UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

DEPARTMENT OF HOSPITALITY AND TOURISM EDUCATION

ASSESSMENT OF INFANT FEEDING AND CARE PRACTICES AMONG NURSING MOTHERS IN ASANTE AKIM CENTRAL

JENNIFER AFRAKOMAH YEBOAH

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BY

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A Dissertation in the Department of Hospitality and Tourism, Faculty of Vocational Education, submitted to the School of Graduate Studies, University of Education Winneba, in partial fulfilment of the requirements for award of the Master of Technology (Catering and Hospitality) degree.

NOVEMBER, 2016

DECLARATION

CANDIDATE'S DECLARATION

I, JENNIFER AFRAKOMAH YEBOAH 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 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 in accordance with the guidelines for supervision of dissertation work laid by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. PATRICIA FORIWAA ABABIO

SIGNATURE:…….…….

DATE:……

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DEDICATION

I dedicate this work to my supportive husband Ps. Dr. Moses K. Sam, parents Mr. & Mrs. Yeboah Boateng and children Effei and Kukua.

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LIST OF ACRONYMS

EBF……...Exclusive BreastFeeding

FGD……..…..Focus Group Discussion

GDHS……..….Ghana Demographic and Health Survey

GHS…….….Ghana Health Service

MICS…….……Multiple Indicator Cluster Survey

MWST……..……..Municipal Water and Sanitation Team

NHS …….…….National Health System

SSPTW……...Social Security Programs Throughout the World

TBA……..…….……Traditional Birth Attendants

UNESCO…….United Nations Educational, Social and Cultural Organisation

UNICEF……..……..United Nations Children's Emergency Fund

USAID……...…..…United States Agency for International Development

WHO……..…….World Health Organisation

ABSTRACT

Childbirth and infancy are the most important and delicate parts of the development of babies. Regarding this, adequate nutrition during infancy and early childhood is essential to ensure child growth, health and development. This study therefore sought to assess the infant feeding and care practices among nursing mothers in the Asante Akim District of Ghana. The objectives of the study were to (1) determine the level of breastfeeding and complementary feeding awareness among nursing mothers in the study area, (2) investigate the complementary and breastfeeding practices among nursing mothers, (3) evaluate sources of water and water management practices among nursing mothers and (4) determine the hygiene practices of nursing mothers when feeding their babies. The researcher employed the descriptive survey design for this study. With a population comprising all mothers with children aged between 0 – 18 months, a sample of one hundred and fifty (150) participants was selected randomly from a strata of five communities. The researcher used observation and questionnaire as instruments for data collection. Analysis of the collected data was mainly done through the use of SPSS with descriptive statistics such as frequencies, means and percentages. The study found the level of breastfeeding and complementary feeding awareness of nursing mothers to be very high. However, the actual feeding practices left much to be desired as a significant proportion of mothers did not practice Exclusive Breastfeeding for the first six months whilst others did not give the all-essential 'first milk' colostrum to their infants. The study again revealed that the water management practices of mothers were good and had access to clean and safe drinking water. It was also found that majority of nursing mothers practiced good hygiene but did not sterilize their feeding equipment. The study recommends policy change such as longer maternity leaves for nursing mothers, higher formal education for females and intensive education for nursing mothers through home visits by health care officials to ensure optimal feeding practices of babies.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children to their full potential (World Health Organisation, WHO, 2009). According to WHO (2003), malnutrition has directly or indirectly contributed to 60% of the 10.9 million deaths annually among children under five. Childbirth and infancy are the most important and delicate parts of the development of babies. Regarding this, adequate nutrition during infancy and early childhood is essential to ensure child growth, health and development. However, nursing mothers are not abreast with current breastfeeding and complementary feeding practices of their children.

It is estimated that more than two-thirds of these deaths are often associated with inappropriate feeding practices which occurs during the first year of life. It has been recognized worldwide that breastfeeding is beneficial for both the mother and child, as breast milk is considered the best source of nutrition for the infant (Ku and Chow, 2010).

Breastfeeding offers many potential health and emotional bonding for mother and baby. Breast milk is nature's complete food for infant which is hygienic, valuable, convenient, economical, easily available and protective and is best appropriate for baby's requirement. It is the most complete form of nutrition available to infants. Milk contains immunizing agents which protects babies against various diseases and is rich in vitamins, enzymes and antibodies and it provides babies for the establishment of personalities and learning readiness. It is no doubt that no other food can replace mother's milk (Smith, 2000). When breast milk or infant formula no longer supplies infants with required energy and nutrients to sustain normal growth and optimal health and development, complementary feeding should be

introduced (More *et al.,* 2011). According to the WHO recommendations, the appropriate age at which solids should be introduced is around six months owing to the immaturity of the gastrointestinal tract and the renal system as well as on the neurophysiological status of the infant (Dratva *et al.,* 2006, Brown and Lee, 2010). Factors that influence the weaning process include infant feeding problems such as refusal to eat, colic, and vomiting (Hagekull *et al.,* 1997). These factors represent challenges for mothers and in turn may either directly or indirectly influence the feeding pattern of infants.

A recent report by the WHO (2008) estimated that almost 10% of the global burden of illness is related to water, through contaminated drinking water, inadequate or non-existent sanitation and hygiene, and poor water management. Globally, 1.5 million children die annually as a result of water and hygiene practices. Current guidelines for infant feeding, developed jointly by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), emphasize exclusive breastfeeding for the first six months of life and the subsequent addition of appropriate complementary foods to meet the increasing energy requirements for infant growth (Davis *et al.,* 2003). However, the Ghana Health Service (GHS) has reported an increasing trend of malnutrition in Ghana (Mensah, 2014). According to the agency's annual report, 2006, the malnutrition trends in children 0-11, 12–23 and 24–59 months have shown an increase over the period 2003-2006 (Mensah, 2014). It therefore appears that the breastfeeding and complementary feeding practices among mothers in Ghana is inadequately adhered to.

1.2 Problem Statement

According to MacCarthy *et al.,* (2007) and Davis *et al.,* (2003) nearly all mothers initiate breastfeeding in Ghana and give complementary foods to infants once the infant demonstrates

readiness to accept complementary food. However, there is low level of breastfeeding and complementary feeding awareness among nursing mothers in the Asante Akim Central District as they do not know how important breastfeeding is and when to introduce babies to complementary foods. There are also reports about nursing mothers not abreast with current breastfeeding and complementary feeding practices. Again, poor water management practices have led to water borne diseases among infants in the Asante Akim Central. Poor hygienic practices such as the use of unsterilized cooking utensils are one of the major problems in Asante Akim Central. This study attempted to identify the reasons for low level of breastfeeding and complementary feeding awareness among nursing mothers in the Asante Akim Central and give possible suggestions that would enlighten them on reasons why they have to breastfeed and give complementary food to their infants.

1.3 Main Objective

The purpose of this study was to assess the infant feeding and care practices among nursing mothers in the Asante Akim Central Municipality of Ghana.

1.3.1 Specific Objectives

The study sets out specifically to achieve the following objectives:

1. To determine the level of breastfeeding and complementary feeding awareness among nursing mothers.
2. To investigate the complementary and breast feeding practices among nursing mothers.
3. To evaluate the sources of water and water management practices among nursing mothers.
4. To determine the hygiene practice of nursing mothers when feeding the baby.

1.4 Research Questions

The following research questions were formulated to guide the study:

1. What is the awareness level of nursing mothers concerning breastfeeding and complementary feeding?
2. What are some of the complementary and breast feeding practices of nursing mothers?
3. What are some of the sources of water and the water management practices nursing mothers put in place when feeding the baby?
4. What are the hygiene practices nursing mothers put in place when feeding the baby?

1.5 Significance of the Study

This study will be beneficial in most ways especially to health workers and mothers who are the regarded as the principal stakeholders. First, the study will provide information on the infant feeding and care practices of nursing mothers to the Ministry of Health and other NGOs. The study will bring to light the current breastfeeding and complementary feeding practices that nursing mothers can adopt to improve breastfeeding and complementary feeding. It will also help mothers to understand and know the appropriate way of caring practices in feeding infants. It will further help identify the poor water management and hygienic practices and come out with suggestions that will improve the water management and hygienic practices of nursing mothers. This will go a long way to improve the health of infants in the Asante Akim Central District. To the academic and health community, it is envisaged that the findings of this study will provide a proper database on care practices that will be beneficial to all mothers, health professionals and policy makers.

1.6 Scope of the Study

The study is on child health care by nursing mothers but specifically is limited to the provision of proper care to infants and children through feeding practices. As such, feeding practices like breastfeeding, introduction of infants to water and weaning/complementary foods are considered under this study.

1.7 Limitations of the Study

Several challenges were encountered during the data collection for the study which had the potential of affecting the validity of the research findings. Participants were not willing to truthfully answer questions perceived to be too personal or difficult. The researcher had to reassure them of the purpose of the study and that the data would not be reported in any way that will reveal their identity. With the reassurance, the respondents were at ease and provided all the information that were needed. Again, most of the nursing mothers selected for the study were illiterates and as such the questionnaires had to be administered to them in the local language.

1.8 Organisation of the Study

The study is organized into six chapters. The first chapter comprises general introduction which includes the background to the study, problem statement, research questions, objectives of the study, scope of study, and organization of the study. Chapter Two focuses on literature review and this involves both empirical and theoretical literature related to the topic. In Chapter Three the methodology used for conducting the study which includes the study area, study design, sources of data, target population, sample size, sampling procedure is discussed. Others are pre-testing of instruments, ethical issues involved and data processing and analysis. Chapter Four is devoted to data analysis and presentation of results. Chapter

five presents a discussion of the results obtained from the study in line with available literature. The last chapter, Chapter six focuses on the summary of the major findings of the study as well as conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

According to the WHO (2008) report, breastfeeding does not benefit only the infant but also the mother in that it creates a vital mother-baby bond necessary for the child to grow in a threat-free environment. In Ghana, most parents admit that breast milk is the best food for the infant but are also ignorant about the health benefits that breast milk provides for the baby. For instance, in the past, it was thought that the first milk (colostrum) that comes after delivery was dirty because of its yellowish colour and had to be discarded (Ku and Chow, 2010). This chapter reviews relevant literature in the breastfeeding and infant nutrition practices of nursing mothers, and the awareness of health benefits of proper infant feeding.

2.2 Breastfeeding and Infant Health

Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children to their full potential World Health Organization (WHO, 2009). It has been recognized worldwide that breastfeeding is beneficial for both the mother and child, as breast milk is considered the best source of nutrition for an infant (Ku and Chow, 2010). The World Health Organization (WHO) recommends that infants be exclusively breastfed for the first six months, followed by breastfeeding along with complementary foods for up to two years of age or beyond (Hanif, 2011). Exclusive breastfeeding can be defined as a practice whereby the infants receive only breast milk and not even water, other liquids, tea, herbal preparations, or food during the first six months of life, with the exception of vitamins, mineral supplements, or medicines (Nkala and Msuya, 2011). The major advantage of exclusive breastfeeding from 4 to 6 months includes reduced morbidity due to gastrointestinal infection (Kramer and Kakuma, 2002). However, many

researchers are questioning if there is sufficient evidence to confidently recommend exclusive breastfeeding for 6 months for infants in developed countries due to the fact that breast milk may not meet the full energy requirements of the average infant at 6 months of age (Fewtrell, *et al.*, 2007).

According to the WHO recommendations, the appropriate age at which solids should be introduced is around 6 months (Brown and Lee, 2010), owing to the immaturity of the gastrointestinal tract and the renal system as well as on the neurophysiological status of the infant (Dratva, *et al*., 2006). Factors that influence the weaning process include infant feeding problems such as refusal to eat, colic, and vomiting among others (Hagekull, Bohlin, & Rydell, 1997). These factors represent challenges for mothers and in turn may either directly or indirectly influence the feeding pattern. Hence, understanding the factors affecting infant nutrition can help in developing strategies to promote breastfeeding and overcoming problems faced by mothers and children.

Predictors of breastfeeding and weaning practices vary between and within countries. Urban or rural difference, age, breast problems, societal barriers, insufficient support from family, knowledge about good breastfeeding practices, mode of delivery, health system practices, and community beliefs have all been found to influence breastfeeding in different areas of developing countries (Nkala and Msuya, 2011; Cherop, Keverenge-Ettyang, and Mbagaya, 2009; Thurman and Allen, 2008).

2.3 Infant- Feeding Practices and Knowledge of Mothers

Every expectant mother will be aware that the official advice on infant feeding is that 'breast is best'. All other things being equal, breastfeeding has health benefits for a newborn baby

over formula feeding (bottle feeding), and a long-running public health campaign promoted breastfeeding over formula feeding on this basis. Yet most women especially in the developed countries do not breastfeed their babies for very long. While about 80% of babies are now breastfed at birth, by three months less than 20% are exclusively breastfed. The official recommendation is that babies are exclusively breastfed – having no infant formula or solid food at all – for six months, but in reality only 1% of babies are exclusively breastfed by this point (Nkala and Msuya, 2011).

This leaves both mothers and policymakers in a difficult position. Women are told that they are supposed to breastfeed exclusively for their baby's first six months, yet they find that they can't, or don't want to do this. This can make them feel guilty or anxious about the impact that their 'failure' to breastfeed might have on their child's health and development. For policy makers, the huge gap between the target and the reality – that 99% of women don't meet that target – is problematic. While many health professionals do want to promote breastfeeding, they do not want new mothers to feel bad about themselves. To set a target that most people will not reach does not make for a credible policy; and in practice, as some midwives have warned, it can create defensiveness and other tensions between mothers and health professionals (Thurman and Allen, 2008)

The hazards that are associated with bottle feeding relate to over- dilution and under dilution of infant formula or unhygienic bottle feeding preparation techniques. Over- dilution of bottle feeds could be attributed to the cost of infant formula as some respondents reported using coffee or tea as a substitute when infant formula was not available. In this study, the majority of mothers and caregivers reported introducing solids at three months. Almost one fifth introduced solids at two months. McLorg and Bryant, (1989), Akter and Rahman, (2010)

found that 44.4% of black mothers started introducing solid foods within the first or second month after birth. The premature introduction of solids is one of the factors that contribute to malnutrition, growth retardation and high mortality among infants in developing countries (Agboado, Michel, Jackson, and Verma, 2010).

2.3.1 Colostrum

The breasts produce colostrum at the beginning of pregnancy, during pregnancy and continue through the early days of breastfeeding. This special milk is yellow to orange in color and thick and sticky. It is low in fat, and high in carbohydrates, protein, and antibodies to help keep the baby healthy. Colostrum is extremely easy to digest, and is therefore the perfect first food for a baby. It is low in volume (measurable in teaspoons rather than ounces), but high in concentrated nutrition for the newborn (WHO, 2009).

Colostrum has a laxative effect on the baby, helping him pass his early stools, which aids in the excretion of excess bilirubin and helps prevent jaundice. This first feeding will also help him begin to learn how to nurse. Placing the newborn baby skin to skin against your chest will help to encourage your baby to smell the colostrum and want to latch on and begin his first feeding. In fact, the initial phase of breastfeeding is a learning process for both mother and baby. Some newborns show little initial interest in nursing. Fortunately, newborns do not need much fluid, and their mothers' breasts contain only small amounts of the very important colostrum. At this stage, it is more important that babies feed frequently than it is for them to feed for long periods of time. Since the breasts are not yet extremely full of milk, they remain soft and supple after delivery, making it easier for the baby to learn to suckle (UNICEF, 2007).

In these early days, it is normal for a baby to lose some weight. This weight loss consists of extra fluid accumulated during pregnancy. In the days after delivery, your baby's appetite and need for fluids will increase. Approximately two to five days after birth, the colostrum production will give way to a higher volume of transitional milk (Santo *et al., 2007*). The colostrum provides not only perfect nutrition tailored to the needs of newborn, but also large amounts of living cells which will defend the baby against many harmful agents. The concentration of immune factors is much higher in colostrum than in mature milk.

Colostrum actually works as a natural and 100% safe vaccine. It has an especially important role to play in the baby's gastrointestinal tract since newborn's intestines are very permeable. Colostrum seals the holes by "painting" the gastrointestinal tract with a barrier which mostly prevents foreign substances from penetrating and possibly sensitizing a baby to foods the mother has eaten. Colostrum also contains high concentrations of leukocytes, protective white cells which can destroy disease-causing bacteria and viruses. The colostrum gradually changes to mature milk during the first two weeks after birth. During this transition, the concentrations of the antibodies in your milk decrease, but your milk volume greatly increases. The disease-fighting properties of human milk do not disappear with the colostrum. In fact, as long as a baby is breastfed, he will receive immunological protection against many different viruses and bacteria (Save the children, 2012)

2.4 Health Benefits of Breastfeeding

The discussion around the health benefits of breastfeeding includes both short and long-term advantages. The NHS Choices website suggests breastfed babies have:

- less chance of diarrhoea and vomiting and having to go to hospital as a result;
- fewer chest and ear infections and having to go to hospital as a result;

- less likelihood of becoming obese and therefore developing type 2 diabetes and other illnesses later in life.

Media reports also often air claims about the 'social' advantages of breastfeeding, such as that breastfeeding can 'enhance a child's IQ', or that breastfed children are 'better behaved'. The health benefits of breastfeeding tend to be presented in such a way that they seem overwhelming, and give the impression that formula feeding will cause health problems in babies. What the evidence actually shows is a far less drastic difference between breastfed and formula-fed babies (Hagekull, Bohlin, & Rydell, 1997).

2.4.1 Short-term benefits

The infections which cause the greatest illness in infancy are respiratory, gastrointestinal and ear infections. There is certainly evidence that breastfeeding may reduce the risk of early infections, which may be due to two key reasons.

First, breastmilk contains some of the mother's antibodies that give some protection against infection. Second, there is a risk when making formula milk that equipment will not be properly sterilised, or that the quantity of milk to water will not be properly measured, both of which can lead to diarrhea (Vaahtera *et al.,* 2001).

- **Diarrhoea, chest and ear infections**

According to contemporary comprehensive studies using data from the Millennium Cohort Study, approximately 12% of healthy, singleton infants in the UK today will have been hospitalised at least once by the time they are 8 months old. Just over 1% of healthy, singleton babies are hospitalised for diarrhoea (gastroenteritis) and just over 3% of babies for Lower Respiratory Tract Infection (chest infection) (Haggerty & Rutstein, 1999; Sterken, 2000; Save the Children, 2012).

The authors used a complex calculation to estimate that 53% of hospital admissions for diarrhoea and 27% of admissions for lower respiratory tract infections could have been prevented each month by exclusive breastfeeding. This has the effect of presenting breastfeeding promotion as a public health necessity, and implying that individual babies will be far healthier if they are not formula-fed. But when we look at the actual numbers used in the study, the difference between the effects of feeding method seems far less stark.

For every 2,000 formula-fed babies, just under four (4) would be hospitalised for diarrhoea in the first 8 months, compared to one per 2,000 among exclusively breastfed babies. For chest infection, 10 per 2,000 formula-fed babies would be hospitalised, compared to 6 per 2,000 who were exclusively breastfed. Curiously those who received both formula and breastmilk (partially breastfed) were at the lowest risk for chest infection.

These figures do suggest that breastfeeding is associated with lower levels of severe diarrhoeal disease or chest infections than formula feeding. But they do not suggest that breastfed babies are never affected by these infections, or that all formula fed babies are at a high level of risk.

Part of the problem in relation to infections in babies and young children is that many different factors can have an effect. For example, a 1997 study of the increased prevalence of recurrent ear infections among preschool children in the USA analysed the various 'risk factors' for this problem (Donma & Donma, 1997). While breastfeeding did not make much difference, but rather that 'increased prevalence of recurrent otitis media was associated with an increase in the use of child care and a higher prevalence of allergic conditions among children'.

In another study conducted, the explanation for higher rates of infection came from increased contact with other children – indicating the difficulty, in a real life context, of separating the effects of feeding method from other 'risk factors' for transmitting infections (Vaahtera *et al.,* 2001).

2.4.2 Longer term benefits

Infant feeding is a notoriously difficult area to study, as it is considered unethical to randomise babies to one or other method of feeding, and randomised controlled trials are the 'gold standard' of scientific investigation. Observational studies inevitably involve a large degree of self-selection in the types of mother who breastfeed, and particularly those who breastfeed exclusively for six months or longer (Sterken, 2000).

For instance, breastfeeding is most common among UK mothers who are aged 30 or over, from minority ethnic groups, have left education aged over 18, are in managerial and professional occupations and living in the least deprived areas. This correlation with social class and educational status is important when it comes to assessing long term health and perhaps even more so when it comes to the alleged 'social' benefits of breastfeeding, such as enhanced IQ or 'better behaviour' (Vaahtera *et al.,* 2001).

2.4.3 Other benefits

Haggerty and Rutstein, (1999) claim that breastfeeding 'can build a strong physical and emotional bond between mother and baby' and can give the mother 'a great sense of achievement'. Haggerty and Rutstein also states that breastfeeding 'naturally uses up to 500 calories a day' and that it 'saves money – infant formula, the sterilising equipment and feeding equipment can be costly'. All these things can be true – however, again they need to be put into perspective.

Many mothers enjoy the emotional and physical experience of breastfeeding. However, this is very different to the claim that breastfeeding helps women to 'bond' more effectively with their baby than if they were formula feeding: a statement that seems to be based largely on a prejudice about the 'kind of mother' who selflessly breastfeeds compared to the 'kind of mother' who selfishly bottle-feeds.

2.5 Initiation of Breastfeeding

Although WHO's, Global National Infant and Young Child Feeding Guidelines recommend that all newborns should start breastfeeding immediately (within the first hour after delivery), but very few practice that. A study conducted by Vasteras *et al.,* (2001) showed that very few participants (27.2%) started to breastfeed immediately/ within minutes after delivery.

The delayed initiation of breastfeeding is most probably related to:

1. physical condition of the mother after delivery (Department of Health and Social Security, 1974), whereby some mothers claimed that they were not feeling well enough to be able to breastfeed;
2. painful conditions associated with caesarian section;
3. absence of their infants who were kept in nursery.

Similarly, other studies also noted that the rate of breastfeeding initiation within 1 hour was low and the principal barrier to the initiation and even continuation of breastfeeding is due to operative obstetrical intervention (Department of Health and Social Security, 1974; World Health Organisation, 1990). It has also been reported that after the caesarian section, mothers and infants are separated for a long period of time owing to anesthesia, baby being kept in nursery, or mother being sedated for pain and unable to feed (World Health Organisation 1990, 2001).

This ultimately leads to poor maternal milk surge. While your breasts will not feel full the day that you give birth, you already have enough colostrum to nourish your baby. Your body will produce colostrum for several days after delivery until your milk increases in amount and becomes more creamy or white in color—a time that mothers frequently refer to as the milk "coming in" (World Health Organisation 1990, 2001). Babies are born with a suckling instinct, though it is stronger in some babies than in others. Since this instinct is intense immediately after birth, it is best to introduce him to the breast within the first hour or so of life. Not only will their suckling at the breast stimulate the breasts to produce more milk, thus beginning the establishment of a reliable milk supply, but it will signal the uterus to contract and decrease the chance of excessive bleeding after delivery (World Health Organisation 1990, 2001).

This first feeding will also help babies begin to learn how to nurse. Placing the newborn baby skin to skin against the chest will help to encourage the baby to smell the colostrum and want to latch on and begin his first feeding. In fact, the initial phase of breastfeeding is a learning process for both mother and baby. Since the breasts are not yet extremely full of milk, they remain soft and supple after delivery, making it easier for the baby to learn to suckle.

In these early days, it is normal for a baby to lose some weight. This weight loss consists of extra fluid accumulated during pregnancy. In the days after delivery, your baby's appetite and need for fluids will increase. Approximately two to five days after birth, the colostrum production will give way to a higher volume of transitional milk (Lartey *et al.,* 2004).

2.6 Reasons for Breastfeeding

Breastfeeding is best for the growth of a baby. It contains all the essential nutrients (i.e. proteins, sugar, fats, vitamins and minerals). It does not need preparation and it is already at

the correct temperature. A mother's milk contains antibodies that protect a baby from infectious diseases.

Moreover, as you breastfeed, you learn to know your child and to dialogue with him. You can breastfeed him whenever he is hungry, without a set rule and at any flexible time and even if he is sick. During the first six months, a baby feeds exclusively on milk, from six months onward, his food can be varied to ensure he grows normal. A child is breastfed 3 or 6 hours immediately after birth. At initial time, it may happen that the baby finds it difficult to stick to the breast, or you feel pains when he sucks or your milk is not enough for him. You should not worry, keep on feed him and later everything will get normal. The length of time a baby spends in feeding varies from child to child (Traveras *et al.,* 2004). Feed him with the two breasts one after the other. The breasts are rich of sugar and fats respectively. Do feed him six times a day the first month and tend to decrease the number of times he feeds gradually. A child should be fed according to his need. If this is strictly followed, he must grow (add) 150 - 200 grams weekly.

2.7 Hygienic Rules for Breastfeeding

Dratva *et al.,* (2006), WHO (2003) and Guldan *et al.,* (1993) outlines some hygiene care practices for nursing mothers especially for the breasts since it can transmit pathogens from mother to baby. Nursing mothers should wash your breasts with water and soap daily and get them dried up accurately. Breastfeeding mothers should wash thoroughly their hands before feeding their baby. Wash and dry your breast after and protect them with a clean surgical gauze or cotton till the next feeding. At times, in the first weeks of lactation, the breasts might become hard and red. Sometimes, tiny and painful cracks may appear. Do not interrupt breastfeeding; see a doctor as soon as possible.

2.8 Exclusive Breastfeeding

It has been found that although knowledge on Exclusive Breastfeeding for the first six months as per WHO recommendation (35.7%) was relatively high, only about half (17.9%) actually practiced it. The mean duration of exclusive breastfeeding in Mauritius is only 2-10 months, whereby there are 17.9% of mothers who practiced EBF for the first six months unlike other developing countries such as East Asia/ Pacific which have the highest rate of exclusive breastfeeding (43.0%) followed by Eastern/ Southern Africa (41.0%), (UNICEF, WHO, 2001). Therefore, it can be argued that mothers fail to adhere strictly to the WHO recommendation of EBF for the first 6 months owing to the introduction of water and infant formula much before 6 months.

The main determinants for EBF include resumption of work, followed by milk insufficiency. Usually female workers in Mauritius are allowed 12 weeks maternity leave which equals approximately 3 months (SSPTW, Social Security Programs Throughout The World), (World Health Organisation, 2003). Under these circumstances, mothers are prompted to resort to the supplementation of infant formula before three months so that their infants familiarize the bottle feeding during their absence. This finding is consistent with other studies which highlighted employment and milk insufficiency as the major barriers to EBF (Wilson, Forsyth, Greene, Irvine, Hau, & Howie, 1998, Collaborative Group on Hormonal Factors in Breast Cancer, Möller, Olsson, & Ranstam, 2002, World Health Organisation 2003), while another research pointed out that mothers stop EBF as they perceive their infants feel hungry and unsatisfied with breast milk only. They ultimately resort to supplement with infant formula.

Nevertheless, it has been argued that the exclusivity of breastfeeding is affected when mothers experience problems with the infant sucking and they do not get assistance from some clinicians who do not feel intrepid in their skills to support breastfeeding and may have limited time to address the matter during preventive visits (Traveras *et al.,* 2004). Additionally, 26% of the respondents cease breastfeeding within two years, while there are notably some mothers who breastfeed above two years. This implies that despite the fact that the majority of the participants adopt mixed feeding, they still adhere to the World Health Organisation recommendation which involves continued breastfeeding up to two years or beyond (WHO, 2009). The study revealed that factors including parity, alcohol consumption, education, and occupation are associated with the termination of breastfeeding.

2.9 Breastfeeding Challenges

Mothers, who do not have enough milk for their babies, can make use of artificial milk. In Pharmacy there are various types of artificial milk (in powder and in liquid) that are similar to a mother's milk (natural milk). It's given to a baby through a feeding bottle (Owor *et al.,* 2000). The paediatrician will tell you one suitable for your baby, how to prepare it, when and the quantity to give him according to the baby's weight and age. The liquid artificial milk is sold ready for use; it should not be diluted with water but only be warmed, while the powdered type is prepared in a feeding bottle with water. Assure that the water is not too hot before giving the milk to the baby. Feeding bottle and teats should be washed and sterilised before use.

Some women do not want to breastfeed. They might not want to want to use their bodies for feeding; they might want or need other people, such as the baby's father or grandmother, to feed the baby; they might have seen other women struggle with breastfeeding, or other babies thrive on formula-feeding. As we note above, the fact that breastfeeding has some health

benefits does not mean that formula-feeding is bad for babies; and in a context where an alternative to breastfeeding exists, some will choose that alternative. Some mothers find it painful, unpleasant, or inconvenient. Common effects can include sore or cracked nipples, sore breasts, blocked ducts, mastitis, and thrush. While the official advice is that women suffering from these conditions should persevere with breastfeeding, many women understandably find the pain and discomfort a reason to introduce formula feeding (Kwaku *et al.,* 1998).

Mastitis is a condition that causes a woman's breast tissue to become painful and inflamed, and she may also experience flu-like symptoms such as a high temperature (fever), aches and chills. It affects around 1 in 10 breastfeeding women and usually develops in the first three months after giving birth. Thrush is a fungal infection that is easily spread from mother to baby, and requires treatment with creams or tablets (Haggerty *et al.,* 1998).

2.10 Infant Formula Feeding

Early termination of breastfeeding also implies early use of breast milk substitute and as pointed out above, factors such as work, milk insufficiency, and breastfeeding difficulties are the major reasons for adopting formula feeding. Among the few participants who encountered minor feeding problems with the formula milk reported constipation and sickness such as vomiting, diarrhea, colic, and regurgitation as the most common ones. The risk of constipation among formula- fed children is quite common and this has also been found in Italy, whereby the authors reported that there is a prolonged gastrointestinal transit in formula-fed infants and the stool consistency is hard compared to breastfed infants (Motee *et al.,* 2013).

2.10.1 Problems Associated With Formula Feeding

Compared to successful breastfeeding, formula feeding can be more labour intensive. It requires supplies of formula milk, thorough cleaning and sterilising of bottles and teats, and preparing feeds. Parents who formula feed do not have a supply of milk 'on tap' and so have to carry bottles around with them (Agble *et al.,* 1998). If formula feeds are made up with too much powder to water, this can result in dehydration; if they are made with not enough powder, babies can go hungry. While it is now possible to buy cartons of ready-made formula, these are expensive and cumbersome when buying in bulk. Gastrointestinal infections can result, when equipment is not sterilized properly.

Formula feeding is expensive. Perhaps because of the idea that breastfeeding is always better than formula, there has been no campaign in Britain to reduce the price of formula milk: for example, through the development of generic brands, as has happened in the USA. This is ironic, given that one of the objections to infant formula is that it is big business; arguably, a more open approach, which recognised that most women are likely to use formula milk in their baby's early months, might allow for the development of a more standard and affordable product (Dearden *et al.,* 2002).

Formula milk remains different from breast milk in one key respect: while breast milk is produced by the individual woman for her individual child and changes in composition and quantity according to the infant, formula is a standard product and cannot precisely replicate all the qualities of human milk. It is true that, as the NHS Choices website puts it, formula milk is 'not a living product so it doesn't have the antibodies, living cells, enzymes or hormones that protect your baby" (Ben-Joseph, 2015).

This is why 'breast is best' is such a powerful commonsense assumption. It is also why scientific evidence finds relative health benefits of breastfeeding, such as immunity to infection, which are additional to the nutritional qualities of the milk. However, formula milk

is more flexible – and babies more resilient – than they are often given credit for. The types of infant formula available today come quite close to the nutritional qualities of breastmilk, even if they cannot mimic all its other properties.

In parts of the world where there is limited access to clean and/or boiled water, formula feeding can cause major health problems related to infection or dehydration. This is why there has been a long-running campaign, since the 1970s, against the promotion of formula feeding in the developing world. But it is important to note that women in the developing world experience the same problems with breastfeeding as do women in the developed world. While formula feeding is problematic in developing societies, breastfeeding is not 'perfect' either. It is also important to note that many of the dire consequences of formula feeding in some developing societies cannot simply be mapped on to the developed world, where levels of sanitation and access to boiled water make formula feeding very safe (Lartey *et al.,* 2004).

2.11 Breastfeeding versus Formula Feeding

The wealth of literature on the health benefits of breastfeeding versus formula feeding strongly suggests that breastfeeding has a relatively protective effect against certain infections. However, when this effect is quantified, it appears to be small. Meanwhile other claims about breastfeeding, such as those related to IQ or behaviour, are so strongly influenced by wider socioeconomic factors that it is very difficult to isolate feeding method as the cause (Dewey & Brown, 2003; Davies-Adetugbo, 1997; Guldan *et al.,* 1993).

While it is legitimate to say that, all other things being equal, breastfeeding is the 'healthier' option, it is not legitimate to overstate claims about the health properties of breastfeeding or to use these as a way to restrict women's choices about how to feed their babies. Nor is it legitimate to deny that there are some very real disadvantages to breastfeeding, which is why most mothers continue to rely on formula feeding in the early months.

2.12 Impact of Breastfeeding Promotion

Exclusive breastfeeding has been officially promoted across the world for several years now, and much is made of the concurrent rise in breastfeeding rates. The Infant Feeding Survey published in 2012 showed that between 2005 and 2010, the proportion of baby's breastfed at birth rose from 76% to 81%; at three months, the number of mothers breastfeeding exclusively raised from 13% to 17%, and at four months, from 7% to 12%. Rates of 'any breastfeeding' also showed a rise, from 48% to 55% at six weeks, and from 25% to 34% at six months (Setegn *et al.,* 20120).

The first point to note about these figures is that the absolute rates of breastfeeding are still low, and strikingly so given the uncompromising character of the breastfeeding promotion campaign. It is not surprising that four in five women initiate breastfeeding, given that they are all but instructed to do so in hospital. But by six weeks, only half of women are doing any breastfeeding at all, and by three months, fewer than one in five are breastfeeding exclusively.

2.13 Weaning Introduction (Complementary Feeding)

Complementary foods are generally introduced between four to six months and partial weaning is the most common type of weaning adopted by mothers. Generally, women who terminate breastfeeding within two years are more likely to adopt partial weaning because it involves nursing the infant as well as introducing complementary foods (Vieira *et al.,* 2004), while those who stop nursing their infants within six months adopt mother- led weaning. Conversely, mother- led weaning occurs when the mother feels the need to introduce complementary foods. Since there is limited research on the type of weaning adopted by mothers during infant feeding practices, the results obtained in the present study are more suggestive than affirmative.

Complementary feeding should be introduced to your baby's diet when breast milk or formula is no longer enough to meet his nutritional needs. The American Academy of Pediatrics recommends there be no introduction of solid foods, including infant cereal, baby food or table food, before 4 months of age, and no sweetened beverages before six months. The transition from exclusive bottle-feeding to table foods is a vulnerable period. It's important to introduce new foods at an early age, especially different fruits and vegetables (Akter and Rahman, 2010). Yet, it is the time when malnutrition starts in many children. Even with a proper introduction of table foods, improper food choices remains and under-nutrition remains a health problem, especially in poor settings (WHO, 2001).

2.13.1 Advantages of Complementary Feeding

Appropriate complementary foods that are introduced and consumed by a young baby at six months old provide energy, protein, fat and vitamins and minerals. These help meet the growing child's needs in addition to breast milk and formula. According to the World Health Organization, malnutrition is responsible, directly or indirectly, for over half of all childhood deaths. Complementary feeding of a baby needs to be done by a parent or caregiver. This promotes healthy interaction and stimulation, which is crucial for the development of the baby's brain.

2.13.2 Disadvantages of Complementary Feeding

Although table foods become important by six months of age, too often foods are introduced too soon or too late. The amount of food offered may not be enough to sustain the normal growth of the child, or the consistency may be inappropriate for the age of the baby and they are unable to consume the food (Thulier & Mercer, 2009). Poor food choices also contribute to the disadvantages. A 2002 survey conducted in San Antonio, Texas by Mathematical

Policy Research Inc. and funded by Gerber found that French fries are the most commonly eaten vegetable for toddlers, age 15 to 24 months, and soda is being served to infants as young as 7 months old. Too much of poor complementary food negates the nutritious properties of breast milk and formula in the child's diet.

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- **Malnutrition**

The second half of an infant's first year is important because infants begin learning how to eat and they must be frequently fed nutritious foods. Malnutrition is a result of poor quality complementary foods and bad feeding practices. Approximately one-third of children less than 5 years of age in developing countries have a lower than normal height for their age, and large proportions are deficient in one or more micronutrients, according to UNICEF. In India alone, more than 5,000 children under 5 years old die every day due to malnourishment or lack of basic nutrients, like Vitamin A, iron, iodine, zinc or folic acid.

2.14 Infant and Young Child Feeding Practices in Ghana

Infant and young child feeding practices include breastfeeding and complementary feeding. These feeding practices are important determinants of child nutritional status more especially children under the age of two (Ghana Demographic and Health Survey, GDHS 2008). However, according to Kimani-Murage *et al.,* (2011), suboptimal breastfeeding and complementary feeding practices are common in developing countries. Similarly, findings from the GDHS 2008 and MICS 2011 revealed that breastfeeding and complementary feeding practices are suboptimal.

2.14.1 Exclusive Breastfeeding in Ghana

Breastfeeding is a universal practice in Ghana, nearly all children less than six months were being breastfed in 2008 (GDHS, 2008). The duration of breastfeeding in Ghana is long as 96% of Ghanaian children between the ages of 9-11 months were breastfed and the median duration of breastfeeding is 23 months (GDHS, 2008). Though there are regional differences in breastfeeding prevalence, these are minimal, with the northern regions recording the longest duration of 28 months and the Greater Accra region recording the lowest duration of 19 months (GDHS, 2003). Breastfeeding rates decline with the age of the child, reducing from 44% among children 20-23 months old to 10% in those 24-35 months old.

Despite research evidence surrounding the many benefits of EBF to both mother and infant including; protection against gastrointestinal infections and mortality, enhancement of mental and motor development in infants (Kramer and Kakuma, 2004; WHO, 2002), promotion of maternal weight reduction and prolongation of lactation amenorrhea in mothers (Dewey *et al.,* 2001), only 63% of children less than six months were exclusively breastfed (GDHS, 2008). In 2003, 53% of children less than six months were exclusively breastfed (GDHS, 2003). A study by Aidam *et al.* (2005) in Accra, Ghana found that 51.6% of mothers exclusively breastfed their infants. However, MICS 2011 reported a decline in the national rate of EBF from 63% to 46%, lower than the 53% and 54% recorded in 2003 and 2006 respectively.

As part of the EBF practice, it has been recommended that breastfeeding be initiated within one hour of birth (WHO, 2002). Early initiation of breastfeeding protects the baby since colostrum serves as the first immunization for the baby and it also stimulates breast milk production. Evidence from the GDHS and MICS has shown that the rate of initiation of

breastfeeding within 1 hour after birth decreased from 52% in 2003 to 35% in 2006 and has remained constant at 46% both in 2008 and 2011 (GDHS, 2003, 2008 and MICS, 2006, 2011). This suggests that more efforts are needed to promote optimal breastfeeding practices in the country.

Poor water and sanitation are underlying causes of under nutrition (UNICEF, 1998). In Ghana, the Upper West, Northern and Upper East regions have the highest populations with no sanitary facilities (71%, 72% and 82% respectively) (MICS, 2011). The use of baby feeding bottle for infant feeding has been discouraged because of the possibility of contamination especially in places where clean sanitation and water are still a challenge. In Ghana, about 12% of young children were fed using baby feeding bottles (GDHS, 2003). However, there was a decline in 2008 as only 5% of babies under two months were fed with a bottle with a teat. It was also realized that the use of feeding bottles increased with the age of the child (GDHS, 2008).

2.14.2 Complementary Feeding in Ghana

Complementary foods are introduced to an infant at a time when breast milk alone is not sufficient to meet the energy and nutrient requirements of the growing infant (WHO/UNICEF, 1998; WHO, 2003). Therefore the aim of introducing complementary foods is to serve as a complement to the breast milk so as to meet the infant's requirements. The total energy requirement for an infant at 6-8, 9-11 and 12-23 months in developing countries are 615 kcal/d, 686 kcal/d and 894 kcal/d respectively (Dewey and Brown, 2003). However, average breast milk energy intake for infants in developing countries is 413kcal/d, 379kcal/d and 346kcal/d at 6-8, 9-11 and 12-23 months respectively (WHO/UNICEF, 1998). Implying that, the energy intake from breast milk decreases as the infant age increases, therefore the

deficit in energy of 200 kcal/d, 300 kcal/d and 550kcal/d at age 6-8, 9-11 and 12-23 months respectively are to be met from complementary food (WHO/UNICEF, 1998). In Ghana, the main complementary food is fermented maize porridge (koko), which is low in energy and nutrient density and therefore unable to meet the energy and nutrient requirements of an infant at age six months and beyond alone. The WHO 2003, has recommended that complementary feeding starts at 6 months, with continued breastfeeding for up to two years. Studies have shown that early introduction of complementary food contributes to diarrhoea (Popkin *et al.,* 1990).

The GDHS 2003 reported suboptimal complementary feeding practices (late introduction of complementary food, low dietary diversity and few meals per day). Vaahtera *et al.,* (2001) on the other hand reported early introduction of complementary foods to newborns in rural Malawi. Unlike breastfeeding, complementary feeding has not gained the necessary support, the 2002-2006 health sector review reports observed that programmes aimed at improving complementary feeding practices have not enjoyed the level of support from both national and international levels as has been given to breastfeeding especially EBF (Black *et al.,* 2008).

Also, there is limited information on complementary feeding practices at district levels in the country to allow for geographic assessment of the practices and to develop and implement appropriate interventions for each setting since according to Aidam *et al.,* (2005) complementary feeding practices differ from one geographic area to the other.

2.15 Relationship between Duration of Exclusive Breastfeeding and Infant Growth

There are several benefits of EBF both to infant and the mother (Kramer and Kakuma, 2002; Kimani-Murage *et al.,* 2011). Raisler *et al.* (1999) indicated that the benefits of EBF are further enhanced by long duration. Implying that the longer a mother breastfeeds exclusively, the more she and her baby derives the benefits. Infancy is a stage in life that is characterized by rapid weight gain, with an infant doubling its birth weight in the first four to six months (Kalies *et al.,* 2005). Due to differences in feeding practices, one would however expect a difference in the weight of a child introduced to complementary food before four and one introduced to complementary food at six months. However, results from a systematic review of two controlled clinical trials from Honduras where women were randomized to either breastfeed exclusively for six months or introduce hygienic and nutritionally adequate complementary food at four months with continued breastfeeding demonstrated no significant benefit for growth for infants introduced early to complementary food though there were some methodological problems (Kramer and Kakuma, 2002). The results from the studies also showed that weight-for-age, length-for-age and weight-for-length z-scores at six months were all non-significantly higher in the EBF group than the mixed breastfed group.

Studies elsewhere have shown that long duration of breastfeeding is associated with slower growth in the first year of life (6–8) months. Kramer and Kakuma (2002) concluded in their systematic review of controlled trails and observational studies on optimal duration of EBF that infants breastfed for six months or more showed no deficits in growth (weight and length). A study by Kalies *et al.* (2005) showed that children who were exclusively breastfed for a duration of less than six months had a greater risk of high weight gain at two years of age than children breastfed for a longer duration of six months (OR: 1.65; 95% CI, 1.17-2.30). This means that six months of EBF protects against elevated weight gain during

infancy. Donma and Donma (1997) in their study on the influence of feeding patterns on head circumference among Turkish infants during the first six months of life where they categorized infants into three groups (exclusively breastfed, mixed fed or formula fed) found that at the end of the first month, exclusively breastfed infants had greater head circumference values than infants who were mixed fed or formula fed. At four months, they found that the values in each of the four groups were almost the same. However, at six months of age, head circumference values were found to be higher among infants exclusively breastfed for six months (43.7± 0.1 cm for boys, 42.9 ± 0.1 cm for girls) than infant who were mixed fed (42.6 ± 0.1 cm for boys, 41.4 ± 0.1 cm for girls) and infants who were formula fed (42.5 ± 0.1 cm for boys, 41.5 ± 0.1 cm for girls). This difference in head circumference values could be due to the availability of docosahexanoic acid in breast milk which is essential for brain growth and development (Georgieff, 2007).

Hence EBF for six months duration enhances better head circumference than EBF for shorter durations. Considering the problems of short duration of EBF and early initiation of complementary feeding in Ghana and the fact that complementary food in Ghana is of low energy and nutrient density (Eyeson *et al.,* 1975) and contributes to diarrhoea which in turn can result in under nutrition, there is the need to investigate the growth of infants at six months of age exclusively breastfed for longer versus shorter durations.

2.16 Factors Associated with Infant Feeding Practices

A lot of factors come into play when decisions on the feeding of infants are made. These factors play significant roles in the choice of feeding of infants, particularly in developing countries**,** of which Ghana is no exception.

2.16.1 Maternal/Household Socio-demographic Characteristics

- **Maternal Age**

Research has shown that maternal age is one of the factors influencing child feeding practices. A study by Santo *et al.* (2007) found that being an adolescent mother (mothers <20 years) was associated with early cessation of EBF (Hazard Ratio=1.48; 95% CI, 1.01-2.17) than mothers ≥20 years and indicated that the association of maternal age on duration of EBF varies with respect to culture and a mother's access to information. Similarly, Tarrant *et al.* (2010) found in their study that younger mothers (18-24 years) were more likely to wean their babies before one month (Odds Ratio: 1.84; 95% Confidence Interval, 1.05-3.21) than mothers who were ≥35 years. In contrary, Vieira *et al.,* (2004) found that the duration of EBF between young and adult mothers was not different.

- **Maternal Level of Education**

Adequate child care practices are crucial for child survival as inadequate care is one of the underlying causes of childhood undernutrition. According to Latham (1997), good child practices may be influenced by factors such as maternal level of education. Well educated women have well-nourished children than their counterparts with no level of education. This is evident in the GDHS (2008) which reported that children born to mothers with the lowest level of education are more likely to be underweight or stunted compared to children born to mothers with higher levels of education. In Ghana, a study by Aidam *et al.* (2005) revealed that mothers with higher levels of education including a secondary school education were more likely to EBF than mothers with lower than secondary school education (OR: 1.79; 95% CI, 1.11-2.86) *(P< 0.05).*A study in rural Malawi found an association between increased maternal education and long duration of EBF (Coefficient B: 2; 95% CI, 1,3) *(p=0.001)* hence implying that highly educated mothers have an enhanced devotion to feed their

children according to infant feeding recommendations (Vaahtera *et al.,* 2001). This is in agreement with the GDHS (2003) report which indicated that formal education helps individuals to make informed decisions that impact their health and well-being. Also, according to Save the Children Report (2012), a mother who is poorly educated is at a greater risk of not being able to feed her baby adequately. Studies have shown the association between maternal level of education and EBF. Martin *et al.* (2002) found maternal level of education to be associated with breastfeeding initiation, duration and EBF.

During the complementary feeding period a mother is not only concerned with what to feed but also how to feed and when to feed. Lanigan *et al.* (2001) indicated that lower level of education is associated with early introduction of complementary foods. This consequently leads to shorter duration of EBF. To improve breastfeeding and complementary feeding practices as well save innocent children from undernutrition and mortality, and break the intergenerational cycle of malnutrition, we need to invest in girls' education. Improving maternal education reduces the rates of mortality in children (Save the Children, 2012). According to estimates from UNESCO, providing universal secondary education for girls could save the lives of 1.8 million children in Sub-Saharan Africa (Save the Children, 2012). 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).

- **Maternal Income**

Poverty is one of the underlying causes of child undernutrition and the role it plays has been established by several studies. Studies including one in Ghana have shown that children in poorer households tend to be more malnourished than children in richer households (Owor *et al.,* 2000; Shell-Duncan and Obiero, 2000; Black *et al.,* 2008). Hong's (2007) analysis of the 2003 Ghana Demographic and Health Survey (GDHS) revealed that children in the poorest

20% of households are more than twice as likely to suffer from stunting as compared to their counterparts in the richest 20% of households. Contrary to these findings, studies have also shown that household poverty is not a necessary condition for childhood undernutrition (Reyes *et al.,* 2004; Save the Children, 2012). A study in Ghana by Aidam *et al.* (2005) found higher maternal socio-economic status to be associated with EBF (OR: 4.23; 95% CI, 1.41-12.95) *($p< 0.05$)*. In contrary, Pe´rez-Escamilla *et al.* (1995) found lower socio-economic status to be associated with EBF *($p\leq 0.10$)* in Honduras and Mexico.

As part of their coping strategies, poor households cut down on the quantity and quality of their food when food prices increase and tend to depend on cheaper foods which are of low nutrient content (Save the Children, 2012). This puts children especially during the complementary feeding period at the risk of chronic malnutrition. During the complementary feeding period, addition of animal source foods to unfortified complementary foods can improve the nutrient contents of these food however this increases the cost of feeding and mothers with the lowest incomes may not be able to afford (Dewey, 2001). This is in conformity with the Save the Children Report (2012) which indicated that children living in poor households have poor dietary quality. To improve appropriate complementary feeding, efforts must be made to empower women and create avenues for them to earn income as they are the primary caregivers. As Haddah *et al.* (2003) suggests that addressing poverty and inequity would result in a long term reduction in malnutrition.

- **Place of Residence**

Area of residence (urban or rural) is associated with breastfeeding initiation, duration and EBF (Martin *et al.,* 2002) however; the degree of the associations varies from one geographic area to the other (Aidam *et al.,* 2005). Area of residence is also a determinant of childhood

under nutrition. The GDHS (2008) reported that 16% of children living in rural areas are underweight compared to the 11% of underweight children in urban areas. Tan (2011) found area of residence to be associated with EBF ($p< 0.05$) as mothers who lived in rural were more likely to exclusively breastfeed than mothers who lived in urban (OR: 1.16; 95% CI, 1.03-1.89). Similarly results from a study in Malawi by Vaahtera *et al.* (2001) showed that EBF was rare and complementary foods were introduced early to newborns among families in rural areas.

2.16.2 Infant characteristics

- **Infant Sex**

Child sex has been associated with early introduction of complementary food. In some communities it is believed that boys breastfeed more frequently than girls hence it is perceived that they eat more than girls therefore require more food. This contributes to the early introduction of complementary foods to boys (Kimani-Murage *et al.,* 2011).

- **Place of Delivery**

In Ghana, women deliver at health facilities, private maternity homes, with Traditional Birth Attendants (TBAs) or at home. Women who attend antenatal clinics and deliver at health facilities are likely to receive information on EBF and complementary feeding practices since health education takes place in the health facilities. A study by Aidam *et al.* (2005) in Ghana found a positive association between EBF and delivery at a health facility (OR= 1.96; 95% CI, 1.08-3.54). The reasons they gave for this finding were that some health facilities in Ghana are baby friendly and so provide prenatal and postnatal health education on breastfeeding and this could have resulted in the exposure of mothers attending these facilities to optimal breastfeeding practices. Similarly, Pe´rez-Escamilla *et al.* (1995) found a

positive association between delivery at a health facility promoting EBF and EBF. Dearden *et al.* (2002) also found that place of delivery influences the time of initiation of breastfeeding. Similarly a baseline survey on promotion of complementary feeding practices in Ghana revealed that majority (62%) of participants who delivered in a health facility initiated breastfeeding within one hour of birth as recommended (USAID *et al.,* 2011). This goes to emphasize that place of delivery influences the kind of feeding practice a mother will choose.

2.16.3 Cultural Factors

Culture is an integral part of every society. The way we eat and the type of food we eat is guided by our cultural beliefs and practices. In the same light, the ways infant and young children are fed vary from one geographic area to the other (Aidam *et al.,* 2005). According to the report by Save the Children (2012) cultural beliefs contribute to suboptimal breastfeeding practices. For instance, the practice of giving water/herbs to newborns is a sign of welcome into the human world. However this practice strongly conflicts with the international recommendation by World Health Organization on EBF for duration of six months (WHO, 2003).

2.16.4 Other Factors

Even though some mothers are able to practice EBF as recommended, others introduce other liquids or solid foods before six months. One factor contributing to this is the mother's perception that her breast milk alone is not enough to satisfy her infant (Otoo *et al.,* 2009; Frewtrell *et al.,* 2007; Caulfield *et al.,* 1999). Similarly, Kimani-Murage and colleagues (2011) indicated that mothers introduced liquids other than breast milk within three days of birth to infants who were experiencing stomach upsets or mother produced inadequate breast milk. Maternal marital status and ethnicity have also been found to be associated with

cessation of breastfeeding and early introduction of complementary foods (Kimani-Murage *et al.,* 2011).

Child care is a collective issue. All family members including external family members are concerned and involved in child care practices. Several studies in Africa have demonstrated the roles grandmothers play with regards to decision making in early child feeding practices (Aubel *et al.,* 2004; Davies-Adetugbo, 1997). Kerr *et al.* (2008) indicated that paternal grandmothers have an upper hand in deciding how a young mother should feed her infant. This study also revealed that young mothers who did not want to follow the decisions by grandmothers regarding the feeding of their infants were often frustrated by these old women. Apart from these, the study also found that decisions concerning the appropriate time to introduce other foods other than breast milk were taken by grandmothers. Similarly, a study involving African-American adolescent mothers that used in-depth interviews revealed that grandmothers dominated in decision making regarding the time to introduce solid foods and also made decisions on what food an infant would eat even though the generalizabilty of this study is limited due to small sample size (Bentley *et al.,* 1999).

A study, in Ghana, by Otoo *et al.* (2009) using Focus Group Discussion (FGDs) revealed that pressure from grandmothers as a factor hindering EBF. Evidence from studies have shown that living in the same house with grandmothers is associated with an early cessation of EBF ($p \leq 0.20$) (Santo *et al.,* 2007), since grandmothers use their infant feeding knowledge and experiences to influence a mother's decision on the kind of feeding practice she will do (McLorg and Bryant, 1989).

Providing a mother the necessary support and encouragement can help her gain confidence to exclusively breastfeed for six months. According to Save the Children (2012), support from

mother-in-laws, fathers and peers can help a woman exclusively breastfeed. This is in conformity with the study by Cernadas and colleagues (2003) which found longer duration of EBF to be significantly associated with family support. Kerr *et al.* (2008) suggested that child feeding practices could be improved by extending education on optimal infant and young child feeding practices to external family members since they influence a mother's feeding choice.

Research evidence has also shown that in some settings, suboptimal breastfeeding and complementary feeding practices are influenced by maternal occupation, health education, media exposure, infant birth weight and method of delivery. Tan (2011) found that unemployed mothers were more likely to exclusively breastfeed compared to employed mothers (OR: 3.66; 95% CI, 2.45-5.46) *(p< 0.05).* The reason given for this finding was the short maternity leave for working mothers and the fact that some workplaces do not support EBF. Similarly, FGDs with women in Ghana revealed that the employment status of a mother influences her ability to exclusively breastfeed as mothers employed in the formal sector have less time to exclusively breastfeed due to the short duration of maternity leave and mothers employed in the informal sector may not also find suitable places to breastfeed during working hours (Otoo *et al.,* 2009). Thrulier and Mercer (2009) indicated that the consistency of association of these factors with suboptimal feeding practices are conflicting and differ from one setting to the other. A study in Ethiopia by Setegn *et al.,* (2012) found that unemployed mothers were more likely to breastfeed exclusively than mothers who were employed (OR: 10.4; 95% CI, 1.51-71.50) *(P< 0.05).* The reason they also gave was that mothers who are employed may not have close proximity with their infants because they may have to return to work considering the short duration of maternity leave.

2.17 Water Management Practices

Access to adequate sanitation is a key mechanism for improving the health well-being of the most vulnerable individuals and the poorest countries in the world. Exposure to human fecal waste increases the likelihood of contracting certain diseases. Anigo *et al.,* (2005) revealed in their study that, the main source of drinking water of nursing mothers was river/stream (40%), followed by open well and pipe borne water with (23% and 22%) respectively. Clay pots (56%) were the main means of storing water and 41% stored their water in plastic containers. On food storage, 75% of the respondents had no specific means of storing food while the remaining 25% said they stored their foods in the refrigerator.

2.17.1 Water and Sanitation

In the area of water and sanitation, the Asante Akim Central Municipal Water and Sanitation Team (MWST) in collaboration with Community Water and Sanitation Agency with support from the Statistical Service undertook a census of all water facilities in the Municipality to ascertain the actual water coverage. The provision of pipe borne water for the twin town of Konongo – Odumasi is mainly done by the Ghana Water Company Limited. This is supplemented by boreholes especially for communities outside the capital town.

The MWST embarked upon a monitoring and evaluation programme of all communities who have boreholes and hand-dug wells to assess the progress of their water and sanitation facilities management and their financial situation in relation to these facilities. It was realized that most of the Water and Sanitation (WATSAN) committees are not operating effectively and this has affected operation and maintenance of the facilities. It is in this regard that the Municipal Water and Sanitation Team (MWST) have planned to hold refresher trainings for the WATSAN committees.

The Kumawu, Konongo and Kwahu Ridge (3Ks) Water Supply Project is also underway. The project when completed would in no small way help to boost water supply in the Municipality (Mensah, 2014).

2.17.2 Water Management Intervention

Water management intervention consists of three steps:

1. Point-of-use treatment, in which contaminated water is treated.
2. Safe water storage, which involves the use of specially designed containers.
3. Behavior change technique, including activities to increase awareness and encourage awareness of good hygiene practices. These types of programs, designed to provide education about access to safe water, are integral to the improvement of water resources in these areas. However, hygiene challenges remain a significant problem for millions of people living in lower income countries (World Health Organization, 2005).

2.18 Hygiene Practices of Nursing Mothers

The result obtained on the hygienic practices of Black *et al.,* (2003) study indicates that, majority of the respondents (84%) did not boil their water before drinking, 10% sometimes boiled the water while only 6% boiled their water every time. Sixty-nine percent of the respondents used spoon, feeding bottle or cup in feeding their child while 21% said they used only feeding bottle. Most mothers (68%) did not sterilize their feeding utensils, with 24% sterilizing feeding utensils some time and the remaining (8%) every time. Majority (68%) of mothers washed their hands some time before preparing babies food with only 24% washing their hands all the time.

Studies have shown that poor drinking water facilities, inadequate sanitary facilities and poor hygiene particularly during food preparation are the main causes of many infections among the young children (WHO, 2008). The best way to ensure that food and water is free from contamination is to heat them to a sufficiently high temperature (> 70^0c) immediately prior to serving. Despite this simple recommendation, the inadequacy or non-availability of facilities in the household like power distance from the source of water supply, refrigeration and sufficient fuel for cooking often makes this guideline impracticable to many mothers (Black *et al.,* 2003).

This study further shows that on all aspect of hygiene practices which the respondents were asked questions, there was low practice as most (40%) mothers get drinking water from river/stream and open well and also most do not have means of storing food. This is similar to the result obtained by Anigo *et al.,* (2009). This study also revealed that most (84%) mothers do not boil water given to the baby and many washed hand sometime when preparing baby's food. When these poor hygienic practice is coupled with complementary foods which are not only low in quality but are usually insufficient in quantity, the infants are not only exposed to infectious diseases and water borne diseases but at a higher risk of dying, for it is a known fact that when nutritional and care practices are not optimal, child's survival and protection against infection is compromised.

From the study, the risk of diarrhoea was higher among children whose mothers did not separate utensils for raw and cooked food and whose mothers prepared food on the ground rather than on the table. Children aged less than two years were more vulnerable to suffer from diarrhoea than children aged 2–4 years. The association with the prevalence of diarrhoea could indicate that the food prepared on the ground was contaminated, and the grounds or the floors are the important routes of transmission of diarrhoea pathogens (World Health Organization, 2005).

Several food-hygiene practices of mothers were also measured in several studies. Such practices included hand-washing before food preparation, washing-method of utensils, such as cups, bowls, and spoons, separation of utensils, such as cutting boards or knives for raw or cooked food, and the location where food was prepared for cooking. (World Health Organization, 2007; Fewtrell, *et al.,* 2005).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this research was to investigate the various child care practices of nursing mothers related to feeding in the Asante Akim Central Municipality. This chapter presents a discussion on the methods and methodology employed by the researcher in the conduct of the study. Methods in research, refers to the range of approaches used to gather data which provides basis for inference and interpretation, explanation and prediction. On the other hand, methodology is also a description of the approaches and kinds of research paradigms used in a particular research (Kusi, 2012). This section therefore focuses primarily on the methodology used and the methods employed in collecting data for the study. It gives a description of how data was collected, discusses the research design, the population, sample and sampling procedure, data collection instruments and techniques, and the instruments used in the analysis of the data collected.

3.2 Research Design

Because the nature of the study sought to collect data on existing practices without altering any variables in a non-experimental situation, the researcher employed the descriptive survey design. This is because it allows for the gathering of large-scale data upon which to draw a basis for interpretation and generalisations. A descriptive study is one in which information is collected without changing the environment i.e. nothing is manipulated (Burns and Grove, 1997). Sometimes these are referred to as “correlational” or “observational” studies. The study was conducted using both quantitative and qualitative analysis. The study is also a cross-sectional study regarding the fact that the researcher is conducting it for academic purposes and is not likely to repeat it in a similar situation in the future.

3.3 Research Area

The research was conducted in the Asante Akim Central Municipality of the Ashanti region. The district was selected for the study because the researcher works in one of the communities in the district. Also, some of the communities are rural in nature which makes it ideal to study the infant feeding practices of nursing mothers to know their awareness level and other practice relating to infant feeding and health.

The Asante Akim Central Municipal (formerly Asante Akim North Municipal) Assembly is one of the 30 Districts in the Ashanti Region. It was carved out of the erstwhile Asante Akim District Council in 1988 as part of the Ghana's Decentralization Process. It has Konongo as its Capital Town. The Municipality is located in the eastern part of Ashanti Region and lies between latitude 60 30' North and 70 30' North and longitude 00 15' West and 10 20' West. It covers a land area of 1,160 sq. km with an estimated population of 169,976 in 2010 (projection from 2000 Population Census). The Municipality shares boundaries with Sekyere East to the North, Kwahu South to the East, Asante Akim South to the South and Ejisu-Juaben on to West.

3.4 Population

The population for the study is made up of all mothers with children between the ages of zero to eighteen (0 – 18) months living in the municipality and rural communities within the research area. Health personnel who are into child health were also considered part of the population.

3.5 Sample and Sampling Technique

With the main aim of the study being to assess the infant care practices of nursing mothers in the study area, the researcher selected one hundred and fifty (150) nursing mothers from the study area. The sample was selected using stratified and random sampling techniques. Five

communities in the study area were used as strata from which thirty (30) participants were selected each. The thirty participants were sampled using simple random sampling technique in order to give each member of the population a fair chance of appearing in the sample. In each of the community visited, nursing mothers in every third house encountered were interviewed and this was the procedure followed in all the communities.

The one hundred and fifty nursing mothers were determined statistically using the population proportion sample determination formula ($n = z^2 P (1- P) / d^2$). This was based on the assumption that eighty-nine percent (89%) of the nursing mothers would answer the questionnaire and an estimated difference between the actual proportion and the research value to be 0.05 at 95% confidence level. Thus using the formula:

$$n = \frac{z^2 p(1-p)}{d^2}$$

where:

n = The estimated sample size

p = Sample proportion 89% (proportion assumed to answer the questionnaire)

d = The probability that the desired sample size will not be representation of the study (5%)

z = level of confidence that the chosen sample will be representation of the population (1.96)

$$n = \frac{1.96^2 \; x \; 0.89(1-0.89)}{0.05^2}$$

$$n = \frac{1.96^2 \; x \; 0.89(0.11)}{0.0025}$$

$$n = \frac{1.96^2 \; x \; 0.0979}{0.0025}$$

$$n = \frac{3.84 \; x \; 0.0979}{0.0025}$$

$$n = \frac{0.375939}{0.0025}$$

n = 150.4

n= 150

3.6 Instruments for data Collection

The following instruments were used for the purposes of eliciting information or data from the participants of the study:

- Observation
- Structured questionnaire

Observation was used by the researcher to gather information on some cultural practices such as breastfeeding of babies as well as the kinds of complementary food fed to the children. Structured questionnaire which was the main data collection instrument, was used to solicit for information which were not readily obtained through observation. The nature of the study, which is a survey, necessitated the use of questionnaire to acquire the needed information for the study on such a large scale. The questionnaire solicited information on the following: Demographic characteristics of nursing mothers and child, the level of breastfeeding and complementary feeding awareness among nursing mothers, breastfeeding and complementary feeding practices of nursing mothers, water management practices and food hygiene practices among nursing mothers.

3.7 Data Analysis

Data analysis is the process of evaluating data using analytical and logical reasoning to examine each component of the data provided (Burns & Grove 1997). Data analysis procedure helps in making meaningful inferences, predictions and conclusions from collected data. It also helps in converting data into information and again explores the relationships

between variables. Burns & Grove (1997) says "information gathered during data collection may lack uniformity." Some information given may need reconstruction.

After collecting the data, it was first edited. During editing, relevant and appropriate errors were found and modified. The edited questionnaires were then organized and coded. Coding involves assigning numbers or symbols to each response category in order to translate the raw data into a form that could be counted, tabulated or fed directly into a computer (Agyedu, Donkor & Obeng, 2011). The organized and coded data was then fed into the Statistical Package for Social Sciences (SPSS Software version 20) for analysis and interpretation. As a means of analysing the Likert Scale items which was part of the questionnaire, a four point rating system was used as follows: Very Often(VO) =1, Often (O) = 2, Not Often (NO) = 3 and Not at All (NA) = 4. On a four point rating scale, a mid-point mean value of 2.5 was used. This means that any variable which scores a mean value of 1.0 indicates the acceptance of that variable. Conversely a mean value of 2.6 and 4.0 is interpreted to mean that respondents did not accept that variable. The analysis and interpretation is presented under Chapter Four of this study.

3.8 Ethical Considerations

A major ethical concern for researchers in their line of duty is that which requires them to strike a balance between the demands placed on them as professional scientists in pursuit of truth and their subjects' rights and values potentially threatened by the research (Cohen, Manion and Morrison, 2007). To make this study conform to ethical principles and practices, the rights to self-determination, anonymity, confidentiality and informed consent were observed (Kusi, 2012). The respondents were informed of their rights to voluntarily participate or decline. They were informed about the purpose of the study and were assured

of not reporting any aspect of the information they provided in a way that will identify them. They were assured that there were no potential risks involved in the process.

CHAPTER FOUR

RESULTS OF THE STUDY

4.1 Introduction

The current study was conducted in a bid to evaluate the infant feeding and care practices among nursing mothers in the Asante Akim Central Municpal of the Ashanti Region of Ghana. This section of the study presents the results emanating from the data collected. It deals with the presentation and analysis of the data gathered from the administered questionnaires. Descriptive statistical tools such as frequencies, percentages, means and standard deviations were used for the analysis. Frequency distribution tables were used to illustrate the outcomes of the data collected. The analyses were guided by the various objectives of this study in the design of the questionnaires administered on the field.

The chapter consists of five sections. The first section contains the presentation and analysis of the socio-demographic characteristics and background information of respondents (i.e. nursing mother and child). The second section discusses the level of breastfeeding and complementary feeding awareness of nursing mothers. The third and fourth sections are dedicated to complementary and breastfeeding practices of nursing mothers and the sources of water and water management practices respectively among nursing mothers. The fifth section also talks about the hygiene practices of nursing mothers when feeding their babies.

4.2 Demographic information of respondents

The demographic information was meant to give the researcher an understanding of the profiles of the participants and also establish the suitability of the respondents for the study and also provided a basis for discussions. The demographic data is presented in Table 1.

Table 1 Socio-demographic information of respondents

Variables	Frequency (*f*)	Percentage (%)
Sex of Child		
Male	60	40%
Female	90	60%
Total	150	100%
Age of Child (in months)		
0 – 6 months	77	51.3%
7 – 12 months	38	25.3%
13 – 18 months	29	19.4%
19 – 25 months	6	4%
26 – 36 months	0	0%
Total	150	100%
Age of Mother (in years)		
Less than 15years	15	10%
15 – 25 years	23	15.3%
26 – 35 years	86	57.3%
36 – 45 years	17	11.3%
46years and above	9	6%
Total	150	100%
Highest Educational Level		
No formal education	0	0%
Primary education	7	4.7%
JHS/Middle School	18	12%
Vocational Training	15	10%
Secondary Education	99	66%
Tertiary Education	11	7.3%
Total	150	100%
Marital Status		
Single	54	36%
Married	83	55.3%
Divorced	13	8.7%
Total	150	100%
Occupation		
Unemployed	17	11.3%
Apprentice	0	0%
Trader	58	38.7%
Farmer	42	28%
Self-employed	20	13.3%
Government worker	13	8.7%
Total	150	100%
Monthly income of mother		
Less than GH¢50	53	35.3%
GH¢50 - ¢300	40	26.7%
GH¢300 - ¢600	33	22%
GH¢600 - ¢800	15	10%
Above GH¢800	9	6%
Total	150	100%

Source: Researcher's field work (2016).

The first item in Table 1 sought to find out the gender of the babies that the nursing mothers sampled for the study were nursing. This is because research asserts that infant sex has been associated with early introduction of complementary food (Kimani_Murage *et al.,* 2011). From the table, out of the 150 nursing mothers sampled for the study, a majority of 90 which represents a percentage of 60% had female babies whilst the remaining 60 representing 40% were nursing male babies. This shows that female babies were in the majority.

Also, the researcher sought to know the age of the babies being nursed currently by the participants in this study. According to the information presented in the table, majority of the babies i.e. 77 (51.3%) were aged 0 – 6 months whilst 38 (25.3%) were in the age bracket of 7-12 months. Also, 29 respondents representing 19.4% had their babies in the age group of 13- 18 months. From the foregoing, it is seen that almost all the respondents sampled for the study were nursing babies who were still breastfeeding or being weaned.

From the table, it is seen that 10% of mothers who participated in the study were aged less than 15 years old whilst 23 (15.3%) were in the age group of 15 – 25 years. The majority of mothers, 86 (57.3%) fell in the age range of 26 – 35 years with 17 (11.3%) falling into the age group of 36 – 45 years. Only nine (6%) respondents were aged 46 years and above.

When the highest educational level of respondents was sought, it was seen that only seven (4.7%) mothers had primary education and 18 (12%) had Junior High or Middle School education. Fifteen (15) respondents which correspond to a percentage of 10% had vocational training whilst majority of respondents 99 (66%) were holders of Senior Secondary/High School certificates and only 11 (7.3%) had tertiary education.

As regards the marital status of respondents, majority of 83 (55.3%) respondents were married whilst 54 (36%) were single. A relatively small number 13 (8.7%) were however divorced or separated.

The next item after marital status to be collected was the occupation of respondents. From table 1, 17 (11.3%) respondents were unemployed whilst 58 of them which represent 38.7% were traders/hawkers. It is seen that, 42 (28%) of respondents are farmers whilst 20 (13.3%) are self-employed. A small percentage of 8.7% with a corresponding frequency of 13 were government workers.

With respect to the monthly income of mothers, it is seen that majority of them i.e. 53 (35.3%) indicated that they earn less than GH¢50 whilst 40 (26.7%) earned between GH¢50 – 300. Another 33 (22%) of respondents earned between GH¢300 - GH¢600 and 15 (10%) said they earned between GH¢600 and GH¢800. Only nine (6%) respondents responded that they earned above GH¢800.

The above result indicates that most of the participants surveyed were nursing female babies, who were aged between 0 – 6 months. The ages of the mothers were mostly around 26 – 35 years and most of them had highest educational level of secondary school education. The results further indicate that most of the nursing mothers were married and their occupation was mostly trading and farming. The average monthly income of the nursing mothers was around GH¢300.

4.3 Level of breastfeeding and complementary feeding awareness among nursing mothers

The level of breastfeeding and complementary feeding awareness was sought among nursing mothers in order to find out how aware nursing mothers are of the benefits of breastfeeding their children and the right kinds of knowledge in the introduction of complementary feeding to babies.

Table 2 Place of child birth

Place of child delivery	Frequency (*f*)	Percentage (%)
Health facility	126	84%
Home	15	10%
Traditional birth attendant (TBA)	9	6%
Total	150	100%

Source: Researcher's field work (2016).

Table 2 presents data on the place where nursing mothers delivered their children. This was sought because research suggests a correlation between the place of delivery and good breastfeeding and complementary feeding practices.

From the table, a majority of 126 respondents representing 84% responded that they delivered their babies at health facilities whilst 15 (10%) said they delivered at home. The remaining 9 (6%) respondents said they were delivered by traditional birth attendants (TBAs). This indicates that nursing mothers in this study are likely to receive information on good breastfeeding practices.

Table 3 Knowledge on good breastfeeding and complementary feeding practices

Statements	Responses	
	Yes (%)	No (%)
Attendance to child welfare clinic	114(76%)	36(24%)
Received education on breastfeeding	139(92.7%)	11(7.3%)
Do you breastfeed your children	146(97.3%)	4(2.7%)
Knowledge of colostrum	93(62%)	57(38%)
Did/do you give colostrum to your children	79(52.7%)	71(47.3%)
Do you know exclusive breastfeeding	109(72.7%)	41(27.3%)
Do you practice exclusive breastfeeding	67(44.7%)	83(55.3%)
Have you received any education on complementary feeding	108(72%)	42(28%)
Do you give complementary food to your child	94(62.7%)	56(37.3%)

Source: Researcher's field work (2016)

Data presented in Table 3 shows that majority 114 (76%) of nursing mothers in this study attend child welfare clinic i.e. both antenatal and postnatal clinics whilst 36 (24%) indicated that they do not. From the table, when respondents were asked whether they received education on breastfeeding, an overwhelming majority of 139 (92.7%) responded in the affirmative whilst 11 (7.3%) said they did not.

The data shows that, 97.3% of respondents breastfeed their children whilst only 2.7% did not. Respondents were also asked whether they had knowledge of the first breast milk produced by the body which is termed 'colostrum' and its benefits to the infant. To this item, 62% of respondents responded in the affirmative whilst 38% were in the negative. This indicates that although majority of the nursing mothers were aware of colostrum and its importance to their babies, a sizable minority of 57 (38%) were not privy to such knowledge. When respondents were asked whether they gave/give colostrum to their babies, 79 (52.7%) indicated that they did whilst the remaining 71(47.3%) indicated otherwise.

On the knowledge of exclusive breastfeeding, 109 out of the 150 respondents which represent 72.7% said they had knowledge of it whilst the remaining 41 respondents representing 27.3% did not have any knowledge of the term exclusive breastfeeding. According to research, infant feeding practices are important determinants of child nutritional status and health.

As a follow-up to the above questions, the researcher sought to find out whether nursing mothers practice exclusive breastfeeding or not. The results showed that only 44.7% of nursing mothers which corresponds to a frequency of 67 out of 105 breastfed their infants exclusively for the first six months whilst the remaining 83 respondents which represents 55.3% did not. This concurs with other research findings which states that despite research evidence surrounding the many benefits of EBF to both mother and infants, only 63% of children less than six months were exclusively breastfed (GDHS, 2008). A study by Aidam *et*

al., (2005) in Accra, Ghana found that 51.6% of mothers exclusively breastfed their infants. Research further reports that there is a drop in the number of mothers who exclusively breastfeed their infants for six months, suggesting that more efforts are needed to promote optimal breastfeeding practices in the country.

Complementary foods are introduced to an infant at a time when breast milk alone is not sufficient to meet the energy and nutrient requirements of the growing infant, preferably after six months (WHO/UNICEF, 1998, 2003). In this regard, the researcher sought to know whether nursing mothers received education on complementary feeding and whether they practiced complementary feeding.

From the table, it is seen that 72% of respondents said they received education on complementary feeding whilst 28% responded in the negative. Also, 62.7% of the respondents said they give complementary food to their infants whilst 37.3% did not.

4.4 Breastfeeding and Complementary feeding practices among nursing mothers

All other things being equal, breastfeeding has health benefits for a new-born baby and the mother and as the baby grows, complementary foods are introduced. It is held that, every expectant mother will be aware that the official advice on infant feeding is that 'breast is best'. The researcher sought to find out the breastfeeding and complementary feeding practices among nursing mothers in the study area, the results of which are presented in Table 4.4.

Table 4 Breastfeeding practices among nursing mothers

Variables	Frequency (*f*)	Percentage (%)
When child was first put to breast after birth		
Less than 1 hour	119	79.3%
1 – 6 hours	16	10.7%
7 – 24 hours	5	3.3%
More than 24 hours	10	6.7%
Total	150	100%
How long baby breastfeeds		
Less than 10 minutes	29	19.3%
10 – 30 minutes	63	42%
Till baby sleeps	58	38.7%
Total	150	100%
Time intervals breast milk is given to baby		
On demand	43	28.7%
1 – 2 hours	51	34%
3 – 4 hours	56	37.3%
5 – 6 hours	0	0%
More than 6 hours	0	0%
Total	150	100%
How breastfeeding is done		
From one breast	0	0%
From both breasts	150	100%
Total	150	100%
How long baby feeds on each breast		
One hour	0	0
Thirty minutes	35	23.3%
Fifteen minutes	58	38.7%
Ten minutes	27	18%
Till baby sleeps	30	20%
Total	150	100%

Source: Researcher's field work (2016)

The results in Table 4 shows that a majority of 119 respondents representing 79.3% breastfed their babies in the first hour of delivery which is in line with the WHO's recommended time within which the baby should be put to breast. However, 16 respondents which represents 10.7% responded that they breastfed their newborns after one hour within the range of 1 – 6 hours whilst five respondents said they breastfed their newborns within 7 – 24 hours. It was also seen that 10 respondents representing 6.7% however said they breastfed their infants more than 24 hours after delivery.

From the study, the researcher sought to know how long baby breastfeeds in each session of feeding. It is seen from the table that, 29 respondents representing 19.3% indicated that their babies breastfed for less than 10 minutes whilst 63 (42%) responded that they fed their babies for 10 – 30 minutes. Also, 58 (38.7%) respondents intimated that they breastfed their babies till the baby sleeps or leaves on its own.

The average time for breastfeeding babies per feeding session in this study was found to be around 20 minutes. On the time intervals breast milk is given to baby, the data from the table also shows that 43 (28.7%) breastfed their infants on demand (i.e. when baby requests for it) whilst 51(34%) said breastfeeding of baby was done in the intervals of 1 – 2 hours. Majority of respondents 56 (37.3%) however said they breastfed their infants on a 3 – 4 hours interval.

The researcher further sought to know how breastfeeding is done among the nursing mothers who partook in this study. From the data presented in Table 4, all the mothers unanimously responded that they fed their infants from both breasts.

Table 5 Complementary feeding practices among nursing mothers

Variables	Frequency (*f*)	Percentage (%)
Additional food given in the first 6 months		
Water	66	44%
Tea	0	0%
Herbs	0	0%
Only breast milk	53	35.3%
Porridge	31	20.7%
Total	150	100%
When complementary food was given to baby		
3 months	16	10.7%
5 months	7	4.7%
6 months	82	54.7%
After six months	45	30%
Total	150	100%
Reason for introducing complementary food before 6 months		
Milk was not adequate for baby	108	72%
So that baby can be strong	12	8%
So that others can feed baby	30	20%
Total	150	100%
Period of continued breastfeeding after complementary food was introduced		
7 – 12 months	78	52%
13 – 18 months	17	11.3%
19 – 24 months	18	12%
Above 24 months	37	24.7%
Total	150	100%

Source: Researcher's field work (2016)

The complementary feeding practices sought from respondents are presented in Table 5. From the table, a majority of 66 respondents representing 44% indicated that within the first six months, water is introduced to the new born or infant whilst 35.3% indicated that they practiced exclusive breastfeeding and hence gave only breast milk to their infant in the first six months. On the next item, 31 respondents with a percentage representation of 20.7 said they gave porridge or 'koko' to their babies who are less than six months. This result supports the several other research findings that less and less mothers practice exclusive breastfeeding.

Also, the table presents data on when complementary food was given to babies by nursing mothers. It is seen from the table that 10.7% of mothers started giving complementary foods to their babies at the age of 3 months whilst 4.7% did at 5 months. A majority of nursing mothers 54.7% said they introduced complementary foods to their babies at 6 months whilst 30% said they did so after six months.

As a follow up, the researcher sought to know why nursing mothers introduced complementary food before six months. The responses on this item indicates that, 108 (72%) of respondents thought that their meal was not adequate for baby before the six months whilst 12 (8%) were of the view that complementary foods would make the baby strong. It is further seen that 30 (20%) of respondents said they gave complementary food to their babies so that others could feed the baby in their absence.

The researcher again sought to know how long mothers continued to breastfeed their babies after complementary foods were introduced. The data from the table indicates that majority of mothers 78 (52%) continued breastfeeding till about 7–12 months after introducing complementary foods to the baby. Also, 17 (11.3%) indicated that they weaned their babies at 13 – 18 months after giving them complementary foods whilst 18 (12%) said they did so around 19 – 24 months. Again from table 5, 37 (24.7%) indicated that they weaned their children after 24 months of introducing complementary foods.

Table 6 Complementary/formula foods practices of nursing mother

Variables	Frequency (*f*)	Percentage (%)
How complementary formula food is prepared		
Follows manufacturer's instructions	107	71.3%
Make it easy for easy swallow	43	28.7%
Total	150	100%
Keeping of prepared leftover formula food		
Yes	73	48.7%
No	77	51.3%
Total	150	100%
Temperature for preparing formula food		
Cold	24	16%
Lukewarm	75	50%
Hot	51	34%
Total	150	100%
How leftover food is stored		
Refrigerator	17	11.3%
Food flask	133	88.7%
Total	150	100%

Source: Researcher's field work (2016)

The researcher sought the complementary feeding practices of nursing mothers using formula food to feed their children. This is presented in Table 6. From the table, it is seen that majority 107 (71.3%) of nursing mothers said they prepared formula food by following the manufacturer's instructions whilst 43 (28.7%) said they make it easy for the baby to swallow. The table again shows that a little less than half 73 (48.7%) of respondents said they do keep leftover formula food for the next feeding of the infant whilst more than half 77 (51.3%) said they discard leftover formula food when all is not consumed by the baby at a feeding session. The temperature around which formula food is prepared by nursing mothers was also collected which shows that 16% of mothers prepared the formula foods at a cold temperature whilst 50% made it lukewarm and the remaining 34% prepared it hot for babies.

As part of the formula feeding practices, mothers were asked how they stored leftover food. The results show that 17 (11.3%) respondents stored leftover formula food in the refrigerator whilst the remaining 133 (88.7%) stored them in food flasks.

Table 7 Kinds of complementary foods given to babies

Complementary food	VO		O		NO		NA		Mean
	f	%	*f*	%	*f*	%	*f*	%	($\bar{x}$)
Cereals	71	47.3%	40	26.7%	39	26%	0	0%	1.79
Vegetables	9	6%	62	41.4%	41	27.3%	38	25.3%	2.72
Fruits	75	50%	24	16%	51	34%	0	0%	1.84
Roots and tubers	16	10.7%	72	48%	62	41.3%	0	0%	2.31
Legumes & meat/fish/egg	6	4%	101	67.3%	43	28.7%	0	0%	2.25
Fats and oils	40	26.7%	27	18%	81	54%	2	1.3%	2.30
Legumes & cereals	23	15.3%	111	74%	16	10.7%	0	0%	1.95
Fish & cereals	31	20.7%	111	74%	8	5.3%	0	0%	1.85
Legumes & cereals & fish	0	0%	97	64.7%	53	35.3%	0	0%	2.35

Key: VO = Very Often, O = Often, NO = Not Often, NA = Not At All.

Source: Researcher's field work (2016)

It is a well-known fact that complementary foods are introduced to babies when breast milk alone is not sufficient to meet the energy and nutrient requirements of the growing infant. This transition period from breast milk to complementary foods is a bit vulnerable and as such mothers should make it a priority to introduce variety of foods especially fruits and vegetables. For this reason, the researcher sought the kinds of complementary foods given to babies by nursing mothers. This information is presented in Table 7. The information is presented in the form of Likert scale instrument using four ratings. On a four point rating scale, a midpoint mean was calculated to be 2.5. This means that any variable which scores a mean value between 1.0 and 2.4 indicates that respondents used that complementary food enough in feeding their infants. Conversely, a mean value between 2.6 and 4.0 is interpreted to mean that respondents did not use such complementary food in feeding their infants.

It is seen from the table that, with a mean value of (x=1.79), nursing mothers preferred giving cereals most to their infants as complementary foods, followed by fruits which also scored a mean value of (x=1.84).

From the table, one can see that nursing mothers did not give enough vegetables to their babies as part of their complementary feeding since vegetables scored a mean rating of (x=2.72) which is above the mid-point value of 2.5.

Using data from the table as a guide, it can be concluded that mothers fed their weaning infants more cereals, fruits, fish and cereals, legumes and cereals, and legumes/meat/fish/egg. It is again seen that, mothers did not include more of fats and oils, legumes, cereals and fish, roots and tubers and vegetables in that order.

4.5 Sources of water and water management practices among nursing mothers

Water remains an integral part in the feeding of infants especially around the time complementary foods are introduced. It therefore behooves on the nursing mother to provide clean and safe drinking water for the baby. This is because the baby has an underdeveloped immune system at this stage of their lives and unsafe water can result in catastrophic outcomes. In this regard, the researcher investigated the sources of water and the water management practices among nursing mothers and presented the results in Table 8.

Table 8 Water management practices of nursing mothers

Variables	Frequency (*f*)	Percentage (%)
Source of water		
Lake	0	0%
Open well	9	6%
Mechanised borehole	92	61.3%
Pipe-borne water	49	32.7%
River/stream	0	0%
Total	150	100%
How water is made safe for drinking and meal preparation		
Boiling	122	81.3%
Filtering	0	0%
Nothing	28	18.7%
Total	150	100%
Storage of water		
Clay pot	26	17.3%
Plastic container	117	78%
Metal/aluminium container	7	4.7%
Total	150	100%
Covering of water		
Yes	150	100%
No	0	0%
Total	150	100%
Allowing any cup or container to be used in fetching stored water		
Yes	29	19.3%
No	121	80.7%
Total	150	100%
Specific cup/container provided for use in fetching stored water		
Yes	94	62.7%
No	56	37.3%
Total	150	100%

Source: Researcher's field work (2016)

In Table 8, it is seen that the source of water for majority 92 (48%) of nursing mothers in the study area is mechanised borehole followed by pipe-borne water which is the source for 69 (46%) of nursing mothers. When asked how nursing mothers made their water safe for drinking and meal preparation, 122 (81.3%) indicated that they boil the water whilst 28 (18.7%) responded that they did nothing to make it safe. This response is probably due to

have come from the respondents whose source of water was pipe-borne which is considered treated and safe for drinking.

Also respondents were asked how they stored their water to which 26 (17.3%) said they used clay pots whilst 117 (78%) indicated that they used plastic containers for storing their water. Again, 7 (4.75) responded that they used metal/aluminium containers or buckets for storing their fetched water.

Respondents were further asked whether they covered their water in storage to prevent dust and other foreign materials from entering them. To this item, respondents gave a unanimous answer in the affirmative. Thus, 150 (100%) responded that they covered their water which is fetched and stored.

From the table, respondents indicated that they did not allow any cup or container to be used in the fetching of stored water since these could contaminate the water with dirt and other undesired substances. This was the opinion of 121 (80.7%) of respondents whilst 29 (19.3%) indicated that they allowed any cup or container to be used in fetching water. To add to this, 62.7% of respondents indicated that they provided specific cup/container for use in fetching stored water whilst 37.3% did not.

4.6 Hygiene practices of nursing mothers when feeding their babies

Nursing mothers are expected to uphold high standards of hygiene in order for their frail infants not to contract any diseases as a result. As such, the WHO recommends several hygiene practices before, during and after the feeding of infants by nursing mothers. The researcher sought to explore some of these hygiene practices adhered to by nursing mothers in the study area.

Table 9 Breastfeeding and complementary feeding hygiene practices of mothers

Statements	Responses	
	Yes (%)	No (%)
Washing of hands with soap and water before preparing baby's food	150(100%)	0(0%)
Washing of hands after attending nature's call	150(100%)	0(0%)
Washing of hands after cleaning baby's bottom	150(100%)	0(0%)
Cleaning of work surface before, during and after cooking	150(100%)	0 (0%)
Washing of hands after touching raw food and before touching cooked food	150(100%)	0 (0%)
Covering sores, cuts or wounds on hand with waterproof plaster before feeding baby	144(96%)	6 (4%)
Cooking food thoroughly before feeding baby	135(90%)	15 (10%)
Cleaning of knives and other utensils before and after use	150(100%)	0 (0%)
Sterilising bottles, nipples, caps and rings before using them	91(60.7%)	59 (39.3%)
Washing with water and allowing feeding instruments to dry	135 (90%)	15 (10%)

Source: Researcher's field work (2016)

The data presented in Table 9 indicates the breastfeeding and complementary feeding hygiene practices of nursing mothers who participated in the study. From the table, it is seen that nursing mothers unanimously responded positively to practicing several hygiene activities. All 150 (100%) of respondents affirmed that they washed their hands with soap and water before preparing the baby's food, washing of hands after attending nature's call and washing of hands after cleaning of baby's bottom. Also, 100% positive responses were received for cleaning of work surfaces before, during and after meal preparation and the washing of hands after touching raw food and before touching cooked food.

It is however seen from the table that, 144 respondents representing 96% said they covered sores, cuts or wounds on hand with waterproof plaster before feeding baby whilst 6 (4%) responded in the negative. This may be attributable to the fact that these mothers did not have any sores or cuts and as such responded in the negative.

Also, on the issue of cooking food thoroughly before feeding baby, 135 (90%) respondents responded in the affirmative while 15 (10%) said they did not. These mothers intimated that certain foods when overcooked lose their nutrient contents and as such were careful not to overcook such foods. Hundred percentage (100%) respondents affirmed that they cleaned the knives and other utensils before and after use in meal preparation.

On the issue of sterilising bottles, nipples, caps and rings before using them, only 60.7% respondents said they did whilst 39.3% intimated that they did not.

It is seen from the table that, 135 (90%) of respondents positively affirmed that they washed their feeding utensils and allowed them to dry before use in feeding whilst 15(10%) indicated that they did not. When asked why, they explained that the time for drying takes long so they used clean napkins to dry such utensils themselves and used them.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 Introduction

This chapter presents a discussion of results obtained from the data collection process. The results of the study is presented and compared with literature. Relevant literature is cited to support or confirm the findings of the study or otherwise when the results are at variance with available research evidence. The discussion of the results is done in accordance with the study objectives.

5.2 Findings of the Study

From the data collected and analysis done, several findings were arrived at. These are presented in this section together with a discussion on such findings as appropriate.

5.2.1 Research Question One

What is the awareness level of nursing mothers concerning breastfeeding and complementary feeding?

Research question one (1) sought to find out the level of awareness of nursing mothers concerning breastfeeding and complementary feeding. In order to achieve this, the researcher presented twelve (12) questionnaire items structured around awareness of breastfeeding and complementary feeding consisting of both open ended and close ended responses for nursing mothers to respond to. From the responses gathered, it was revealed that majority (84%) of nursing mothers delivered their babies at a health facility and 76% attended child welfare clinics indicating that they were likely to receive education or information on good breastfeeding practices. According to Aidam *et al.,* (2005), good breastfeeding practices like Exclusive Breastfeeding (EBF) and complementary feeding practices are taught in the health

facilities. The WHO (2001) also indicates that, it has been found that the knowledge on exclusive breastfeeding for the first six months was relatively high.

The study also revealed that 92.7% of respondents received education on breastfeeding which is due to the fact that most of the mothers delivered at health facilities. Others who delivered at home or by Traditional Birth Attendants could receive this information from experienced mothers, friends, grandmothers and family who are close. This is supported by Aubel *et al.,* (2004) and Kerr *et al.,* (2008) who opined that in Africa, child care is seen as a collective issue. Family members and friends tend to be concerned and involved in child care practices like providing information from their experiences to 'new mothers'. Of particular mention are grandmothers, who have an upper hand in deciding how a young mother should feed her infant.

With regards to breastfeeding of the new-born, an almost unanimous majority of 146 representing 97.3% of respondents indicated that they breastfeed their children whilst only 4 (2.7%) responded in the negative citing reasons such as pains in the breast, recovery from surgery (caesarean section), not wanting the breast to fall or sag and the breast not producing enough milk. Research support this finding since it is noted to be on record that about 80% of babies are breastfed now at birth which is continued for at least three months before complementary foods are introduced (Nkala and Msuya, 2011; Thurman and Allen, 2008).

Knowledge of colostrum was known to only 62% of nursing mothers, however 52.7% reported giving it to their babies. Several studies suggests that the relative high number of mothers responding that they do not give colostrum to their infants is probably due to the erroneous notion held by people that the first milk that comes immediately after delivery is dirty because of its yellowish colour (Ku and Chow, 2010; Aidam *et al.,* 2005).

Knowledge on exclusive breastfeeding was 72.7%. This was seen as suboptimal. This according to GDHS, (2008) probably stems from the fact that nursing mothers lack the necessary information on the benefits of exclusive breastfeeding. According to the GDHS (2008), this is prevalent in developing countries than the developed countries.

5.2.2 Research Question Two

What are some of the complementary and breast feeding practices of nursing mothers?

The aim of research question two (2) was to find out the breastfeeding and complementary feeding practices of nursing mothers in the study area.

The results showed that 79.3% of nursing mothers breastfed their babies in the first hour of delivery. This therefore, is essential for the optimal growth, health and total development of infants. This result is at variance with Vaahtera *et al.,* (2001) who found in their study that few participants started to breastfeed immediately, i.e. within minutes after delivery or within one hour after birth. The difference here is significant as 79.3% of the participants in the study reported to breastfeed their newborns within the first hour of delivery. Others however delayed the initiation of breastfeeding to as later as more than 24 hours which is not recommended. Vaahtera *et al.,*(2001) proceeded to give reasons for the delayed breastfeeding among nursing mothers as; physical condition of mother after delivery, painful conditions associated with caesarian section and absence of infants who were kept in nursery.

It was found that nursing mothers breastfeed their babies for long, per session since the average time was around 20 minutes. This was supported by Traveras *et al.,* (2004) who pointed out that the length of time a baby spends in feeding varies from child to child, but ranged between 5 – 30 minutes.

From the results, most nursing mothers (44%) introduced water in the first six months whilst only 35.3% exclusively breastfed. Also, 15.4% said they introduced complementary foods

before six months. Respondents gave several reasons for introducing complementary foods before six months such as milk was not adequate for baby, so that others could feed the baby in the absence of mother and also, so that baby could be strong. The WHO (2001) asserts that, early introduction of complementary foods is a risk factor causing malnutrition and under nutrition among infants. For this reason, The American Academy of Pediatrics cited in (Akter and Rahman, 2010) recommends that there be no introduction of solid foods, including infant cereal, baby food or table food before 4 months of age.

The study brought to light that, the respondents practiced suboptimal breastfeeding and complementary feeding practices which is in consonance with MICS (2011), who reported that suboptimal breastfeeding and complementary feeding practices are prevalent in developing countries than developed countries. To buttress this point, Aidam *et al.,* (2005) indicated in their study that, complementary feeding practices have not enjoyed the level of support from both national and international levels as has been given to breastfeeding. This has led to a rise in the prevalence of infant malnutrition especially in developing countries since complementary foods often lack the necessary nutrients for optimal growth and health.

5.2.3 Research Question Three

What are some of the sources of water and the water management practices nursing mothers put in place when feeding the baby?

The data analysis revealed that, the source of water for most of the nursing mothers are bore-hole (48%) and pipe-borne (46%). These sources of water are regarded as 'clean and safe' hence preventing water borne diseases such as diarrhea in children. Again, 81.3% of respondents boiled their water to make it safer and 100% indicated that they covered their water in storage to prevent dust and other microbes from entering into it. Thus this study maintains that, the water management practices of nursing mothers were good and their

sources of drinking water were also clean and safe. In contrast, Anigo *et al.,* (2005) in a study conducted in rural Burkina Faso found that, the main source of drinking water of nursing mothers was rivers/streams (40%) which was followed by open well (23%) and pipe-borne (22%). Mensah (2014) also found in his study that unclean and unsafe water were contributing factors towards poor health and nutritional status of children under- five years in Asante Akim North Municipality, Ghana which is at variance with findings from this study. It is possible that results and recommendations from previous studies such as Mensah's may have led to improvements in the provision of safe and clean sources of water as is evident in this study.

5.2.4 Research Question Four

What are the hygiene practices nursing mothers put in place when feeding the baby?

The results showed that, almost all the hygiene practices presented to nursing mothers to respond to in the questionnaire scored a percentage of 90% or above with the exception of sterilization of feeding equipment which received 60%. This was probably due to the unavailability of sterilizers such as antibiotics and sanitizers considering the fact that the study area was a bit rural in nature and the fact that sterilizers are expensive. This is supported by available literature as Black *et al.*, (2003) reported similar findings in their study. In their study, 68% of mothers did not sterilize their feeding utensils with only 24% sterilizing the feeding utensils albeit not all the time. In this instance, the researcher suggests that nursing mothers resort to alternative practices such as boiling which is relatively inexpensive and available. Therefore, when this poor hygienic practice is coupled with complementary foods which are not only low in quality but are usually insufficient in quantity, the infants are not only exposed to infectious diseases and water borne diseases but

at a higher risk of dying, for it is a known fact that when nutritional and care practices are not optimal, child's survival and protection against infection is compromised (WHO, 2008). However, Anigo *et al.,* (2009) revealed that 84% of mothers observed high hygiene practices when preparing their baby's food such as washing of hands under running water, washing of equipment and working surfaces. Fewtrell *et al.,* (2005) also reported high hygiene practices among nursing mothers during food preparation for infants.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The researcher conducted this study in the Asante Akim Central Municipality to explore the various infant feeding practices of nursing mothers. This section of the study reports the key findings of the study, draws a conclusion based on the findings and presents recommendations. The researcher goes on to make suggestions into areas that can be pursued for further studies in relation to the subject of this study.

6.2 Summary of Key Findings

In the conduct of this study, breast-feeding and complementary feeding practices of nursing mothers were the main focus. The study sampled 150 mothers at random from the study area whose babies were aged between 0 – 24 months. The following are the key findings of the study:

6.2.1 Level of breastfeeding and complementary feeding awareness among nursing mothers

From the study, it came to light that majority of nursing mothers were adequately aware of breastfeeding and complementary feeding of their infants since a good percentage 84% of them said they delivered their babies at health centres. This is an indication that, they were given education/information on breastfeeding and complementary feeding at the various health centres where they delivered. However, a relatively low number; 62% claimed to have knowledge of colostrum whilst 72.7% had knowledge on exclusive breastfeeding. There was a difference in the number who had knowledge of EBF and those who actually practiced it.

The percentage of mothers who claimed to actually practice EBF was 44.7% which is on the low side.

6.2.2 Complementary and breastfeeding practices among nursing mothers

The actual practices of mothers during breastfeeding and complementary feeding found that, a good number of respondents; 79.3% initiate breastfeeding in the first hour of delivery. However, since the time for babies to feed when breastfeeding differs from child to child, an average was found for this study to be around 20 minutes. It was further found that most mothers breastfed their babies between intervals of 3 – 4 hours and 1 – 2 hours and also on demand. All the mothers in this study, 100% reported to breastfeed their babies from both breasts which is considered a good practice.

On the complementary feeding practices, it was seen that majority of mothers 44% introduced water within the first six months of birth 54.7% claimed that complementary food was introduced around six months. The study again found that after the introduction of complementary foods, majority of mothers continued breastfeeding their infants to about 7 – 12 months more. The common complementary foods of nursing mothers were cereals, fruits, fish and legumes. Mothers did not include enough vegetables in the complementary foods of their infants.

6.2.3 Sources of water and water management practices among nursing mothers

With water being an essential component of complementary feeding, the study found that majority 61.3% of mothers sourced their water from boreholes which is considered a clean source of water. Also, 81.3% of mothers said they further made the water safe for drinking and cooking by boiling it. On the storage of water, it was found that most nursing mothers, 78% used plastic buckets/containers and 100% of the mothers reported that they covered their

water which was in storage. This is also considered a good water management practice since it prevents dirt and other disease causing organisms from entering the water.

6.2.4 Hygiene practices of nursing mothers when feeding their babies

Since babies have weak immune system to fight infections, it is expected of nursing mothers to practice good personal hygiene when feeding their babies. From the study, it was found that 100% of the nursing mothers reported that they washed their hands with soap and water before preparing the baby's food and also washed their hands after attending nature's call and after cleaning of baby's bottom. Also, 100% positive responses were received for cleaning of work surfaces before, during and after meal preparation and the washing of hands after touching raw food and before touching cooked food. This suggests that, almost all the nursing mothers in this study upheld good standards of hygiene which is commendable.

6.3 Conclusion

According to WHO (2003), malnutrition has directly or indirectly contributed to 60% of the 10.9 million deaths annually among children under five. Regarding this, adequate nutrition during infancy and early childhood is essential to ensure child growth, health and development. However, nursing mothers are not abreast with current breastfeeding and complementary feeding practices of their children. A report by the WHO (2008) estimated that almost 10% of the global burden of illness is related to water, through contaminated drinking water, inadequate or non-existent sanitation and hygiene, and poor water management. Globally, 1.5 million children die annually as a result of water and hygiene practices. It therefore appears that the breastfeeding and complementary feeding practices among mothers in Ghana is inadequately adhered to. Therefore, the purpose of this study was

to assess the infant feeding and care practices among nursing mothers in the Asante Akim Central Municipality of Ghana.

From the findings of the study, it can be concluded that the level of breastfeeding and complementary feeding awareness of nursing mothers is high in the Asante Akim Central Municipality. However, complementary and breastfeeding practices left much to be desired. A significant number of mothers did not practice Exclusive Breastfeeding (EBF) and also, most mothers did not give the essential 'first milk' or colostrum to their babies whilst mothers did not include enough vegetables in the complementary foods of their infants. This study maintains that, the water management practices of nursing mothers were good and their sources of drinking water were also clean and safe. The study concludes that, despite the efforts and resources dedicated to improve the rates of mothers who practice Exclusive breastfeeding, the numbers are actually going down. The study also revealed that nursing mothers upheld high personal hygiene and good water management practices.

6.4 Recommendations

The researcher suggests that in order for more mothers to practice exclusive breastfeeding for the desired duration, there should be a change in policy such as longer maternity leaves for nursing mothers to about 4 months. Also, there is the need to advocate for higher formal education of females since more educated females tend to provide optimal breastfeeding and care practices for their babies.

The researcher further suggests that, the Ghana Health Service (GHS) should intensify its education on infant health through home visits since a significant number of nursing mothers especially the rural folk do not attend child welfare clinic.

As an alternative to sterilization but equally effective, the researcher recommends that nursing mothers boil the feeding utensils and equipment like the feeding bottles used in feeding babies to temperatures above 100^0C. This will effectively kill all bacteria and disease causing microbes.

6.5 Suggestions for Further Studies

For further studies, the researcher suggest that attention should be focused on exploring the influence of culture on breastfeeding and complementary practices among nursing mothers. Also, future researchers can consider studying the relationship between children that were exclusively breastfed and their health and/or mental development to truly assess the benefits of EBF on babies.

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APPENDIX

QUESTIONNAIRE FOR NURSING MOTHERS

I am Jennifer Afrakomah Yeboah, a student at the College of Technology, Kumasi, University of Education, Winneba, pursuing M.Tech Catering and Hospitality. I am conducting a research on Assessment of infant feeding and care practices among nursing mothers as part of my academic work. I would be grateful if you could spare me some few minutes of your time to answer the following questions. Your privacy is protected; no information that will identify you is required.

SECTION A: DEMOGRAPHIC CHARACTERISTICS OF NURSING MOTHER AND CHILD

1. Sex of the child

Male [ ] Female [ ]

2. Age of the child

a. 0 – 6 months [ ]
b. 7 – 12 months [ ]
c. 13 – 18 months [ ]
d. 19 – 25 months [ ]
e. 26 – 36 months [ ]

3. Weight of the child (kg) ……

4. Height of the child (cm)

5. Age of mother

a. less than 15 years [ ]
b. 15 – 25 [ ]
c. 26 - 35 [ ]
d. 36 – 45 [ ]
e. 46 and above [ ]

6. What is your highest level of education attained?

a. No formal education [ ]
b. Primary education [ ]
c. J. H. S/Middle School [ ]
d. Vocational Training [ ]
e. Secondary Education [ ]
f. Tertiary Education [ ]

7. Marital Status

a. Single [ ]
b. Married [ ]
c. Divorced [ ]
d. Widowed [ ]

e. Cohabiting [ ]

8. Religion
a. Christian [ ]
b. Muslim [ ]
c. Traditional [ ]
d. Others (specify) …….

9. Mother`s occupation
a. unemployed [ ]
b. apprentice [ ]
c. trader [ ]
d. farmer [ ]
e. self-employed [ ]
f. gov't worker [ ]
g. others (specify) …….

10. Mother's monthly income
a. less than GH¢50 [ ]
b. GH¢50 - ¢300 [ ]
c. GH¢300 - ¢600 [ ]
d. GH¢600 - ¢800 [ ]
e. GH¢800 [ ]

11. How many children do you have? ……..

12. How many people do you feed in your household?.....

SECTION B: LEVEL OF BREASTFEEDING AND COMPLEMENTARY FEEDING AWARENESS AMONG NURSING MOTHERS

13. Where did you deliver your child/children?
a. health facility [ ]
b. home [ ]
c. Traditional Birth Attendant (TBA) [ ]
d. others

14. Do you attend Child Welfare Clinic?
a. Yes [ ] b. No [ ]

15. a. If yes, Why? …….
b. If no, why?.....

16 (i). Have you received any education/information on breastfeeding?
a. Yes [ ] b. No [ ]
16 (ii) If yes to Q16(i), where?.....

17. If no why?
…….

18. Do you/did you ever breastfeed this child/children?
a. Yes [ ] b. No [ ]

19. Is the child still breastfeeding?
a. Yes [ ] b. No [ ]

20. Do you know colostrum?
a. Yes [ ] b. No [ ]

21. Did you give colostrum to your child?
a. Yes [ ] b. No [ ]
If yes, why?.....
If No, why?.....

22. Do you know Exclusive breastfeeding?
a. Yes [ ] b. No [ ]

23. Do you practice exclusive breastfeeding?
a. Yes [ ] b. No [ ]
b. Could you give the importance of breastfeeding the child?
…….
…….

24. Have you received any education/information on complementary feeding?
a. Yes b. No
If Yes, where? ……

25. Do you give complementary food to your child?
a. Yes b. No

26. Could you give the importance of complementary feeding?
……..
……

SECTION C: BREASTFEEDING AND COMPLEMENTARY FEEDING PRACTICES OF NURSING MOTHERS

27. When did you put the child to breast after birth?

a. less than 1 hour [ ]
b. 1 – 6 hours [ ]
c. 7 – 24 hours [ ]
d. more than 24 hour [ ]
f. none of the above [ ]

28. How long does the baby breastfeed?

a. Less than 10 minutes b. 10 – 30 minutes
c. till baby sleeps/till baby leaves on its own

29. At what time intervals do you give breast milk to the baby?

a. On demand
b. 1 – 2 hours
c. 3-4 hours
5. 5-6 hours

30. Each time you breastfeed, do you feed from one breast or both?

a. From one breast b. from both breasts

31. If you feed on both breast, how long do you put the baby to breast feed on each breast?

a. One hour
b. Thirty minutes
c. Fifteen minutes
d. Ten minutes

32. Did you give any of the following to your child/children in the first 6 months?

a. water [ ]
b. tea [ ]
b. herbs [ ]
d. only breast milk [ ]
e. porridge [ ]
f. others [ ]

33. At what age did you start giving complementary foods to your child/children?

a. less than 5 months
b. 5 months
c. 6 months
d. above 6 months

34. Give reasons why complementary food was introduced before 6 months

a. milk not adequate for baby
b. so that baby can be strong
c. so that others can feed the baby

35. How do you prepare formula food?
    a. Follows manufacturer's instructions
    b. Make it easy for easy swallow

36. Do you keep leftover food?
    a. Yes b. No

37. Why do you keep leftover food?
    a. Money constraints
    b. To avoid waste
    c. Other

38. How do you store leftover food?
    a. refrigerator
    b. food flask
    c. other

39. How long do/did you continue to breastfeed the child after introducing complementary food?
a. 7 months – 12 months [ ]
b. 13 months – 18 months [ ]
c. 19 months – 24 months [ ]
d. above 24 months [ ]

40. Please indicate how often you give the under listed foods to your child? Tick [√] as appropriate.
Key: VO = Very Often, O = Often, NO = Not Often, NA = Not at All

Complementary Food	VO	O	NO	NA
cereals (e. g.: corn, wheat, millet, oats)				
vegetables (e.g.: leafy vegetables, garden eggs, okro)				
fruits (e.g.: orange, mango, pawpaw, banana)				
roots and tubers (e.g.: yam, cassava, cocoyam, potato)				
legumes/meat, fish, egg				
fats and oils (e.g. margarine, palm oil, vegetable oil)				
legumes + cereals				
fish + cereals				
legumes + cereals + fish				

41. At what temperature do you feed your child?
    a. Cold
    b. lukewarm
    c. Hot/warm

42. What do you do to the leftover food?
    a. Kept for future use
    b. Throw away leftover food

SECTION D: WATER MANAGEMENT PRACTICES

43. What source of water do you use?
    a. Lake
    b. Open Well
    c. Mechanized Borehole
    d. Pipe borne water
    e. River/stream

44. How do you make the water safe for drinking or for meal preparation?
a. boil
b. filter
c. Nothing
c. Other

45. Where/how do you store your water?
a. Clay pot
b. plastic container
c. metal/aluminum container

46. Do you cover the water?
a. Yes b. No

47. Do you allow the use of any cup or container to be dipped into the water?
a. Yes b. No

48. Do you put a cup or a container in it to be used by all?
a. Yes b. No

SECTION E: FOOD HYGIENE PRACTICES AMONG NURSING MOTHERS

49. Do you wash your hands before you prepare your child's food?
a. Yes b. No

50. Do you wash your hands with soap and clean water?
a. Yes b. No

51. How do you wash your hands?
a. under running water
b. in a bowl of water
c. other

52. Do you wash your hands after using the toilet?
a. Yes b. No

53. Do you wash your hands after cleaning your baby's bottom?
a. Yes b. No

54. Do you clean your environment before cooking or feeding your child?
a. Yes b. No

55. Do you clean your work surface before, during, and after cooking?
a. Yes b. No
If yes, why?.....
If No, Why?.....
56. Do you wash your hands after touching raw food and before touching cooked food?
a. Yes b. No

57. Do you cover any sores or cuts on hands with waterproof plaster before you touch food or feed?
a. Yes b. No
If yes, Why?.....

58. Do you cook food thoroughly before feeding?
a. Yes b. No

59. Do you clean your knives and utensils before use?
a. Yes b. No

60. Do you sterilize bottles, nipples, caps and rings before using them for the first time?
a. Yes b. No
If yes, Why? ……..……

61. Do you wash them with soap and water?
a. Yes b. No

62. Do you allow them to dry?
a. Yes b. No
If yes, why……..…….

63. Do you use bottled water?
a. Yes b. No

64. Why do you give bottled water to your child?
    a. It is clean
    b. It is safe
    c. other