**SCHOOL OF PUBLIC HEALTH**

**COLLEGE OF HEALTH SCIENCES**

**UNIVERSITY OF GHANA**

**UNIVERSITY OF GHANA - LEGON**

# EXCLUSIVE BREASTFEEDING AND ASSOCIATED FACTORS AMONG NURSING MOTHERS IN THE GA EAST MUNICIPALITY, 2021

**BY**

**GHARTEY GEORGIA NAA K.**

**(10490587)**

**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PHILOSOPHY IN APPLIED EPIDEMIOLOGY AND DISEASE CONTROL DEGREE**

**DECEMBER, 2021**

## DECLARATION

I, **GHARTEY, GEORGIA NAA K**., declare that I am the author of this dissertation. Except for references to other publications which have been duly cited, I do hereby declare that the study described in this dissertation, either in whole or in part, which has not been presented elsewhere for another degree, is the result of my research work at the University of Ghana, School of Public Health, Legon, under the supervision of Dr. Adolphina Lartey and Dr. Reginald Quansah.

Candidate's Signature; ……GNKGT……

GHARTEY GEORGIA, NAA KORKOI

Date: 12th January, 2021.

Primary supervisor's signature …… ……

DR. ADOLPHINA ADDO-LARTEY

Date 13th January, 2021.

Secondary supervisor's signature……

DR. REGINALD QUANSAH

Date: 13th January, 2021.

## DEDICATION

I dedicate this work to my late father King Fredrick Ayitey Ghartey. This one is for you Daddy.

**ACKNOWLEDGEMENT**

I am grateful to God, for being my greatest support system. I appreciate WAHO, for their financial support rendered to me for this program. I am greatly indebted to both of my supervisors, Dr. Addo-Lartey and Dr. Quansah, for their guidance and input throughout this study. I could not have come this far without Dr. Donne Ameme, who has encouraged and guided me since I showed interest in this program. I would like to appreciate my two mentors, Dr. Esther Dsani and Dr. Paul Dsane-Aidoo for their immense contribution to this project. I am very grateful to Emmanuel Quaye and Kelvin Acquaye for their contributions to this study. I am grateful to all staff of the GFELTP and Department of Epidemiology and Disease Control for their dedication to grooming me along this path. I am very grateful to the director of staff of the Ga East Health Directorate and facilities, for their willingness and cooperation throughout this study. I am grateful to my family and friends, both in the Lord and by blood, for their support of all kinds throughout this program.

## ABSTRACT

**Introduction**: Exclusive breastfeeding (EBF) offers nutritional, protective, and economic benefits to mother and child populations. The proportion of nursing mothers who exclusively breastfeed in Ghana in 2018 was 42.9%, lower than the WHO target of 70%. The reduction in exclusive breastfeeding rates among children directly reduces the benefits that the practice offers and hence increases the risk of morbidity and mortality among children and women. Again, exclusive breastfeeding rates vary with population type, and hence, gaps in location-specific data delay efforts to curb the reducing rates. Therefore, this study aimed to estimate the proportion of women that practice exclusive breastfeeding and determine factors associated with exclusive breastfeeding in the Ga East Municipality.

**Methods**: A quantitative cross-sectional study was conducted among nursing mothers at facilities of sub-municipalities in the Ga East Municipality. A structured questionnaire was used to collect data on exclusive breastfeeding practices, socio-demographic, clinical, and maternal factors from 388 nursing mothers that were randomly selected. Descriptive analysis was performed, with the resulting frequencies and proportions represented in charts and tables. Univariate analysis was performed and factors that were associated with breastfeeding at a significant level were included in the multi-variable logistic regression. Odds ratios were estimated with 95% confidence intervals and statistical significance was determined at p-value <0.05.

**Results**: Of the 388 respondents, 373 (96.13%) were educated, 260 (67.01%) were married and 234 (60.31%) received help with household chores. Most of the respondents had given birth to children as singletons (95.88%, *n*=372), with the majority of children born by normal delivery (69.07%, n=268). Many of the nursing mothers reported that they had experienced tiredness postpartum (39.43%, 95% CI: 34.54 - 44.49). About 50.26% (95% CI = 45.17 - 55.34) of the nursing mothers in the municipality practised exclusive breastfeeding.

There was a 71% increased odds of EBF among mothers who received help with household chores as compared to those who do not receive help (AOR = 1.71, 95% CI = 1.04 - 2.82, *p* = 0.034) but other socio-demographic characteristics were not found to be significantly associated with EBF. There was a 66% decreased odds of EBF among mothers who had been ill post-partum as compared to those who had not been ill (AOR = 0.34, 95% CI = 0.14 - 0.84, p = 0.019) and an 80% decreased odds of EBF among mothers who received prenatal counselling from untrained personnel as compared to mothers who received counselling from trained personnel (AOR = 0.20, 95% CI = 0.06 - 0.73, p = 0.015). Other clinical characteristics were not found to be significantly associated with EBF. There were 11.08 times increased odds of EBF among nursing mothers who had engorged breasts as compared to those who did not have engorged breasts (AOR =11.08, 95% CI = 1.42 - 86.68, p = 0.022) but other maternal characteristics were not significantly associated with EBF.

**Conclusions**: Half of the women in the Ga East Municipality practised exclusive breastfeeding, which is lower than the WHO target but higher than the current national prevalence of EBF in Ghana. Having help with household chores increased exclusive breastfeeding implying the need to intensify domestic support given to nursing mothers. Illness among mothers decreased exclusive breastfeeding providing a basis for the provision of extra support to nursing mothers who are ill. Counselling from untrained personnel decreased EBF showing the urgent need for regular straining of staff.

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## LIST OF ACRONYMS

**AOR-** Adjusted Odds Ratio

**CHPS-** Community-based Health Planning and Services

**CI-** Confidence Interval

**COR-** Crude Odds Ratio

**CWC-** Child Welfare Clinic

**EBF-** Exclusive Breastfeeding

**GHS-** Ghana Health Service

**GSS-** Ghana Statistical Service

**IQR-** Interquartile Range

**SD-** Standard Deviation

**UNICEF-** United Nations Children's Fund

**WABA -** World Alliance for Breastfeeding Action

**WHO-** World Health Organization

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background

Exclusive breastfeeding (EBF) is breastfeeding that involves an infant receiving only breast milk from his mother or a wet nurse until 6 months of age, with no other liquids or solids except oral rehydration solution or drops/syrups of vitamins, minerals, or medicines (WHO, 2019). EBF is nutritionally beneficial for babies because breast milk contains adequate amounts of vitamins, minerals, protein, fat, carbohydrate, and enzymes that the growing human body needs, which cannot be said for milk substitutes (Motee & Jeewon, 2014). Due to the adequate nutritional components of breastmilk, exclusive breastfeeding is the gold standard breastfeeding practice for feeding and nutrition in children under 6 months of age (CDC, 2021).

In addition to nutritional benefits, protective benefits are offered to babies from the initiators and modulators of the immune system, microbial host resistance factors, anti-inflammatory agents, and hormones that breastmilk contains (Motee & Jeewon, 2014). By this, exclusive breastfeeding offers protection to children under five years of age from infectious diseases generally, and specifically from the world's two leading causes of child mortality, diarrhoea and pneumonia (Arifeen et al., 2001; Zandoh et al., 2006). Additionally, EBF offers a 13% reduced risk of childhood obesity and 35% reduced risk of type-II diabetes among children. There is also increased cognitive development with increased breastfeeding among child populations (Victora *et al*., 2016).

Exclusive breastfeeding contributes greatly to the reduction of childhood mortality. It is said to be significant in reducing the risk of death in children worldwide by 36% and in low- and middle-income countries by 88% (Victora et al., 2016). EBF has been reported to contribute to a five-fold decrease in mortality in children under 5 in Sub-Saharan Africa, whiles reducing

mortality specific to human immunodeficiency virus (HIV) infection in children under 5 years of age in the region by 49% (Zhao *et al*., 2012; Natchu *et al*., 2020).

EBF is also beneficial for the nursing mother, reducing the risk of ovarian cancer, gestational weight gain, myocardial infarction, Type II diabetes, postpartum haemorrhage and breast cancers in women (Schwarz & Nothnagle, 2015; Motee & Jeewon, 2014; Chowdhury *et al.*, 2015). In addition to all these, it has been shown that breastfeeding reduces the financial burden on gross family incomes by reducing money spent on purchasing milk substitutes, baby toiletries, and service charges for healthcare, which increase with increasing nonexclusive breastfeeding (WHO, 2003). Furthermore, it is directly related to gross national income for many countries (WHO & UNICEF, 2017). Each percentage increase in exclusive breastfeeding has been shown to prevent national losses of approximately €5.6 million equivalent to an approximate cost savings of €464 per child (Quesada *et al.*, 2020).

Exclusive breastfeeding is influenced by many factors including sociodemographic, clinical, sociocultural, and maternal factors. Sociodemographic factors include the age of the mother, marital status, the age of the baby, the location, the employment status of the mother and spouse and the monthly income (Machila *et al.*, 2021). The clinical factors that have been shown to influence EBF include the medical condition of the mother, medical condition of the baby, mode of delivery, facility of delivery, prenatal counselling, and parity (Maongo *et al.*, 2016).

Furthermore, maternal factors include the duration of maternity leave of the mother, the mother not being interested in breastfeeding, the inverted nipple of the mother, the flat nipple of the mother, breast engorgement, the baby unable to latch, the baby refusing to breastfeed and the sleepy baby influence breastfeeding (WHO, 2009). Sociocultural perceptions of exclusive breastfeeding, the role of the mother in the home, the views of older women, and the participation of the husband in the care of the children are sociocultural factors that influence

exclusive breastfeeding (Wanjohi *et al.*, 2016). Milk secretion should normally proceed in not less than 85% of eligible women worldwide, which, however, does not occur due to some of these factors that influence exclusive breastfeeding (Neville, 2001).

### 1.2 Problem statement

Globally, only 44% of women breastfeed exclusively, which is less than the WHO target of 70% (UNICEF, 2021; WHO, 2019). Furthermore, 60% of women in the world cease breastfeeding earlier than desired, although approximately 80% have the intention of breastfeeding after giving birth. (Odom *et al.*, 2013). In Africa, only 37% of babies under 6 months of age were exclusively breastfed in 2017 (Bhattacharjee *et al.*, 2019). Furthermore, about 20% to 75% of African women stop breastfeeding before the standard duration of 6 months (Kellkay *et al.*, 2020; Kebede *et al.*, 2020).

Exclusive breastfeeding among mothers in Ghana has been shown to decrease, falling from 62.1% in 2008 to 52.1% in 2014 and further decreasing to 42.9% in 2018 (UNICEF, 2021). The most recent study on breastfeeding in the Ga East municipality, conducted in 2015, was carried out among first-time mothers only and focused on breastfeeding initiation only. (Nortey, 2015). Therefore, exclusive breastfeeding generally, and its associated factors in the Ga East Municipality, which has a diverse population, has not been documented.

Exclusive breastfeeding is influenced by employment and work schedules, as well as the health status of the nursing mother (Tampah-Naah *et al.*, 2019). Furthermore, other factors that influence exclusive breastfeeding include educational level, marital status, baby's health, maternal health policies, characteristics of the healthcare facility, support from families and society, knowledge of mothers about breastfeeding, etc. (Sultana et al., 2013, Diji et al., 2016). There are maternal factors that influence exclusive breastfeeding including delayed

lactogenesis, poor milk production, breast infection, plugged milk duct, breast engorgement, nipple trauma, shortened breastfeeding periods, etc. (Sultana *et al.*, 2013, Giugliani, 2004).

The decrease in exclusive breastfeeding rates has been shown to cause a loss of 300 billion dollars in gross national income for countries around the world (WHO & UNICEF, 2017). In addition, the reducing rate of exclusive breastfeeding exposes children to an increased risk of diarrhoea, respiratory infections, ear infections, overweight, and child mortality (Stuebe, 2009; Clark & Bungum, 2003). Another consequence of the reduction in exclusive breastfeeding rates is that it compromises the protective benefits of breastfeeding against myocardial infarction, metabolic syndrome, gestational weight gain, and breast and ovarian cancers that breastfeeding provides to female populations (Hahn-Holbrook *et al.*, 2013).

### 1.3 Justification

In line with the global agenda to increase breastfeeding rates to 70% by 2021, regular studies must be conducted on breastfeeding and its associated factors. (UNICEF, 2021; WHO, 2019). Since breastfeeding is linked to all 17 Sustainable Development Goals of the United Nations that Ghana aims to achieve, research in the area must be carried out regularly (WABA, 2021). Again, the country's first lady's nutrition initiative for 2021 to 2022 aims to support mothers to breastfeed as long as they want (WHO Africa, 2021).

This study will provide information that will help catapult the municipality and therefore the country and the world at large to meet breastfeeding goals. Furthermore, the study contributes to the acquisition of up-to-date data on exclusive breastfeeding and its associated factors specific to the Ga East Municipality, to ensure that adequate and focused responses are offered in the form of financial support, the implementation of appropriate policies, sensitization and education, emotional support for mothers and children, etc. Again, to maximize the interest, intention, and practice of exclusive breastfeeding among nursing mothers and hence increase

rates of exclusive breastfeeding, it is important that factors that reduce or prevent exclusive breastfeeding are identified and significantly reduced.

There is evidence that the rate of exclusive breastfeeding could be further reduced if facilitators and barriers specific to varying populations are not identified to aid in the identification of a solution (Diji et al., 2016). By this, there is then the danger of an increase in infant risk of infections, a general increase of child morbidity, and negative impacts on maternal health.

### 1.4 Conceptual framework

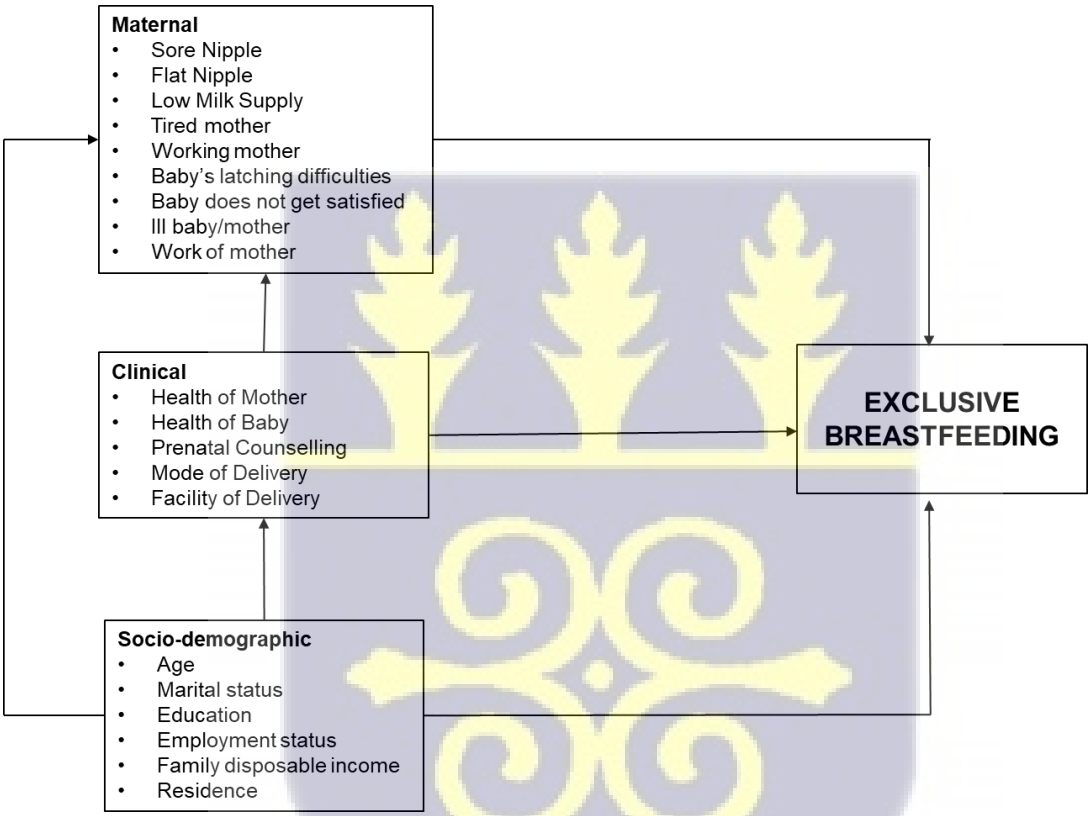


**Figure 1:Conceptual Framework**

### 1.5 Narrative of conceptual framework

This conceptual framework shows the interplay between sociodemographic factors, clinical / health factors, and maternal factors in influencing exclusive breastfeeding. Sociodemographic factors could influence clinical and health factors. Education, the employment status of the mother and her spouse, as well as the disposable income of the family, can influence the kind of facilities that women visit and the preferred mode of delivery due to what these women can

afford. Additionally, the age of the mother will influence the occurrence of underlying medical conditions in the mother and baby and infection prevention and control strategies at home to curb childhood diseases. Education will go a long way in determining a mother's understanding of prenatal counselling and how the health of babies and mothers is managed. Where a mother lives will directly affect a mother's perception of counselling on exclusive breastfeeding.

In addition, sociodemographic factors directly influence maternal factors that a woman experiences. Whether a woman is employed or unemployed will influence maternity leave periods, the time the mother has to breastfeed, and the tiredness of the mother. Again, education will influence what a mother identifies as a maternal challenge or benefit, and hence, the reasons for her choice of EBF or not. Again, age will influence a woman's desire to stay in shape and therefore her willingness to breastfeed or not.

The health conditions of the mother reduce the ability of the mother to breastfeed. For example, mothers with HIV are encouraged not to breastfeed postpartum, and women with breast cancer are also unable to breastfeed. Poor health of a child could cause refusal of breast milk or an inability to receive breast milk. A woman who delivers by caesarean is unlikely to relapse as fast as a woman who delivers normally, and therefore initiation of breastfeeding could be delayed. Facilities that are not baby-friendly will not have policies in place to ensure that the mother can breastfeed within an hour of delivery, nor will there be trained personnel to offer advice to mothers. In addition to these interactions, each of these groups of factors directly influences exclusive breastfeeding.

### 1.6 Research questions

1. What proportion of women breastfeed exclusively in the Ga East Municipality?

2. What socio-demographic factors are associated with exclusive breastfeeding in the Ga East municipality?
3. What clinical factors are associated with exclusive breastfeeding among nursing mothers in the Ga East Municipality?
4. What maternal factors are associated with exclusive breastfeeding among nursing mothers in the Ga East Municipality?

### 1.7 General objective

To assess the prevalence and factors associated with exclusive breastfeeding practices among nursing mothers in the Ga East Municipality.

### 1.8 Specific objectives

1. Determine the proportion of women who exclusively breastfeed their children in the Ga East Municipality
2. Assess socio-demographic factors that are associated with exclusive breastfeeding among nursing mothers in the Ga East Municipality
3. Assess clinical factors that are associated with exclusive breastfeeding among nursing mothers in the Ga East Municipality
4. Assess maternal factors that are associated with exclusive breastfeeding among nursing mothers in the Ga East Municipality

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

### 2.1 Introduction

Reviews have shown that different methods have been used to determine the proportions of women who exclusively breastfeed and the factors that influence breastfeeding including cross-sectional surveys, mixed-methods studies and qualitative studies, quasiexperimental studies, etc., revealing varying proportions of women who practice exclusive breastfeeding and the factors associated with the practice (Yang *et al.*, 2018).

### 2.2 Theoretical framework

#### 2.2.1 The bioecological theory

The bioecological theory, also known as Bronfenbrenner's ecological systems theory, as proposed by Urie Bronfenbrenner in 1995, posits that developmental processes in humans are transactional and complex processes that are driven by the individual's interaction with various dynamic systemic environments, nested in each other. In other words, developmental pathways, either in individuals or patterns of behaviour as observed over time, are due to different circuitous spheres of factors that are affecting and in turn being affected, to give a unified result (Bronfenbrenner, 1995).

He describes the individual nested systems as the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. The microsystem is the most immediate to the individual composed of family, peers, religious organizations, healthcare facilities, etc. and peers which the individual directly influences and which mutually influences the individual (Bronfenbrenner, 1995). The mesosystem is described as a system of microsystems that encompasses the relations that occur between two or more systems containing the developing human (Bronfenbrenner, 1995). The exosystem is the sphere (eg neighbours, parent's economic

situation, school board, government agencies, etc.) which does not contain the individual but influences one or more of the microsystems (Bronfenbrenner, 1995). The macrosystem focuses on the effects of cultural elements like socioeconomic status, ethnicity, ideologies of culture, etc. that affect the individual. The chronosystem encompasses the influence of historical eras consisting of all the environmental changes that occur over the lifetime of the individual (Bronfenbrenner, 1995).

### 2.2.2 The Stolzer model

Stolzer (2005) from this theory builds a perspective surrounding breastfeeding and hence its mechanisms, facilitators and challenges in different populations, proposing that breastfeeding is a bioecological phenomenon that is not only intrinsic, i.e. occurring between mother and child. By this, he describes breastfeeding to fit the Bronfenbrenner model, where the breastfeeding process, can only be better understood if it is fitted as consisting the individuals (mothers and babies), microsystem (family, friends, work colleagues closest to the mother and child), mesosystem (interactions between multiple microsystems), exosystem (governmental agencies policies that affect breastfeeding patterns in populations, mass media, accepted school age by school boards, etc.), macrosystem (cultural ideas of breastfeeding, weaning and exclusive breastfeeding, economic situation of the mother including occupational decisions, etc.) and the chronosystem (patterns developed over long periods) (Stolzer, 2005). Stolzer, therefore, concludes that breastfeeding can be properly investigated by thoroughly studying the bioecological phenomenon as a variable involved transactionally with these corollaries (i.e.,(i.e. in the person-context-time perspective) (Stolzer, 2005).

### 2.2.3 Interactive theory of breastfeeding

Confirming the above theory and contributing further to the point of discussion, the interactive theory of breastfeeding developed by Primo & Brando, (2017) proposes that there is a dynamic interaction between mother and child that consists of perception, action and judgement and

reaction with sequential feedback resulting in the transaction (breastfeeding). The theory is based on King's conceptual system and explains that various concepts influence breastfeeding, including the image of the woman's body, the space for breastfeeding, the role of the mother, organizational systems for the protection, promotion, and support of breastfeeding, family and social authority (Primo & Brando, 2017). In addition, the level of interaction was said to be greatly affected by two things, stress (combinative effect of stressful factors that are due to interaction between woman, child and the environment) and time (duration of breastfeeding, continuity or discontinuity of breastfeeding, age of the child, etc.) (Primo & Brando, 2017).

Stuart-Macadam & Dettwyler (1995) show that breastfeeding is a biological process that is culturally determined, and hence studying the process needs a combined effort into both spheres. Therefore, a holistic view of breastfeeding is needed. The above-stated theories are relevant to this study given the emphasis placed on the need for open-mindedness in studying the diverse factors that influence breastfeeding in the specific population, with the results aiding in characterizing exclusive breastfeeding into diverse spheres.

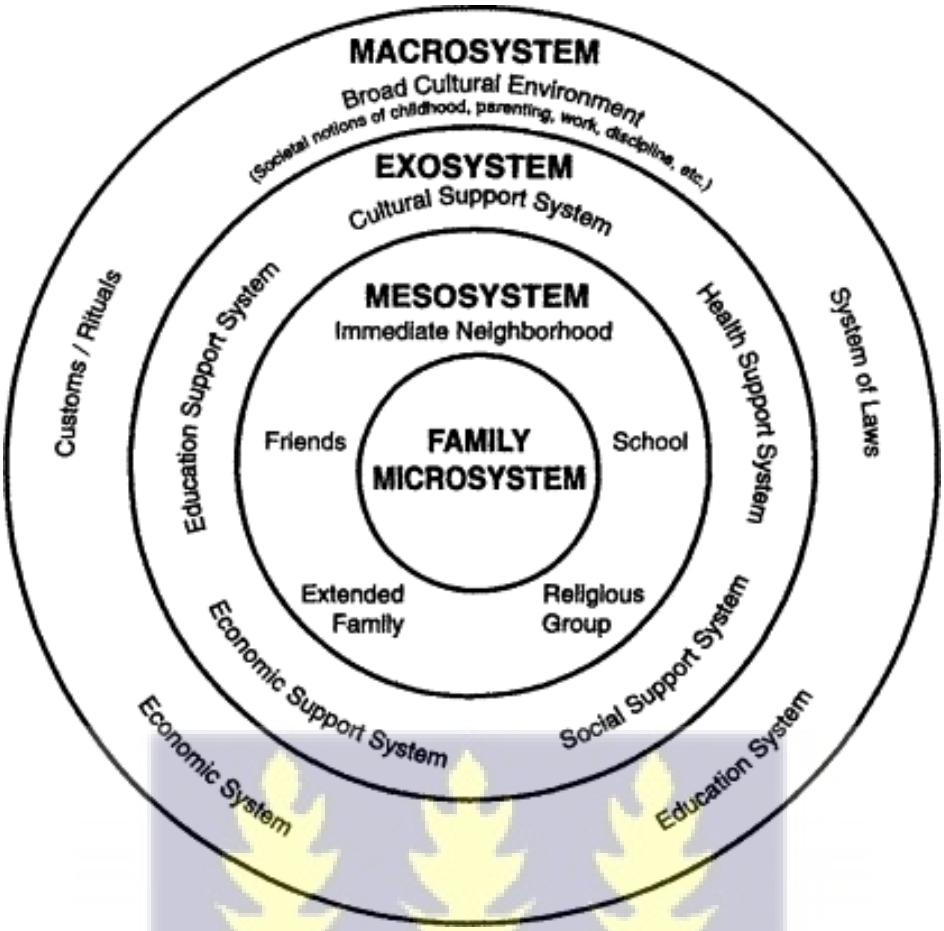


**Figure 2:The Bronfenbrenner's ecological systems theory (Vélez-Agosto et al., 2017)**

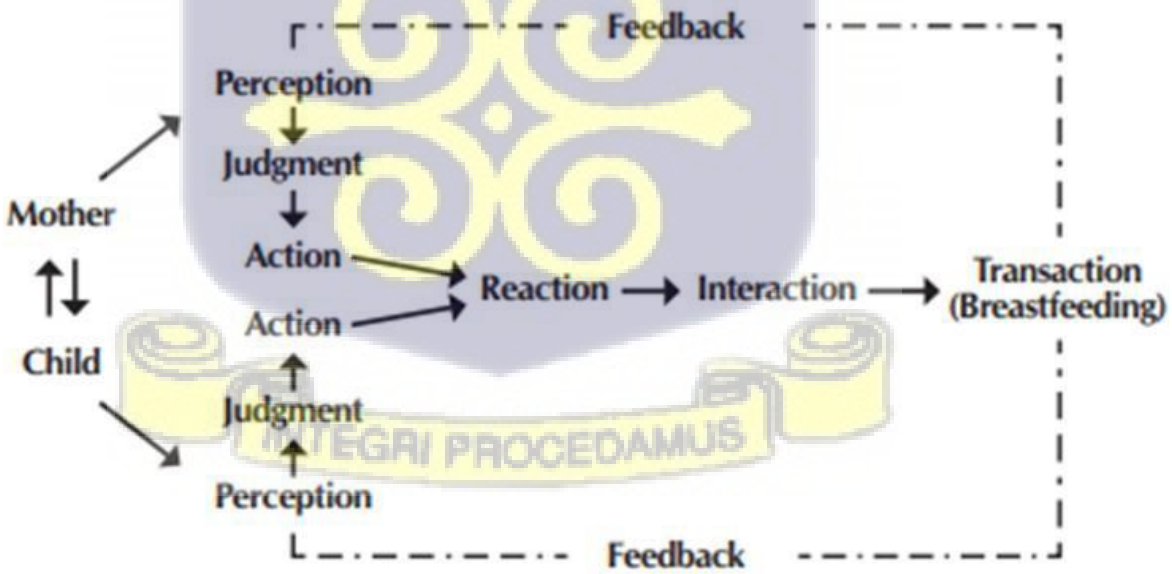


**Figure 3:The Interactive theory of breastfeeding (Primo & Brandão 2017)**

## 2.3 Exclusive breastfeeding

### 2.3.1 Global perspective of exclusive breastfeeding

A review study conducted by UNICEF and WHO in collaboration with the Global Breastfeeding Collective Initiative in 2017 showed that none of the countries that collect data on breastfeeding meets all standards for breastfeeding. The study aimed to track the progress of breastfeeding policies and programs using what was called the Global Breastfeeding Scorecard. The scorecard measured indicators for priorities of action including rates of exclusive breastfeeding, implementation of global codes of marketing of breast-milk substitutes, adequacy of funding for breastfeeding programs, maternity leave and remuneration policies, prenatal counselling, provision of appropriate maternal health care services and baby-friendly facilities, community support for breastfeeding, and developing monitoring systems to track and improve programs (WHO & UNICEF, 2017).

The study showed that, of the 194 countries that were evaluated, only 23 countries reported rates of exclusive breastfeeding rates at 6 months above 60%. The overall rate of exclusive breastfeeding was estimated at 40% (WHO & UNICEF, 2017). WHO & UNICEF (2017) showed in their reports that though all countries were mandated in 1981 to employ legislation that ensures the codes of the International Code of Marketing of Breast-Milk Substitutes are met, only 39 countries have laws that cover all codes, with 96 countries having laws that cover some of the codes. This is said to reduce the woman's motivation to breastfeed while increasing the social values of breast milk substitutes above breast milk.

Funding was noted to be crucial to making breastfeeding programs and support readily available to mother and child. However, the study showed that only seven countries in the world receive at least USD 7.00 funding for the purpose, which poses a great threat to the survival of breastfeeding programs worldwide, denying the mother, child, and health worker

the necessary means and motivation to ensure the increase in breastfeeding rates (WHO & UNICEF, 2017).

In addition to external funding for the individual, another indicator that was reported on breastfeeding globally was enumeration during maternity leave (WHO & UNICEF, 2017). The Maternity Protection Convention under the auspices of the International Labour Organization allows a woman rights to paid maternity leave with breaks in the day to breastfeed. However, only about 10% of countries around the world comply with remuneration for the required 18 weeks. Therefore, many women are forced to cut breastfeeding when they return to work (WHO & UNICEF, 2017).

There were no adequate data on women who receive individual counselling for breastfeeding. However, the study by WHO & UNICEF showed that of the 57 countries that report on counselling, 75% have incorporated Infant and Young Child Feeding (IYCF) counselling into their primary health care counselling services. The Global Breastfeeding Scorecard (2017) showed that 24 countries have coverage towards baby-friendly health facilities and 64 countries have not assessed or reassessed the state of their facilities since 2012 showing that the baby-friendly policy in these countries has been dormant. If this is lacking, the goal of improving maternal facilities to support breastfeeding is greatly reduced, serving as a challenge to exclusive breastfeeding.

Only 50% of the 64 countries that collect data on community support programs were reported to have these programs in the districts of their countries. The scorecard showed that with existing tools for monitoring and evaluation of breastfeeding programs readily available to all countries, only 77 countries have completed the assessment since 2012. By all of this, the major priorities to ensure an increase in the rates of exclusive breastfeeding have been tampered with.

### 2.3.2 Exclusive breastfeeding in the Western World

In Europe, a study conducted by Theurich *et al*. (2019) showed that exclusive breastfeeding rates were low and reducing, varying from country to country. Poor breastfeeding rates were consistent with the general rate of breastfeeding in the WHO European region, which is as low as 25%. This work aimed to report national breastfeeding data in 11 countries namely Germany, Croatia, Denmark, Belgium, Ireland, Norway, Sweden, Italy, Spain, The Netherlands and Switzerland to report national strategies, achievements, and challenges with exclusive breastfeeding at the national level.

The study found that only Spain and the Netherlands, out of the 11 countries, had no national breastfeeding committees and Sweden, Switzerland, Spain, and the Netherlands had no national plans for breastfeeding promotion, protection, and support. Croatia and the Netherlands had a high percentage of baby-friendly hospitals (93% & 80% respectively), with all other countries in the study having facilities with baby-friendliness lower than 50%.

Breastfeeding support of trained health personnel and peer counsellors was reported to be generally unavailable in the 11 countries, with the exact numbers varying per country. Italy recorded the longest legislated duration of the mandatory paid maternal leave of 16 weeks, and Ireland recorded the lowest of only 4 weeks. In all countries except the Netherlands, Germany and Denmark, there is an additional optional maternity leave which is partially or fully paid. Also, all countries except Denmark reported legal breastfeeding breaks at work or school. (Theurich, 2019).

A Chinese study was conducted by Zhang *et al*. (2018) in Shanghai and Weifang to determine the breastfeeding experience of mothers, the factors associated with these experiences and the support needed in some five categorized stages of mothers' breastfeeding practices. Stages were classified as preparatory, initial, self-exploratory, transitional, and complementary feeding stages. The study was carried out by individual in- depth interviews following a semi-

structured interview guide and focus group discussions with mothers, service providers, and policymakers (Zhang *et al*., 2018).

In both cities, the most reported factor found to be associated with exclusive breastfeeding was breast duct blockage. About half of the mothers in Shanghai had challenges with the sufficiency of milk for the babies and almost all the mothers in that city relied greatly on milk substitutes. Women in Weifang complained more about the inability of babies to latch, breast pain, and jaundice. Some mothers also reported breast engorgement, tiredness, and the inconvenience of breastfeeding. Some of the mothers complained about inappropriate advice and support from older people. Almost all mothers delivered in baby-friendly facilities.

However, there was inadequate counselling and skill enhancement given to mothers and insufficient support from the required health professionals. Most mothers complained of the beginning of breastfeeding problems after leaving maternal facilities. Shanghai mothers had a shorter hospital stay than Weifang mothers, leaving them with unresolved breastfeeding problems. Some of the mothers sought the treatment of breastfeeding problems from Kainashis (an informally trained person who helps mothers with breastfeeding problems by applying traditional methods) rather than appropriate healthcare. Some mothers found it embarrassing to breastfeed, especially after returning to work, with unsupportive work conditions. Furthermore, children who were teething were reported to be a threat to breastfeeding due to pain caused to the mother when they suck (Zhang *et al*., 2018).

Odom *et al.* (2013) by their study described the prevalence and factors associated with not meeting the desired duration of breastfeeding as prescribed by the World Health Organization (WHO). They analyzed data on 1,177 mothers aged 18 years who responded to monthly surveys from pregnancy until their child was 1 year old, from the Infant Feeding Practices

Study II (IFPSII), a longitudinal study of mothers of infants conducted from 2005 to 2007 by the US Food and Drug Administration and the Centers for Disease Control and Prevention, in households in the USA. In the event of cessation of breastfeeding, mothers were asked if they breastfed as long as they wanted and to rate the importance of 32 reasons for stopping on a 4-point Likert scale. The results showed that approximately 60% of mothers who stopped breastfeeding admitted to having stopped earlier than desired. Early cessation of breastfeeding was found to be positively associated with mothers' concerns about difficulties with breastfeeding, infant nutrition and weight, illness or the need to take medicine; and the effort associated with pumping milk.

### 2.3.3 Exclusive breastfeeding in Africa

A study by Bhattacharjee *et* al. in 2019 aimed at a geospatial analysis of the frequency and trends of exclusive breastfeeding in 49 countries (Burundi, Algeria, Angola, Benin, Botswana, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire (Ivory Coast), the Democratic Republic of the Congo, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe) from 2007 to 2016.

The study showed that trends varied greatly across the continent with heterogeneous representation within the country as well. Burundi, Ethiopia, Uganda, and Rwanda (all in the Eastern Region) were in the 90$^{th}$ percentile (highest) of measurement. However, the lowest prevalence (in the 10$^{th}$ percentile) of exclusive breastfeeding was found in regions in eastern and western Burkina Faso, northern Angola, northern Central African Republic (CAR), southern Côte d'Ivoire, southern DRC, south-western Niger and southern Nigeria.

In WHO's Opportunities for African Newborns: Practical Data, Policy and Programmatic Support for Newborn Care in Africa Publication in 2006, Quinn *et al.* write on the standard breastfeeding practices, inculcating these standard practices into breastfeeding programmes across Africa, nutrition and the general health of mothers, challenges to breastfeeding practices, and how to curb these challenges (Quinn *et al.*, 2006).

It was shown that there was a general laissez-faire attitude of stakeholders to breastfeeding practices and improvements based on the assumption that the practice happens everywhere and hence is under due control (Quinn *et al.*, 2006). Most women expressed inadequate support from properly trained healthcare providers, which should be the primary source of advice and skill enhancement for breastfeeding mothers. In addition, the number of healthcare personnel who have received special training on feeding for exceptionally vulnerable babies (preterm babies, small babies, babies born to HIV positive mothers, etc.) was found to be inadequate.

Furthermore, the health sector was shown to be failing and presenting a great challenge to breastfeeding, as there was a low representation of baby-friendly facilities on the continent. Across the continent, there were mothers and babies in the category of hard to reach including adolescent mothers, mothers who delivered at home, and mothers and babies living in difficult circumstances like refugee and emergency settings. Some sociocultural perceptions were also found to be a barrier to breastfeeding. Some communities and traditions considered colostrum dirty, others consider it a norm to include water and milk substitutes in a baby's diet, etc.

Horwood *et al.* (2020) in a South African study to describe determinants of exclusive breastfeeding concluded that breastfeeding rates have generally increased, yet some factors could interfere with the increasing rates. Approximately 49.8% of mothers breastfed exclusively, 27% were not breastfeeding at all, and 23.1% practised mixed feeding for babies. There was a challenge for some mothers not to start breastfeeding at all, and some mothers

stopped breastfeeding 14 weeks after the child was born. It was also shown that mothers who were to return to work or school during periods of breastfeeding were not able to practice exclusive breastfeeding for as long as they wanted (Horwood *et al*., 2020).

### 2.3.4 Exclusive breastfeeding in Ghana

The United Nations Children's Fund (UNICEF) project on Infant and Young Child Feeding aims at collection and analysis of exclusive breastfeeding data to aid planning and monitoring. Data in this survey were extracted from the Ghana Statistical Service database and Multiple Indicator Cluster Surveys. Data collected by this survey has shown that the rates of exclusive breastfeeding in Ghana have been dropping since 2008. Though 62% of babies were exclusively breastfed in 2008, the figures decreased sharply to 45.7% in 2011 and decreased further to 42.9% in 2017.

Another cross-sectional study on exclusive breastfeeding among Ghanian mothers by Tampah-Naah *et al.* in 2013 focussed on assessing the determinants of EBF among mothers in the country. The study extracted data from the women data of the 2008 Ghana Demographic and Health Survey to determine the proportions of women who practised EBF in the former 10 regions of the country and factors associated with EBF. This study reported that the rate of exclusive breastfeeding in the country in the year 2013 was 64%.

A study by Gladzah in 2013 sought to determine the proportion of mothers practising breastfeeding and the factors that influence exclusive breastfeeding among health workers at Accra- La general and Ridge hospitals. Data were collected using a structured questionnaire. It was found by this study that thirty-two per cent of women that responded to the questionnaire did not practice exclusive breastfeeding.

The Ghana Statistical Service (GSS) in collaboration with other State-owned agencies and international stakeholders conducted a survey in 2017 under the auspices of the Global United

Nations Children's Fund (UNICEF) Multiple Indicator Cluster Survey (MICS) Program. One of the objectives of the survey was to report on the achievement of SDGs and the Ghana Medium-Term National Development Framework (2018-22) goals and targets, of which child health and nutrition were indicators. About 13,000 households were sampled covering 8,903 children under five across the country. The survey found that only 42.9% of babies under 6 months were exclusively breastfed in Ghana in 2018.

Further details of the study showed the distribution of exclusive breastfeeding by the regions of the country. The highest proportion of babies that were exclusively breastfed was reported in the Upper West Region (77.6%) followed by the Upper East Region (73.9%) and Brong Ahafo Region (67.2%). The proportions of babies that were exclusively breastfed in the rest of the regions were reported as follows; 58.2% in the Eastern Region, 56.0% in the Northern Region, 45.0% in the Volta Region, 43.0% in the Greater Accra Region, 34.8% in the Central Region, 25.0% in the Ashanti Region, and 22.2 % in the Western Region. The results also showed that the majority of the babies that were exclusively breastfed in the country resided in rural areas and were females.

**2.4 Factors associated with exclusive breastfeeding**

**2.41 Demographic factors associated with exclusive breastfeeding**

Horwood *et al.* (2018) in their paper, report the findings of a survey of feeding practices of 14-week-old infants attending clinics in KwaZulu-Natal of South Africa. The survey included a multistage random sample of 4172 pairs of infant-mother and caregivers in 99 primary care (PHC) clinics in the 11 districts of KwaZulu-Natal (KZN), of babies 14 weeks old.

Horwood *et al.* (2018) found from their study that education (OR = 0.6, 95% CI 0.4–0.8) and high socioeconomic status (OR = 0.7, 95% CI 0.6–0.9) were predictive factors for not practising EBF at all. Furthermore, returning to work after maternal leave (OR = 0.3, 95% CI

0.2 to 0.3) and returning to school (OR = 0.2 95% CI, 0.1 to 0.3) were associated with reduced rates of exclusive breastfeeding. In conclusion, the main factors associated with exclusive breastfeeding proposed by Horwood *et al.* (2018) were resuming work and schooling, and it was recommended that to achieve EBF, schooling and working mothers should be supported so that the continuation of breastfeeding is ensured.

Li *et al.* (2018) conducted a study in the United States of America to determine the reasons for early cessation of exclusive breastfeeding, determine the relationship between the age of the child when weaned and cessation of breastfeeding, and determine the relationship between sociodemographic characteristics to commonly cited reasons. The study used data collected in the II Infant Feeding Practices Study, which took place from March 2005 to May 2006. Data from 1323 lactating mothers of White, Black, Hispanic and other races, who lived in the West, Midwest, South and Northeast regions of America, were enlisted for the study. Ten questionnaires were sent to each mother, 1 before birth and 9 after birth, asking details on breastfeeding cessation and challenges that led to cessation, and these reasons were rated using a four-point Likert scale (Li *et al.*, 2018).

The study showed that 1669 of the mothers stopped breastfeeding during the study period, with only 1323 mothers with adequate data to analyze breastfeeding challenges, associated factors, and distribution of the challenges (Li *et al.*, 2018). The ages at which babies were weaned due to various reasons varied.

The reasons that were cited include baby's trouble with latching/ sucking, mother preferring another person to breastfeed, baby not being satisfied with breastmilk, mother wanting to keep in shape, mother sick or taking medicine, baby losing interest in breastmilk and mother not considering pumping as worth the effort. Socio-demographic factors found to be significantly

associated with the reasons were some women ceased breastfeeding include age, marital status, education and income.

In this study, there were increased odds of all the reasons occurring among mothers that were unmarried as compared to mothers who were married. However, there were decreased odds of all the reasons occurring among mothers that had received college education as compared to mothers who had received only high school education. Li *et al*, 2018 also reported that lower income increased odds of women saying that they stopped breastfeeding because of baby's trouble with latching/ sucking, mother preferring another person to breastfeed, baby not satisfied with breastmilk, mother wanting to keep in shape, mother sick or taking medicine and baby losing interest in breastmilk. However, higher income was shown to increase odds of women ceasing breastfeeding because they do not consider pumping worth the effort.

In this study, increasing age was found to significantly increase the odds of mothers ceasing breastfeeding because the baby was not satisfied with only breast milk. Also, more women in older age groups ceased breastfeeding because they were sick or had to take medicine, as compared to women in younger age groups. In addition, more nursing mothers in higher age ranges were reported to cease breastfeeding because their babies lost interest in breastmilk. However, the researchers showed that more women in younger age groups stopped breastfeeding because they did not want changes to their body shapes. Also, more nursing mothers in younger age groups stopped breastfeeding because they preferred other women to breastfeed their babies.

**2.42 Clinical factors associated with exclusive breastfeeding**

Lee and Kelleher (2016) highlight important clinical factors that impact exclusive breastfeeding. In their review, they assert that prolactin is the principal lactogenic hormone that regulates mammary gland differentiation, milk production, and active secretory mechanisms

during breastfeeding. They further identified that genetic expressions greatly affect the biochemical mechanisms involved in mild breast production and secretion. They proposed that this is due to variations in single nucleotide polymorphisms (SNPs), which can be varied in diets along with the production of inflammatory lipids that inhibit secretion in breast milk secretion pathways.

Lee and Kelleher (2016) further identify certain essential hormones that work together to maintain differentiated epithelium and milk secretion during breastfeeding. These hormones include insulin, growth hormone, glucocorticoids, oxytocin, and thyroid hormone. Insulin and glucocorticoids have been found to aid in the required secretory activation and ejection of milk to regulate the formation of tight junctions in the mammary gland, stimulate mammary differentiation, and induce the expression of milk proteins. They also cited studies showing the importance of insulin, together with prolactin and hydrocortisone, in the regulation of milk protein synthesis in mammary explants from animals.

It was shown by this study that hyperglycemic insulin clamp reduces milk fat and milk production. In effect, women with gestational diabetes who are on insulin therapy experience delayed secretory activation, further confirming that insulin treatment may have adverse effects on milk production or composition in humans. The review of Lee and Kelleher (2016) also revealed that growth hormone deficiency compromises milk yield in rats, implying that a growth hormone deficiency may be significant in affecting breastfeeding challenges.

According to Horwood *et al.*, HIV positive mothers were significantly more likely to have started breastfeeding (OR 3.6, 95% CI 2.7–4.8). However, the mothers who were HIV positive were reported to stop breastfeeding at 14 weeks (OR 1.1, 95% CI 0.9-1.4) compared to mothers who were HIV negative. The researchers of this study concluded that HIV was one of the main

factors associated with EBF and recommended that breastfeeding practices among HIV positive mothers should be improved.

### 2.43 Maternal factors associated with exclusive breastfeeding

In the study conducted in Ghana by Gladzah *et al.* in 2013, about 60% of the individuals interviewed had work schedules that did not accommodate breastfeeding, 71% had no hour break for breastfeeding, 18% had poor cooperation with colleagues, and 35% complained of no breastfeeding room at work. Approximately 40% of the women faced a challenge with the compatibility of maternal leave to standard breastfeeding practices. Some of the respondents (7%) had no help with household chores at home.

Odom *et al.* (2013) highlighted in their study that the main factors associated with exclusive breastfeeding and, by extension, with the early cessation of breastfeeding include concerns about maternal or child health (infant nutrition, maternal illness or the need for medicine, and infant illness) and the actual process of breastfeeding (breastfeeding and milk-pumping problems). This could be traced to the lack of support and education of the responsible health institution for maternal and childcare.

Gebrekidan *et al.* (2020) conducted a study on a population of employed mothers in government institutions within the northern part of Ethiopia. Their study focused on the qualitative assessment of maternal factors that affect exclusive breastfeeding at workplaces of nursing mothers, from the perspectives of managers. The rationale of this study was that these managers interact directly with employed mothers and are hence in a position to answer on support mothers receive from managers, availability of resources, time allotted for breastfeeding, and supportive policies that are important factors for exclusive breastfeeding among employed mothers.

The authors interviewed 15 managers from 12 district-level government institutions in the Tigray region of northern Ethiopia, through semi-structured interviews. Manager perspectives were transcribed verbatim and thematically analysed. From the thematic analysis, three themes were generated, namely, i) the attitudes and preferences of managers; ii) the concern of managers about the impact of breastfeeding on staffing and productivity, and iii) the assertions of managers about the lack of policies and government strategies to support employed breastfeeding mothers in North Ethiopia.

The first theme revealed that, in general, the participants (managers) had positive attitudes towards breastfeeding and were in favour of supporting nursing mothers who are employees as they considered it an important aspect of good childcare. Participants further expressed how guilty they felt for asking nursing mothers to work, knowing how it could affect their babies. The second theme highlighted the concern of managers about the impact of breastfeeding on staffing and workplace productivity. In most institutions, it was found that women are not replaced by another employee if the woman is not available. As such, it creates a serious burden on available staff, and consequently productivity. Furthermore, managers opined that the capacity to replace nursing mothers also depends on their job description. As such, it is difficult to replace women who are professionals with specialized skills in the event of delivery and nursing.

The participants also expressed the concern that nursing mothers generally have difficulty concentrating at work, and some mothers come to work late and leave earlier than the closing time to breastfeed their babies. This harms productivity and tends to further create an unfavourable working environment, further affecting nursing mothers. The third theme focused on the claims of managers that there are not enough policies and government strategies to support employed breastfeeding women.

Participants proposed that maternity and annual leave should be reviewed to better support nursing mothers, to achieve the 6 months of exclusive breastfeeding as recommended by the World Health Organization. Although participants generally had a positive attitude towards breastfeeding, a major factor for exclusive breastfeeding is managing work responsibilities and time schedules among employee nursing mothers (economic factors), as well as the availability of policies that ensure equitable support for nursing mothers (political factors).

In Li *et* al.'s study in 2008, the researchers listed maternal factors associated with early cessation of exclusive breastfeeding. The major reason for the cessation of EBF was the mother's conclusion that breastfeeding alone did not satisfy the baby, which led to a greater dependence on dietary substitutes. Other reasons were that the mother or health professional was not satisfied with the weight gain of the baby, delayed lactogenesis, and the low amount of milk supply. Other maternal factors that led to breastfeeding cessation included sore, cracking and bleeding nipples, leaking breasts, painful breasts, engorged breasts, infected or abscessed breasts, the primary lactational reason being the infant's inability to suck or latch onto mother's nipples (Li *et al.,* 2018). More reasons that were reported in this study include mothers finding breastfeeding tiring, desire to be able to leave the baby for long hours, too many household chores, etc.

**2.5 Gaps in the literature**

Due to recent awareness and global initiatives aimed at increasing breastfeeding rates, there have been some studies in the area of exclusive breastfeeding. Some of these studies are conducted in settings that differ from the Ghanaian situation and therefore do not provide an adequate basis for data-informed decision making. Hence, there is a great gap in the literature on the Ghanaian situation and, more importantly, a gap in data specific to the various regions and varying groups of women. Also, many of the studies previously conducted do not collect and analyze data on individual maternal factors. Those that collect data on maternal factors

usually conduct the studies qualitatively. This contributes to a low amount of data that is specific to different groups in the nation. It is for these reasons that this current study sought to determine the proportion of women who exclusively breastfeed and to determine sociodemographic, clinical, and maternal factors that are associated with exclusive breastfeeding.

# CHAPTER THREE

## 3.0 METHODS

### 3.1 Study design

A cross-sectional study was conducted among nursing mothers attending Child Welfare Clinics (CWCs) in sub-municipality facilities of the Ga East Municipality. Quantitative data was collected on socio-demographic, clinical, and maternal factors and exclusive breastfeeding practices was collected. Data was analysed to determine the proportion of women who practice exclusive breastfeeding and factors associated with the practice.

### 3.2 Study setting

The setting for the study was the Ga East Municipality, a diverse municipality with a wide range of socio-demographic characteristics. . This municipality is one of the 29 Metropolitan, Municipal and District Assemblies (MMDAs) in the Greater Accra Region and has five subdistricts, namely, Dome, Abokobi, Taifa, Haatso and Ashongman subdistricts. It is made up of 83 communities characterised by urban, peri-urban, and rural settlements (GSS, 2014). Data from the 2010 Population and Housing Census (2010 PHC) show that the population of the Ga East Municipality is 147,742, which represents 3.68 per cent of the Greater Accra regional population (GSS, 2014). The current population of the municipality as of 2020 is estimated to be 183,032. This is made up of 43928 (24.0%) women in fertility age (15-49 years), 49419 (27.0%) men in the same age group, and 7321 (4.0%) children younger than 1 year (GEHD, 2014). Due to these characteristics, the setting can serve as an example, providing information on EBF for MMDAs, whiles providing information on how the bigger Ghanaian picture looks.

Ga East Municipality has 22 health facilities, made up of 2 public health facilities (Taifa Polyclinic and Abokobi Health Centre) and 20 private health facilities. The municipality is

made up of 41 CHPS zones with one CHPS compound (GEHD, 2014). All sub-municipalities operate CWCs, either in the sub-municipality facility, as an extension of a private facility in the sub-municipality, or as a stationary and independently setup CWC. The Taifa and Abokobi sub-municipalities run CWcs in the Taifa Polyclinic and Abokobi health centres, respectively twice every week. The Ashongman sub-municipality runs CWCs as an extension of a private facility (Asongman Community Clinic) and the Haatso sub-municipality runs CWCs as an extension of a Quasi-government facility (Ghana Atomic Energy Commission (GAEC) Hospital). The Dome sub-municipality has a stationary CWC that operates every day. All CWCs have sections for records keeping, nutrition, immunisation, counselling, vitamin supplementation, treatment of minor ailments and referrals. The map of the municipality is shown below.

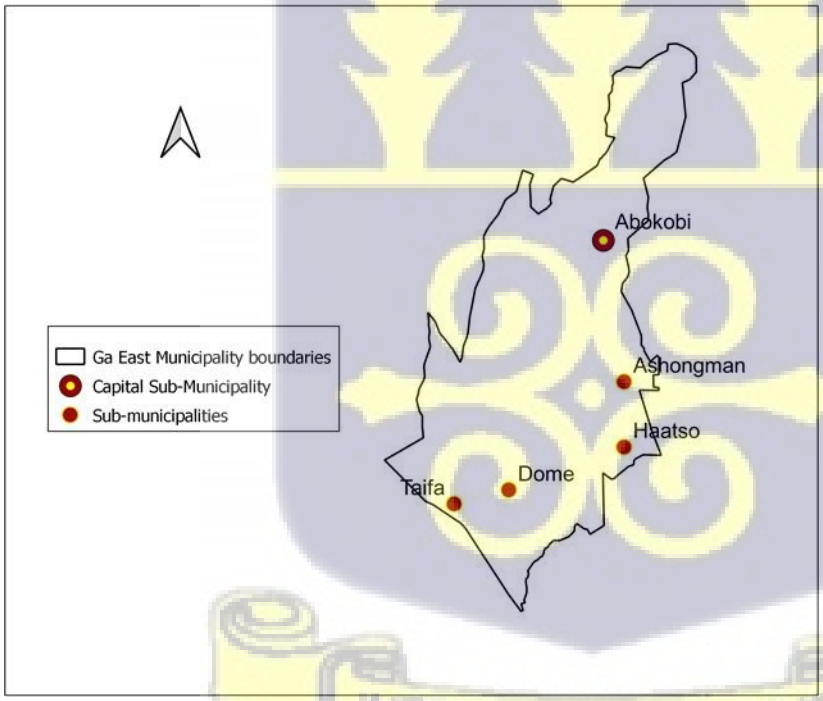


**Figure 4: Map of Ga East Municipality**

### 3.3 Study variables

#### 3.3.1 Independent variables

The study collected data on sociodemographic variables such as age, occupation, years of education, marital status, and socioeconomic status. Furthermore, clinical data (mode of delivery, prenatal counselling, facility of delivery, underlying medical conditions, type of gestation) were also collected. Data were also collected on maternal characteristics such as milk flow, nipple issues, maternity leave, illness among babies and mothers, tiredness, baby's refusal of breastmilk, etc. The variables are further explained in Table 2 below.

#### 3.3.2 Dependent variable

The dependent variable for the study was exclusive breastfeeding.

#### 3.3.3 Operationalization of variables

**Table 1: Variables used in the study**

| Category | Variable Definition | Indicator |
|---|---|---|
| Exclusive Breastfeeding | The practice of giving a child only breastmilk in the first six months of the baby's life. | • Only Breastmilk<br>• No Water<br>• No milk substitutes |
| Socio-demographic characteristics/factors | A combination of social and demographic characteristics that define the nursing women, their husbands and their babies | • Age: Age of mother in years at the time of response to the questionnaire or age of a child in weeks at the time of the study<br>• Education: Women who had received up to either primary, secondary or tertiary school education or had received none (uneducated). The same applies to spouses<br>• Employment status: Whether a woman has a job (employed/self-employed) or not, independent of maternity leave periods |

| | | | |
|---|---|---|---|
| | | | • Religion: Woman's main worship<br>• Marital Status: The state of a mother's intimate relationship with a man (never legally married, legally married, cohabiting (not legally married but staying with a male partner))<br>• Number of children: Number of children a woman has that were alive at the time of the study<br>• Income: Amount of money a woman earns from her job after a month<br>Sex of Babies: either male or female |
| Clinical Factors | Characteristics/ | Characteristics that define clinical, health and avenues for receiving them, independent of individual maternal factors | • Gestation Type: Was the child being brought to CWC was born as a singleton or as a twin?<br>• Mode of Delivery: Was the child delivered by normal labour or through caesarean section<br>• The facility of Delivery: Type of facility which child being brought to CWC was delivered<br>• Prenatal counselling: Whether nursing mother received pregnancy and child birth counselling before birth<br>• Source of Counselling: Whether nursing mother received counselling from trained (nurse, midwife, doctor, counsellor) or untrained personnel (mother, grandmother, community elder who is not a trained counsellor)<br>• Underlying Medical Conditions: Chronic conditions that require continuous care |

| | | | |
|---|---|---|---|
| Maternal Characteristics | Factors/ | Characteristics specific to a nursing mother or baby that could affect exclusive breastfeeding for the mother, but might not influence exclusive breastfeeding the same way in another mother | • Breast Milk Not Flowing: A mother whose breast milk does not flow at all<br>• Low Milk Supply: A mother who reports that her breastmilk flow is inadequate to meet the standard of number of times or duration of breastfeeding<br>• Sore Nipple: A woman with sores on her nipples<br>• Flat Nipple: A woman whose nipple is flat and hence is not popped out to allow baby to latch to breastfeed<br>• Inverted Nipple: A woman whose nipple is inverted into the breast, preventing baby from latching on mother's nipples to breastfeed<br>• Breast Engorgement: A woman with painful and swollen breasts due to the breasts being too full with milk or her child not breastfeeding enough<br>• Ill Mother: Mother ill at any point of breastfeeding<br>• Tired Mother: Mother feeling physically or emotionally tired, affecting the ability to breastfeed<br>• End of Maternity Leave: A woman whose maternity leave has ended<br>• Mother Is Busy Working: A woman busy with work despite maternity leave or not<br>• Baby's Latching Difficulties: A baby's difficulty to latch its mouth on the mother's nipple to breastfeed |

- Baby Refusing to Be Fed: A baby not allowing the mother to him/her with breastmilk
- Restless Baby: A fussy baby
- Baby Is Ill: Baby ill at any point of breastfeeding
- Sleepy Baby: Baby usually sleeping or sleepy, affecting his/her ability to breastfeed
- Constipating Baby: A baby who does not shed stool as much as required for age (1 to 2 stools per week for baby age up to 1 month, 1 stool per day in baby aged more than one month)
- Insufficient Weight Gain: Baby not gaining weight required for age, or losing more weight than the standard weight range for his or her age.

### 3.4 Study population

The study population for this study was nursing mothers of infants attending child welfare clinics at the 5 sub-municipal facilities in the Ga East municipality. According to the World Health Organization/United Nations Children's Fund, 2018, the standard Women in Fertility Age (WIFA) is 18 and 18-49 years, hence the study included nursing mothers of ages between 18 to 48 years. Though the attendance of CWCs include children between the ages of 0 to 3 years, to ensure that recall bias was reduced, only women with children aged 1 week to 1 year were asked about current breastfeeding practices or practices they undertook in the first six months post partum. Hence the study population covered nursing mothers of ages between 18 to 49 years of age with children aged 1 week to 1 year.

### 3.5 Sample size

The prevalence of exclusive breastfeeding in Ghana was found in a previous study to be 42.9% (GSS, 2018). Using the Cochran formula for sample size calculation, an error margin of 0.05 at a 95% confidence level, a sample size of 377 or more was determined for the current study.

$$n, sample\ size\ \geq \frac{Z2 * P(1-P)}{(e^2)}$$

Z level = 1.96

P = prevalence = 42.9%

e = Level of precision = 0.05

$$n \geq \frac{1.96^2 * 0.429(1-0.429)}{(0.05^2)}$$

$$n \geq 377$$

### 3.6 Sampling method/procedure

Mothers visiting child welfare clinics at the 5 sub-municipality health facilities within the Ga East municipality were included in the study. The sampling methods that were used were stratified sampling, and then, consecutive sampling.

#### 3.6.1 Stratified Sampling

The five sub-municipalities (Ashongman, Abokobi, Dome / Kwabenya, Haatso and Taifa) of the municipality were the strata from which the sample population was randomly obtained. Proportionate random sampling was used and hence, in order to obtain a proportional number of nursing mothers into the study from each of the strata or sub-municipalities, a common factor was determined as is shown below;

$$\text{Common factor} = \frac{Sample\ Size}{Total\ Population}$$

$$= \frac{377}{183,032}$$

$$= 0.002$$

The determined common factor was used to estimate the minimum number of respondents expected to participate in the study from each sub- municipality, using the formula below.

Sample size = Common factor × Sub-Municipality Population.

Each municipality runs a Child Welfare Clinic in the sub-municipalities' major health facility. The table below shows the number of women recruited into the study from the various sub-municipalities and the sub-municipal facilities which the respondents were recruited from.

**Table 2:Number of nursing mothers recruited from the various sub-municipalities/sub-municipal facilities in the Ga East Municipality**

| Sub-Municipality | Sub-Municipality Population | Sample Size | Facility |
|---|---|---|---|
| Ashongman | 21,964 | 45 | Ashongman Community Clinic |
| Abokobi | 14,643 | 30 | Abokobi Health Centre |
| Dome | 54,910 | 113 | Dome CWC |
| Haatso | 34,776 | 72 | GAEC |
| Taifa | 56,740 | 117 | Taifa Polyclinic |
| Total | 183,032 | 377 | Not Applicable |

**3.6.2 Consecutive Sampling**

Mothers attending child welfare clinics in the Taifa Polyclinic, Abokobi Health Centre, Ashongman Community Clinic and Ghana Atomic Energy Commission (GAEC) were recruited over 3 weeks, on days that CWCs were held in these facilities. Mothers attending the Dome CWC, which was a stationery CWC that operated every day, were recruited into the study over a period of 5 days. On each day of data collection, research assistants at each of the selected health facilities recruited all nursing mothers coming to the

health facilities who met the inclusion criteria. This was done for a number of days (number of days depends on the facility type, as explained above) until the required number for the sub-facility was obtained.

### 3.7 Inclusion criteria

The inclusion criteria for the study were all mothers aged 18 to 49 years in the Ga East municipality, whose children were aged 1 week to 1 year, attending the Child Welfare Clinic at the sub-municipal facilities of the municipality.

### 3.8 Exclusion criteria

The exclusion criteria for the study were women that were referred from the CWCs to other facilities on the day of attendance, women with babies in Neonatal Intensive Care Units and women who had had either one or both of their breasts amputated.

### 3.9 Data collection techniques and tools

Structured questionnaires were developed and were used to collect socio-demographic characteristics and clinical health information were obtained through interviews (Appendix A). A questionnaire adapted from a tool by Lala, Februhartanty, and Basuki (2014) was included in the structured questionnaire to assess the maternal characteristics of the mothers. This tool focuses on maternal characteristics of nursing mothers during the first 6 months postpartum and covers the experience of mothers during 1 to 4 weeks postpartum, 5 to 12 weeks postpartum and 13 to 24 weeks postpartum.

### 3.10 Training and pre-testing

Research assistants were recruited and trained for 5 days to assist in data collection. They were thoroughly trained with interview guides and standardized questionnaires. The final complete draft of the questionnaire was used to conduct a pretest study among 30 participants at the Bejewahume CWC. After this, the reliability and validity of the questionnaire were assessed and the items were reviewed to produce the final questionnaire. In addition, peculiar challenges in the data collection process were noted and addressed before actual data collection.

### 3.10 Quality control

Data collection was carried out by properly trained research assistants who were closely supervised. It was ensured that the data was recorded legibly on the questionnaires and without ambiguities. The figures were cross-checked for validity. The collected data were scrutinized to ensure that they made sense. Codes were used to identify each questionnaire to avoid duplicates. Data entry was meticulously done and cross-checked after all questionnaires had been entered. Electronic data was stored on a password-protected laptop.

### 3.11 Data management and statistical analysis

#### 3.11.1 Data management

All data from the questionnaires were entered into Microsoft Excel 2016 (Microsoft Corp., Seattle) and cleaned. The proportion of women who practice exclusive breastfeeding was measured by calculating the number of women who exclusively breastfeed over a denominator of the total number of nursing mothers who responded to the questionnaire. Socio-demographic and clinical factors that were categorical had answers stated and coded for easy interpretation. For socio-demographic and clinical factors that were not categorical (age), responses were stated as numbers. For maternal characteristics, data was first entered for mothers who reported any of the maternal factors, despite the period in which they reported them and further entered for the period (1-4 weeks, 5-12 weeks and 13-24 weeks) that mothers reported that they encountered them. The data was then exported to StataIC 15 (StataCorp, College Station, TX, USA).

#### 3.11.1 Statistical analysis

StataIC 15 (StataCorp, College Station, TX, USA) was used for all statistical analyses. Descriptive analysis was performed on socio-demographic, clinical and maternal characteristics and results were summarized as frequencies and proportions at a 95% confidence interval. Skewed quantitative continuous variables, such as age, were analyzed in

the median and interquartile range.

Univariate logistic regression was performed to test the strength of association between the practice of exclusive breastfeeding and the various independent variables (sociodemographic, clinical, and maternal), with crude odds ratios generated at 95% confidence intervals and statistical significance determined at p-value $\leq 0.05$. Factors that were associated with exclusive breastfeeding at a significant level (p-value $\leq 0.05$) were included in the multi-variate model, with adjusted odds ratios generated at 95% confidence intervals and statistical significance determined at p-value $\leq 0.05$.

### 3.12 Ethical considerations

Ethical clearance for this study was sought from the Ghana Health Service Ethics Review Committee before beginning data collection (GHS-ERC 068/04/21). Permission was sought formally from the Ghana Health Service, Greater Accra Regional Health Directorate and the Ga East Municipal Health Directorate, along with ethical clearance before the start of the study.

To prevent the spread of COVID-19, all protective and preventive measures were strictly adhered to as outlined in the GHS-ERC Guidelines for Researchers During the Covid-19 Pandemic. The purpose and nature of the study, including highlighting all possible risks and benefits, were thoroughly explained to all possible participants and they were required to provide their consent after they were sufficiently informed, by signing or providing thumbprints. Participants in this study were assured that their confidentiality will be respected concerning any information provided. All information was used for the study only. The questionnaires were kept in a cabinet and locked after the participants had filled them out. The student researcher and the supervisor for this study were the only persons authorized to have access to the data.

# CHAPTER FOUR

## 4.0 RESULTS

### 4.1 Background characteristics

#### 4.1.1 Sociodemographic characteristics of nursing mothers, Ga East Municipality, 2021

A total of 388 nursing mothers participated in the study with ages ranging from 18to 44 years (median = 29, IQR = 25 to 34). Most of the mothers were educated (96.13%, *n* = 373). Most were Christians (96.91%, *n* = 376), married (67.01%, *n* = 260), and had more than one child (57.73%, *n* = 224). Furthermore, most of the mothers resided in urban areas (96.39%, *n* = 374) and receive help with household chores (60.31%, *n* = 234), the majority being employed (76.80%, *n* = 298) and earning income between 1-999 Ghanaian Cedis (80.51%, *n* = 240). The total number of women with partners was 323. These 323 individuals include men cohabiting and married to breastfeeding mothers. The majority of the men were educated (98.14, *n* = 317) and were employed (97.21%, *n* = 314). The age of the children ranged from 2 to 48 weeks (median = 34, IQR= 16.5 - 41.5). The majority of the children were female (54.90%, n=213) (Table 3 and Table 4).

**Table 3:Sociodemographic characteristics of mothers of nursing mothers, Ga East Municipality, 2021**

| Variables | Frequency (N) | Percentages (%) |
|---|---|---|
| **Age at Birth/years (median (IQR))** | **29 (25 - 34)** | |
| Minimum-Maximum | 18-44 | |
| **Education** | | |
| No Education | 15 | 3.87 |
| Educated | 373 | 96.13 |
| **Religion** | | |
| Muslim | 12 | 3.09 |
| Christian | 376 | 96.91 |
| **Marital Status** | | |
| Never married | 65 | 16.75 |
| Cohabiting | 62 | 15.98 |
| Married | 260 | 67.01 |
| Widowed | 1 | 0.26 |
| **Number of children** | | |
| One | 164 | 42.27 |
| More than one | 224 | 57.73 |
| **Settlement Type** | | |
| Rural | 14 | 3.61 |
| Urban | 374 | 96.39 |
| **Mother gets help with household chores** | | |
| No | 154 | 39.69 |
| Yes | 234 | 60.31 |
| **Employment Status** | | |
| Unemployed | 90 | 23.20 |
| Employed | 298 | 76.80 |
| ***Income (*N* = 298)** | | |
| 1-999 | 240 | 80.51 |
| 1000-1999 | 38 | 12.75 |
| 2000-2999 | 1 | 0.34 |
| 3000-3999 | 14 | 4.70 |
| 4000+ | 5 | 1.68 |

***N*=388, **N* differs from the total sample size of 388, IQR= Interquartile Range, SD=**

**Standard Deviation**

**Table 4: Sociodemographic Characteristics of Spouses and Babies of Nursing Mothers, Ga East Municipality, 2021**

| Variables | Frequency (N) | Percentages (%) |
|---|---|---|
| ***Education of Spouse (*N* = 323)** | | |
| Uneducated | 6 | 1.86 |
| Educated | 317 | 98.14 |
| ***Employment status (*N* = 323)** | | |
| Unemployed | 9 | 2.79 |
| Employed | 314 | 97.21 |
| **Age of Babies/weeks (Median (IQR))** | **34 (18 - 42)** | |
| Minimum-Maximum | 2-48 | |
| **Sex of Babies** | | |
| Male | 175 | 45.1 |
| Female | 213 | 54.9 |

***N* differs from the total sample size of 388, IQR= Interquartile Range**

### 4.1.2 Clinical characteristics of nursing mothers, Ga East Municipality, 2021

Most of the respondents had delivered children as singletons (95.88%, *n*=372), with the majority of the children born by normal delivery (68.99%, *n*=267) and delivered in public facilities (50.77%, *n* = 197). The weight of the children ranged from 2.7 kg to 13 kg (median = 7.5, IQR = 5.6 - 8.6). The underlying condition that was reported most among mothers was high blood pressure (3.87%, *n* = 15). Most mothers received prenatal counselling (85.82%, *n*=333) and received this counselling from formally trained personnel like midwives, nurses and doctors (93.99%, *n* = 313). There were no reported underlying conditions among the babies of the responding mothers. (Table 5).

**Table 5:Clinical characteristics of nursing mothers, Ga East Municipality, 2021**

| Variable | Frequency (N) | Percentage (%) |
|---|---|---|
| **Gestation Type** | | |
| Singleton | 372 | 95.88 |
| Twin | 16 | 4.12 |
| **Mode of Delivery** | | |
| Caesarean Section | 120 | 30.93 |
| Normal Delivery | 268 | 69.07 |
| **Facility of Delivery** | | |
| Private | 68 | 17.53 |
| Public | 197 | 50.77 |
| Quasi-Government | 99 | 25.52 |
| Christian Health Association Hospitals | 18 | 4.64 |
| Home | 6 | 1.55 |
| **Prenatal counselling about breastfeeding** | | |
| No | 55 | 14.18 |
| Yes | 333 | 85.82 |
| ***Source of counselling (*N* = 333)** | | |
| Trained personnel | 313 | 93.99 |
| Untrained personnel | 20 | 6.01 |
| **Weight of Child/kg (median (IQR))** | 7.5 (5.6 - 8.6) | |
| Min - Max | 2.7 - 13 | |
| **Underlying Medical Conditions of Mother** | | |
| Asthma | 7 | 1.80 |
| Low Blood Pressure | 3 | 0.77 |
| High Blood Pressure | 15 | 3.87 |
| Ulcer | 5 | 1.29 |
| Fertility Issues | 3 | 0.77 |
| HIV | 1 | 0.26 |
| None | 354 | 91.24 |
| **Underlying Medical Conditions of Child** | | |
| None | 388 | 100 |

***N*=388, **N* = sample size different from the total sample size**

### 4.1.3 Maternal characteristics of nursing mothers, Ga East Municipality, 2021

Most of the nursing mothers reported that they had experienced tiredness postpartum (39.43%, 95% CI: 34.54 - 44.49). About 26% of the nursing mothers reported soreness of their nipples (26.29%, 95% CI: 21.98 - 30.97). Also, about 20% of the mothers reported that their babies were unusually sleepy for most of the day (20.10%, 95% CI: 16.23 - 24.44). A number of the mothers mentioned that their breastmilk was not flowing at all (19.59%, 95% CI: 15.75 - 23.89). The least reported maternal characteristic was the baby being ill (2.58%, 95% CI: 1.24 - 4.69). The proportions of women who reported various maternal situations are shown in Table 6.

**Table 6:Maternal characteristics of nursing mothers, Ga East Municipality, 2021**

| Variables | Number (*N* = 388) | Proportion | 95% Confidence Interval |
|---|---|---|---|
| Breast Milk Not Flowing | 76 | 19.59 | 15.75 - 23.89 |
| Low Milk Supply | 33 | 8.51 | 6.36 - 12.32 |
| Sore Nipple | 102 | 26.29 | 21.98 - 30.97 |
| Flat Nipple | 34 | 8.76 | 6.14 - 12.03 |
| Inverted Nipple | 35 | 9.02 | 6.36 - 12.32 |
| Breast Engorgement | 19 | 4.90 | 2.97 - 7.54 |
| Ill Mother | 36 | 9.28 | 6.58 - 12.61 |
| Tired Mother | 153 | 39.43 | 34.54 - 44.49 |
| End of Maternity Leave | 52 | 13.40 | 10.17 - 17.20 |
| Mother Is Busy Working | 40 | 10.31 | 7.47 - 13.77 |
| Baby's Latching Difficulties | 28 | 7.22 | 4.85 - 10.26 |
| Baby Refusing to Be Fed | 68 | 17.53 | 13.87 - 21.68 |
| Restless Baby | 61 | 15.72 | 12.24 - 19.73 |
| Baby Is Ill | 10 | 2.58 | 1.24 - 4.69 |
| Sleepy Baby | 78 | 20.10 | 16.23 - 24.44 |
| Constipating Baby | 64 | 16.49 | 12.94 - 20.57 |
| Insufficient Weight Gain | 44 | 11.34 | 8.36 - 14.92 |

**4.2 Exclusive breastfeeding practice among nursing mothers, Ga East Municipality, 2021**

Of the 388 respondents, 50.26% ( 95% CI = 45.17 - 55.34) of them reported exclusively breastfeeding **(Figure 4.2).**

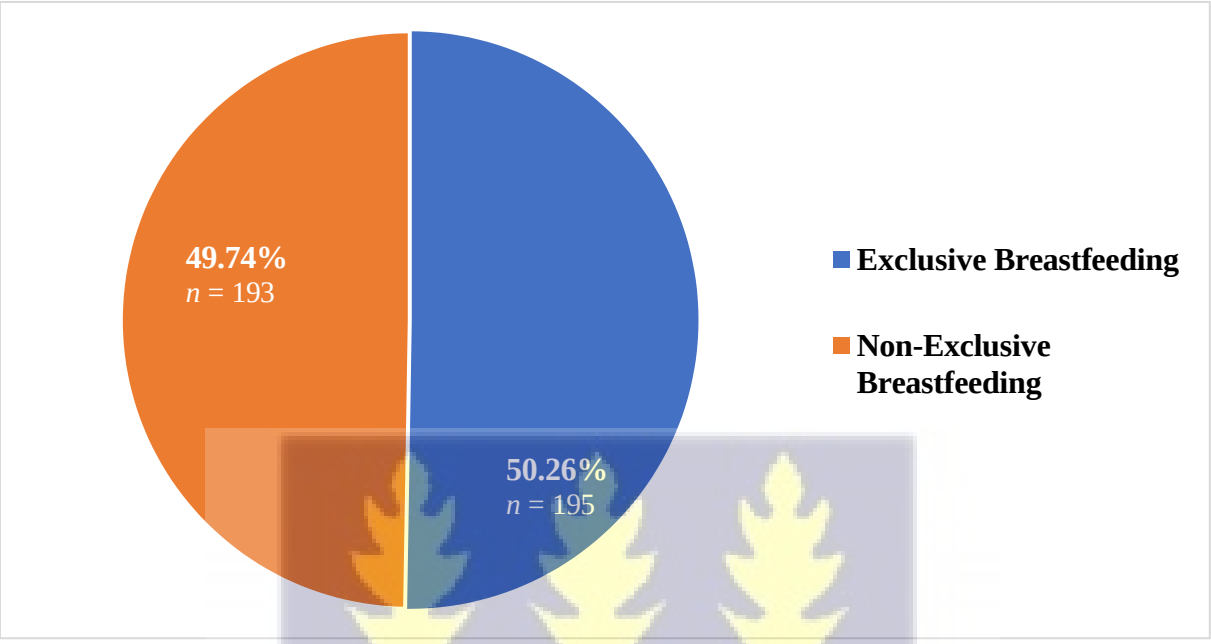


**Figure 5:Proportion of women who exclusively breastfeed, Ga East Municipality, 2021**

### 4.3 Association between nursing mothers' sociodemographic characteristics and exclusive breastfeeding practice

There were 6% increased odds of exclusive breastfeeding with increasing age at birth (COR = 1.06, 95% CI = 1.02 - 1.10, $p$ = 0.003). There was a 2.34 increased odds of EBF among nursing mothers who had help with household chores as compared to mothers who did not have help with household chores (COR = 2.34, 95% CI = 1.54 - 3.55, $p$ <0.001. There was also a 72% increased odds of exclusive breastfeeding among nursing mothers that were employed as compared to mothers who were not employed (COR = 1.72, 95% CI = 1.06 - 2.77, $p$ = 0.027). The odds of exclusive breastfeeding among mothers that were cohabiting as compared to those that were married was decreased by 54% (COR = 0.46, 95% CI = 0.22 - 0.95, $p$ = 0.036). Other variables were not found to be associated with exclusive breastfeeding **(Table 7).**

**Table 7: Association of sociodemographic factors with exclusive breastfeeding among breastfeeding mothers, Ga East Municipality, 2021**

| Variables | Exclusive Breastfeeding N = 195 | Non-Exclusive Breastfeeding N = 193 | COR (95% CI) | *p*-value |
|---|---|---|---|---|
| **Age At Birth/ years** | N | N | 1.06 (1.02 - 1.10) | **0.003*** |
| **Education** | | | | |
| No Education | 11 | 4 | 1.00 | |
| Educated | 184 | 189 | 0.35 (0.11 - 1.13) | 0.080 |
| **Religion** | | | | |
| Muslim | 6 | 6 | 1.00 | |
| Christian | 189 | 187 | 1.01 (0.32 - 3.19) | 0.986 |
| **Marital Status** | | | | |
| Never married | 33 | 32 | 1.00 | |
| Cohabiting | 20 | 42 | 0.46 (0.22 - 0.95) | **0.036*** |
| Married | 142 | 118 | 1.17 (0.68 - 2.01) | 0.578 |
| **Number of children** | | | | |
| One | 78 | 86 | 1.00 | |
| More than One | 117 | 107 | 1.21 (0.67 - 1.23) | 0.91 |
| **Settlement Type** | | | | |
| Rural | 7 | 7 | 1.00 | |
| Urban | 188 | 186 | 1.01 (0.35 - 2.94) | 0.984 |
| **Help with household chores** | | | | |
| No | 58 | 96 | 1.00 | |
| Yes | 137 | 97 | 2.34 (1.54 - 3.55) | **<0.001*** |
| **Employment Status** | | | | |
| Unemployed | 36 | 54 | 1.00 | |
| Employed | 159 | 139 | 1.72 (1.06 - 2.77) | **0.027*** |
| **Income** | | | | |
| 1-999 | 133 | 107 | 1.00 | |
| 1000-1999 | 18 | 20 | 0.72 (0.36 - 1.45) | 0.356 |
| 3000-3999 | 6 | 8 | 0.60 (0.20 - 1.79) | 0.363 |
| 4000+ | 2 | 3 | 0.54 (0.09 - 1.60) | 0.499 |
| **Education of Spouse** | | | | |
| Uneducated | 5 | 1 | 1.00 | |
| Educated | 157 | 160 | 0.20 (0.02 - 1.70) | 0.139 |
| **Employment status of Spouse** | | | | |
| Unemployed | 3 | 6 | 1.00 | |
| Employed | 159 | 155 | 2.05 (0.50 - 8.35) | 0.316 |
| **Age of Babies/weeks** | N | N | 0.99 (0.97 - 1.00) | 0.412 |
| **Sex of Babies** | | | | |
| Male | 97 | 78 | 1.00 | |
| Female | 98 | 115 | 0.69 (0.46 - 1.02) | 0.065 |

***; significant association, COR= Crude Odds Ratio, CI= Confidence Interval**

### 4.4 Association between nursing mothers' clinical characteristics and exclusive breastfeeding practices, Ga East Municipality, 2021

The was an 88% reduced odds of exclusive breastfeeding among mothers who had twins as compared to mothers who had singletons (COR = 0.22, 95% CI = 0.06 - 0.79, $p$ = 0.020**).** There was a 75% decreased odds of EBF among mothers who received prenatal counselling from untrained personnel as compared to those who received counselling from trained personnel (COR = 0.15, 95% CI = 0.04 - 0.52, $p$ = 0.003) The other clinical characteristics were not found to be significantly associated with EBF **(Table 8).**

**Table 8: Association of clinical factors with exclusive breastfeeding among nursing mothers, Ga East Municipality, 2021**

| Variables | Exclusive Breastfeeding N = 195 | Non-Exclusive Breastfeeding N = 193 | COR (95% CI) | *p*-value |
|---|---|---|---|---|
| **Gestation Type** | | | | |
| Singleton | 13 | 3 | 1.00 | |
| Twin | 182 | 190 | 0.22 (0.06 - 0.79) | **0.020*** |
| **Mode of Delivery** | | | | |
| Caesarean Section | 63 | 57 | 1.00 | |
| Normal Delivery | 132 | 136 | 0.88 (0.57 - 1.35) | 0.555 |
| **Facility of Delivery** | | | | |
| Home | 2 | 4 | 1.00 | |
| Private | 39 | 29 | 2.68 (0.46 - 15.70) | 0.272 |
| Public | 86 | 111 | 1.55 (0.277 - 8.66) | 0.618 |
| Quasi-Government | 57 | 42 | 2.71 (0.47 - 15.52) | 0.262 |
| Christian Health Association Hospitals | 11 | 7 | 3.14 (0.45 - 21.98) | 0.248 |
| **Prenatal counselling about breastfeeding** | | | | |
| No | 23 | 32 | 1.00 | |
| Yes | 172 | 161 | 1.49 (0.83 - 2.65) | 0.178 |
| **Source of counselling (*N* = 333)** | | | | |
| Trained personnel | 169 | 144 | 1.00 | |
| Untrained personnel | 3 | 17 | 0.15 (0.04 - 0.52) | **0.003*** |
| **Weight of Child/kg** | N | n | 0.99 (0.90 - 1.10) | 0.932 |
| **Underlying Medical Conditions of Mother** | | | | |
| None | 182 | 172 | 1.00 | |
| Asthma | 2 | 5 | 0.38 (0.07 - 1.97) | 0.249 |
| Low Blood Pressure | 2 | 1 | 1.89 (0.17 - 21.03) | 0.605 |
| High Blood Pressure | 7 | 8 | 0.83 (0.29 - 2.33) | 0.719 |
| Ulcer | 2 | 3 | 0.63 (0.10 - 3.82) | 0.615 |

***; significant association, COR= Crude Odds Ratio, CI= Confidence Interval**

### 4.5 Association between maternal characteristics and exclusive breastfeeding practice, Ga East Municipality, 2021

The odds of exclusive breastfeeding among mothers who were ill was decreased by 54% as compared to mothers who were not ill (COR = 0.46, 95% CI= 0.22 - 0.95, *p* = 0.036). However, there was a 2.57 increased odds of exclusive breastfeeding among mothers who had flat nipples as compared to mothers who did not have flat nipples (COR = 2.57, 95% CI= 1.19 - 5.53, *p* = 0.016) Also, there were 9.12 increased odds of EBF among mothers who had engorged breasts as compared to mothers who did not have engorged breasts (COR = 9.12, 95% CI= 2.07 - 40.04, *p* = 0.003) **(Table 9).**

All maternal characteristics that were specific to babies were not found to be significantly associated with EBF **(Table 10).**

**Table 9:Association of maternal factors, specific to mothers, with exclusive breastfeeding, Ga East Municipality, 2021**

| Variables | Exclusive Breastfeeding N = 195 | Non-Exclusive Breastfeeding N = 193 | COR (95% CI) | *p*-value |
|---|---|---|---|---|
| **Breast Milk Not Flowing** | | | | |
| No | 155 | 157 | 1.00 | |
| Yes | 40 | 36 | 1.13 (0.68 - 1.86) | 0.644 |
| **Low Milk Supply** | | | | |
| No | 174 | 181 | 1.00 | |
| Yes | 21 | 12 | 1.82 (0.87 - 3.81) | 0.112 |
| **Sore Nipple** | | | | |
| No | 150 | 136 | 1.00 | |
| Yes | 45 | 57 | 0.72 (0.45 - 1.13) | 0.149 |
| **Flat Nipple** | | | | |
| No | 171 | 183 | 1.00 | |
| Yes | 24 | 10 | 2.57 (1.19 - 5.53) | **0.016** |
| **Inverted Nipple** | | | | |
| No | 177 | 176 | 1.00 | |
| Yes | 18 | 17 | 1.05 (0.53 - 2.11) | 0.885 |
| **Breast Engorgement** | | | | |
| No | 178 | 191 | 1.00 | |
| Yes | 17 | 2 | 9.12 (2.07 - 40.04) | **0.003** |
| **Ill Mother** | | | | |
| No | 183 | 169 | 1.00 | |
| Yes | 12 | 24 | 0.46 (0.22 - 0.95) | **0.036** |
| **Tired Mother** | | | | |
| No | 120 | 115 | 1.00 | |
| Yes | 75 | 78 | 0.92 (0.61 - 1.38) | 0.694 |
| **End of Maternity Leave** | 164 | 172 | 1.00 | |
| No | 31 | 21 | 1.55 (0.85 - 2.80) | 0.149 |
| Yes | | | | |
| **Mother Is Busy Working** | | | | |
| No | 173 | 175 | 1.00 | |
| Yes | 22 | 18 | 1.24 (0.64 - 2.39) | 0.527 |

***: significant association, COR= Crude Odds Ratio, CI= Confidence Interval**

**Table 10: Association of maternal factors, specific to baby, with exclusive breastfeeding, Ga East Municipality, 2021**

| Variables | Exclusive Breastfeeding N = 195 | Non-Exclusive Breastfeeding N = 193 | COR (95% CI) | *p*-value |
|---|---|---|---|---|
| **Baby's Latching Difficulties** | | | | |
| No | 181 | 179 | 1.00 | |
| Yes | 14 | 14 | 0.99 (0.46 - 2.13) | 0.977 |
| **Baby Refusing to Be Fed** | | | | |
| No | 162 | 158 | 1.00 | |
| Yes | 33 | 35 | 0.92 (0.54 - 1.55) | 0.754 |
| **Restless Baby** | | | | |
| No | 171 | 156 | 1.00 | |
| Yes | 24 | 37 | 0.59 (0.34 - 1.03) | 0.065 |
| **Baby Is Ill** | | | | |
| No | 188 | 190 | 1.00 | |
| Yes | 7 | 3 | 2.26 (0.60 - 9.25) | 0.219 |
| **Sleepy Baby** | | | | |
| No | 157 | 153 | 1.00 | |
| Yes | 38 | 40 | 0.93 (0.56 - 1.52) | 0.761 |
| **Constipating Baby** | | | | |
| No | 159 | 165 | 1.00 | |
| Yes | 36 | 28 | 1.33 (0.77 - 2.29) | 0.295 |

***: significant association, COR= Crude Odds Ratio, CI= Confidence Interval**

### 4.6 Multivariate logistic analysis of factors associated with exclusive breastfeeding, Ga East Municipality, 2021

There was a 71% increased odds of EBF among mothers who received help as compared to those who do not receive help (AOR = 1.71, 95% CI = 1.04 - 2.82, p = 0.034). Also, there was a 66% decreased odds of EBF among mothers who had been ill as compared to those who had not been ill (AOR = 0.34, 95% CI = 0.14 - 0.84, p = 0.019). The odds of exclusive breastfeeding was 80% decreased among mothers who received prenatal counselling from untrained personnel as compared to mothers who received counselling from trained personnel (AOR =

0.20, 95% CI = 0.06 - 0.73, p = 0.015). There were 11.08 times increased odds of EBF among nursing mothers who had engorged breasts as compared to those who did not have engorged breasts (AOR =11.08, 95% CI = 1.42 - 86.68, p = 0.022). Other factors that were included in the multivariate model were not found to be associated with exclusive breastfeeding among the mothers **(Table 8).**

**Table 11:Association of factors with exclusive breastfeeding- Multivariate Logistic Regression**

| Variable | Exclusive Breastfeeding N = 195 | Non-Exclusive Breastfeeding N = 193 | Crude Odds Ratio | | Adjusted Odds Ratio | |
|---|---|---|---|---|---|---|
| | | | COR (95% CI) | *p*-value | AOR (95% CI) | *p*-value |
| **Age At Birth/ years** | N | N | 1.06 (1.02 - 1.10) | 0.003 | 1.03 (0.98 - 1.08) | 0.182 |
| **Marital Status** | | | | | | |
| Never married | 33 | 32 | 1.00 | | 1.00 | |
| Cohabiting | 20 | 42 | 0.46 (0.22 - 0.95) | 0.036 | 0.59 (0.23 - 1.48) | 0.258 |
| Married | 142 | 118 | 1.17 (0.68 - 2.01) | 0.578 | 0.95 (0.44 - 2.05) | 0.901 |
| **Help with household chores** | | | | | | |
| No | 58 | 96 | 1.00 | | 1.00 | |
| Yes | 137 | 97 | 2.34 (1.54 - 3.55) | <0.001 | 1.71 (1.04 - 2.82) | **0.034*** |
| **Employment Status** | | | | | | |
| Unemployed | 36 | 54 | 1.00 | | 1.00 | |
| Employed | 159 | 139 | 1.72 (1.06 - 2.77) | 0.027 | 1.06 (0.56 - 1.97) | 0.860 |
| **Gestation Type** | | | | | | |
| Singleton | 13 | 3 | 1.00 | | 1.00 | |
| Twin | 182 | 190 | 0.22 (0.06 - 0.79) | 0.020 | 3.94 (0.90 - 17.30) | 0.069 |
| **Source of counselling** | | | | | | |
| Trained personnel | 169 | 144 | 1.00 | | 1.00 | |
| Untrained personnel | 3 | 17 | 0.15 (0.04 - 0.52) | 0.003 | 0.20 (0.06 - 0.73) | **0.015*** |
| **Flat Nipple** | | | | | | |
| No | 171 | 183 | 1.00 | | 1.00 | |
| Yes | 24 | 10 | 2.57 (1.19 - 5.53) | 0.016 | 1.73 (0.73 - 4.08) | 0.212 |
| **Breast Engorgement** | | | | | | |
| No | 178 | 191 | 1.00 | | 1.00 | |
| Yes | 17 | 2 | 9.12 (2.07 - 40.04) | 0.003 | 11.08 (1.42 - 86.68) | **0.022*** |
| **Ill Mother** | | | | | | |
| No | 183 | 169 | 1.00 | | | |
| Yes | 12 | 24 | 0.46 (0.22 - 0.95) | 0.036 | 0.34 (0.14 - 0.84) | **0.019*** |

***; significant independent association, COR= Crude Odds Ratio, AOR= Adjusted Odds Ratio, CI= Confidence Interval**

# CHAPTER FIVE

## 5.0 DISCUSSION

Only about half (50.26%) of the respondent nursing mothers were found to exclusively breastfeed in the municipality, much lower than the UNICEF global goals of 70% exclusive breastfeeding among nursing mothers (UNICEF, 2021; WHO, 2019). Although this proportion is higher than the proportion of nursing mothers who exclusively breastfeed in Nigeria, it is lower than the proportions found in Sierra Leone, an African country described to be nearing standard EBF targets (Bhattacharjee *et al*., 2019; Brits, 2021). Additionally, the reported proportion of EBF in the municipality is similar to the proportions found in country subdivisions of Togo, Benin and Burkina Faso (Bhattacharjee *et al*., 2019; Brits, 2021). Furthermore, the determined proportion is relatively higher than the most recently determined nation's overall score for exclusive breastfeeding conducted in 2018 (UNICEF, 2021).

The current study showed that age, marital status, help with household chores, employment status, gestation type, source of counselling, the flatness of nipple, illness among mothers and breast engorgement were significantly associated with exclusive breastfeeding at the univariate level. However, after these variables were included in the multivariate model, only help with household chores, source of prenatal counselling, illness among mothers and breast engorgement were found to be significantly associated with exclusive breastfeeding.

In this study, more mothers who receive help with household chores breastfeed exclusively compared to those who do not, both in the univariate and multivariate regression models. This finding is in line with those of studies conducted in Northern Ghana and parts of Tanzania (Tampah-Naah, 2019; Matare *et al*., 2019). In the Ghanaian setting, many cultural settings envision the mother as the one responsible for household chores (Owoo *et al.*, 2020). The demands of household chores, since they are high and tedious, can interfere with EBF, as it could lead to reduced personal time for babies and tiredness among nursing mothers (Tampah-

Naah, 2019). However, the shared responsibility of household chores with partners or other family members decreases the burden and increases the odds of exclusive breastfeeding among nursing mothers.

The odds of exclusive breastfeeding are significantly reduced by prenatal counselling received from untrained personnel. This is consistent with other studies where counsellor training enables them to give appropriate advice on exclusive breastfeeding and proper maternal standards in general, as opposed to counsel from untrained personnel that is more biased by personal choices or past experiences (Seidu, 2020; Negin *et al.*, 2016; Ekström & Nissen, 2006).

Illness among mothers was found to significantly reduce the odds of EBF among nursing months. This is probably because the illnesses and their severity can increase during the first six months postpartum, making the mother physically unable to breastfeed and hence require the use of substitutes for feeding babies, as other studies have shown (Chang *et al.*, 2019). Again, should the illness require medication for the mother that does not allow breastfeeding such as radioactive iodine, sedating psychotherapeutic drugs, or cytotoxic therapy, breastfeeding is interfered with (WHO, 2009).

This present study found that breast engorgement increased the odds of EBF among nursing mothers, probably because it is known that engorged breasts are primarily caused by breasts filled with milk, and therefore women want to breastfeed to reduce the pain they feel from engorgement (WHO, 2009; Mangesi *et al.*, 2016). However, some studies have shown that breast engorgement reduces interest and practice of EBF among nursing mothers, which could be due to women being unable to stand the amount of pain they get when babies feed because their breasts are engorged (Diji *et al.*, 2016; Motee & Jeewon, 2014).

Though this study focused on mothers of children younger than 12 months because the outcome was exclusive breastfeeding, a possible limitation of this study is that recall bias could have

still been introduced into the study. To control the possibility of recall bias, the women were asked about significant occurrences in the infant's life that have transpired since birth as a method of facilitating their recall ability. Also, the pretesting of the survey tool aided the investigators to explain the questionnaire in a way that provided adequate understanding to the respondent. Despite this limitation, the study provided information that is useful in leading the municipality and the country as a whole on paths of increasing rates of exclusive breastfeeding.

# CHAPTER SIX

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Conclusions

About half (50.26%) of the women in the Ga East Municipality practised exclusive breastfeeding. As much as this is higher than the current national prevalence of exclusive breastfeeding, it is lower than the WHO targets implying a possibility of malnutrition among babies below 6 months of age in the municipality. Having help with household chores was the only sociodemographic characteristic found to be positively associated with EBF among the nursing mothers, serving as evidence that, domestic support to nursing mothers is a key step in improving rates of EBF. Illness among mothers decreased odds of exclusive breastfeeding, providing a basis for extra care to be given to nursing mothers who are ill and intensifying education on expressing breastmilk for days mother cannot breastfeed. Prenatal counselling from untrained personnel decreased exclusive breastfeeding, implying that the source of counselling is as important as receiving the counsel. Though breast engorgement was the only maternal characteristic found to be associated with exclusive breastfeeding among nursing mothers in the Municipality, it is a biological occurrence that inflicts pain on mothers and hence, steps should not be taken to increase it.

### 6.2 Recommendations

Based on the findings of the study, it is recommended to

.1. Policy Makers;

- Ministry of Health to increase countrywide strategies for exclusive breastfeeding promotion, protection, and support to meet the breastfeeding targets in national plans, whiles providing responsibilities and rewards for lower governance levels to ensure sustainability of these policies.

2. The Municipal Health Directorate;

- Should promote and encourage exclusive breastfeeding among its members through local durbars and media sharing platforms
- Should regularly educate municipal members through public awareness creation about the importance of mothers attending prenatal counselling sessions
- Should intensify training of health workers about providing extra support to nursing mothers who are ill.

3. Families

- Fathers, and other extended families where present, should offer more domestic support to nursing mothers
- Elderly women in families should encourage mothers to keep to counsel they receive from trained health workers by not insisting on traditional or family norms.

3. Nursing Mothers;

- Increase reporting of breastfeeding challenges at maternal health clinics
- Encourage other women on the benefits of exclusive breastfeeding

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## 8.0 APPENDIX

**Appendix I: Data Abstraction Tool**

**STUDY TOOL (QUESTIONNAIRE)**

SECTION 1: DEMOGRAPHIC CHARACTERISTICS

Kindly tick the appropriate option/fill in the blank space with your response.

1a. Age: …… Age group: a) 18 – 24 [ ] b) 25 – 34 [ ] c) 35 – 44 [ ] d) 45 and above [ ]

1b. Age of mother at birth: ……..

2a) Marital Status: a) single [ ] b) married [ ] c) divorced [ ] d) separated [ ] e) widowed [ ]

2b) If married, what level of education is your husband?

a) primary [ ] b) JHS [ ] c) SHS [ ] d) tertiary [ ] e) other [ ] specify…….

2c) Employment status of husband: [ ] unemployed [ ] self-employed [ ] employed

4. Religion: a) Christian [ ] b) Muslim [ ] c) Traditional [ ] d) Other [ ] specify……

5. Highest level of education: a) primary [ ] b) JHS [ ] c) SHS [ ] d) tertiary [ ] e) other [ ] specify…….

6. Nationality: a) Ghanaian [ ] b) Other African [ ] c) Other [ ] Specify……..

7. Employment status: [ ] unemployed [ ] self-employed [ ] employed

8. Occupation/Profession: ……

a) [ ] Managers b) [ ] Professionals c) [ ] Technicians and associate professionals

d) [ ] Clerical support workers e) Services and sales workers f) [ ] Skilled agricultural, forestry and fishery workers g) [ ] Craft and related trade workersh) [ ] Plant and machine operators, and assemblers i) [ ] Elementary occupations j) [ ] Armed forces occupations

9. Living conditions

a) Where do you live?.....

[ ] Rural [ ] Sub-urban [ ] Urban

b) How many people live in your house? ……

c) Do you get help with household chores and/or taking care of the baby? [ ] yes [ ] no

d) Who do you live with? (Tick all that apply)

[ ] Parent (s) [ ] Spouse [ ] Siblings/other family members [ ] House help/Maid [ ] Friends [ ] Alone

10. Monthly income/earnings (GHS)

[ ] less than 500 [ ] 500 – 900 [ ] 1000 – 1999 [ ] 2000 – 3999 [ ] 4000 +

11. How do you fund daily living expenses? (Tick all that apply)

[ ] Self [ ] Spouse (Husband) [ ] Family (Parents, siblings, etc) [ ] Friends

CLINICAL DATA

4. Any underlying medical condition (mother)? If yes, please specify

……

6. Weight of baby (kg): ……

7. Type of gestation: [ ] Singleton [ ] Twin [ ] Triplet and beyond

8. Sex of baby: [ ] Male [ ] Female

9. Age of baby (in weeks): ……

10. Any underlying medical condition (baby):

……

11. Where did you deliver your baby?.....

12. Mode of delivery: [ ] Caesarean session (CS) [ ] Normal delivery (SVD)

13. Was this your: [ ] First birth? [ ] Second birth? [ ] Third birth and beyond?

14. Counselling before birth: [ ] yes [ ] no [ ] cannot remember/not sure

15. If your answer in (13) above was yes, who did you receive the counselling from?

(Specify) ……..

[ ] formally trained personnel [ ] informally trained [ ] untrained

ATTITUDES TOWARDS BREASTFEEDING

1. Are you breastfeeding exclusively?

[ ] yes [ ] no [ ] maybe

2. For how long do you intend to breastfeed your baby generally?

……

……

**SECTION 2: ASSESSMENT OF CHALLENGES**

Please tick Yes or No for where it applies.

| PERIOD OF BREASTFEEDING | ITEM | CHOICE | | |
|---|---|---|---|---|
| 0 to 1 month of breastfeeding | Sore nipple | Yes | No | Not sure |
| | Ill mother | Yes | No | Not sure |
| | Breast milk not flowing | Yes | No | Not sure |
| | Fatigued mother | Yes | No | Not sure |
| | Improper breastfeeding position | Yes | No | Not sure |
| | Restless baby | Yes | No | Not sure |
| | Baby refusing to be fed | Yes | No | Not sure |
| | Nipple infection | Yes | No | Not sure |
| | Baby is ill | Yes | No | Not sure |
| | Sleepy baby | Yes | No | Not sure |
| | Flat nipple | Yes | No | Not sure |
| | Inverted nipple | Yes | No | Not sure |
| | Baby's latching difficulties | Yes | No | Not sure |
| | Breast engorgement | Yes | No | Not sure |
| 1 month, 1 day to 3 months of breastfeeding | Low milk supply | Yes | No | Not sure |
| | Sore nipple | Yes | No | Not sure |
| | Tired mother | Yes | No | Not sure |
| | Breast engorgement | Yes | No | Not sure |
| | Improper breastfeeding position | | | |
| | Flat nipple | Yes | No | Not sure |
| | Inverted nipple | Yes | No | Not sure |
| | Baby refusing to be fed | Yes | No | Not sure |
| | Nipple infection | Yes | No | Not sure |

| | | | | |
|---|---|---|---|---|
| | Baby is ill | Yes | No | Not sure |
| | Infant insufficient weight gain | Yes | No | Not sure |
| | Constipation | Yes | No | Not sure |
| | End of maternity leave | Yes | No | Not sure |
| | Mother is busy working | Yes | No | Not sure |
| | Mother is ill | Yes | No | Not sure |
| 3 months, 1 day to 6 months of breastfeeding | Low milk supply | Yes | No | Not sure |
| | Sore nipple | Yes | No | Not sure |
| | Tired mother | Yes | No | Not sure |
| | Breast engorgement | Yes | No | Not sure |
| | Improper breastfeeding position | | | |
| | Flat nipple | Yes | No | Not sure |
| | Inverted nipple | Yes | No | Not sure |
| | Baby refusing to be fed | Yes | No | Not sure |
| | Nipple infection | Yes | No | Not sure |
| | Baby is ill | Yes | No | Not sure |
| | Infant insufficient weight gain | Yes | No | Not sure |
| | Constipation | Yes | No | Not sure |
| | Mother is busy working | Yes | No | Not sure |
| | Mother is ill | | | |

**Do you have any comments about the assessment?**

_____

_____

## Appendix II: Ethical Clearance

**GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE**

*In case of reply the number and date of this Letter should be quoted.*

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address: GA-050-3303
Mob: +233-50-3539896
Tel: +233-302-681109
Fax + 233-302-685424
Email: ethics.research@ghsmail.org

*My Ref. GHS/RDD/ERC/Admin/App* 121/184
*Your Ref. No.*

3rd June, 2021

Georgia Naa Korkoi Ghartey
School of Public Health, University of Ghana.
P.O. Box AH 1372, Achimota- Accra.

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

| | |
|---|---|
| GHS-ERC Number | **GHS-ERC 068/04/21** |
| Study Title | Breastfeeding Challenges and Associated Factors Among Nursing Mothers in the Ga East Municipality, 2021. |
| Approval Date | 3rd June, 2021 |
| Expiry Date | 2nd June, 2022 |
| GHS-ERC Decision | **Approved** |

**This approval requires the following from the Principal Investigator**

- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

**You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19**

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol.

SIGNED… .....
Dr. James Akazili
(Head, Ethics & Research Management Department)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

**Appendix III: Permission Letter**

In case of reply the number and the date of this letter should be quoted.

**Our Core Values**

- *People-Centered service*
- *Professionalism*
- *Discipline*
- *Team work*
- *Integrity*
- *Innovation & Excellence*

My Ref. No.
GHS/GE/MHD/RAT/01/21

Your Ref. No.....

GHANA HEALTH SERVICE
Your Health · Our Concern

GA EAST MUN. HEALTH DIRECTORATE
P. O. BOX AK 1
ABOKOBI. - GREATER ACCRA

TEL: +233 (0) 548190018

**E-mail: gaeastmhd@yahoo.com**

**Date: 28th June, 2021**

**ALL IN-CHARGES**

**RE: LETTER OF INTRODUCTION**

**NAME: MS. GHARTEY GEORGIA NAA KORKOI**

I forward to you a letter with reference number RHD/PHDP dated 22nd June, 2021 from the department of Epidemiology and Disease Control of the School of Public Health. College of Health and Sciences. University of Ghana, for your information and further action.

Kindly provide her with the necessary support to undertake her field work.

Thank you.

DR. SELORM A. KUTSOATI
(PUBLIC HEALTH SPECIALIST)
GA EAST MUNICIPAL DIRECTOR
OF HEALTH SERVICES
ABOKOBI - ACCRA

**DR. SELORM KUTSOATI**
**(PUBLIC HEALTH SPECIALIST)**
**MUNICIPAL DIRECTOR OF HEALTH SERVICES**

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INTEGRI PROCEDAMUS