

**ENSIGN COLLEGE OF PUBLIC HEALTH, KPONG,
EASTERN REGION, GHANA**

**INFANT FEEDING PRACTICES AMONGST MOTHERS WITH CHILDREN
BETWEEN 6 AND 24 MONTHS OF AGE IN THE ADENTAN MUNICIPALITY**

by

MIRABEL ASOMBOYA

**A Thesis submitted to the Department of Community Health in the Faculty of Public
Health in partial fulfilment of the requirements for the degree**

MASTER OF PUBLIC HEALTH

June 2016

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**Supervisor: Dr. Moses Klevor
Co-supervisor: Dr. Phyllis Antwi**

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CERTIFICATION/DECLARATION

I hereby declare that except for reference to other people work, which I have dully cited, this project submitted to Ensign College of Public Health, Kpong is the results of my own investigation, and has not been presented for any other degree elsewhere.

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Dr. Phillys Antwi
(Co- Supervisor) **Signature** **Date**

Certify by:

Dr. Christopher Tetteh
(School Dean) **Signature** **Signature**

DEDICATION

I dedicate this work to the entire Asomboya Family.

ACKNOWLEDGEMENTS

Firstly and most importantly I would like to thank God Almighty for giving me life and strength to conduct this study. Also, my sincere gratitude goes to my family for their support and encouragement. I am so grateful to be supervised by Dr. Moses Klevor and Dr. Phyllis Antwi for their guidance, patience, and encouragement. I would never have been able to do this work. I admire your intelligence and dedication. I also want to thank the Dean, lecturers and non- teaching staff of Ensign College of Public Health for your support and encouragement, guidance and tuition. In addition, I would like to say a big thank you to all the respondents who partook in this study. Lastly I would like to thank Kamal Mumuni Sumani who helped me out with my data analysis and to my School Colleagues for making this academic journey a memorable one. God bless you all.

DEFINITION OF KEY TERMS

Complementary feeding.....Any food or beverage that is not breast milk, including water and herbal teas which are consumed by an infant while he or she remains breastfeeding.

Colic..... An attack of crying and what appears to be abdominal pain in early infancy (babies).

Exclusive breastfeeding..... Breastfeeding without giving other food or beverage, including water, but includes the provision of drops and syrups for medicinal purposes.

Infant.....Any child below the age of 1 year.

Malnutrition..... under nutrition or over nutrition resulting in poor nutritional status

Parity..... number of times that a woman has given birth to a foetus with a gestational age of 24 weeks or more, regardless of whether the child was born alive or was stillborn

Stunting..... height for age < -2 SD of the WHO Child Growth Standards median

Underweight..... weight for age < -2 standard deviations (SD) of the WHO Child Growth Standards median

Undernutrition.....Low weight-for-height, height-for-age and weight-for-age; and deficiency in micronutrients.

Wasting..... weight for height < -2 SD of the WHO Child Growth Standards median

Weaning..... the act of breastfeeding cessation using foods and beverages to replace breast milk.

LIST OF ABBREVIATIONS

ANC.....	Antenatal care services
CWC.....	Child welfare clinic
C-section.....	Caesarean section
EBF.....	Exclusive breastfeeding
DHIMS2.....	District Health Information Management System
GDHS.....	Ghana Demographic and Health Survey
MICS.....	Multiple Indicator Cluster Survey
PNC.....	Postnatal care services
TBA.....	Traditional birth assistants
WHO.....	World Health Organization

ABSTRACT

Background and objective: The World Health Organization recommends three strategies for infant feeding: putting new born babies to breast within 30 minutes after birth, exclusive breastfeeding (EBF) for the first 6 months of life, and appropriate complementary feeding from 6 to 24 months of age with continued breast breastfeeding. The aim of this study was to determine infant feeding practices amongst mothers with babies 6 to 24 months old within the Adentan Municipality. This work will also serve as a baseline or reference point for the Municipality.

Methods: This was a quantitative descriptive cross-sectional survey with a sample size of 391 mothers. Data was collected during face-to-face interviews using open-ended, structured questionnaires. Data were analysed using SPSS (version 13.0). Bivariate analysis was used to evaluate the associations between different selected variables in relation to infant feeding practices.

Results: Out of 391 mothers interviewed, 92.3% admitted that they had been informed about the importance of EBF at least once during antenatal services. Antenatal service visits amongst respondents was 80.8%, and postnatal and child welfare clinic services attendance was 95.7%. About 84% of mothers initiated breastfeeding (BF) within 30 minutes to 1 hour after delivery, and 59% exclusively breastfed their infants for the first 6 months postpartum. About 46% of respondents initiated complementary feeding at 6 months postpartum. With only a quarter receiving fruits and vegetables at least once a day. Factors such as health worker's support, family support and employer support encouraged and promoted EBF.

Conclusion: The rate of EBF was low amongst respondents as compared with WHO standards. Less than half of respondents initiated complementary feeding at 6 months postpartum, indicating poor timely initiation of appropriate complementary feeding amongst respondents. Consumption of fruits and vegetables amongst infants was low as compared with the energy and body building foods.

TABLE OF CONTENTS

Certification	i
Dedication	ii
Acknowledgements	iii
Definition of key terms	iv
List of abbreviations	v
Abstract	vi
Table of contents	vii
List of tables	ix
List of figures	ix
List of appendices	ix

CHAPTER ONE: INTRODUCTION

1.0	Introduction	1
1.1	Background	1
1.2	Statement of problem	3
1.3	Rationale for the study	4
1.4	Research questions	6
1.5	General objective	6
1.6	Specific objectives	6
1.7	Profile of study area	6

CHAPTER TWO: LITERATURE REVIEW

2.1	Infant feeding	8
2.2	Exclusive breastfeeding	8
2.3	Importance of exclusive breastfeeding	9
2.4	Knowledge and attitude levels of exclusive breastfeeding	10
2.5	Factors affecting exclusive breastfeeding	11
2.6	Importance of complimentary feeding	13
2.7	Types of complementary foods given to infants	15
2.7.1	Fruits and vegetables	15
2.7.2	Protein-rich foods	15
2.7.3	Grain products	15
2.7.4	Home-prepared meats, poultry and fish	16

CHAPTER THREE: RESEARCH METHODOLOGY

3.1	Research methods and design	17
3.2	Data collection techniques and tools	18
3.2.1	Training of research assistants	18
3.3	Study population	19
3.4	Study variables	19
3.4.1	Dependent variables	19
3.4.2	Independent variables	20
3.5	Sampling	20
3.5.1	Sample size calculation	20
3.5.2	Sampling technique	20
3.6	Pre-testing	21
3.7	Data handling	21

3.8	Data analysis	22
3.9	Ethical considerations	22
3.10	Limitations of study	23
3.11	Assumptions	23

CHAPTER FOUR: RESULTS

4.0	Results	25
4.1	Socio demographic characteristics of participants	25

CHAPTER FIVE: DISCUSSION

5.0	Discussion	36
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CHAPTER SIX: CONCLUSION

6.1	Conclusion	40
6.2	Recommendations	41

REFERENCES		42
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LIST OF TABLES

Table 4.1 Socio-demographic characteristics of mothers and their children 6-24 months of age in the Adentan Municipality	26
Table 4.2 Services utilized by mothers with children 6–24 months old in the Adentan Municipality	28
Table 4.3 Breastfeeding status of mothers with children 6-24 months old in the Adentan Municipality	29
Table 4.4 Complementary feeding practices amongst mothers with children 6-24 months old in the Adentan Municipality	31
Table 4.5 Health worker’s attitudes during post-natal and child welfare clinics services	32
Table 4.6 Chi-square tests of associations between EBF and timely introduction of appropriate complementary feeding.	33

LIST OF FIGURES

Figure 1.1 Conceptual framework for the determinants of malnutrition as a result poor infant feeding practices	5
Figure 4.1 Age distribution of mothers with children 6-24 months of age in the Adentan Municipality	28

APPENDICES

Appendix 1: Questionnaire on infant feeding practices amongst mothers with children between 6 months and 24 months in Adentan Municipality (Ghana Health Service facilities)	46
Appendix 2: Questionnaire allocation to sub-Municipalities and number of women with infants 6 to 24 months of age interviewed	51
Appendix 3: Descriptive statistics of child age and birth weight, and mother's age in the Adentan Municipality	52
Appendix 4: Locally available foods mothers give to their 6-24 months old children in the Adentan Municipality	53

CHAPTER 1

1.0 INTRODUCTION

1.1 Background

The World Health Organization (WHO) has noted that adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children to their full potential (WHO, 2009). Infant feeding practices have been identified as one of the important determinants of children's nutritional status, and account, to a large extent, for the high rates of malnutrition among children in Ghana. The impact of feeding practices on the health of children and the importance of encouraging breastfeeding has gained increasing recognition increment years (UNICEF, 2008).

In Ghana, only half of children under 6 months are exclusively breastfed, and complementary feeding practices are inadequate (Ghana Nutrition Country Profile, 2010). These feeding practices, combined with food insecurity of households and low access to health services, are among the main causes of malnutrition among young children. Nearly a quarter of preschool children are stunted i.e. affected by chronic malnutrition (Ghana Nutrition Country Profile, 2014). WHO recommends that infants be exclusively breastfed for the first 6 month of life, followed by breastfeeding along with complementary foods for up to two years of age or beyond (Ku and Chow, 2013).EBF is the practice whereby 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; complementary feeding (CF) is the introduction of an infant to solid foods, water or any other edible substances at 6 months of age (usually locally and homemade foods) with continued breast milk up to 24 months (WHO, 2012).

Majority of mothers across the globe are not able to practice the above recommendations. Factors such as age, breast problems, societal barriers, insufficient support from family, lack

of knowledge about good breastfeeding practices, mode of delivery, and health system practices, influence breastfeeding in developing countries (Cherop; *et al*, 2009). WHO statistics indicate that, few children receive nutritionally adequate and safe complementary foods; in many countries, less than a fourth of infants 6-23 months of age meet the criteria of dietary diversity and feeding frequency that are appropriate for their age (WHO, 2015).

Under nutrition is associated with 45% of child deaths; only about 36% of infants 0 to 6 months old are exclusively breastfed (WHO, 2015). About 800,000 children's lives could be saved every year among children under 5 years of age if all children 0-23 months were optimally breastfed (WHO, 2015). In Ghana, the situation is not encouraging; EBF rates dropped from 63% in 2008 to 46% in 2011 according to the Multiple Indicator Cluster Survey (MICS, 2014); the rate is currently at 52% (GDHS 2015). This means that almost half of infants in the country are introduced to complementary foods earlier than is recommended, which is not a good practice. According to the WHO, the appropriate age at which solids should be introduced is around 6 months, owing to the immaturity of the gastrointestinal tract and the renal system as well as the neurophysiological status of the infant. About 6.3 million children under the age of 5 died in 2013 globally, and 45% of all child deaths are linked to malnutrition (WHO, 2015).

Complementary feeding should be introduced when children are 6 months old, because breast milk alone is no more enough to meet the nutritional needs of children (More; *et al*, 2011). Children in sub-Saharan Africa are 15 times more likely to die before the age of 5 than children in developed regions (WHO, 2012). Though Ghana has made some gains in the reduction of under-nutrition among children under- 5 years of age, the marginal differences are not much. Stunting decreased from 34% in 1993 to 26% by 2008 among Ghanaian children; wasting decreased from 15% in 1993 to 13% by 2008 which is still high by WHO standards (GDHS, 2009).

Hence, understanding the factors associated with infant nutrition in the Adentan Municipality can help in developing strategies to promote breastfeeding and overcome nutrition problems among young children. Despite continuous nutritional interventions and supportive education by healthcare providers, caregivers have difficulty in meeting the nutritional demands and requirements of children from 6 months to 2 years old, and malnutrition remains one of the leading causes of death in children under 5 years of age globally, especially in developing countries.

1.2 Statement of the problem

The importance of exclusive breast feeding for the first 6 months of life and timely introduction of appropriate complementary foods in Ghana cannot be over emphasized. It is estimated that 84% of children younger than 2 months are exclusively breastfed; by the age of 4 to 5 months, only 49% continue to receive EBF (Ghana Statistical Service and ICF Macro, 2009). Complementary feeding practices are also inadequate amongst mothers (Ghana Nutrition Country Profile, 2014). This means that majority of nursing mothers in Ghana practice EBF for less than 6 months of child age and start complementary feeding either too early or later than 6 months.

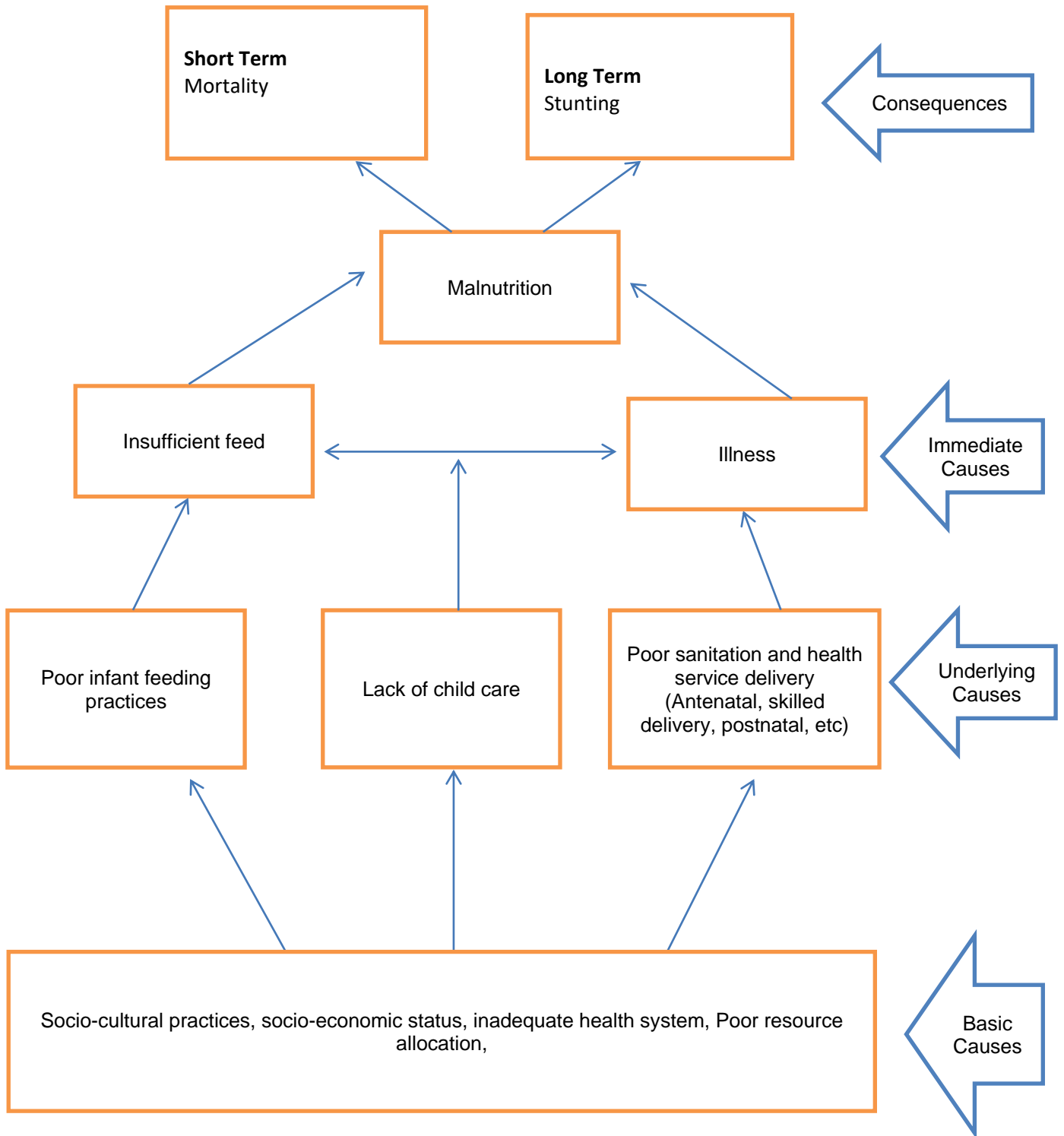
1.3 Rationale for the study

Ghana's strategy for infant feeding is that; infants should be exclusively breastfed for first 6 months of life and complimentary feeding should start at 6 months of age adopted from (WHO); about 99% of nursing mothers know the importance of EBF for 6 months and are willing to practice it, but only about 52% of these mothers are able to successfully attain this (GDHS, 2014). The situation in Adentan Municipality is unknown, since no such research has been done. The District Health Information Management System (DHIMS2) captures data on

early initiation breastfeeding but not prevalence and actual time of introduction of appropriate complementary feeding by nursing mothers. Secondly, the Municipality has no base- line data on infant feeding practices. Therefore, a survey of this kind will serve as a baseline and a point of reference for the Municipality. It is in this vein that the researcher seeks to look at the subject matter in the Adentan Municipality.

Also, 3-year data for underweight children (0-59 months old) in the Adentan DHIMS2 gives the prevalence of moderate underweight as 5% in 2014, indicating that majority of the children were doing well; this is still of concern though, considering the consequences of malnutrition later in life; and the present rate may just be a tip of the iceberg. There is therefore the need to do a background investigation to understand the challenges caregivers' face that influence the kinds of foods given to children. This will enable us modify counseling strategies to meet the needs of care-giver so that children below 5 years of age, especially those from 6 to 24 months, can get the best nutritional foundation for good health. Findings from this study will help health professionals, policy makers and others stakeholders at the community, district, regional and national levels to best understand the real needs of care-givers in order to modify policies, health interventions and re-strategize counselling skills to obtain maximum results.

Figure 1.1 Conceptual frame work for the determinants of malnutrition as a result poor infant feeding practices



1.4 Research questions

1. What proportion of mothers with children 6-24 months exclusively breastfed their infants for the first 6 months of life?
2. What factors enable mothers to exclusively breastfeed for the first 6 months of life?
3. At what age do caregivers introduce complementary foods to their infants, and what types of foods do they give to their infants.

1.5 General objective

To assess infant feeding practices amongst caregivers with children between 6 months and 2 years of age in the Adentan Municipality.

1.6 Specific objectives

1. To estimate the proportion of mothers with children between 6 months and 2 years of age who exclusively breastfed their infants for the first 6 months of life.
2. To assess which factors enable mothers to exclusively breastfeed their children for the first 6 months of life.
3. To determine the time of introduction of complementary feeding and the types of complementary foods caregivers give to their children.

1.7 Profile of study area

The research was carried out in the Adentan Municipality of the Greater Accra Region of Ghana. The Adentan Municipality was carved out from the Tema Municipal Assembly and inaugurated February, 2008, with an estimated population of about 88,374 residents. The Municipality shares boundaries with Tema Metropolitan Assembly (TMA) to the in east, Abokobi Municipality to the west, Oyibi Township to the north, and La-Nkwantanan

(Madina) Municipality to the south. Majority of the residents are self-employed, farmers, civil servants, public servants, and traders. The district lies in the savannah agro-ecological zone; and the rainfall pattern is bi-modal (MHD, 2015). The Adentan Municipality is divided into four (4) sub-Municipalities, Sutsurunaa, Koose, and NiiAshale. Adentan Municipality has 5 government health centres and 17 private health facilities. Four health facilities and 4 communities within the Municipality were selected for the study, with one health Centre and community from each sub-Municipality making 8 sites in all. The selected health facilities were Amanfrom Health Centre, Frafraha Health Centre, Adjiringanor Health Centre and Nii Ahaley Health Centre. The communities were Ashieyie, Adentan New Village, Nanakrom and Otinshie. The Adentan Municipality has a blend of nursing mothers and caregivers from different socio-economic status and cultural backgrounds, making a good site to carry out research work.

CHAPTER 2

2.0 LITERATURE REVIEW

This chapter reviews the literature extensively, based on the specific objectives and the problem statements.

2.1 Infant feeding

According to Black *et al*, (2008), appropriate infant feeding comprise optimal breastfeeding practices; including immediate postpartum initiation of skin-to-skin contact with breastfeeding within 1 hour of birth, EBF with no additional fluid or foods for the first 6 months of life, and continuation of breastfeeding thereafter up to 24 months and beyond with age appropriate complementary; feeding these have great potential for reducing under 5 mortality rates. Research shows that if about 90% of children were exclusively breastfed for the first 6 months of life, the potential reduction in mortality would be higher than from any other known effective intervention (Jones *et al*, 2003).

2.2 Exclusive breastfeeding

Available data suggests that; the prevalence of EBF among infants younger than 6 months of age in developing countries increased from 33% in 1995 to 39% in 2010. The prevalence increased in almost all regions in the developing world, with the biggest improvement seen in West and Central Africa, where the prevalence of EBF more than doubled, from 12% in 1995 to 28% in 2010, (Cai *et al*, 2012). Eastern and Southern Africa also realized improvements, with an increase from 35% in 1995 to 47% in 2010; modest improvements were observed in South Asia, with rate of 40% in 1995; and 45% in 2010 (Cai *et al*, 2012).

According to the WHO, only about 36% of infants 0 to 6 months old are exclusively breastfed globally (WHO, 2015). Although considerable improvements have been made in some regions, the prevalence of EBF remains far too low in many areas of the developing world.

A review of data from 66 countries, covering 74% of the world population, observed that less than 40% of infants younger than 6 months of age were estimated to be exclusively breastfed in 2010 (Labbok *et al*, 2003), far below the widely accepted “universal coverage” target of 90% EBF rates, and suggests the need for acceleration of efforts to scale up programs in promoting EBF (UNICEF, 2010). In most sub-Saharan African countries, particularly those with no or insufficient progress towards attainment of Millennium Development Goal (MDG) number 4, the prevalence of EBF among infant 6 months or younger has not increased substantially and remains generally below 40% (Bhutta *et al*, 2010).

In order to understand the dynamics of the practice of EBF, studies have been conducted in Ghana and in many parts of the world; most of which focused on factors and barriers to EBF. Among about 99.7% of mothers who were currently breastfeeding, only half (51.6%) of them exclusively breastfed their infants (Aidam *et al*, 2005). Reasons such as belief that the child is thirsty, pressure from family and friends, and perceived insufficiency of breast milk alone prevent care givers from practicing exclusive breastfeeding (Siziya *et al*, 2008). Other studies done by other researchers have also looked at the health outcomes of exclusive and non-exclusive breastfeeding (Coutsoudis *et al*, 1999); and the potential role of husbands in breastfeeding decisions (Arora *et al*, 2000).

2.3 Importance of exclusive breastfeeding

Breastfeeding plays an important role in developing countries because of its relationship with child health and birth spacing. Studies have shown that breastfeeding has beneficial effects on the nutritional status, morbidity and mortality of young children (UNICEF, 2015). During the last couple of decades, there has been an increasing interest in the promotion of EBF as the ‘best’ feeding method for newborns (UNICEF, 2015). This, to a large extent, has been inspired by mounting scientific evidence on the importance of EBF in reducing infant morbidity and mortality. In resource limited settings, poor and suboptimal breastfeeding practices frequently result in child malnutrition, which is a major cause of more than half of all child deaths (Sokol *et al*, 2007). EBF is regarded as imperative for infants’ survival. Indeed, of the 6.9 million under 5 children who were reported dead globally in 2011, an estimated 1 million lives could have been saved by simple and accessible practices such as EBF (WHO, 2012). Exclusively breastfeeding infants for the first 6 months of life and timely introduction of complementary feeding have several advantages, including protecting infants against major childhood disease conditions such as diarrhea, gastrointestinal tract infection, allergic diseases, diabetes, obesity, childhood leukemia and lymphoma, and inflammatory bowel disease (WHO, 2009); however, only 35% of infants are exclusively breastfed for the first 6 months of life (WHO, 2015). Breastfeeding was found to be protective against sudden infant death syndrome, reducing the risk by 50% at all ages during infancy (Vennemann *et al*, 2000). These benefits have been reported to exhibit dose-response relationship, that is, health gains increase with increase in duration and exclusivity of breastfeeding.

For the first 6 months of life, breast milk alone is the ideal nourishment, providing all of the nutrients, including vitamins and minerals, an infant needs, meaning that no other liquid or food is needed (Butte *et al*, 2002). In addition, breast milk carries antibodies from the mother that help combat disease, protecting babies from diarrhea and acute respiratory infections

(Hanson, 2014). Breastfeeding also stimulates an infant's immune system, response to vaccination, and confers cognitive benefits as well (Dorea, 2009).

Breastfeeding is also associated with longer periods of postpartum amenorrhea, which in turn leads to longer birth intervals and lower fertility level; (Huffman and Combest, 1990)

2.4 Knowledge and attitude levels of exclusive breastfeeding

A study amongst breastfeeding mothers in Ghana indicated that about 98% of participants had heard about EBF, and 86% of them planned to exclusively breastfeed on delivery (University of Connecticut/University of Ghana, 2005). The study also found that delivery at a hospital or polyclinic was associated with a two times higher likelihood of EBF (OR1.96; 95% CI, 1.08–3.54); women living in their own houses were more likely to exclusively breastfeed (OR3.96; 95% CI, 1.02–15.49) than those living in rented accommodations and family houses, Women with a more positive attitude towards EBF were more likely to exclusively breastfeed (OR 2.0; 95% CI, 1.11–3.57) than their counterparts with more negative attitudes (University of Connecticut/University of Ghana, 2005).

2.5 Factors affecting exclusive breastfeeding

Efforts to promote modest nutritional improvements such as changes in feeding behaviour will have a beneficial impact on mortality rates over time. Feeding practices adopted by mothers depends on the knowledge, attitude and socio-cultural tradition they are exposed to (Ezechukwu *et al*, 2004). Owing to the known nutritional and health benefits to infants, the WHO recommends that women in resource-poor countries exclusively breastfeed their babies until they reach 6 months of age (WHO; 2002).

Studies have documented the impact of cultural factors, maternal age, marital status, family income/social class, mode of delivery, time of initiation of first breastfeeding and proximity to babies on feeding pattern (Okolo *et al*, 1999). Outside maternal factors, studies have also shown that the babies' general behaviour is influenced by what feed they receive (Karacam *et al*, 2008).

A study in south-east Nigeria showed, complementary breastfeeding, which involves use of breast milk, infant formula and other non -milk feeds, was practiced by significantly more mothers (39%) compared to EBF (34%) and predominant breastfeeding (28%); stratification analysis showed that mothers whose infants were older and mothers with lower education attainment practiced more complementary breastfeeding than other infant feeding options (Onah *et al*, 2014). The researchers explained that most mothers usually start introducing other types of feeds as the child gets older and is able to tolerate these feeds in order to give the mothers time to attend to other activities. Likewise, mothers with higher education will more likely understand and be better informed of the benefits of EBF and thus they delay introduction of other feeds compared to mothers with lower educational attainment (Onah *et al*, 2014).

Similar research done, in southwest Nigeria found that mothers with greater education and higher age were more likely to be abreast with the overriding benefits of EBF and therefore will be more motivated to practice it (Lawoyin and Olawuyi, 2001). Socioeconomic status had inverse association with EBF practice; higher socioeconomic status was associated with lessened rate of EBF practice; this may be related to the notion of use of infant formula as a status symbol (Lawoyin and Olawuyi, 2001). These findings were linked to the fact that mothers in the higher socioeconomic class are richer sometimes by virtue of husbands' wealth or families they are married into, but may not necessarily be better educated, and are able to afford and sustain infant formulas which are exorbitant in price. Furthermore, the occupation

of mothers in this socioeconomic class would most likely interfere with the practice of EBF; this class of mothers is also more likely to travel for business engagements, thereby hampering to some extent the preconditions for EBF practice (Lawoyin and Olawuyi, 2001).

A study in Taiwan also illustrated that mothers would usually take too long to recover from anesthesia, before thinking of recommended infant feeding practices (Chien and Tai, 2007). Research by Sakha and Behbahan,(2008) showed that increased maternal stress following operative deliveries could delay the onset time for lactation, which could affect EBF; the introduction of formula feeds to babies' right after delivery was significantly associated with reduced EBF. A study by (Hagekull *et al*, 1997) showed that refusal to eat, colic, and vomiting represented challenges for mothers and in turn may either directly or indirectly influence the feeding pattern of their children.

In Ghana, attitudes of married women concerning breastfeeding were more positive than the attitudes of single mothers (De La Mora *et al*, 1999). Familial factors have a profound impact on infant feeding practices (Arora *et al*, 2000); having been breastfed as an infant or having siblings who were breastfed establishes breastfeeding as a norm for an individual and her household (Meyerink and Marquis, 2002). Mothers are more likely to feed their infants in the same manner in which they themselves were fed (Hawthorne, 1994: Meyerink and Marquis, 2002). Hospital practices may also affect infant feeding practice with regards to the initiation and duration of breastfeeding, and the introduction of infant formulas (Ford and Lobbok, 1990).

The role of the healthcare professional can be very critical in providing women with the information they need to make decisions on how to feed their babies; negative attitudes and lack of knowledge on the part of healthcare providers can be barriers to successful infant feeding practices (Black *et al*, 1990).

2.6 Importance of complementary feeding

The nutritional needs of an infant from age 6 months onwards can no longer be met with breast milk alone. To ensure adequate energy and nutrients intake, an infant's diet must be gradually expanded to include complementary family foods (WHO, 2012). Most stunting occurs in the first 2 years of childhood, when there is a simultaneously high demand for nutrients and high rate of infectious diseases. Preventing infants and children from becoming undernourished is more effective and cost-efficient than treating children who are already moderately malnourished (UNICEF, 2014). Complementary feeding should be *timely*, meaning that all infants should start receiving foods in addition to breast milk from 6 months onwards. It should be *adequate*, meaning that complementary foods should be given in right amounts, frequency, and consistency and using a variety of foods to cover the nutritional needs of the growing child (WHO, 2014).

In spite of recommendations to delay introduction of complementary foods until 6 month of child age, studies have demonstrated that early introduction of complementary foods remain very common. The incidence of early introduction of complementary foods before 6 months has been reported to range from 44% to 93%, depending on the group surveyed (Crocetti *et al*, 2004). The practice is lower among infants who are exclusively breastfed than among those who are fed infant formula or those fed a combination of breast milk and formula (Bronner *et al*, 1999).

Continued breastfeeding beyond 6 months of age, accompanied by sufficient quantities of nutritionally adequate, safe and appropriate solid, semi-solid and soft foods, also helps ensure good nutritional status and prevent 1.4 million deaths in children under 5 years in the developing world annually (Black *et al*, 2008). WHO recommends that infants start receiving complementary foods at 6 months of age in addition to breast milk, initially 2-3 times a day between 6-8 months, increasing to 3-4 times daily between 9-11 months and 12-24 months, with additional nutritious snacks offered 1-2 times per day, as desired (WHO, 2015).

In Ghana, about 74% of mothers indicated had not missed any scheduled child welfare clinic (CWC) sessions; over 60% of mothers knew the appropriate age of introduction of foods; and 86% gave correct responses regarding the minimum number of times their child should be fed daily (Gyampoh *et al*, 2014). About 81% of children less than 6 months were exclusively breastfed in the preceding 24 hours, although 36% had received water since birth (Gyampoh *et al*, 2014).

2.7 Types of complementary foods given to infants

Positive attitude should be exhibited towards children when caregivers are introducing new foods to their infants. (Satter, 2000). When new foods are rejected by infants, force should not be applied but instead foods should be offered again in a week or 2; it takes up to 10 to 15 exposures to a new food for an infant to readily accept the food (Sullivan, 1990).

Breastfed infants have been shown to prefer rice infant cereal prepared with their mother's breast milk over infant cereal prepared with water. Additionally, breastfed infants tend to accept the introduction of new foods more readily than formula-fed infants (Mennella and Beauchamp, 1997).

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2.7.1 Fruits and vegetables

Vegetables and fruits provide infants with carbohydrates, including fiber; vitamins A and C; and minerals. A recent comprehensive analysis of the available literature indicates that the order of introduction, fruits first or vegetables first, is not important (Butte, *et al*, 2004).

2.7.2 Protein-rich foods

Protein-rich foods are generally introduced to infants between 6 and 8 months of age. If an additional source of iron or zinc is needed and the infant is developmentally ready, protein rich foods may be introduced between 4 and 6 month (USDA, 2008).

2.7.3 Grain products

Between 6 and 8 months of age, many infants are ready to try crackers, bread, noodles, macaroni, and other grain products. By this stage in their development, infants can practice picking up these foods with their fingers. Grain products provide carbohydrates, thiamin, niacin, riboflavin, iron, other minerals, and, in the case of whole-grain products, fiber to the diet (USDA, 2008).

2.7.4 Home-prepared meats, poultry and fish

Infants can be offered well-cooked strained or pureed lean beef, pork, lamb, veal, chicken, turkey, liver, boneless finfish (fish other than shellfish), egg yolk, legumes, tofu, sliced or grated mild cheese, yogurt, or cottage cheese (USDA, 2008).

CHAPTER 3

3.0 RESEARCH METHODOLOGY

This chapter describes the research design and methodology used to determine infant feeding practices amongst mothers with children between 6 and 24 months of age in the Adentan Municipality. The section includes study setting, research population, sample and sampling technique, data collection, analysis and ethical considerations. The research design and methodology for this study was guided by the aspiration to achieve the specific objectives and to answer the research questions posed.

3.1 Research methods and design

Research design means a strategy that defines how, when and where data are to be collected and analyzed (Burns and Grove, 2005); the design identifies how subjects were enlisted and integrated into a study, and what will happen during the study period, including when the study will end (Macnee and McCabe, 2008).

The design used for this study was a quantitative descriptive cross-sectional survey. Quantitative research refers to a formal, objective and systematic process to describe and test relationships and to examine cause and effect interactions between variables (Burns and Grove, 2005).

3.2 Data collection techniques and tools

Open ended structured questionnaires and consent forms were adapted to suit the scope of the study. The questionnaire was in 3 parts: section A comprised participant's personal information age, place of residence, occupation, religion, marital status etc. Section B focused on EBF, factors encouraging mothers to breastfeed, and the time of termination of exclusive

breastfeeding, employing more open ended questions; section C comprised dichotomous and multiple response questions on complementary feeding and the types of foods given at home.

The questionnaire development procedure involved the following steps, to ensure the validity of the test instrument: sample questionnaires from related studies were reviewed, and the study questionnaire was then developed and pre-tested at Amanfrom Health Centre using a small sample of 30 participants. Corrections were made to the questionnaire after the pretesting, before the final questionnaire was drafted and administered. These were done to ensure accuracy and reliability of results.

Interviewers administered structured questionnaires to obtain data from the respondents. Data collection involved face-to-face interviews with respondents. Data was collected in English; however, the local dialects Ga, Ewe and Twi were used in instances where respondents preferred those languages. Data was collected by the principal investigator and four well-trained research assistants who were university graduates undertaking their National Service during the period. The researcher performed quality control reviews of the completed questionnaires at the end of each day, to check for omissions, incomplete answers or unclear statements. A total of 422 questionnaires were taken to the field; 211 were designated for the CWCs and 211 were designated for the selected communities under each sub-Municipality. A total of 391 questionnaires were responded to. The non-response rate was high, but the researcher was able to reach the required sample size for the study. About 15 minutes was used to complete each questionnaire with a participant. Data was collected over a period of 3 weeks.

3.2.1 Training of research assistants

Four research assistants who could read and write English, as well as speak at least 2 local dialects fluently were recruited and trained for 1 day. Training entailed explanation of the questionnaires in English and translation into the local languages, research ethics, and seeking informed consent from study participants. The training was done to ensure that the research assistants collect valid and reliable data as well as conform to the ethical guidelines of the study.

3.3 Study population

The study population was nursing mothers who attended postnatal services at the selected health facilities or lived within the study communities in the Adentan Municipality. Part of the inclusion criteria was nursing mothers with babies between 6 months and 2 years of age; exclusion criteria included mothers who had infants less than 6 months or more than 2 years of age. These measures were put in place to ensure that primary data gathered was reliable and substantial.

3.4 Study variables

A variable is the characteristic or attribute of an individual, group, educational system, or the environment that is of interest in a research study. Variables are anything that can effect or change the results of a study. Every study has variables as these are needed in order to understand differences (Heffner).

3.4.1 Dependent variables

- 1, Breastfeeding for the first 6 months of life
- 2, Time of introduction of complementary foods.

3.4.2 Independent variables

The independent variables include gender of child, age of mother, occupation, marital status, income status, parity, religion, educational status, place of delivery, antenatal and postnatal clinic attendance, and birth attendance.

3.5 Sampling

3.5.1 Sample size calculation

The sample size was based on Cochran's formula. The sample size was estimated using the formula below:

$n = \frac{z^2 pq}{e^2}$, where n denotes the sample size, z =1.96 at 95% confidence interval, e denoted a tolerated error margin of 5%, p refers to the prevalence of EBF = 52.0% (GDHS, 2014) and q= 1-p.

N = minimum sample size; = [3.8416 x 0.52 x 0.48] / [0.0025] = 383.54 = 384 participants.

A sample size of 384 participants was determined using the above formula, allowing for a 10% non-response rate, the sample size was increased to 422 participants.

3.5.2 Sampling technique

Purposive and convenient sampling was used to select mother and child pairs attending CWCs at the health facilities within households in the study communities. Due to limited time and the nature of schedules at CWCs, participants were interviewed as they came along for services, once they met the inclusion criteria. At the community level, to reduce clustering within one area, the researcher restricted to interview one participant in each household. In situations where there was more than one qualified participant within a house or household, there was balloting between a YES and NO response written on folded pieces of paper; whoever chose YES was interviewed and whoever chose NO was disqualified. A bottle was spun to determine the direction, and areas to start conducting interviews. A maximum of 10 houses were sampled from each direction, after which the researcher went back to same spot to spin the bottle again for a new direction. If a direction is repeated twice, it is ignored and the bottle is spun again, until a new direction is obtained. Participants were engaged in face-to-face interviews: the questionnaire was primarily of closed format, including dichotomous questions (e.g., yes or no), multiple responses for ease of completion, and open ended questions. The opened ended questions gave participants the opportunity to dive deeper and express themselves more thoroughly.

3.6 Pre-testing

The questionnaire was piloted at Amanfrom Health Centre with 30 nursing mothers who were comparable to the sample of respondents, before the main data collection commenced. The pretesting was done to ensure that questions to be asked were understood and clear enough to generate relevant responses and to enable the researcher get familiar with the questions. Necessary modifications and clarification of terms were effected based on the pilot study.

3.7 Data handling

Questionnaires were coded and kept under lock and key in a cupboard, the key kept by the researcher. A soft copy of the data was stored in the Dropbox cloud storage system, and on a hard drive protected with a password known only to the researcher. All data collected is kept securely by the researcher for 7 years to allow for publication of the research results when needed.

3.8 Data analysis

Epi-info software (version 7) was used for data entry and data cleaning, whilst SPSS (version 23) was used for analysis. Descriptive statistics, including frequencies and percentages were used to describe the socio-demographic variables, prevalence of EBF and complimentary feeding. Associations between infant feeding practices and socio-demographic factors such as sex, age, religion, education, marital status and income were analyzed using multivariate Chi square tests. A p-value of less than 0.05 was considered statistically significant.

3.9 Ethical considerations

Ethical clearance was obtained from Ghana Health Service and approval from Ensign College of Public Health. Permission was obtained from the Health Directorate of the Adentan Municipality and the heads of the various health facilities where the surveys were conducted. The purpose of the study was fully explained to respondents, signed informed consent was obtained from each participant before the questionnaires were administered, whilst assuring participants of the confidentiality of their information. Participants had the right to opt out of the study at any time they desired, and they were made to feel comfortable and protected from any physical or mental harm in the course of the data collection. Privacy was guaranteed by

holding tete-a-tete interviews with respondents at distinct places. Confidentiality was further ensured by not disclosing any of the data collected on respondents deliberately or accidentally to other people.

3.10 Limitations of study

Some limitations were determined in the course of the study, especially during the data collection period. Some of the limiting factors were:

1. Limited time period allocated for the research activity. As a result, follow-ups that were supposed to be done with non-responders and uncompleted questionnaires were not possible.
2. Due to the nature of schedules of the CWC services, participants were not randomly selected due to limited number of mothers coming in at a particular time, because they had different appointments times, which was once within every month.

3.11 Assumptions

By the end of the study:

1. The number of nursing mothers practicing exclusive breastfeeding for the first 6 months of life will be known.
2. Factors that enable nursing mothers to successfully breastfeed will be documented.
3. The time of initiation of complementary feeding by nursing mothers and the types of foods given to infants will be known.

4. This research work will be used as a baseline reference in the area of infant feeding practices in the Adentan Municipality and will help health workers to best understand the situation on the ground so that relevant actions can be taken to improve conditions of infants.

CHAPTER 4

4.0 RESULTS

This section presents results on the socio-demographic characteristics of participants, prevalence of EBF among participants, actual time of initiation of complementary feeding, and factors associated with infant feeding practices.

4.1 Socio-demographic characteristics of participants

Table 4.1 illustrates the socio-demographic characteristics of respondents in this study. A total of 391 respondents were interviewed during the study period. Their age range was 17- 45 years, with two thirds of them in the age range of 25-34 years. The minimum birth weight was 1.9 kg and the maximum was 5kg. Most children below 24 months of age in Adentan Municipality did not attend school. Respondents were of different ethnicities with majority being Akans. More than two- thirds of the respondents were married, and most of them were Christians. About a third of the participants had tertiary education; and majority earned a monthly income of GH¢500 or about 125 USD and below. About half of the respondents were self-employed (mostly petty traders, hairdressers, and seamstresses).

Table 4.1 Socio-demographic characteristics of mothers and their children 6-24 months of age in the Adentan Municipality

Variables	Number of participants (N %)
Ages of children	
6 -11 months	195 (49.9)
12-24 months	196 (50.1)
Sex of children	
Male	190 (51.4)
Female	201 (48.6)
Number of children attending school	81 (20.7)
Normal birth weight of children (above 2.5kg)	382 (97.7)
Age categories of mothers	
15-24	54 (13.8)
25-34	264 (67.5)
35-44	72 (18.4)
45+	1 (0.3)
Parity	
No response	4 (1.0)
1-2 children	247 (67.5)
3-4 children	72 (18.4)
5+	1 (0.3)
Ethnicity	
Ga/Adagme	50 (12.8)
Akan	151 (38.6)
Ewe	95 (24.3)
Krobo	25 (6.4)
Northern Ghana	64 (16.4)
Non-Ghanaian	6 (1.5)
Marital status of children	
Married	301 (77)

Co-habiting	25	(6.2)
Divorced/separated	7	(1.8)
Single	56	(14.3)
Widowed	2	(0.5)
Religion		
Christian	324	(82.9)
Muslim	58	(14.8)
Pagan	9	(2.3)
Education		
Primary	48	(12.3)
JHS	97	(24.8)
Secondary	73	(18.7)
Vocational	122	(31.2)
Tertiary	29	(7.4)
Never been to school	22	(5.6)
Occupation		
No response	2	(0.5)
Government institution	49	(12.5)
Private institution	62	(15.9)
Self-employed	197	(50.4)
Unemployed	81	(20.7)
Income status		
No response	67	(17.1)
< GH¢500	180	(46.0)
Between GH¢500-GH¢1000	81	(20.7)
Between GH¢1000 – GH¢2000	51	(13.0)
Above GH¢ 2000	12	(3.2)

Figure 4.1 Age distribution of mothers with children 6-24 months of age in the Adentan Municipality

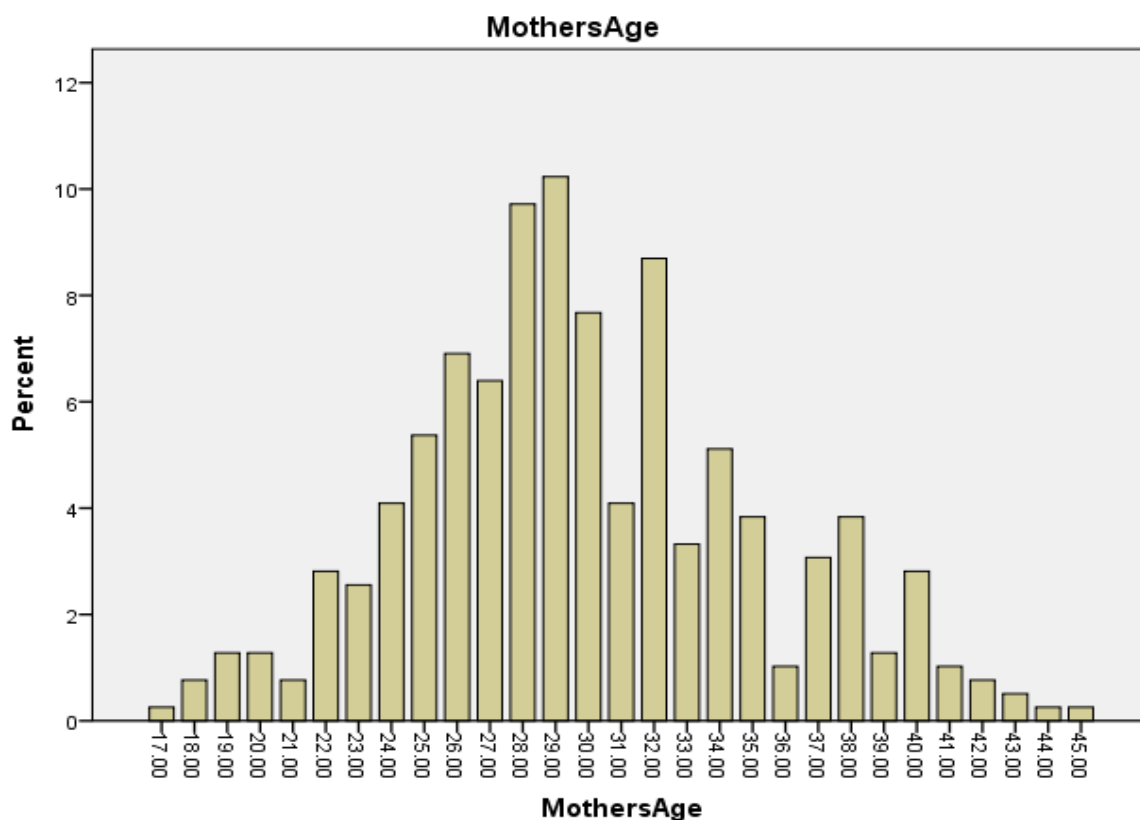


Table 4.2 Services utilized by mothers with children 6–24 months old in the Adentan Municipality

Variable	No of participants (N %)
Place of delivery	
Home (Traditional birth attendants (TBA)/ relatives)	37 (9.5)
Government facility (midwife, doctor, nurse)	209 (53.5)
Private facility (midwife, doctor, nurse)	145 (37.1)
Antenatal attendance	
No response	16 (4.1)
4 visits	29 (7.4)
≤ 4 Visits	30 (7.7)
> 4 Visits	316, (80.8)
Received postnatal care	374 (95.70)

Table 4.2 above illustrates how respondents patronize health services more than half of the respondents attended antenatal clinic and gave birth at government facilities, whilst about 10% gave birth at home. Respondents who gave birth at government and private health facilities were attended to by skilled doctors, midwives or nurses, whilst relatives or traditional birth attendants (TBAs) mostly attended to mothers who gave birth at home. Most mothers attended antenatal services, for more than 4 visits. About 96% respondents attended postnatal and CWC services regularly after delivery.

Table 4.3 Breastfeeding status of mothers with children 6-24 months old in the Adentan Municipality

Variables	No of participants (N %)
Exclusive breastfeeding awareness	361 (92.3)
Breast initiation after delivery	
Within 30 minutes	232 (59.3)
Within 1 hour	43 (11.0)
More than 1hour	98 (25.1)
Others (24 hours and above)	14 (4.6)
Introduction of breast milk substitutes before discharge from hospital	67 (17.1)
Exclusive breastfeeding rates	
At 3 Months and below	78 (20.1)
4-5 Months	83 (21.1)
6 Months	230 (58.8)
Mothers still breastfeeding	337 (86.8)
Factors encouraging EBF	
Employer support	11 (2.8)

Family and friends support	89 (22.7)
Health worker support	119 (30.4)
Factors discouraging EBF	
Less flow of breast milk	40 (10.2)
Return to work after maternity leave	27 (6.7)
Did not see it necessary	26 (6.6)
Experiences from past EBF	
Baby gains weight and hardly falls sick	140 (35.8)
Economically friendly to family	49 (12.5)
Very demanding	22 (5.6)
Served as form of family planning	18 (4.6)
No experience	9 (2.3)

Table 4.3 shows the EBF practices by respondents most of the mothers had been informed about the importance of EBF at least once during antenatal services, and each respondent was able to mention at least 1 importance of EBF. Majority of mothers initiated EBF within 30 minutes to 1 hour after birth. Late initiation of breastfeeding was mostly attributed to Caesarean-sections (C-section), lack of health workers support and complications for either baby or mother after birth (results not shown). About 17% said their babies were given infant formula after delivery, due mainly to lack of breast milk flow, C-section, and complications. More than half of mothers exclusively breastfed their children for 6 months, Factors that enabled mothers to exclusively breastfeed included, health workers support, friends and family support, and employer support. Mothers who could not practice EBF for long attributed it to factors such as resumption of work after maternity leave, lack of family support. Based on benefits of EBF from past experience, about 81% of mothers said they will encourage others to exclusively breastfeed (data not shown); and majority of them were still

Table 4.4 Complementary feeding practices amongst mothers with children 6-24 months old in the Adentan Municipality

Variable	No of Participants N (%)
Complementary feeding initiation	
At 6 months	178 (45.5)
Between 7 -8 months	60 (15.3)
Less than 6 months	153 (39.2)
Complementary foods introduced	
Formula	158 (40.4)
Fortified porridge	22 (5.6)
Local, home prepared foods	126 (32.2)
Plain koko (corn dough porridge)	85 (21.7)
Fruits and vegetables fed to children	352 (90)
Frequency of fruits and vegetable intake	
Every day (at least one serving a day)	100 (25.6)
Often times (at least 2 to 3 days intervals)	179 (45)
Once a while (1 to 2 weeks intervals)	76 (9.6)
Not at all	36 (9.2)
Frequency of main meals to children	
2 times	37 (9.5)
3-4 times	287 (72.1)
5 times and more	62 (15.9)
Not yet	10 (2.6)
underweight status of children (from growth monitoring charts)	
Normal (between +2 and -2 Z- scores)	340 (87.0)
Moderately underweight (between -2 and -3 Z- scores)	45 (11.5)
Severely underweight (below -3 Z-scores)	4 (1.0)
Overweight (above +3 Z-scores)	2 (0.5)
Snacks given in-between meals	
At least one snack a day	275 (70.3)
Sometimes (not every day)	63 (16.1)
Not given	53 (13.5)

Table 4.4 above shows the complementary feeding practices of respondents. Almost half of respondents introduced complementary feeding at 6 months of age, while about 15% introduced complementary feeding between 7 and 8 months of age. Most mothers initiated complementary feeding with formula and about fifth introduced children to local home prepared foods and plain maize porridge. Most respondents added fruits and vegetables to their children's meals, with about a quarter of them adding fruits and vegetables at least once every day to children meals. About three-quarters of mothers fed their wards between 3-4 times a day, and majority of them added at least one snack a day to main meals. The main factors that influenced mothers complementary feeding practices were; being educated and informed by health workers. Majority of the children had normal birth weight. Majority of the mothers fed their babies energy giving foods (staples) and body building foods (proteins); fruits and vegetable (protective foods) were the least added to baby's meals daily by respondent.

Table 4.5 Health worker’s attitudes during post-natal and child welfare clinics services

Variable	No of participants N (%)
Health workers attitudes	
Very helpful	296 (75.7)
Not helpful	95 (24.3)
Helpful health worker actions	
Give counseling and support	171 (43.7)
Accommodating and nice	30 (7.7)
Inform and educate on health issues	91 (23.3)
Unhelpful health worker actions	
Not accommodating and not nice	30 (7.8)
Don’t inform and educate on health issues	10 (2.3)
Don’t listen to problems and complaints	25 (5.6)
Don’t render counselling and support	6 (1.6)

Table 4.5 above presents the response from mothers’ concerning health worker attitude during postnatal and CWC services. Most mothers were satisfied with how they are treated when they go for CWC services. The main reasons for mothers being satisfied with health workers were that they gave counseling, support, informed and educated on health issues; mothers who were not happy with health workers noted that they were not accommodating_or nice and do not inform nor educate them on health issues.

Table 4.6 Chi-square tests of associations between EBF and timely introduction of appropriate complementary feeding.

Independent variables	Exclusive breastfeeding for six months		Timely introduction of complementary feeding	
	X ²	p- value	X ²	p-value
Sex of child	2.7	0.01*	0.66	0.72
Marital status	3.192	0.53	11.62	0.17
Mothers education	2.807	0.73	14.15	0.17
Occupation	2.69	0.61	6.47	0.60
Parity	6.05	0.11	8.79	0.19
Income status	6.7	0.244	11.36	0.33
Mother's age	31.97	0.23	48.13	0.82
ANC visits	9.95	0.003*	1.13	0.57
Knowledge level in EBF	18.34	< 0.0001*	2.87	0.49
Place of delivery	14.6	< 0.001*	2.96	0.58
Attendance at birth	14.18	0.003*	5.47	0.49
Time of breastfeeding initiation	22.4	< 0.0001*	6.65	0.58
Postnatal attendance	4.72	0.094	0.47	0.06

*Statistically significant. P < 0.05

Results of Chi-square tests of association between EBF for 6 months and timely introduction of complementary feeding at 6 months and independent variables, showed that, time of breastfeeding initiation after delivery, personnel attending to pregnant women during child delivery, place of delivery, and knowledge level in EBF were significantly associated with EBF for 6 months as shown in **Table 4.6** above. Independent variables that were significant to exclusive breastfeeding also had a positive association. Meaning that mothers who attended

ANC services and had adequate knowledge were likely to exclusively breastfeed than their counterparts who did not. Mothers who delivered at the health facility and were attended to by a skilled work (nurses, mid-wives, Doctors) were more likely to exclusively breastfeed for 6 months. Mothers who had adequate knowledge about the importance of EBF and initiated early breastfeeding within 30 minutes and 1 hour were more likely. However, none of the independent variables had any significant association with timely introduction of complementary feeding at 6 months of child's age. Meaning that there was no strong association found between the independent variables and timely initiation of complementary feeding.

CHAPTER 5

5.0 DISCUSSION

This study investigated breastfeeding practices, factors that enable women to exclusively breastfeed their children, time of introduction of complementary feeding and the types of foods mothers give to their infants after 6 months among women with children between 6 months and 2 years of age in the Adentan Municipality.

The prevalence of EBF for the first 6 months of life in the Adentan Municipality was 59%. Our findings compare with the EBF rate of 64% reported by Mwinilanaa and Kumi-Kyereme, 2013, 63% in the 2008 GDHS and 52% in the 2015 GDHS (GDHS, 2008 and GDHS, 2015). The difference between the previous rates and the present study may be due the period of data collection and geographical locations. The slightly higher of 52% EBF from 52% in 2015 GDHS and the 59% rate in this study, could be as a result of a higher number of respondents initiating breastfeeding at the hospital within 30 minutes to 1 hour after delivery (70%), knowledge of the importance of EBF for the first 6 months of life (92%), and high attendance of antenatal and postnatal services (81% and 96%. respectively). Findings from this study could be compared to a study by Ford and Labbok (1990); which reported that hospital practices may affect infant feeding practices, with regards to the initiation and duration of breastfeeding, and the introduction of infant formula. The role of healthcare professionals can be very critical in providing women with the information they need to make the correct decisions on how to feed their babies. The practice of giving pre-lacteal feeds may interfere with the establishment of good breastfeeding practices and is contrary to the principles of Baby Friendly Hospital accreditation (Liqian *et al*, 2007).

Findings from this research work indicated that factors such as; health worker support and attitude, family and friends support at home, employer support at work (closing earlier than the normal closing time, allowing nursing mothers to extend their maternity leave by adding

their annual leave, and giving them break times during working hours to express breast milk and self-determination as a result of past benefits obtained from practicing EBF for the 6 months with their previous children also helped mothers to practice successful EBF. Black *et al* 1999 indicated that negative attitudes and lack of knowledge on the part of healthcare providers can be barriers to successful infant feeding practices. (Cherop *et al*,2009) further emphasize that majority of mothers across the globe are not able to practice recommendations appropriately due to several factors such as age, breast problems, societal barriers, insufficient support from family, lack of knowledge about good breastfeeding practices, mode of delivery, health system practices, and community beliefs. In our study, nearly half of respondents did not practice EBF for 6. Some of the factors that discouraged or could not help respondents in this study to exclusively breastfeed for the first 6 months of life included time, Caesarean sections, complications after delivery, return to work, trading and attending to other important stuff, EBF being very demanding, baby not getting enough breast milk, baby refusing to take breast milk, lack of family support, and pressure to give other foods at home by relatives. Other research findings have linked factors such as mother's educational status, income, parity, religion, marital status, place of stay, and age to EBF (Ezechukwu *et al*, 2004). However, in this study, mother's educational status, income, parity, marital status and age, were not significantly associated with EBF and time of introduction of complementary feeding.

WHO recommends that breastfeeding should be initiated within the first hour of life, EBF for the first 6 months of life, followed by appropriate complementary foods, and continue breastfeeding for up to 2 years of age. Majority of mothers in this study were practicing continued breastfeeding in addition to feeding other foods, which is quiet encouraging. Mothers who did not continue breastfeeding during the complementary feeding period gave reasons which included children refusing to take breast milk for no apparent reasons, no or less flow of breast milk, and that children tend to eat very well when you stop giving them

breast milk. This latter reason, which was mostly mentioned, needs to be discouraged during antenatal, postnatal and CWC services in order to remove this misconception. Almost half of mothers introduced complementary feeding at 6 months postpartum. It would have been expected that the EBF rate of 59% would correspond with the complementary initiation at 6 months postpartum but this was not the case. This could be because some of the women started complementary feeding late. Some of the reason given by mothers for starting complementary feeding late were that they were informed by health workers to start complementary feeding at 7 months, and they knew the importance and benefits of EBF so they decided to do more by extending the duration so their children could have more nutrients to grow well. These reasons indicated above shows that there is knowledge gap that needs to be addressed. It could be as a result of inadequate information or miscommunication by health staff during antenatal, postnatal and CWC services. Adequate information and proper counseling on infant and young child feeding needs to be stepped up during antenatal, postnatal and CWC services; health workers also need to have routine refresher trainings to update their knowledge on current health issues so they can give correct information to nursing mothers. This indicates that when these factors are improved, encouraged, managed and addressed very well, there is a high tendency that EBF rates will go up, meaning that more babies will be exclusively breastfed

This study also looked at the types of complementary foods respondents introduced to their wards at 6 months of age, and their feeding frequencies in a day. WHO recommends that infants start receiving complementary foods at 6 months of age in addition to breast milk, initially 2-3 times a day between 6-8 months, increasing to 3-4 times daily between 9-11 months and 12-24 months, with additional nutritious snacks offered 1-2 times per day, as desired (WHO, 2015).

About two-fifth of respondents started feeding their children with formula feed at 6 months postpartum. Reasons for giving formula and other light foods like porridge, instead of local,

home prepared foods were that health workers informed them to do so; babies may not walk early if they started with local home prepared food; and their babies were too young and needed to take light foods first before they graduate to local, home prepared foods.

Mothers need to be well educated and informed that at 6 months of age, their children can eat foods prepared at home and eaten by the family and therefore they do not need to spend money on formula or modified foods on the markets. Care givers should rather pay attention to the frequency of feeding; the variety; amount and consistency of foods; responsive feeding; hygiene; and proper preparation of infant's foods. Complementary foods need to be prepared specially, focusing more on appropriate texture (soft and tender), taste (free from pepper and other hot spices), and adequate balance of nutrients for proper growth and developments.

Majority of respondents gave between 3-4 servings of main meals and added at least 1-2 snacks a day, in addition to breast milk. This is very much encouraging and mothers need to be encouraged to keep the good practices. However, the situation was not encouraging with regards to feeding infant's with fruits and vegetables; this needs to be addressed through proper education and counseling by health care providers. Only a quarter of respondents added fruits and vegetables to baby meals daily, reasons for not giving babies fruits and vegetables include, the fruits and vegetables being expensive, children refuse to eat them, and mothers did not know their importance or see it as necessary. Mothers need to be encouraged by health workers to give more fruits and vegetables as snacks. They can also capitalize on seasonal fruits as they become cheaper to buy. Children may get fed-up with one particular taste all the time and therefore mothers needs to vary fruits and vegetables they give to their children.

CHAPTER 6

6.1 Conclusion

Prevalence of EBF was low in the study population. Majority of the respondents knew about the importance of EBF, but this did not correspond with the prevalence of EBF. This study brings to light the need to focus on factors such as family support, employer support, and demonstrations of proper positioning and attachment to the breast. Less than half of respondents initiated complementary feeding at 6 months postpartum. The consumption of fruits and vegetables by infants was generally low. In summary infant feeding practices are influenced greatly by what health workers tell nursing mothers, therefore health workers should be efficient and competent enough, to give the right information, counseling and support when needed.

6.2 Recommendations

Based on the findings of this study, it is recommended that:

1. Qualified health workers, including nutritionists, doctors, nurses and other public health experts should increase education in the mass media, including radio and television, to effectively promote EBF and remove misconceptions about EBF.
2. Health workers need to be given refresher trainings to be abreast with current information, strategies and innovations concerning proper infant feeding practices.
3. Health workers should refrain from their old ways of always giving information at all times and doing little listening. Rather, they should be more innovative, employing practical demonstrations, role plays and counseling, and doing more listening than talking.
- 4 WHO policy code for formula feeds should be re-emphasized and health workers should refrain from selling, advertising and demonstrating to mothers how to use and prepare formula feeds during postnatal and CWC services.
5. Mothers should be encouraged to include fruits and vegetable to children meals daily at 6 months of age after exclusive breastfeeding. .
6. Policy makers, programme planners and public health experts should revisit and modify previous policies and strategies used to promote infant feeding, in order to suit current trends.

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APPENDICES

Appendix 1: Questionnaire on infant feeding practices amongst mothers with children between 6 months and 24 months in Adentan Municipality (Ghana Health Service facilities)

SOCIO – DEMOGRAPHIC

Questionnaire number..... Facility..... Mother's age.....

Date.....

Age (months)..... Sex..... Child's Birth weight
.....

Marital status Married Single Divorced/Separated Widowed Co-habiting

Educational level Primary Middle/JHS SHS/O level/A level Vocational/Tech
Tertiary Never been to school

Occupation A. Civil Servant B. Public Servant C. Trader D. Unemployed

Religion A. Christian B. Muslim C. Pagan D. Others.....

Ethnic group Ga Adagme Ada Krobo Akan Ewe Northern Non-Ghanaian

Number of children (parity) A. 1-2 B. 3-4 C. 5+

Income status in Ghana cedis (A) GH¢500 and below (B) Between GH¢500 and GH¢1000 (C) Between Gh¢1000 and GH¢2000 (D) GH¢ 2000 and above.

BREAST FEEDING SECTION

1. Did you attend antenatal care in your last pregnancy? A. Yes b. No.

2. (a). If yes how many times **b) less than 4 times c) 4 times d) More than 4 times**

3. Were you given a talk on the importance of exclusive breastfeeding? Yes No

4. (b) If Yes what were the information you were given?

.....
.....
.....
.....

5. Attendance at birth (tick one) A. Skilled (Doctor/Midwife/Nurse) B. Unskilled (TBA, relative)

6. (b) If is by a skilled health worker which hospital.....(Private or government)

7. How long did it take for your baby to be put to your breast after delivery?

A. Within 30 minutes B. Within 1 hour C. More than 1 hour D. Others

.....

8. If more than 1 hour, why?

.....
.....
.....

9. Was your baby introduced to any form of feed apart from breast milk at the hospital before you were discharged after birth? A. Yes B. No

10. For how long did you exclusively breastfeed your child? A. Less than 1 month B. 2 months C. 3 months D. 4 months E. 5 months F. 6 months G. 7 and more months

11. If she was able to exclusively breastfeed for 6 months what factors enabled you to do so?

.....
.....

.....
.....
12. From past experience what can you say about exclusive breastfeeding for 6 months?

.....
.....
.....
.....

13. If she could not breastfeed for **6 months but less than 6 months**, what factors did not enable you to do so?

.....
.....
.....
.....

13. (a) Have you stop breastfeeding? **Yes** **No**

14. Do you attend post natal clinic regularly? **Yes** **No**

COMPLEMENTARY FEEDING SECTION

15. When did you introduce other foods to your baby in addition to breast milk?

A. Less than 6 months B. Equal to 6 months C. 7 months to 11months D. 12 months to 24months (2 years).

16. What complementary foods, are you giving to your child? Tick as much as necessary.

A. Formula feed B. Porridge only (plain koko, etc) C. Fortified porridge (plus fish, groundnut, mpotompoto etc) D. Home prepared food (fufu, ampesi, banku, akple etc.).

16 (a) List others if not in the range above

.....
.....

17. Do you give fruits and vegetables to baby? A. Yes B. No

18. If yes list them.

FRUITS.....

VEGETABLES.....

What influence the types of foods given to baby above (tick all where necessary) **A. That is what I can afford** **B. Was informed by health staff** **C. I think that is the best** **D. More nutritious and locally available** **E. Others**

19. Observe growth chart to check for child's growth status in **Z-scores** and tick accordingly.

A. Normal (between -2 to 2) **B. Moderately Malnourished** (between -2 to -3) **C. Severely Malnourished** (below -3) **D. Possible Over weight** (between 2-3) **E. Possible Obese** (above +3)

20. Does your child eat regularly? A. Yes B. No

21. If no what do you do..... **A. Force feed Him** **B. Play and sing with him to eat** **C. I leave him alone.**

Others

22. How many times do you feed your child with main meal in a day?

.....

A. Between 6 to 9 months (3-4 servings) with one snack *B. Between 9-12 months (4-5 times) with one snack* *C. Between 12-2years (3- 4 times) with 2 snacks*

23. Do you give in between snacks A. Yes B. No

24. What do you give as snacks A. Fruits B. Pastries C. Drinks D. Others

.....

25. Is your child attending a day care? A. Yes B. No

26. If yes what food do you put in his lunch box?

.....

27. Do you have any idea of what foods are given to your child at school? A. Yes B. No

28. In your opinion do you think health workers are supportive enough during postnatal services? A. Yes B. No

29. If **Yes** how?

.....

.....

Appendix 2: Questionnaire allocation to sub-Municipalities and number of women with infants 6 to 24 months of age interviewed

Sub-Municipality	Total questionnaires distributed	Total number of respondents
Koose	100	93
Sutruuna	100	91
Gbentaana	100	99
Nii- Ashaley	122	108
Total	422	391

Appendix 3: Descriptive statistics of child age and birth weight, and mother's age in the Adentan Municipality

Parameters	Child's age (months)	Child's birth weight (kg)	Mothers age (years)
Average	13	3.18	29.9
Median	12	3.2	29
Minimum	6	1.89	17
Maximum	24	5.40	45

Appendix 4: Locally available foods mothers give to their 6-24 months old children in the Adentan Municipality

Food group	Food list
Vegetables	Ayoyo, borkoborko (spinach), nkomere (cocoyam leaves), tomatoes, onions, beet root, green beans, carrot, cabbage, lettuce, cucumber, garden eggs, alefu leaves, bra- leaves, green peas, okra, kantose, Yaasatewaa (garden eggs), cauliflower, cassava leaves
Fruits	Sour sap (aluguntugui), sweet apples, banana, pawpaw, mango, pear, pineapple, watermelon, oranges
Energy-giving foods	Fortified wean mix (Tom brown); maize porridge; grated corn (oblayo); wheat, rice and oat porridges; formula feeds (SMA, Nan 1); hausa koko (milled sorghum or millet porridge); honey; Indomie (noodles); spaghetti; plantain; mashed kenkey; mashed yam; mashed potatoes; waakye; rice; fufu, kokonte, banku, omotuo, and tuo zaafi (with soup)
Body-building foods	Milk, cottage cheese (wagashi), fish, red meat, eggs, groundnut soup, palm nut soup, light soup, soya beans, beans, liver
Snacks	Biscuits, meat pie, cakes, bread, koose (beans cake), maasa (millet cake), yoghurt, Kalyppo (fruit drink), blended fruits, Vitamilk, cocoa drinks, soobolo (hibiscus flower drink), brukina (cow's milk drink), candies