ate fruits and vegetables. Fifty one (51) respondents representing 73.9% always included beans, nuts and oily seeds in their diet. It was found out that all the respondents (100%) fed their infants with cereals and grains. But starchy root and plantain recorded the least patronage with only 4.3% of the respondent indicating that they always included them in their choice of foods. Fats and oils were consumed always, usually and sometimes with percentages of 34, 39, 26.1 respectively. This is a strong indication that mothers in Suhum prepared weaning foods from all the six food groups which is in support of existing literature. It is important infants get foods from the main food groups and are eating plenty of fruit, vegetables, carbohydrates, meat, fish, dairy and (cooked) egg” (www. bounty.com). Takyi et al. (1991) suggested that alfalfa could be incorporated into the weaning diet of infants. This legume was found to contain higher levels of protein, minerals, and carotene and could support child growth better than wean mix.

The theory of Random Utility Model state that consumers choose the product with the most desired set of attribute from a set of alternatives. It is assumed in these models that the preference of an individual among the available alternatives is describe by a utility function. The individual chooses the alternatives with highest utility. The utility of an alternative depend on attributes of the alternatives and individual that the analyst observes and attribute that the analyst does not observe.

4.3 Research Question Two

What factors influence nursing mothers' choice of weaning foods? This research question sought to identify the factors that influence the nursing mothers' choice of weaning foods. The study presented frequencies and percentages of the items. Mean (M) scores and the standard deviation (SD) were also used to analyze them.

Table 18: Factors That Influence Choice of Weaning Foods by Nursing Mothers

Factors Influencing Choice of Weaning Foods	Strongly Agree		Agree		Disagree		Strongly Disagree		Mean	Std. Deviation
	F	P (%)	F	P (%)	F	P (%)	F	P (%)		
Availability of food	54	78.3	0	0	0	0	15	21.7	1.65	1.265
Medical conditions of infants	3	4.3	0	0	0	0	66	95.7	3.87	.626
nutritional needs	27	39.1	3	4.3	3	4.3	36	52.2	2.70	1.460
Acceptability of food	39	56.5	0	0	6	8.7	24	34.8	2.22	1.445
Method of food preparation	18	26.1	18	26.1	30	43.5	3	4.3	2.26	.915
Financial considerations	18	26.1	18	26.1	30	43.5	3	4.3	2.26	.915

From the data gathered, 78.3% of the respondents strongly agree that one of the factors that influence their choice of weaning foods is availability of food item. While 21.7% strongly disagree, on medical condition of the infant, only 4.3% strongly agreed whiles 95.7% which is the majority said it not one of the factors they consider,

again, 43.4% of the mothers opined that nutritional needs of the infant are also determinants of the choice of food they give to their infant, while 52% is the otherwise. Moreso, 56.5% of the mothers were of the view that the acceptability of the weaning food is an important consideration to them, while 34.8% said they strongly disagree. The responses obtained indicated that availability and acceptability of weaning foods influence their choice. This view is supported by Drewnowski (1997), Drewnowski and Levine (2003), and Drewnowski *et. al.*, 1999) that taste preferences (acceptability) often are cited as a primary motivator of individuals' food choices.

4.4 Research Question Three

How often Nursing Mothers in Suhum Feed Their Babies with Weaning Foods in the day

This research question sought to find out how often nursing mothers in Suhum feed their babies with weaning foods. The number of times and intervals mothers give weaning food to their babies

Table 19: Number of Feeding Times in a Day for Infants

Number of Feeding Times	Frequency	Percentage (%)
Twice	15	21.7
Thrice	30	43.5
4 times and above	24	34.8
Total	69	100.0

The researcher wanted to find out the frequency of giving weaning foods by mothers and the result shows that 21.7% of the respondents indicated they feed twice a day, 43.5% made it known that they feed their infants thrice a day, another 34.8% of the sample respondents made it known that they feed their infants four times or more a day.

Table 20: Feeding Interval for Infants

Feeding intervals	Frequency	Percent
2 hours	12	17.4
4 hours	9	13.0
6 hours	39	56.5
8 hours	9	13.0
Total	69	100.0

The researcher wanted to find out the time interval for weaning by mothers, 17.4% of respondents indicated they serve within an interval of 2 hours, while, 13.0% of the respondents made it clear they serve every 4 hours, another 56.5% of the respondents made it known that the feeding interval is 6 hours, those who indicated 8 hours intervals were 13.0%, mothers explain that they intersperse weaning foods with breast milk. Table 19 and 20 give a clear indication that mothers feed their infants three times of six hours intervals in a day without considering that toddlers have very small stomachs. It may be better to feed them 5-6 small meals a day, rather than three large ones (Samour, & King, 2005).

Table 21: Feeding On Demand by mothers

Feeding on Demand	Frequency	Percentage (%)
Yes	54	78.3
No	15	21.7
Total	69	100.0

From the data gathered, 78.3% of the respondents responded that they feed on demand, when the baby is crying or showing signs of readiness. However, 21.7% of the respondents answered no, they do not feed on demand rather on schedule or by force because their babies do not demand the weaning food.

It is normal for an infant to eat every 1 to 4 hours. Breast fed babies may eat more frequently because breast milk is more easily digested than formula. Sometimes babies will follow normal feeding patterns, but it is important not to force an infant to

eat on a strict schedule. Letting a baby to choose when he or she eats allows for self-regulation and healthy weight gain (World Health Organization, 2012, the American Academy of Paediatrics, 2012). Tylka *et. al.* (2015) explained further that, Interfering in this process by imposing an infant feeding schedule does not help babies develop their own intuitions about food And it may lead to problems. From the table above, 78.3% of the mothers agreed to this fact whiles 21.7% did not agree and said they force to feed their infants with weaning foods.

4.5 Research Question Four

What are the challenges during the weaning period?

This research question sought to investigate the mothers' experiences on the challenges during the weaning period. Results were analyzed using means and standard deviations. Question items were also presented in frequencies and percentages.

Table 23: Challenges during the Weaning Period of Infants

Challenges during the Weaning Period	Strongly Agree		Agree		Disagree		Strongly Disagree		Mean	Standard Deviation
	F	P (%)	F	P (%)	F	P (%)	F	P (%)		
Baby refuses to eat	27	39.1	12	17.4	12	17.4	18	26.1	2.30	1.259
Constipation	3	4.3	6	8.7	33	47.8	27	39.1	3.22	.795
Diarrhoea	48	69.6	0	0	3	4.3	18	26.1	1.87	1.359
Baby vomits	45	65.2	0	0	6	8.7	18	26.1	1.96	1.364
Baby develops allergies	6	8.7	0	0	0	0	63	91.3	3.74	.864

Table 23 presents responses to find out mothers challenges during the weaning period. It revealed that, 56.5% of respondents agreed to the fact that their babies refuse to eat every food they give to them during the weaning period. However few the respondents (13.0%) agreed that babies constipate when weaning began whiles majority (83.9%) were in disagreement, and as such was not regarded as a

major challenge to them. Again 69.6% were complaining of acute diarrhoea when they started introducing solid foods, from the responses of the mothers. Hofvander (1983) was not far from the truth when he concluded that, weaning is a dangerous time for infant and young children. Research has established the fact that there is a relatively high rate of infection, particularly of diarrhoea diseases during weaning than at any other period in life. This is because the diet changes from clean breast milk, which contains anti-infective factors, to foods, which are often prepared, stored and fed in unhygienic environments (Decher, 1993). Again, 65.2% said babies vomit food they eat when they are forced and only 8.7% complain of babies experiencing food allergies. In the research, parents were open about the many challenges that they faced: These included:

- Choosing baby foods to introduce at the weaning stage can be confusing
- Varying opinions and advice from grandparents, family and friends about what to do.

Taylor (2018) continued to explain that weaning can be an exciting and sometimes daunting time for parents as they introduce their baby to the world of solid food. Advice is often conflicting with lots of opinions thrown in to the mix, so take your time. It is recommended to breastfeed exclusively for the first six months and then continue with demand-breastfeeding as solid food is introduced. It is a well known fact that, there is a relatively high rate of infection, particularly of diarrhoea diseases during weaning than at any other period in life. This is because the diet changes from clean breast milk, which contains anti-infective factors, to foods, which are often prepared, stored and fed in unhygienic environments (Hofvander, 1983). According to Smith (2002), inadequate feeding practices during the weaning period also causes a high mortality rate in Children in West Africa.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTION FOR FUTURE RESEARCH

5.0 Overview

In this chapter, the summary of the study and findings and conclusions drawn from the study are presented. The chapter also presents recommendations based on the conclusions as well as suggestions for further studies and research.

5.1 Summary of findings

The purpose of the study was to investigate child weaning practices among nursing mothers in Suhum Municipality in the Eastern Region of Ghana. In line with the aim of the study, the objectives were to find out weaning foods mothers in Suhum give to their infants after 6-24 months, identify factors that influence the choice of weaning foods in Suhum, find out how mothers feed their infants with weaning foods and to find out mothers challenges during the weaning period, using the descriptive research design. Purposive and convenience sampling techniques were used to sample a total of sixty nine (69) respondents structured interview guide data gathering tools to document the findings.

The Statistical Package for Social Science (SPSS) version 20 for windows was used for the analysis. Statistics included mean, frequencies, percentages and standard deviations. Based on the research questions, the frequency tables were used to make summaries of respondents' responses and for drawing conclusions.

Research Question One

What are the weaning foods mothers in Suhum give to their infants?

According to the study, mothers in Suhum choose food from the six Ghanaian food groups and prepare various dishes in liquid or served in puree form for their infants at the point of feeding depending on the age of the baby. Porridge (koko) is found to be the non-milk food given to infant. Food items mostly used are predominantly maize, rice, yam, groundnut, pawpaw, banana, beef, chicken, fish, margarine, kontomire, okro. It was also found out that no mother had introduced the child to pork.

Common dishes that were mostly prepared as weaning foods were: porridge (koko), wean mix (cereal+legumes), boiled rice with soup/stew, oto, banku with okro soup/stew, served from the family's pot.

Research Question Two

What are the factors that influence the mothers' choice of weaning foods?

The factors which account for choice of weaning food was looked at and it was evident that there are a host of factors that determine the choice of weaning food. The following were identified as some of the factors; food available at home at the time they want to feed infant or at the market, the level at which the child accept a particular food, the nutritional needs of the infant, method and skills use to prepare the dish, cost of food available. The study revealed that very few mothers do consider medical condition of their infants before choosing food for them.

Research Question Three

How do mothers in Suhum feed their babies with weaning foods?

Another significant finding was that, mothers feed their infants three times in a day with six hours intervals, yet on demand of the infant. Mothers revealed that they

feed the babies themselves while others admitted that they do that with a helping hand.

Research Question Four

What are the challenges during the weaning period?

Other striking findings that emerged out of the study were the challenges that the mothers face during the weaning period. Some of the challenges were acute diarrhea, babies crying and rejecting food by pushing it out with their tongues, vomiting, some of the babies developing allergies and constipation in one of the cases. Some of the allergenic foods identified are snails, beans and milk.

5.2 Conclusions

Based on the findings of the study, the following conclusions were drawn:

Many of the traditional weaning foods used in the Suhum Municipality are of low nutrient density. Cereal gruels and starchy roots and tubers continue to form the bulk of the weaning foods. Some children, however, are weaned directly onto the family diet early in life.

The diets of the infants were diversified as they frequently consume food stuffs from the six food groups. However, more vegetable and variety of fruit should be included in their diet in a form that will be more acceptable by the infants.

In choosing food for their infants, mothers focused more on the availability and acceptability of the food. However, cost of food and infant nutritional needs were found to be the least of their considerations.

Infants were fed three times in a day with six hour interval by themselves and other helping hands.

Infant who Suffer from acute diarrhoea was the major challenge confronting nursing mothers, followed by refusal of food by infant, vomiting and

infants developing allergies were other challenges they face during the weaning period.

5.4 Recommendations

After a closer look at weaning practices among mothers in Suhum Municipality,

- The range of consumption of foods like fruits, vegetables, roots and tubers was very limited therefore it is recommended that a greater variety of these foods should be included in their diet.
- Weaning foods should be attractive and palatable as much as possible to attract infants.
- Mother should set aside substantial amounts of time to prepare foods separately to improve acceptability of food.
- New foods should be introduced gradually to ensure maximum cooperation of the infants.
- Infant should be fed 5-6 times in a day interspersed with breast milk.
- Nursing mothers in Suhum should be educated to help improve upon their knowledge in food hygiene and food borne diseases to enable them make informed decisions on cooking and feeding of their infant during the weaning period.

5.4.1 Suggestions for Future Research

- Infants feeding practices and the impact on their nutritional status.
- Assessing mothers' knowledge in food hygiene and food borne diseases and its influence on their choice of weaning foods.

REFERENCES

- Agostoni, C., Decsi, T., Fewtrell, M., Goulet, O., Kolacek, S., Koletzko, B., & Shamir, R. (2008). Complementary feeding: A commentary by the ESPGHAN Committee on Nutrition". *Journal of Pediatric Gastroenterology and Nutrition*, 46(1), 99-110.
- Airasian, P. W., & Gay, L. R. (2003). *Educational research: Competencies for analysis and application*. Upper Saddle River, NJ: Prentice Hall.
- Al-Mazrou, Y. Y., Al-Amoud, M. M., El-Gizouli, S. E., Khoja, T., Al-Turki, K., Tantawi, N. E., & Aziz, K. M. (2003). Comparison of the growth standards between Saudi and American children aged 0 - 5 years. *Saudi Medical Journal*, 24(6), 598-602.
- Alnwick, D., Moses, S. & Schmidt, O. G. (ed.) (2012). Improving young weaning practices in child feeding in Eastern and Southern Africa. *International Development Research Centre*, Ottawa
- American Academy of Pediatrics (2012) Breastfeeding and the use of human milk. *Pediatrics*, 129 (No. 3) pp. e827 -e841
- Amin, M. E. (2005). *Social science research: Conception, methodology and analysis*. Kampala: Makerere University Printery.
- Annon, (1994). Weaning and the weaning diet. Report of the working group on the weaning diet of the committee on medical aspect of food policy. Department of Health.
- Annon, (2010). Breastfeeding benefits for mothers. INFACT Canada.
- Armar-Klimesu, M. A., & Wheeler, E. F. (1991). Weaning practices and their outcome: A critical look with special reference to Ghana. *Bulletin of Noguchi Memorial Institute for Medical Research*, 4, 3-24.
- Armar-Klimesu, M. A., & Wheeler, E. F., (1992). Feed fading practices and nutritional status of breast fed infants in rural Upper East, Ghana. Special Edition *Bulletin of Noguchi Memorial Institute of Medical Research*, 5(2), 36 - 53.
- Armar-Klimesu, M. A. & Wheeler, E. F. (2011). Weaning practices and their outcome: A critical look with special reference to Ghana. *Bulletin of Noguchi Memorial Institute of Medical Research*. 4,3-24.
- Ashley, T. (2014). On Demand versus Scheduled Feeding: Which is the best for baby? Retrieved online from www.sdbfc.com on April 2, 2019.
- Ashworth, A. (2006). "Efficacy and effectiveness of community-based treatment of severe malnutrition". *Food and Nutrition Bulletin*, 27(3), S24-S48

- Babbie, E., & Mouton, J. (2008). *The practice of social research*. Cape Town: Oxford University Press.
- Babbie, E., (2004). *The practice of social research* (10th Ed.). USA: Thomas Wadsworth.
- Barnes, L. A. (1990). *Basis for weaning recommendation*. Journal of Paediatrics. 117: 584 – 585.
- Barr SI. (1994). Associations of social and demographic variables with calcium intakes of high school students. *J Am Diet Assoc* 94(3):260–269.
- Bauer, RK. W., Hearst, M. O, Escoto K, Berge J. M., & Neumark-Sztainer, D. (2012). Parental employment and work-family stress: Associations with family food environments. *Social Science and Medicine*. 75(3):496–504. [PMC free article] PubMed.
- Bellows, L., Clark, A. & Moore, R. (2013). Introducing solid foods to infants. Retrieved online from <http://extension.colostate.edu> on March 20, 2019
- Birch, L. L. (1999). Development of food preferences. *Annual Review of Nutrition*, 19(41-62).
- Birch, L. L., McPhee, L., Steinberg, L., & Sullivan, S. (1990). Conditioned flavour preferences in young children. *Physiology and Behaviour*, 47, 501-505.
- Blanc., & Gray (2000). *Greater than expected fertility decline in Ghana: An Examination of the evidence*. Maryland USA: Macro International Inc
- Blum-Khemelior, D. M. (2002). Feeding Infants: A guide for use in the child nutrition programs. A publication of United States Department of Agriculture Food and Nutrition Service. Vol. 258. Retrieved online from www.worldcat.org on January 4, 2019.
- Borg, W. R., & Gall, M. D. (2003). *Educational research: An introduction* (5th ed.). New York: Longman.
- Brandtzaeg, P., Kiyono, H., Pabst, R., & Russell, M. W. (2008). Terminology: nomenclature of mucosa-associated lymphoid tissue. *Mucosal Immunology*, 1(1), 31.
- Bredbenner, C., Abbot, J. M., & Cussler, E. (2009). Nutrient profile of household food supplies of families with young children. *Journal of the American Dietetic Association*, 109(12), 2057-2062
- Bressani, R., & Elias, L. G., (2013). *Nutritional improvement of food and feed protein*. New York and London. Plenum Press.

- British Nutrition Foundation. (2016). *Infant nutrition*; Retrieved from [www. nutrition .org.uk](http://www.nutrition.org.uk) on 12/09.2017.
- Bryman, A., & Bell, E. (2011). *Business research methods* (3rd ed.). New York: Oxford.
- Cameron, S. L., Heath, A-L. M., & Taylor, R. W. (2012). Healthcare professionals' and mothers' knowledge of attitudes to and experiences with baby-led weaning: A content analysis study.
- Cameron, S. L., Heath, A-L. M., & Taylor, R. W. (2012). Healthcare professionals' and mothers' knowledge of attitudes to and experiences with baby-led weaning: A content analysis study.
- Central Intelligence World Facts Book, (2018). Retrieved from www.theodora.com on 17/1/2019
- Clíodhna, F. N. (2018). New research highlights challenges for parents when starting their babies on solid food.
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research Methods in Education*. 8th Ed. London: Routledge Press.
- Commey, J. O. O. (1991). Nutrition and child development. *Ghana Medical Journal*, 24(1), 37-42.
- Cooke, L. McCrann, U., & Higgins, C. (2013). Managing weaning problems and complementary feeding, *paediatrics and child health*, 23: 8, Elsevier Limited
- Cowbrough, K. (2010). Complementary feeding for infants 6 to 12 months. *Journal of Family Health Care*, 20.
- Dachner, N, Ricciuto, L., Kirkpatrick, S. I, & Tarasuk, V. (2010). Food purchasing and food insecurity among low-income families in Toronto. *Canadian Journal of Dietetic Practice and Research*. 71(3): 50-56.
- Dandekar, R. H., Shafee, M., & Kumar, R. (2014). Breastfeeding and weaning practices among literate mothers: A community based study in rural area of Perambalur Taluk, Tamil Nadu. *The Health Agenda*, 2(1), 15-21.
- Danso, J. (2014). Examining the practice of exclusive breastfeeding among professional working mothers in Kumasi Metropolis of Ghana. *International Journal of Nursing*, 1(1).
- Decher, L. (1993). Feeding practices and severe infectious diarrhea in West African children under the age of two years. *Ann Arbor, Michigan University Microfilms International*, XVI(210) [Doctoral dissertation, University of Minnesota,]

- Department of Health. (2008). Weaning: Starting solid food. London: Department of Health. Available at <http://www.dh.gov.uk/publications>. Retrieved on March, 2016.
- Dettwyler, K. A. (1987). Breastfeeding and weaning in Mali: Cultural context and hard data. *Social Science and Medicine*, 24(8), 633-644.
- Devine, C. M. & Connors, M. B. (1999). Life-course influences on the development of a food choice trajectory: a qualitative analysis of fruit and vegetable use. *Journal of Nutrition Education*. 30: 361-370.
- Devine, C. M., Wolfe, W. S., Frongillo, E. A. Jr., & Bisogni, C. A. (1999). Life-course events and experiences: Association with fruit and vegetable consumption in 3 ethnic groups. *Journal of the American Dietetic Association*, 99(3), 309–314
- Devine,, C. M., Connors, M. M., Sobal, J, Bisogni, C. A. (2003). Sandwiching it in: Spillover of work onto food choices and family roles in low and moderate-income urban households. *Social Science and Medicine*, 56(3), 617-630.
- Dibsdall, L. A., Lambert, N., Bobbin, R.E. & Frewer, L. J., (2003). Low-income consumers' attitudes and behaviour towards access, availability and motivation to eat fruit and vegetables. *Public Health Nutrition*, 6(2):159-168.
- Donkin, A. J., Dowler, E. A., Stevenson, S. J., (2000). Mapping access to food in a deprived area: the development of price and availability indice. *Public Health Nutrition* 3 (1), 31-38. Cambridge.org
- Douglas, J. E. & Bryon, M. (2012). Interview data on severe behavioural eating difficulties in young children.
- Drewnowski, A, & Levine, A. S. (2003). Sugar and fat - from genes to culture. *Journal of Nutrition*, 133(3), 829S–830S.
- Drewnowski, A., Henderson, S. A., Levine A, & Hann, C. (1999). Taste and food preferences as predictors of dietary practices in young women. *Public Health Nutrition* 2(4):513–519. PubMed.
- ESPGHAN Committee on Nutrition. (2008). Complementary feeding: A commentary by the ESPGHAN Committee on Nutrition. *J. Pediatric Gastroenterol Nutrition*, 46, 99-110.
- Evans A., Chow S., Jennings R., Dave J., Scoblick K., Sterba K. R., & Loyo, J. (2011). Traditional foods and practices of Spanish-speaking Latina mothers influence the home food environment: Implications for future interventions. *Journal of the American Dietetic Association*, 111(7):1031–1038.

- Fagbule, D. O., Olaosebikan, A., & Parakoyi, D. B. (1990). Community awareness and utilization of growth chart in a semi-urban Nigerian community. *East African Medical Journal*, 67(2), 69-74.
- Fleisher M. K., Weaver L., & Branca, F., (2000). Feeding and nutrition of infants and young children. WHO Regional Publications. Copenhagen: European Series, No. 87
- Foley, N. (2018). Weaning a Challenging time for parents. Retrieved from www.irishhealth.com 10/07/2018
- French, S. A., Story, M., Hannan P., Breitlow, K. K., Jeffery, R. W, Baxter, J. S., & Snyder, M. P. (1999). Cognitive and demographic correlates of low-fat vending snack choices among adolescents and adults. *J Am Diet Assoc* 99(4):471-475.
- Gardiner, C. N. (1991). Effects of maternal education on weaning practices and child health. *Noguchi Memorial Institute of Medical Research Bulletin*. 4(1), 48-55.
- Garoo, R (2019). 15 Healthy Breakfast Recipe Ideas for your Baby. www.momjunction.com. Retrieved on 2/4/2019.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*. 11.0 update (4th ed.). Boston: Allyn & Bacon.
- Gerrish, K., & Lacey, A. (2006). *Communication and disseminating research* (5th ed.). Oxford: Blackwell Publishing
- Ghana Demographic and Health Survey. (1993). *Government of Ghana, Ghana Statistical Service and Macro International Inc.*, Accra: USA: Ghana and Calverton, Maryland:
- Ghana Statistical Service, (2017). *Population Census*. Retrieved from statsghana.gov.gh. on 01/03/2016.
- Grant, W. F. (1955). Nutrition and health of Gold Coast Children; care and physical status of children. *Journal of the American Dietetic Association*. 31, 685-693.
- Guldan, G. S., Zeitlin, M.F., Beiser, A. S., Super, C. M., Gershoff, S. N., & Dhatta, S. (1993). *Maternal education and child feeding practices in Bangladesh*.
- Guldan, S. G. & Zhang, Y. M., Zhang, P. Y., Hong, R. J., Zhang, X. H., Fu, Y. S., & Fu, S. N. (1993). Weaning practices and growth in rural Sichuan infants: A positive deviance study. *Journal of Tropical Pediatrics*, 39, 168-75, 10.1093/tropej/39.3.168.
- Gyebi-Ofosu, E. A. (1990). Nutritional status of Ghanaian children in Old Tafo and Donyina in the Ashanti Region of Ghana. *Ghana Medical Journal*, 24(2), 120-125.

- Hammond, P. (2012). Religious dietary guidelines and restrictions. Retrieved online from www.chewfo.com on March 26, 2019
- Heird, W. C. (1996). *Nutritional requirements during infancy*. 7th Ed., 396–403. ILSI Press: Washington, DC.
- Hoare, K. (1994). Tackling infant malnutrition in The Gambia. *Health Visitor*, 67, 102-103.
- Hofvander, T. Y. (2013). Chasing children's fortunes: Cases of parents' strategies in Sweden, the UK and Korea. *Intersection and Interplay: Contributions to the Cultural Study in Performance, Education, and Society*, 125-140.
- Hofvander, Y., & Cameron, M. (1983). *How to develop recipes for weaning foods*. In Manual on feeding infants and young children. (3rd Ed). Delhi, India: Oxford University Press.
- Hursti, K. (1999). Factors influencing children's food choice. www.science.gov . Retrieved on April 4, 2019
- International Conference on Nutrition (ICN) (1993). Sudan/FAO Regional Office for the Near East, 69-82.
- Kahneman, D. (2011). *Thinking, fast and slow*. Delhi. Farrar, Straus and Giroux.
- Kambli, S. (2014). Mother's knowledge regarding weaning process in infants. *International Journal of Science Research*, 3(7), 1192-1197.
- Kempson, K, Keenan, D. P., Sadani, P. S., & Adler, A. (2003). Maintaining food sufficiency: Coping strategies identified by limited-resource individuals versus nutrition educators. *Journal of Nutrition Education and Behavior*, 35(4):179–188.
- Koletzko, B. (2008) Basic concepts in nutrition: Nutritional needs of children and adolescents. e-SPEN. *The European e-Journal of Clinical Nutrition and Metabolism*, 3, 179–184.
- Kowal-Connelly, S. (2017). *How children develop unhealthy food preferences*. *American Academy of Paediatrics*. Retrieved from www.healthychildren.org on April 4, 2019
- Krebs, N. F., Westcott, J. E., Butler, N., Robinson, C., Bell, M., & Hambidge, K. M., (2006). 'Meat as a first complementary food for breastfed infants: feasibility and impact on zinc intake and status'. *Journal of Paediatric Gastroenterology and Nutrition*, 42: 207 – 214.
- Kusi, H. (2012). *Doing qualitative research: A guide for researchers*. Accra: Emmpong Press.

- Lal, M. (2015). Breastfeeding and weaning practices of children in Rural Area of Punjab, India: A questionnaire study. *International Journal of Scientific Study*, 3(1), 90-93.
- Laroche, H. H., Wallace, R. B., Snetselaar, L, Hillis, S. L., & Steffen, L. M. (2012). Changes in diet behavior when adults become parents. *Journal of the Academy of Nutrition and Dietetics*. 112(6): 832 – 839.
- Latham, M. C., & Preble, E. A. (2000). Appropriate feeding methods for infants of HIV infected mothers in sub-Saharan Africa. *BMJ*. 320, 1656 – 60.
- Lebenthal, E. (1985). 'Impact of digestions and absorption in the weaning period on infant feeding practices'. *Pediatrics* 75 (1 pt 2): 207 – 13
- Liu, H. Y & Stein, M. T. (2013). 'Feeding Behaviour of Infant and Young Children and Its Impact on Children Psychosocial and Emotional Development. *Encyclopedia of Early Childhood Development*. Retrieved on 18/3/18.
- Lucas, B. L. & Feucht, S. A. (2003). 'Introduction to using growing charts for Medical Nutrition Evaluation'. *Paediatric Manual of Clinical Dietetics*. Chicago IL, America
- Mammen, S., Bauer, J. W, & Richards, L. (2009). Understanding persistent food insecurity: A paradox of place and circumstance. *Social Indicators Research*. 92(1), 151–168.
- McMillan, J. H., & Schumacher, S. (2010). *Research in Education: Evidence-Based Inquiry* (7th Ed.). Boston, MA: Pearson.
- Mennella, J. A., & Ventura, A. K. (2011). Early feeding: Setting the stage for healthy eating habits. In *Early Nutrition: Impact on Short-and Long-Term Health* (68), 153-168. Karger Publishers.
- Mennella, J. H., Jagnow, C. P., & Beauchamp, G. K. (2001). 'Pre-natal and post-natal flavour by learning by human infants'. *Paediatrics*. 107: E88.
- Mohammed, S. G. S. (2014). Infants feeding and weaning practices among mothers in Northern Kordofan State, Sudan. *European Scientific Journal*, 10(24).
- O'Connell R., & Brannen J. (2014). Food families and work; Children's changing food practices in the context of parental employment. Bloomsbury Publishing.
- Ocloo, E. (1993). Chronic under nutrition and the young. *Proc Nutr Soc.*, 52(1), 7-11.
- Olson, C. M., Bove, C. F., & Miller, E. O. (2007). Growing up poor: Long-term implications for eating patterns and body weight. *Appetite*, 49(1), 198–207.

- Orr, A. J., Newsome, S. D., Laake, J. L., Van-Blaricom, G. R., & DeLong, R. L. (2012). Ontogenetic dietary information of the California sea lion (*Zalophus californianus*) assessed using stable isotope analysis. *Mar Mamm Sci*, 28, 714-732.
- Oyeleke, G. O., Odedeji, J. O., Ishola, A. D., & Afolabi, O. (2015). Phytochemical Screening and Nutrition Evaluation of African Oil Beans Seeds. *Journal of International Science*, ISSN: 2319-2399 8(2).
- Polit, D. F. & Hungler, B. P. (1999). *Nursing Research: Principles and Methods*. Retrieved from <https://Scholar.google.com>. on 07/09/2015.
- Polit, D. F., & Beck, C. T. (2004). *Nursing research: Appraising evidence for nursing practice* (6th Ed.). Philadelphia: Wolters Klower/Lippincott Williams & Wilkins.
- Rao, S., & Rajpathak, V. (1992). Breast feeding and complementary practices in relation to nutritional status of infants. *Indian Pediatrics*, 29(12), 1533-1539.
- Reyes-Posso, M. (2008) Alimentación complementaria en los niños menores de dos años. *Revista Ecuatoriana de Pediatría* 9, 63–67.
- Roundy, G. T. (2016). Pathways to marriage: Relationship history and emotional health as individual predictors of romantic relationship formation.
- Ruel, M. T., Habicht, J. P. & Olson, P. (1992). Impact of the clinic-based monitoring program on maternal nutrition knowledge in Lesotho. *International Journal of Epidemiology*, 21, 59–65.
- Saaka, M. (2014). Relationship between mothers' nutritional knowledge in childcare practices and the growth of children living in impoverished rural communities. *Journal of Health, Population and Nutrition*, 32(2), 237.
- Sagan, C., & Druyan, A. (1994). Literacy – The Path to a More Prosperous, Less Dangerous America. Parade Magazine.
- Sajilata, G., Rekha, S., & Pushpa, R. (2002). Weaning foods: A review of the Indian experience. *Food and Nutrition Bulletin*, 23(2). The United Nations University.
- Salih, M., El Bushra, H., Satti, S., Ahmed, M el-F., & Kamil, A. I. (1993). Attitudes and practices of breast-feeding in Sudanese urban and rural communities. *Tropical and Geographical Medicine*, 45, 171-174.
- Samour, P. Q. & King, K. (2005), *Paediatric Nutrition (3rd Ed.)*. U.S.A: Jones and Bartlett Publishers.

- Santiago-Torres, S. (2014). Home food availability, parental dietary intake and familial eating habits influence the diet quality of urban Hispanic children. *Child Obesity, 10* (5): 408 – 415 doi 10.1089 /chi
- Schwartz, C., Issanchou, S., & Nicklaus, S. (2009). Developmental changes in the acceptance of the five basic tastes in the first year of life. *British Journal of Nutrition, 102*, 1375–1385.
- Smith, J. P. (2013). Lost milk? Counting the economic value of breast milk in gross domestic product. *Journal of Human Lactation, 29*(4), 537-546.
- Smith, J. P., Thompson, J. F., & Ellwood, D. A. (2002). Hospital system costs of artificial infant feeding: Estimates for the Australian Capital Territory. *Australian and New Zealand Journal of Public Health, 26*(6), 543-551
- Snehalatha, C., & Ambady, R. (2010). Rising burden of obesity in Asia. *Journal of Obesity*, DOI: 10.1155/2010/868573. Retrieved from www.researchgate.net on 02/10/2018
- Soboti, J. C. & Addy, H. A. (1980). Protein-malnutrition in the Sununu area: Etiological factors. *Ghana Medical Journal, 19*, 203-208.
- Sorensen, L. B., Moller, L., Martens. (2003). Effects of sensory perception of foods on appetite and food intake: a review of studies on humans. *International Journal of Obesity and Related Metabolic Disorders 27*:1152-1166. *Public Health Nutrition, 3*(1):31-38.
- Spence, C (2017). Breakfast: The most important meal of the day? *International Journal of Science , 8*,1-6
- Svanberg, U. (1988). Dietary bulk in weaning foods and its effect on food and energy intake. In *Improving Young Child Feeding in Eastern and Southern Africa: Household Level Food Technology*. Proceedings of a Workshop held in Nairobi, Kenya, 11-16 Oct., IDRC, Ottawa, ON, CA.
- Takyi, E. E. K., Kido Y., Rikimaru, T., & Kennedy, D. O. (1991). The use of alfalfa as a supplement in infant feeding. *Bulletin of Noguchi Memorial Institute for Medical Research 4*: 35-47.
- Tannor, L. L. (2011). *Guide to writing dissertations*. Accra: Dieco Ventures.
- Tarrant, M., Fong, D. Y., Wu, K. M., Lee, I. L., Wong, E. M., Sham, A., & Dodgson, J. E. (2010). Breastfeeding and weaning practices among Hong Kong mothers: A prospective study. *BMC Pregnancy and Childbirth, 10*(1), 27.
- The British Dietetic Association (2013). Complementary feeding: Introduction of solid food to an infant diet. A Policy Statement.

- The British Dietetic Association Specialist Paediatric Group (2013). BDA paediatric group position statement: weaning infant onto solid foods. Retrieved from <http://www.bda.uk.com>
- Thomas, B., & Bishop, j. (2007). *Manual of dietetic practice*. 4th ed. London: Wiley-Blackwell.
- Tylka, T. L., Lumeng, J. C. & Enebi, I. U. (2015). Maternal intuitive eating as a moderator of the association between concern about child weight and restrictive child feeding. *Appetite* 95: 158 – 165
- United Nations International Children's Emergency Fund (UNICEF) (2011). Infant and young child nutrition. Retrieved from www.unicef.org on 20/4/2016.
- Vyas, S. D., Jayanti, S., Sandhya, C., Vipul, N.,(2014). Trends in weaning practices among infants and toddlers in a hilly terrain of a newly formed State of India. *International Journal of Preventive Medicine*. Retrieved from www.ncbi.nlm.nih.gov on 12/3/16.
- Walker, C. D. (2010). Maternal touch and feed as critical regulators of behavioural and stress responses in the offspring. *Developmental Psychobiology*, 52(7), 638-650.
- Wardlaw, G. M. & Insel, P. M. (2000). *Contemporary nutrition*. 4th ed. McGraw Hill Companies.
- Weck, H., (1984). "Wage formation in Norwegian manufacturing: An empirical application of a theoretical bargaining model" *European Economic Review journal*, 32:4
- Welman, C., Kruger, F., & Mitchell, B. (2005). *Research methodology*. New York: Wiley.
- Whartson, B. A. (1999). Iron deficiency in children detection and prevention. *Br. J. Heamatol* 106, 270-280 .
- WHO (2000). Complementary feeding: Family foods for breastfeeding children. Geneva
- WHO (2010). Infant and young child feeding. Accessed on November, 2017
- WHO (2013). Breastfeeding retrieved from <http://www.who.int/topic/breastfeeding/en> on 12/8/2018
- Wiig, D. K., & Smith, C. (2009). Factors affecting low-income women's food choices and the perceived impact of dietary intake and socioeconomic status on their health and weight. *Journal of Nutrition Education and Behavior*, 41(4), 242-253.

- Wiig, D. K. & Smith, C. (2009). Factors affecting low-income women's food choices and the perceived impact of dietary intake and socioeconomic status on their health and weight. *Journal of Nutrition Education and Behavior*, 41(4): 242–253.
- Wiig, K., & Smith C. (2009). The art of grocery shopping on a food stamp budget: Factors influencing the food choices of low-income women as they try to make ends meet. *Public Health Nutrition*, 12(10):1726–1734.
- World Health Organization(WHO) (2013). Global update on HIV treatment result; impact opportunities
- World Health Organization, (2013). Essential nutrition actions: Improving maternal, newborn, infant and young child health and nutrition. World Health Organization 20, Avenue Appia, 1211 Geneva 27, Switzerland: WHO
- World Health Organization, (WHO) (2012). Nutrition experts take action on malnutrition. Retrieved online from http://www.who.int/nutrition/pressnote_action_on_malnutrition/en.
- World Health Organization. (2013). Guideline: Updates on the management of severe acute malnutrition in infants and children. World Health Organization. [www.w.bounty.com/baby-0 to 12months/weaning/problems with weaning](http://www.bounty.com/baby-0-to-12months/weaning/problems-with-weaning), (Monday, 22/10/2018; 11:40am)
- World Health Organization. Fifty-Fourth World Health Assembly. (2001). Global strategy for infant and young child feeding: The optimal duration of exclusive breastfeeding. Geneva, Switzerland: World Health Organization
- Young, B. & Drewett, R. (2010). Eating behaviour and its variability in 1-year-old children. *Appetite* 35, 171–177.
- Zikmund, W. G., & Babin, B. J. (2010). *Business Research Methods* (8th Ed.). USA: South-Western College Publishing.

APPENDICES

APPENDIX A: QUESTIONNAIRE INSTRUMENT FOR RESPONDENTS

UNIVERSITY OF EDUCATION, WINNEBA

FACULTY OF SCIENCE EDUCATION

DEPARTMENT OF HOME ECONOMICS EDUCATION

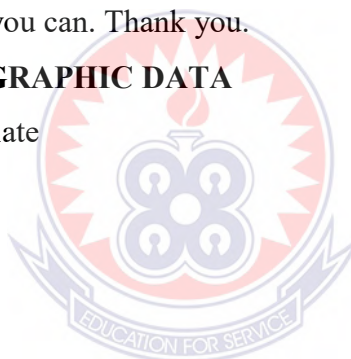
Introduction

This study is being carried out by Monica Boateng, an M.Phil student of the Department of Home Economics Education, University of Education, Winneba. The aim of this interview is to collect information on the Child Weaning Practices among nursing mothers in the Suhum Municipality. It is strictly for academic purpose, and you are please requested to provide honest information that will assist the researcher in obtaining appropriate data for this exercise. There is no right or wrong answers and your answers will be kept entirely anonymous. Please feel free to provide your answers in the best way you can. Thank you.

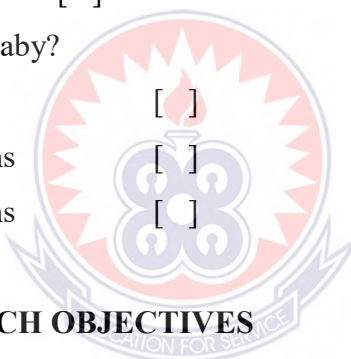
SECTION A – DEMOGRAPHIC DATA

Please tick () as appropriate

1. Age
 - a. 18 – 25 []
 - b. 26 – 35 []
 - c. 36 – 45 []
 - d. Above []
2. Level of education
 - a. Tertiary []
 - b. ‘A’, ‘A’ Level/Secondary/SHS []
 - c. Basic Education /MLSC/JHS []
 - d. No formal education []
3. Occupation
 - a. Self employed []
 - b. Private sector []
 - c. Government []
 - d. Unemployed []
4. Ethnic background:



5. What is your religious affiliation?
 - a. Christian []
 - b. Muslim []
 - c. Traditionalist []
 - d. Others (Specify)
6. Marital status
 - a. Married []
 - b. Divorced []
 - c. Single []
 - d. Widow []
7. How many children do you have?
 - a. 1 – 3 []
 - b. 4 – 5 []
 - c. 6 or more []
8. How old is your baby?
 - a. 6 – 12 months []
 - b. 13 – 18 months []
 - c. 19 – 24 months []



SECTION B: RESEARCH OBJECTIVES

OBJECTIVE ONE: TYPE OF WEAVING FOODS GIVEN BY NURSING MOTHERS

9. What non-milk food did you first give to your child?
.....
10. At what age?
 - a. 1 – 2 months []
 - b. 3 – 5 []
 - c. 6 – 8 []
 - d. 9 months or more []
11. What food do you give to your child at the following meal times?
 - a. Breakfast
 - b. Lunch
 - c. Supper

12. Which of the following iron rich food do you normally include in your child's diet? Tick as appropriate
- | | |
|----------------|------------------|
| a. Beef [] | d. Oily fish [] |
| b. Chicken [] | e. Pork [] |
| c. Lamb [] | f. White [] |
13. Do you normally serve snacks?
- a. Yes []
b. No []
14. What do you serve as snack?
15. How often do you give your child food from the following food groups? Tick appropriate answer. Thank you.

16.

Food items	Always	Usually	Sometimes	Once in a week
Animal product				
Fruit and vegetables				
Beans, nuts and oily seeds				
Cereal and grains				
Starchy root and plantain				
Fats and oils				

OBJECTIVE TWO

17. FACTOERS THAT INFLUENCE THE CHOICE OF WEANING FOODS BY NURSING MOTHERS

	Strongly Agree	Agree	Disagree	Strongly Disagree
i. The infant's nutritional needs				
ii. Medical conditions				
iii. Social factors				
iv. Financial consideration				
v. Method of preparation				

OBJECTIVE THREE:

HOW OFTEN BABIES ARE FED BY NURSING MOTHERS

18. How many times do you feed your baby with weaning foods in a day?
- a. Once []
 - b. Twice []
 - c. Thrice []
 - d. Four or more []
19. Specify the time interval of feeding your baby:
20. Do you feed on demand?
- a. Yes []
 - b. No []

OBJECTIVE FOUR:

21. CHALLENGES ENCOUNTERED DURING WEANING

Challenges	Strongly Agree	Agree	Disagree	Strongly Disagree
Baby refuse to eat				
Baby wants to self-feed				
Baby cries				
Baby vomits				
Any form of allergy after eating a particular food				

22. Have you identified any allergenic food?

