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THE RELATIONSHIP BETWEEN BREASTFEEDING PRACTICE AND CHILDHOOD MORBIDITIES IN GHANA: ANALYSIS OF THE NATIONALLY-REPRESENTATIVE DATA.

BY

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DECLARATION

I, Amalga Seth Atubila, do hereby declare that this research study was written by me under the supervision of Rd. Prudence Tettey and co-supervision of Rd. Paul Botwe of the school of public health, University of Ghana. In places where references to other people's works have been made, full acknowledgments have been made. This dissertation has not been presented either in whole or partial to any other institution.

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DEDICATION

I dedicate this work to the Almighty God, my parents, and all my family members with love.

ACKNOWLEDGMENT

My foremost gratitude to God for His blessings and mercies upon my life throughout my study period and in conducting this dissertation.

Secondly, I wish to express my profound appreciation and gratitude to my loving and uncompromising supervisors, Rd. Prudence Tettey and Rd. Paul Botwe for their immense comments, suggestions, and dedication which aid in the successful completion of this study. God bless you for your support.

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I do recognize and appreciate the encouragement and support from all course mates during my study period. Your friendship helped in this academic endeavour to attain this foot

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ABBREVIATIONS

ANC	Antenatal Care
AOR	Adjusted Odds Ratio
ARI	Acute Respiratory Infection
CI	Confidence Interval
CM	Childhood Morbidity
DHS	Demographic Health Survey
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GSS	Ghana Statistical Service

MDG	Millennium Development Goals
MOH	Ministry of Health
OR	Odds Ratio
PHC	Population and Housing Census
SSA	Sub-Saharan Africa
SDG	Sustainable Development Goals
UN	United Nations
UNICEF	United Nations Children's Fund
WHO	World Health Organization

ABSTRACT

Background: Breastfeeding the child appropriately guarantees infant and children optimum growth. However, significant evidence on how breastfeeding practices might influence childhood morbidities is lacking in Ghana. To address this knowledge gap, this study was conducted to determine the relationship between breastfeeding practices and childhood morbidities in Ghana.

Methods: Using a cross-sectional design, the study utilized secondary data from the 2014 Ghana Demographic and Health Survey (GDHS). A simple proportion was used to estimate the prevalence of breastfeeding practices among respondents. The associations between childhood morbidities (fever, anaemia, diarrhoea, acute respiratory infection (ARI), and cough), and breastfeeding practices were analysed using a logistic regression model. A p-value of 0.05 was considered statistically significant at a 95% confidence interval.

Findings: The prevalence of exclusive, predominant, and complementary breastfeeding among children under six months of age were 52.3%, 21.7%, and 25.7% respectively. For children under 2 years, 14.4% were exclusively breastfed, 11.3 % were predominantly breastfed and 62.3% were complementarily breastfed. Compared to those who were not breastfed, breastfeeding in general (any breastfeeding) was significantly associated with reduced odds of fever [(Adjusted odds ratio (AOR): 0.60, confidence interval: (CI) 0.37 – 0.97), p=0.038]. Furthermore, exclusive breastfeeding was significantly associated with reduced odds of fever [(AOR: 0.24, CI: 0.12 – 0.46), p<0.001], diarrhoea [(AOR: 0.30, CI: 0.16 – 0.58), p=0.001] and cough (AOR: 0.50, CI: 0.30 – 0.84), p=0.009] compared to children non-exclusively breastfed (predominantly and complementarily breastfed). Also, the relationship between exclusive, predominant, complementary breastfeeding and childhood morbidities compared to those who were not breastfed showed that those who were exclusively and predominantly breastfed had 84% [(AOR: 0.16, CI: 0.07 – 0.36), p<0.001] and 55% [(AOR: 0.45, CI: 0.23 – 0.88), p=0.002] reduced odds of fever respectively. Similarly, exclusive breastfeeding was associated with 77% [(AOR: 0.23, CI: 0.11 – 0.50), p<0.001] and 64% [(AOR: 0.36, CI: 0.19 – 0.70), p=0.002] reduced odds of diarrhoea and cough respectively.

Conclusion: Evidence from the study suggests that breastfeeding practices may influence the frequency of childhood morbidities among children under 2 years old. This, therefore, calls for policies and enforcement of policies that will promote and enhance good breastfeeding practices.

CHAPTER ONE

INTRODUCTION

1.1 Background

Breastfeeding is known to be one of the most cost-effective health interventions aimed at improving maternal and child health (Bartick and Reinhold, 2010). Breastfeeding and complementary feeding help to fulfil the nutritional needs of an infant during the second half of the first year before a child can be weaned in the second year of life (WHO, 2011). A document on the indicators for the assessment of breastfeeding practices was first developed in 1991 to serve as indicators for the assessment of infant feeding especially in support of breastfeeding efforts within and across countries, (WHO, 1991).

The original recommendation for exclusive breastfeeding from 4 to 6 months before introducing complementary foods has been revised to include the recommendation for exclusive breastfeeding up to 6 months before introducing supplementary foods (WHO 2001). The foundation for improving the immune systems of infants and young children is the early initiation of exclusive breastfeeding for six months, prolonged breastfeeding for one year, and the introduction of solid, semi-solid, or soft foods, minimum dietary diversity, minimum meal frequency, minimum adequate diet, and iron or iron-fortified food intake (WHO, 2017).

Studies have suggested that adhering to best breastfeeding practices could reduce the frequencies of childhood morbidities, especially infectious diseases among infants (Lassi et al., 2020; Bisrat, Kenzudine & Bossena, 2017 Motee et al., 2013). Diseases such as acute respiratory infection (ARI) and diarrhoea, have become a public health issue among policymakers and development

practitioners, and account for the deaths of millions of children (under five years) worldwide every year (WHO, 2017). Diarrhoea, ARI, anaemia, and fever are among the leading causes of childhood morbidity and mortality worldwide (WHO, 2017).

Projections of diarrhoea have shown that it accounts for about 9.0 percent of the total deaths in children under the age of five (UNICEF, 2017). Sadly, about 80% of these casualties occur in developed countries (Reiner et al., 2020).

ARI accounts for the largest portion of infant mortality and morbidity worldwide, according to UNICEF (2017), where about 97.0 percent of ARI exists in developing countries (Whidden et al., 2019). Children under five years of age experience approximately five ARI episodes per child per year, which accounts for approximately 238 million attacks on children's health (Tampah-Naah, 2019). Furthermore, data also revealed that ARI and pneumonia among children have been linked with 30-40% of outpatient department attendance and 20-40% of hospital admissions in developing countries (Adjei, 2018).

In developing countries, children fighting cough is a common occurrence due to the exposure of mothers to smoke during cooking (Mauer, Moscona & Resnizky, 2019). In developed countries, this scenario is worse, as most households do not have access to clean cooking fuel (Mohamed, 2019). Moreover, in Africa, an estimated 68.0% of children under the age of five suffer from anaemia (WHO, 2017). The prevalence of anaemia among children below five years in Sub-Saharan Africa ranges from 42.0 percent to 91.0 percent across the sub-region (Williams et al., 2019). The high prevalence of anaemia is related to inadequate nutrition available to children and mothers, which ultimately leads to iron deficiency and, subsequently, insufficient development of red blood cells among children (Mantadakis, Chatzimichael & Zikidou, 2020).

Fever is also prevalent in Sub-Saharan Africa countries among children under five years old (WHO, 2017). However, it is generally a symptom of infectious diseases such as malaria, dengue, pneumonia, diarrhoea, and typhoid, the precise statistics on the incidence of fever are difficult to establish in Sub-Saharan Africa (Teferi et al., 2019). Considering the high prevalence of childhood morbidities, best breastfeeding practices are known to be a natural way to minimize childhood morbidities (Lassi et al., 2020). This is because breast milk contains antibodies and nutrients that are necessary to protect infants and young children from diseases and to ensure their cognitive growth (Ramiro-Cortijo et al., 2020). Moreover, breast milk prevents gastrointestinal and respiratory infections over the lifetime of a child (Wiciński et al., 2020). Around 40 % of children suffering from respiratory infections are estimated to be avoided by proper breastfeeding practices (Mehlawat, Puri & Rekhi, 2020).

An evaluation of Ghana's survey results shows that the prevalence of diarrhoea was 19.8 percent in 2008 and decreased to 12 percent in 2014. Similarly, the prevalence of ARI in 2008 was 5.5 percent and decreased in 2014 to 3.6 percent. Also, the prevalence of anaemia was 77.9 percent in 2003 and decreased to 65.7 percent in 2014. The incidence of fever was 20% in 2008 and decreased to 14% in 2014 (Ghana Statistical Service, Macro Fund of the Ministry of Health & Inner City-GSS, GHS & ICF International, 2015). Considering the importance of breastfeeding practices on reducing childhood morbidities worldwide, this study, therefore, seeks to examine the relationship between breastfeeding practices and childhood morbidities in Ghana using the 2014 Ghana Demographic and Health Survey (GDHS) data.

1.2 Problem statement

Children's health is a big public health issue and reducing childhood morbidities is of great concern to policymakers in Ghana (Ewusie et al., 2014). As a result, the aim of the Millennium Development Goal (MDG) 4 was to decrease by two-thirds the childhood mortality rate for children under five. However, most nations, including Ghana were not able to achieve this goal. To minimize under-5 mortality to at least as low as 25 per 1000 live births, the Sustainable Development Goal (SDG) 3 (target 2) was repackaged (United Nations-UN, 2016). In achieving this goal, best breastfeeding practices including exclusive breastfeeding have been recommended to plays an important role in promoting children's growth and development globally. According to Rempel, Rempel, and Moore (2017), childhood morbidities such as diarrhoea, ARI, anaemia, and fever can be prevented, if mothers and caregivers adhere to best breastfeeding practices for young children and infants. Moreover, a study by Kuchenbecker et al. (2015); Bowatte et al. (2015), revealed a negative correlation between exclusive breastfeeding and childhood morbidities such as fever and ARI. Similarly, studies by Adedokun (2020); Ross et al. (2011) revealed a negative relation between exclusive breastfeeding and infants and young children's exposure to diarrhoea and fever. However, other studies by scholars like Chipojola et al. (2020); Bayissa et al. (2015), showed a positive relationship between childhood morbidities and breastfeeding practices. Specifically, Frank et al. (2019), revealed a positive correlation between exclusive breastfeeding and infants and young children's exposure to diarrhoea and fever. While, Nambuusi et al. (2020), also revealed a positive relationship between breastfeeding and young children's exposure to diarrhoea, ARI, and fever.

These inconsistencies between breastfeeding practices and childhood morbidities call for further investigations to provide robust evidence on how breastfeeding practices might influence

childhood morbidities. This study is also important because the evidence on how exclusive breastfeeding might influence childhood morbidities and the magnitude of the influence is lacking in Ghana. Hence, this study sought to assess the relationship between breastfeeding practices and childhood morbidities in Ghana.

1.3 Research Objective

1.3.1 General Research objective

The general objective of this study was to investigate the relationship between breastfeeding practices and childhood morbidities in Ghana.

Specifically, the study:

1. To determine the prevalence of exclusive, predominant, and complementary breastfeeding.
2. To investigate the associations between any breastfeeding and childhood morbidities compared to children who were not breastfed.
3. To assess the relationship between exclusive breastfeeding on childhood morbidities compared to children who were breastfed non-exclusively (predominantly or complementarily).
4. To establish the relationship between exclusive, predominant, complementary breastfeeding and childhood morbidities compared to children who were not breastfed.

1.5 Justification of the study

In discourses on public health and development, child health continues to attract tremendous attention. In the previous MDG and now in the new SDG, child wellbeing was prominently featured in the discussion. As demonstrated by the number of research papers in recent years and action plans by WHO and UNICEF, the issue of breastfeeding practices and their effect on children's health outcomes has also gained a lot of attention. Data on breastfeeding practice and how it might influence childhood morbidities has been lacking in this part of the world and there is an inconsistency of data on the relationship between exclusive breastfeeding and comorbidities. It is, therefore, important to investigate the role of breastfeeding practice on childhood morbidities, which is posing a significant threat to public health due to child mortality. Inadequate nutrition for these children whether by breastfeeding or natural foods for their development causes low immune system leading to infections and diseases such as diarrhoea, anaemia, fever, cough, and acute respiratory infection, brain development is also challenged leading to mental retardation and lack of concentration in schools that lead to drop-outs. This situation then robs the community, country, and the world of its most valuable resource, the human professionals these children could have been for their development and also inflict cost implications to the country for the treatment of these diseases and health problems that is manifested in this children. Hence, finding from this study will be beneficial to governmental and non-governmental organizations that are interested in child health and nutrition to find robust evidence that will help to formulate, enforce and promote appropriate breastfeeding practices to mitigate these childhood morbidities. The findings of this study will enable policymakers to target at-risk populations when dealing with childhood morbidities issues. This will enable policymakers to use their limited resources prudently to achieve their goals in the beneficiary communities in Ghana. Information from this study will

support existing literature on the influence of breastfeeding practices and childhood morbidities in Ghana.

1.6 Conceptual framework

In the conceptual framework, this study conceptualized that breastfeeding practices have a direct influence on childhood morbidity of children under 2 years. The types of childhood morbidities affecting children under 2 years to be investigated are fever, ARI, anaemia, cough, and diarrhoea. The adoption of appropriate breastfeeding practices is based on environmental factors, health factors, economic factors, and social factors. In this study, the types of breastfeeding practices studied were exclusive breastfeeding, complementary breastfeeding, and predominant breastfeeding, and mothers who do not practice breastfeeding. Exclusive breastfeeding is the preferred breastfeeding practice for children below six months, which provides for the right proportion of nutrients and adequate amount to nourish the child and provide immunity against childhood morbidities (fever, cough, diarrhoea, ARIs, and anaemia). Concerning the choice of breastfeeding practice, which may be influenced by socio-demographic, economic, and environmental factors, mothers may choose any one of these breastfeeding practices, which may lead to a low prevalence of childhood morbidities in their children. On the contrary, mothers who do not practice breastfeeding for their children would expose their children to a high prevalence of these childhood morbidities. Additionally, a mother's compliance with the right breastfeeding practices can also lead to an improvement in the child's immune system that would ultimately prevent or limit the prevalence of fever, ARI, Anaemia, Cough, and Diarrhoea among children under 2 years.

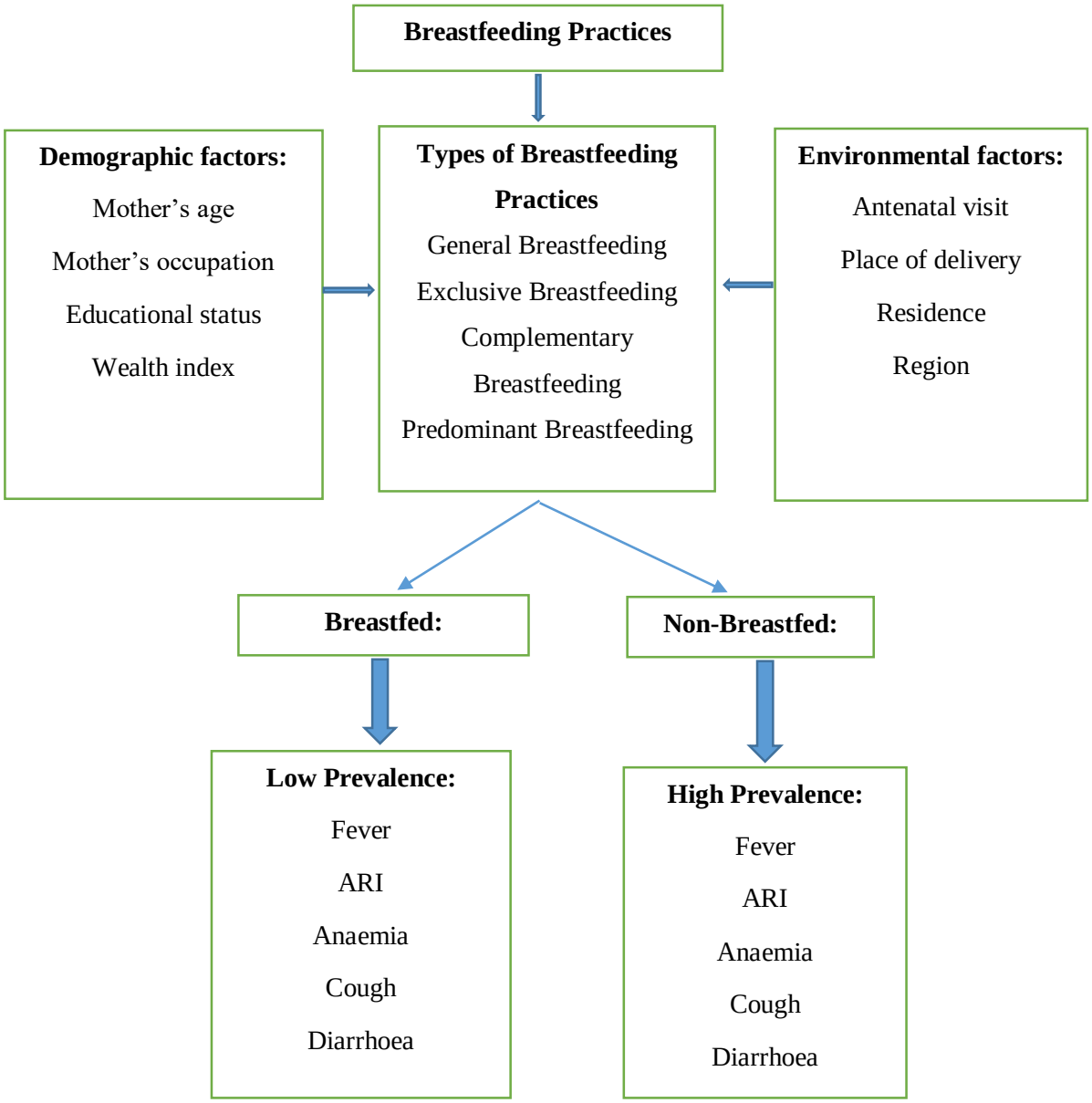

Figure 1.0: Conceptual Framework showing the relationship between exclusive breastfeeding on childhood morbidity

Source: Author's construct, (2020)

1.7 Organization of study

This study is grouped into six (6) chapters. Chapter one presents the study background of the effect of breastfeeding practice on childhood morbidities, problem statement and study objectives and questions, conceptual framework, and justification for the study.

For chapter two, a detailed and critical review of important literature on breastfeeding practice and relationships to various childhood morbidities on the study concepts. Such a literature review will serve as a guide to the study and subsequently informs the research methodology and the findings of the study.

Chapter three of the study indicates the methodological approach to the study. It captures and explains the chosen research design, study location, study variables, sample size and sampling techniques, data collection tools and analysis, issues of ethics among others. In chapter four, data gathered from field inquiries are analysed, with chapter five discussing and situating the findings of the study within the wider literature in the field of study. Chapter six of the study recaps major findings, conclusions, and recommendations based on the study's findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a literature review intended to provide a deeper understanding of the context of the effects on childhood morbidity of breastfeeding practice. The chapter starts with various conceptual understandings of breastfeeding policies, conceptual understanding of breastfeeding general, and the relationship between breastfeeding practices and childhood morbidities. The chapter follows in that order of sub-sections

2.2 Breastfeeding in general

Breast milk contains calcium, vitamin A, and iron and is an essential nutrient source long after the baby begins to consume other foods (UNICEF et al., 2010). The risk of serious illness will diminish as long as the baby is breastfed (UNICEF et al., 2010). A variety of other foods will be required to provide enough nutrients and energy when the child is 6 months old. If food is introduced too late, development and growth can slow (UNICEF et al., 2010). For optimum dietary status from 6 months of age to the first two years of a child's presence, food along with breastfeeding is therefore essential. Insufficient dietary factors at this stage of time can affect children's physical and mental health for the rest of their lives (UNICEF et al., 2010). Breastfeeding children are usually healthier, developing, and growing faster than babies who are fed formulae (UNICEF et al., 2010). Thus, growth in the number of breastfeeding children by up to two years or more could achieve health and development benefits for millions of children in the world (UNICEF et al., 2010).

2.3 International Breastfeeding and Child Feeding Policies

The WHO and UNICEF have developed strategies for breastfeeding and infant feeding to improve the health and well-being of children around the world. One of these main initiatives is the

universal code of marketing for breast milk substitutes, the hospital initiative for babies, and the global policy for infant feeding. In 1981, the World Health Assembly adopted the International Code on Marketing of Breast Milk Substitutes as a universal Health Policy Mechanism for the Member States to encourage breastfeeding (WHO, 2003). As a public health policy, legal protection was to be given to the Code in the countries that adopted it to impose limits on the selling of breast milk alternatives that could be similar to breastfeeding. Breast milk substitutes consist of: infant formula; vegetable mixtures; infant cereal; baby teas and juices; follow-up milk; and other milk products. Also, it contains outlined ethical guidelines and regulations for the marketing of feeding bottles and teats (UNICEF, 2005).

This strategy was intended to better promote the overall maternal and child health services that are core elements of primary health care in all aspects of society (National Institute for Health and Care Excellence-NICE, 2017). After the adoption of the Code, 84 countries have adopted legislation to ensure that parties comply with the resolutions it includes. Approximately 14 countries have drafted legislation to ensure the smooth application of the Code (International Baby Food Action Network-IBFAN, 2017). In addition to these nations which have developed tremendous strategies to ensure that families, health facilities, and related companies comply with the Code are Iran, India, and Papua New Guinea (UNICEF, 2005). Besides, hospitals and maternity units provide a greater climate for new mothers to understand and adopt safer and more efficient breastfeeding practices. The Baby-Friendly Hospital Initiative (BFHI) is one such initiative. The BFHI, which was initiated in 1991, has been an initiative by UNICEF and the WHO to ensure that all maternity units, whether free-standing or in-patient, became breastfeeding centres. A baby-friendly maternity facility can be regarded when it provides free or low-cost breast milk replacements, bottles, and treats, and has taken ten practical steps to support successful

breastfeeding (WHO 2009). (WHO 2009) UNICEF / WHO (1991) previously recommended that all prenatal services and treatment facilities for newborns should: (1) have a recorded and frequently communicated maternal care policy for all health workers; (2) train all health workers with the skills to implement this policy. Additional measures in BFHI include teaching mothers to breastfeed and to support lactation even if it is separate from their children; supplying newborns with no food or drink except breast milk; rooming, that is, allowing mothers and children to live 24 hours a day; promoting on-demand breastfeeding; not providing artificial breastfeeding. GSIYF, which was approved in 2002, sets standards for global action to promote effective breastfeeding, complementary feeding, and associated maternal nutrition and health. Specifically, the plan includes the following: six months of exclusive breastfeeding; two or more years of continuous breastfeeding; timely, safe, and effective complementary food and feeding starting after six months; and related support for maternal health, safety, and birth spacing (WHO / UNICEF, 2003). Moreover, as indicated by WHO and UNICEF (2003), the GSIYF's aim was to: recognize key issues related to the nutrition of children, identify approaches to their solution and provide the basis for critical interventions; enhance governments, international organizations, and other stakeholders' commitment to best feeding practices for children and young children.

2.4 National Child Health Policy

The National Child Health Policy (2007-2015) established by the Ghana Ministry of Health aimed to provide a framework for the planning and implementation of a continuum of programs to promote their protection, growth, and development in the areas of newborns, infants, and children under the age of five. This strategy was developed based on a previous working document in 1999 and complements the Health Sector Program (2007-2011) (GHS, 2016). A variety of preventive and treatment measures have been identified at the stage of infants and children (aged 1-59 months)

on the spectrum of health. Continued breastfeeding for up to two years and longer, supplementary feeding for up to six months, access to clean water, sanitation and promotion of hygiene, malaria prevention, RTOs and zinc for diarrhoea, and pneumonia antibiotics; and malnutrition management (GHS, 2016) are all included but are not restricted to breastfeeding for up to six months. The implementation of relevant international policies on the welfare of infants and children has helped the country to achieve substantial improvements in maternal and child health issues. For example, in the country's qualifying health facilities, the Baby-Friendly Hospital Program has effectively encouraged the introduction of breastfeeding and strengthened exclusive breastfeeding for infants and neonates for less than six months. The following parts discuss the understanding of breastfeeding and then the etiological characteristics of childhood morbidity and relate them to breastfeeding practices.

2.5 Exclusive Breastfeeding

Exclusive breastfeeding for six months is the best way to ensure optimal growth, health, and development for children (UNICEF et al., 2010; WHO, 2011). Studies show that only breastfeeding infections (Kramer et al, 2012; WHO, 2010) have decreased and only infection-protected breastfeeding for a span of seven months (UNICEF et al., 2010; WHO, 2012) is protected from infectious illnesses such as diarrhoeal or mortality (Bhutta et al., 2013; WHO, 2001, 2012). Breast milk antikörpers improve the childhood immune system (UNICEF et al., 2010; WHO, 2012). UNICEF et al. (2010) say that the deaths of at least 1.2 million children would be avoided if the majority of babies were breasted only six months. The WHO estimates that proper nutrition will save about 1.5 million lives a year for children less than 5 years of age (WHO, 2012). Milk other than breast milk can endanger a child's health, such as animal and formula milk (UNICEF et al., 2010). Breast milk is easier to digest and feed the child more efficiently, according to UNICEF

et al. 2010. 2010. (2010). The infant cannot be covered by any other fluid as well as by breast milk (UNICEF et al., 2010). In addition to the fact that they do not include antibodies, a negative aspect of breast milk substitution is that it also increases the risk of infectious diseases for the infant because they may have water that is spotted or the bottles / takes not clean (UNICEF et al., 2010; WHO, 2012). Studies have also shown that children who are replacing breast milk are more likely to develop obesity in children or certain chronic diseases afterlife (UNICEF et al., 2010; WHO, 2012). The mothers also benefit from exclusive breastfeeding (Kramer and Kakuma, 2012; WHO, 2012). It will allow you to gain weight more easily and stay with amenorrhea for 6 months before pregnancy (Kramer & Kakuma, 2012; WHA, 2012). Breastfeeding also decreases the maternal risk of breast and ovarian cancer. It improves and renders families and national wages environmentally sustainable (WHO, 2013).

2.6 Complementary

Around the age of 6 months, the need for energy and nutrients for a child begins to outweigh what breast milk offers, and supplementary foods are required to fulfil those needs. Complementary feeding is when a 6-month-old child is ready for other foods developmentally (English et al., 2019).

Breastfeeding alone does not fulfil the nutritional needs at any stage in the life of an infant. No earlier than the beginning of the fifth month and no later than the beginning of the seventh (Al-Samarrai, Yaseen & Jadoo, 2020), complementary feeding should be started. Most children will propel boluses of semi-solid food with their tongues from the age of 4 to 5 months on. They begin to demonstrate an interest in or rejection of food from the age of 5 to 6 months. It is important that the food provided to the child is healthy, nutritious, and has a texture that does not cause breathing problems or other potentially hazardous situations. In health counselling for mothers who

introduce complementary foods to babies, proper awareness of healthy and balanced foods is of great importance (Athavale et al., 2020).

Ensuring that the nutritional needs of infants are met demands that complementary foods be given:

A) Timely, meaning that when the demand for energy and nutrients exceeds what can be given by exclusive breastfeeding, they are added;

B) Adequate, meaning that they provide enough energy, protein, and micronutrients to meet the nutritional needs of a growing child;

C) Healthy, meaning they are hygienically preserved and prepared and fed with clean hands using clean utensils, not bottles and teats.;

D) Properly fed, which ensures that they are given in compliance with a child's signs of appetite and satiety, and that meal frequency and feeding are ideal for aging.

2.7 Predominant Breastfeeding

Predominant breastfeeding: In addition to breast milk, the child can receive water-based beverages, including plain water, tea, and soft drinks; no food-based fluid or milk has been approved within the previous 24 hours (Chikkala, 2019).

2.8 Prevalence of exclusive breastfeeding

Exclusive breastfeeding is characterized by WHO as the situation in which 'the kid receives only breast-milk from his or her mother or a wet nurse or expressed breast-milk, and no other liquids or solids, except for drops or syrups made from vitamins, mineral supplements or medicines for the first six months. While the most appropriate age for solids is still debated, the World Health Organization (WHO) and governments around the world are promoting exclusive breastfeeding (EBF). WHO proposed introducing solid food 4-6 months before 2001 and modifying the

recommendation from 2001 to date to 6 months (WH O, 2001; Kramer & Kakuma 2002). Compared to all other newborn and infant milk foods, it is clear that breast milk is the most ideal, most healthy, and most full food that a mother can provide for a newborn. It has also become increasingly clear. Regrettably, EBF declines continue in many developed nations despite the huge benefits of breast milk. An analysis of the trends and determinants of breast food in urban informal settlements in Nairobi carried out by Elizabeth et al. (2011) in Kenya, found that exclusive breasts in the first six months were rare, as only approximately 2% of infants had breasts for six months alone. A study by Nigatu, Azage, and Motbainor (2019) of Ethiopia's demographic and health surveys found that 55 percent of children under six months old had exclusively breastfed and adverse nutritional results. In 2008 demographic and health surveys reported that while 84% of infants under two months of age had only breastfeeding, only 49% had breastfeeding at 4-5 years (GSS, 2008). In the cross-sectional research conducted by Santos, Santos, Santos, Leite, and Mello in Brazil (2016), the prevalence of exclusive breastfeeding among children under six months of age was 32 percent for children involved in family health strategies. The average prevalence of EBF in the first 6 months of birth was 56 percent for Khan and Islam (2017), which conducted a report on the effect of exclusive breastfeeding in selected adverse health and nutritional outcomes in Australia. Cai, Wardlaw, and Brown (2012) reported an average EBF (39 percent) in developed countries in their study entitled "International Trends in Exclusive Breastfeeding".

2.9 Diarrhoea

WHO describes diarrhoea as a movement of three or more loose or liquid stools a day or longer than is normal in people (WHO, 2017). Diarrhoea is not referred to as the passing of loose stools by children who are breastfeeding or the frequent passing of formed stools. However, it can be known as diarrhoea when an adult passes loose stools three or more times a day or a breastfeeding

baby passes loose watery stools twelve or more times. Three clinical forms of diarrhoea are available. There are watery acute diarrhoea, bloody acute diarrhoea, and chronic diarrhoea. Suddenly, acute watery diarrhoea starts and can last several hours or days. This is the most normal diarrhoea. When a person passes loose or watery stools containing clear blood, acute bloody diarrhoea, also known as dysentery, happens (WHO, 2017). Persistent diarrhoea lasts more than two weeks, often leading to severe weight loss and nutritional complications associated with it (Health Direct, 2017).

This type of diarrhoea may signal in a person the onset of other health problems. Infectious agents typically cause diarrhoea, but in some cases, it can be caused by metabolic errors, chemical irritation, or organic disturbances. Bacteria, viruses, and parasites are pathogens. E is caused by bacterial diseases. (Rathaur, Pathania, Jayara & Yadav, 2014). Coli, Salmonella, Shigella, Campylobacter, Yersinia, Vibrios, and Clostridium difficile. Norwalk viruses, Norwalk viruses, enteric adenoviruses, caliciviruses, and astroviruses contain viral infections (Al-Ruwaili, Khalil & Selim, 2012). Besides, Giardia lamblia, Entamoeba histolytica, Cyclospora cayetanensis, and Cryptosporidium (Shah, Kongre, Kumar & Bharadwaj, 2016) are parasites that cause diarrhoea. Diarrhoea, rotavirus, enterotoxigenic Escherichia coli, Shigella, Salmonella, Campylobacter jejuni, and Cryptosporidium spp. are all among these causes. In developed countries, such as Ghana, they are the most commonly known triggers of diarrhoea (Binka, Vermund & Armah, 2012). Directly or indirectly, diarrhoea is transmitted. In contact with a person's mouth, direct transmission of diarrhoea takes place between hands contaminated with faeces (Centre for Disease Control and Prevention-CDC, 2012). Diarrhoea is also spread indirectly through tainted food or water ingestion and oral contact with contaminated dirt, cooking utensils, cups, spoons, and the like. Also, flies with traces of faeces on them are potential diarrhoea transmitters.

2.10 Breastfeeding Practices and Diarrhoea

In infancy, breastfeeding can reduce diarrhoea. The natural immunological function of human milk glycans protects breastfeeding babies from diarrhoea in natural or conjugated forms of the baby's oligosaccharides (Triantis, Bode & Van Neerven, 2018). These glycans act as soluble receptors for pathogens contained in human milk that bind to the target receptors of children's mucosal surface (Newburg, 2009). Optimum breastfeeding also helps discourage children from consuming other unhealthy liquids and foods. The infant immune systems have been sufficiently improved to avoid diarrhoea-driven diseases (Maggini, Pierre & Calder, 2018). Studies have been conducted to show how various breastfeeding techniques tend to protect or predispose children to diarrhoea growth.

The protective effect that exclusive breastfeeding provides to children's immune systems to significantly minimize childhood diarrhoea has been greatly recognized in these studies (Gedefaw & Berhe, 2015; Hendaus, Jomha & Ehlayel, 2016). To further argue for the importance of breastfeeding in the prevention of diarrhoea among infants, other studies have also used cross-sectional and case-control approaches (Gedefaw & Barhe, 2015). Acharya et al. (2018) have also established important independent associations between children who have not been breastfed exclusively and diarrhoea. Yarnoff, Allaire, and Detzel (2013) have suggested that while all other types of feeding are related to worse health outcomes than exclusive breastfeeding, the impact on child health is lower than solid foods when complemented with liquid breastfeeding. The association between the prevalence of exclusive breastfeeding and diarrhoeal diseases was investigated in a comparable study by Brushett et al. (2020) and found that the prevalence of diarrhoea was significantly associated with the absence of exclusive breastfeeding. Other research has shown in certain instances that exclusive and prevailing breastfeeding has equally beneficial

effects on the diarrhoea of children (Ahmed et al. 2020). However, there is a higher incidence of diarrhoea due to the late initiation of breastfeeding and early introduction of pre-lacteal feeding to children (Hanieh et al., 2015). This means that children partially breastfed have a greater frequency of diarrhoea than others. On the other hand, Raheem, Binns, and Chih (2017) indicated that while the children were partly breastfed for six months, the risk of diarrhoea was significantly reduced. This outcome suggests that the prevalence among them is identical, regardless of the breastfeeding status of children.

2.11 Acute Respiratory Infection (ARI)

Acute respiratory infection (ARI) happens when a person has or finds it difficult to breathe and swallow a sore throat, nose, or ear issue. The ARI can be characterized by two types: infections in the upper airway or infections in the lower respiratory tract. The upper respiratory tract is formed by airways in the upper larynx, from nose to vocal cords, including paranasal sinus and the middle ear (Mortazhejri et al.' 2020). Active pharyngitis, common resistances, and acute ear infections are included in upper respiratory infections. In addition to the airways from the tracheas and bronchioles into the bronchioles and alveoli, the lower respiratory tract is a continuation. Some lower respiratory disorders include bronchitis, pneumonia, and bronchiolitis. An acute respiratory infection can result from pathogens of one of these tract sectors. ARI can cause both bacteria and viruses. It contains rhinovirus, adenovirus, the virus Coxsackie, parainfluenza, air syncytial virus, and human metapneumovirus. There are some including adenoviruses, rhinoviruses, and adenococcal disease (Howard et al., 2019). A source of common colds is rhinoviruses, among the causes of respiratory infections. ARI may be aggravated by poor cold management, especially among kids and elderly people, including those with weak immune systems. Usually, inhaling

droplets from the infected person's sneeze and cough will transmit ARI. Inhaling droplets from the sneeze and cough of the infected person will normally transmit ARI. The capacity of viral pathogens to pass on respiratory infections varies. Normally the coronaviruses are spread over large droplets, while the influenza viruses spread through the air, both aerosol and gout (Leung et al., 2020).

It is not known how rhinoviruses are transmitted exactly. Rhinoviruses are still thought to be spread mainly through direct or indirect contact (Stephens et al., 2019).

For example, these viruses have been shown to live on the surface and propagate by inoculating the nose or eyes with one's fingers and others have shown that they can also spread through droplets (Dawson, 2020). Many mechanisms have been postulated for the possible defence effect of breastfeeding against respiratory infections. One was that in breast milk, there are antimicrobial or immunological substances that usually boost the nutritional status of breastfed infants (Di-Benedetto et al., 2020). This prevents babies from respiratory infections. It has been claimed that from previously exposed mothers, secretive antibodies can transmit immunity to their children (Pickering, 2020). As a result, cytokines and growth factors may be passed on by human milk and activate children's immune systems. Oligosaccharides can also avoid attachment to infant mucosa in human milk by infectious agents and thus prevent respiratory infections (Wiciński et al., 2020).

2.12 Breastfeeding Practices and Acute Respiratory Infection

Breastfeeding provides children with nutritional features that help protect them from respiratory infections. Adequate evidence suggests that there are substantial connections between breastfeeding and ARI (Rana et al., 2019). The protective impact of exclusive breastfeeding against ARI in childhood has been identified by most relevant studies (Wibawa, Indrarto & Samodra, 2019; Kuriakose et al., 2020). Some studies have also shown that prolonged

breastfeeding periods of up to 24 months also boost children's ARI immune systems (Fisk et al., 2011). ARI tends to be more vulnerable to the prelate, partially breastfed, and those weaned before six months (Hajeebhoy, Nguyen, Mannava, Nguyen & Mai, 2014; Taksande & Yeole, 2015). It has also been noted that pre-lacteal and supplementary foods given to children who do not breastfeed also provide fewer micronutrients to help minimize the occurrence of ARI (Shiferaw, 2020). Other potential risk factors have been reviewed, in addition to the association between breastfeeding practices and ARI. This covers the child's age, maternal age, and maternal occupation, place of residence, prenatal visits, and fuel for cooking.

2.13 Anaemia

Anaemia is characterized as a condition where the amount of red blood cells or their oxygen-carrying capacity is insufficient to meet age, gender, altitude, smoking, and pregnancy physiological needs (WHO, 2017). That technically defines anaemia as less than 11 grams per decilitre (g/dl) of haemoglobin level. Anaemia signs include feeling tired, exhaustion, shortness of breath, or inability to exercise, feeling like you're going to run, and loss of awareness or increased thirst (Johnson & Rubenstein, 2013). Three factors can contribute to anaemia, such as anaemia due to blood loss, decreased red blood cell growth, and increased red blood cell breakdown (de Back et al., 2014). Anaemia types are iron deficiency anaemia, or vitamin B-12 (short iron body), chronic disease anaemia (such as cancer, rheumatoid arthritis, kidney disease, Crohn’s disease, and others) (Begum and Latunde-Dada, 2019). Anaemia is commonly associated with anaemia with iron deficiency (such as short iron in a person's body). Aplastic anaemia (insufficient red blood cell production), a disease of the bone marrow associated with anaemia (for example leukaemia and myelofibrosis) and haemolytic anaemia, (loss of red cells that can substitute for bone marrow). For the first four to six months, breast milk contains enough iron to prevent

childhood anaemia (Irawan, Widjaja & Hanindita, 2019). Mothers are encouraged to feed their children with iron-fortified foods, such as iron-fortified formula or iron-fortified baby cereal, during this period of exclusive breastfeeding. Iron absorption is regulated primarily in the intestines of children. There is no procedure for excretion from the kidneys or liver as long as iron has been ingested (Gaharwar, Meena & Rajamani, 2019). To maintain adequate amounts that can prevent anaemia, iron is then passed into all membranes, as the iron used is continuously replaced by successful breastfeeding practices.

2.14 Breastfeeding Practices and Anaemia

In girls, breastfeeding contributes to the reduction of anaemia (Buck et al., 2019). For this reason, prospective studies have shown that various breastfeeding behaviours (predominant, selective, full breastfeeding) and childhood haemoglobin levels are significantly associated (Stiller et al., 2020). Most kids that are breastfed exclusively are less likely to be anaemic (Asoba et al., 2019). The low prevalence of anaemia in children who are exclusively breastfed is due to breast milk's immunological properties (Erliana & Fly, 2019). Studies show, however, that children who have been breastfeeding for more than six months alone may be anaemic, particularly among children whose mothers have iron deficiency (Mboya et al., 2020; Engidaye et al., 2019). Other cross-sectional studies found that there were low levels of haemoglobin in children receiving supplementary feed (Addo et al., 2020).

2.15 Fever

Fever is an immune response that can protect the body from microbial infection symptoms (García, 2020). Temperatures above 38 ° C (rectally measured) or 37.2 ° C (under the arm) are indicative of fever in infants that are frequently related to infection (Glashan, Eberhardt & Mahmoud, 2019). A temporary rise in body temperature indicates the onset of illness and a mild increase in body

temperature could lead to a serious infection in the case of infants and young children (Chen et al., 2020). Sweating, chills and chills, headache, lack of appetite, dehydration, and general exhaustion include, but are not limited to, signs of a fever (Smothers, 2019). Infection of the ear, mouth, lung, bladder, and kidneys is a widespread fever infection. Infants may experience short-term low-level fever through vaccination or teething (such as vaccine shooting). Autoimmune disorders (included RHA, lupus, and inflammatory bowel diseases), adverse medicaments, and blood clots can be caused by fever, hormone disruption, tumours, and medication use (Cunha, Apostolopoulou & Gian, 2017). Fever can also be caused by autoimmune diseases. In addition, chemical poisons, including bacteria and parasites, may be produced by micro-organisms. The formation of substances called white blood cells (known as monocytes) is caused both by the microorganism and by poisons. Pyrogens trigger fever (Prajitha, Athira & Mohanan, 2018). Breast milk provides a special balance of nutrition that strengthens the infant's poor immune system and can mitigate the severity of childhood fever. Breastfed children benefit from many factors present in breast milk that are anti-inflammatory and immunomodulatory (Oddy, 2017). However, the exact mechanisms by which fever is alleviated by the properties of breast milk remain unknown (Tam et al., 2020). Despite this, studies have generally linked anti-inflammatory and immunomodulating components in breast milk to reductions in infectious diseases such as fever (Abenavoli et al, 2018; Tuaillon et al., 2017).

2.16 Breastfeeding Practices and Fever

Infectious symptoms such as fever may be covered by children by multiple ways of feeding (exclusive lactosomal, nonspecific lactosomal, baby formula, milk, milk fluid, solid foods) (Talbert et al., 2020). To draw their conclusions, these studies used to survey and prospective cohort results. Children's rise in body temperature in literature is normally attributed to viral

infections (Barbi et al., 2017). A warning of malaria and other infections is fever (Kiemde et al., 2018). The main causes of childhood fever in Ghana are malaria and ARI (Tampah-Naah et al., 2019). Therefore, the following risk factor evaluation involves fever (not localized)-malaria or fever in infants due to acute respiratory infections.

2.17 Cough

Coughing is generally a sign that an irritant from mucus to a foreign material is being eliminated by your child's body (Morice et al., 2020). Cough is caused by inflammation, rain, croups, and pneumonia. "Colds tend to cause mild to moderate coughing, influenza is often severe, dry rough, and barking" often happens at night in noisy breathing croups (Amos 2018). Acid reflux may be coughing in children, extreme vomiting/spitting, bad mouth tastes, and burning chest sensations called heartburn. Allergies/sinusitis can lead to rest of the mouth, runny nose, watery eyes, sore throat, or rash. Poultry, pollen, pet dander, and dust may contain allergens (Hays, 2020). Whooping cough, also known as pertussis, has a "swinging" sound of inhalation of back-to-back cough. Other signs can include a runny nose, sneezing, or low fever. Whichever cough is infectious, but it is easy to avoid with a vaccine (Deshimaru, 2017).

2.18 Breastfeeding Practices and Cough

Exclusive breastfeeding has been shown to improve children's immune systems through the development of stronger, healthier bodies (Thomas et al., 2017; Tamburini et al., 2016). The health effects of children may vary from food type to food and therefore it is important to determine the type of food provided to children (Rowan, Lee & Brown, 2019). It has also been demonstrated that exclusive breastfeeding among infants enhances the immune system (Henrick et al., 2017). To minimize the symptoms of acute respiratory infection and cough, breast-fed and formula-fed babies have been reported (Béghin et al., 2019; Asgarshirazi et al., 2017).

Generally, a majority of the studies used cross-sectional surveys, self-administered questionnaires, observations, and others used cohorts and meta-analyses in conducting their studies. It is also observed that the majority of the articles used were conducted out of Ghana as a result of limited articles available in the field of study particularly in the remit of breastfeeding practice as it relates to childhood morbidities in Ghana. There is, therefore, the need to research the impact of breastfeeding as concerns childhood morbidities.

CHAPTER THREE

METHODOLOGY

3.1 2014 GDHS

3.2 Research design

This study relied on the cross-sectional design, mainly employing secondary data obtained from the 2014 Ghana Demographic and Health Survey (GDHS). The study obtained information from residents in both rural and urban areas across Ghana. Data were collected on demographic, socio-economic, breastfeeding practicing, and childhood morbidities.

3.3 Study population

This sample population consisted of all children under two (2) years of age in Ghana. In the sub-region of West Africa, Ghana, officially the Republic of Ghana, is a nation along the Gulf of Guinea and the Atlantic Ocean. Ghana is bordered by the Ivory Coast in the west, Burkina Faso in the north, Togo in the east, and the Gulf of Guinea and the Atlantic Ocean in the south (Dickson, Benneh & Essah, 1988), covering a landmass of 238,535 km^2 (92,099 square metres). According to the 2010 population and housing census of Ghana, there are an estimated 24,658,823 people in Ghana as against 18,912,079 in the year 2000 (Ghana Statistical Service, 2010).

Specifically for this study, the target population consists of children under two (2) years, because most children are breastfed from the first day they were born till they are two (2) years old. Moreover, these children are at a higher risk of exposure to childhood morbidities

3.4 Sampling of Study Respondents

The 2014 GDHS used a two-stage sample technique to produce separate estimates for key indicators in both rural and urban areas for each of the 10 regions in Ghana. The first stage was based on selecting clusters with the enumeration areas defined by the 2010 Population and Housing Census (PHC). Systematic sampling procedures were applied in the second stage. From each cluster, 30 households were selected and this equated to a sample size of 12, 831 households. In each household selected for the 2014 GDHS, mothers (15-49 years) should have been living with their youngest child under two years of age (0-23 months) at the time of the survey. However, since the study concentrated on children under two (2) years old (0-23 months), a target sample of 2262 children under two (2) years old constituted the final sample towards eliciting the relationship between breastfeeding practices and childhood morbidity in Ghana.

3.5 Inclusion and Exclusion criteria

The population under study comprised children under two (2) years old (between 0-23 months) who were staying with their mothers. Those who were not staying with their mothers were excluded from the study. It is worth noting that while the data from the DHS survey contains information on various ages of children, however, this study concentrated exclusively on children under two years old. As such, any such data on older children were excluded from the final analysis and discussion of findings.

3.6 Data collection

Table

Query	**Responses**	
Non-breastfeeding	**Yes**	**No**
Exclusive breastfeeding	**Yes**	**No**
Predominant breastfeeding	**Yes**	**No**
Complementary breastfeeding	**Yes**	**No**
2014 GDHS extracted by trained Statistician		

Data was sourced from the Ghana Demographic and Health survey. These were determined by asking mothers about the breastfeeding status of a child (0-23 months) within a recall period of 24 hours (yesterday and last night). Based on the GDHS 2014 report, these breastfeeding practices were categorized as no breastfeeding, exclusive breastfeeding, breastfeeding plus water only, breastfeeding plus non-milk liquids, breastfeeding plus other milk, and breastfeeding plus complementary foods. However, in this study breastfeeding was categorized into namely; no breastfeeding; exclusive breastfeeding; predominant breastfeeding, and complementary breastfeeding or food. Exclusive breastfeeding defines an infant or child breastfed with only breast milk. Predominant breastfeeding means an infant or child who was breastfed and given water and non-milk liquids only. Complementary breastfeeding refers to an infant or child being fed breast milk along with other milk products, and complementary foods (WHO, 2002).

Under the GDHS 2014 survey, five childhood morbidities are considered namely; diarrhoea, ARI, anaemia, fever, and cough.

In the GDHS 2014, data on 'all diarrhoea' and 'diarrhoea with blood' were collected. Mothers were asked, "Whether any of their children under five years of age had diarrhoea during the two weeks preceding the survey".

The prevalence of ARI was estimated by asking mothers whether their children under five years had been ill with a cough as well as short rapid breathing in the past two weeks preceding the survey. The ARI categories were: No=0; Yes=1; Don't know=8.

For anaemia, children who stayed in the household on the night before the interview were tested for anaemia based on their haemoglobin levels. The various types of anaemia were characterized by haemoglobin levels as follows; severe (less than 7.0 g/dl); moderate (7.0-9.9 g/dl) and mild

(10.0-10.9 g/dl). These were recorded as anaemic (severe, moderate, mild) and not anaemia. Similarly, mothers were asked whether "their children have been ill with a fever at any time in the last 2 weeks?" Finally, for cough, mothers were asked whether "their children been ill with a cough at any time in the last 2 weeks"?

3.7 Main variable

Independent variables: on primary; Any breastfeeding (an infant that is been breastfed at least with a breastfeeding pattern), non-breastfeeding (if an infant is not breastfed at all), exclusive breastfeeding (means that no other food or liquids except breast milk, not even water, are provided to the child until the age of 6 months), predominant breastfeeding (means a feeding pattern that involves breast milk [including expressed or wet nursing milk] and water to be provided to the child only as of the predominant source of nourishment) and complementary breastfeeding (means feeding infants or children with breast milk and other complementary or supplementary food).

Dependent variables: Diarrhoea (a breastfeeding baby passes loose watery stools twelve or more times), Acute Respiratory Infection (when an infant has or finds it difficult to breathe and swallow, presence of sore throat, nose, or ear issue), anaemia (condition where the amount of red blood cells or their oxygen-carrying capacity is insufficient to meet age, gender, and pregnancy physiological needs) less than 11 grams per decilitre (g / dl) of haemoglobin level, fever (Temperatures above 38 ° C (rectally measured) or 37.2 ° C (under the arm) are indicative of fever in infants), and cough (a sign that an irritant from mucus to a foreign material is being eliminated by your child's body).

Potential confounders: age of mother at the time of delivery, place of delivery, and access to clean water, geographical location, and wealth index, these confounders have influences on the outcomes of children by their health which leads to diseases such as diarrhoea, Anaemia, cough, fever, and acute respiratory infection.

3.7 Data Analysis

To adjust for the cluster sampling techniques employed in the surveys, use of complex survey module to account for primary sampling units, sample strata, and sample weight in all the analyses. In this analysis, the prevalence and relationship between breastfeeding practices and childhood morbidities were conducted using data from the 2014 Ghana Demographic and Health Survey. Simple proportions and percentages were used to compare the prevalence of childhood morbidities and types of breastfeeding practices. Moreover, the relationship between breastfeeding practices and childhood morbidities was established using a logistic regression model. A p-value of <0.05 was considered statistically significant. The data analysis was done using STATA version 15 (Stata, College Station, Texas, USA).

In analysing the data from the 2014 GHDS, a detailed list of tables is being codified from the data set, a statistical association between variables is been provided. Key associations and linkages are been explained in the results section and also bivariate comparisons to show significant correlations.

3.8 Ethical Consideration

.For this study, ethical clearance to use the data was obtained from the Ghana Demographic and Health Survey. Permission was soughed from the Ghana Statistical Service for the use of the data for this study.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of children under 2 years old

This section of the analysis presents results on the socio-demographic characteristics of children under 2 years old. Applying the inclusion criteria, data on a total of 2,262 children staying with their mothers were extracted from Ghana Demographic and Health Surveys (GDHS), (2014) data.

Table 1A: Socio-demographic and health characteristics of children under 2 years old, 2014 GDHS.

Variable name	**Frequency**	**Percent (%)**
Child's age (months)		
0 – 5	606	26.8
6 – 11	579	25.6
12 – 17	565	25.0
18 – 23	512	22.6
Sex of child		
Male	1171	51.8
Female	1091	48.2
Residence		
Urban	903	39.9
Rural	1359	60.1
Mother's education		
No education	766	33.9
Primary	457	20.2
Middle/JSS/JHS	767	33.9
Secondary+	272	12.0
Mother's age (years)		

15 – 19	140	6.1
20 – 24	446	19.7
25 – 29	591	26.1
30 – 34	511	22.6
35 – 39	370	16.4
40 – 44	160	7.1
45 – 49	44	2.0
Wealth index		
Poorest	752	33.2
Poorer	490	21.7
Middle	399	17.6
Richer	347	15.3
Richest	274	12.1
Region		
Western	208	9.2
Central	229	10.1
Greater Accra	174	7.7
Volta	185	8.2
Eastern	207	9.2
Ashanti	213	9.4
Brong Ahafo	256	11.3
Northern	360	15.9
Upper East	229	10.1
Upper West	201	8.9
Type of cooking fuel		
Clean fuel (liquid petroleum gas)	373	16.5
Solid fuel (charcoal)	1,889	83.5
Sanitation facility		
Improved sanitation (drainage)	1,262	57.4
Unimproved sanitation (no drainage)	938	42.6

Source of drinking water		
Improved (pipe borne water)	1,870	85
Unimproved (dugouts)	330	15
Disposal of child's stools when not using a toilet		
Properly disposed (sceptic tank)	615	27.5
Not properly disposed ("free- range")	1,620	72.5

Source: Ghana Demographic and Health Surveys (GDHS), (2014)

From the analysis in Table 1A, the result revealed that the majority (51.8%) of the children under 2 years old were males and the rest (48.2%) of the children were females. On the age distribution of the children under 2 years, most of the children belong to the 0 – 5 months category (26.8%), followed by age group 6 – 11 months (25.6%) and 18 – 23 months (22.6%). Moreover, an estimated number of 1,359 of the mothers were rural residents.

Besides, 33.9% of the mothers had attained Middle/JSS/JHS education, 12.0% had secondary education and 33.9% had no formal education. Furthermore, most of the mothers belong to the 25 – 29 years category (26.1%), followed by the age group 30 – 34 years (22.6%) and 20 – 24 years (19.7%). Concerning their wealth status, 33.2% belonged to the poorest wealth index, 17.7% belonged to the middle wealth index and 12.1% belonged to the richest wealth index.

Also, 83.5% of mothers used solid fuel, and only 16.5% of mothers used clean fuel for cooking. Also, most (57.4%) of mothers had access to improved sanitation facilities. Moreover, the majority (72.5%) of mothers could not properly dispose of their children's stools. Finally, the majority (85.0%) of mothers had access to improved water, and only (15.0%) of the mothers were not having access to improve water as shown in Table 1A.

4.2.1 Health Characteristics of Children Under Two (2) Years Old

This section of the analysis presents results on some selected health characteristics of children under 2 years old.

Table 1B: Socio-demographic and health characteristics of children under 2 years old, 2014 GDHS

Variable name	Frequency	Percent (%)
Breastfeeding Status		
No	243	10.7
Yes	2019	89.3
Maternal age at delivery		
<=18	781	34.5
19-24	1103	48.8
25-38	378	16.7
Antenatal visits		
No visit	86	3.8
1-4 visit	520	23.0
5-8 visit	1293	57.2
+9 visit	363	16.1
Place of delivery		
Home	636	28.1
Health facility	1626	71.9
Distribution of childhood morbidities		
Fever		
Yes	301	13.3
No	1961	86.7
Acute Respiratory Infection		
Yes	90	4.0
No	2172	96.0

Diarrhoea		
Yes	321	14.2
No	1941	85.8
Cough		
Yes	326	14.4
No	1936	85.6
Anaemia		
Yes	638	78.8
No	172	21.2

Source: Ghana Demographic and Health Surveys (GDHS), (2014)

The result in Table 1B revealed that the majority (89.3%) of mothers were generally breastfeeding their children under 2 years. On the delivery age of mothers, the study revealed that most (48.8%) of mothers gave birth between the ages of 19 to 24 years old, followed by 25 – 38 years old (16.7%) and below 18 years old (34.5%).

The result of mothers' antenatal visits also, revealed that the majority (57.2%) of mothers visited antenatal between 5 to 8 times before delivery and only 3.8 percent of mothers never visited antenatal at all. Moreover, the majority (71.7%) of mothers were delivered at a health facility, and only 28.1 percent delivered at home. Concerning the health indicators of the children, 78.8% report being anaemic, and 14.4% had a cough, 14.2% had had diarrhoea, 4.0% had ARI and 13.3% had a fever.

4.3 Background characteristics and prevalence of exclusive, predominant, and complementary breastfeeding

Table 2: Prevalence of breastfeeding by background characteristics

Variables	Not breastfeeding number (%)	Exclusive Breastfeeding number (%)	Predominant breastfeeding number (%)	Complementary breastfeeding number (%)
Age in months				
0 – 5	4 (1.6)	293(92.5)	122(49.1)	142(10.3)
6 – 11	6(2.2)	20(6.2)	80(32.2)	474(34.5)
12 – 17	53(19.8)	4(1.2)	32(12.9)	475(34.7)
18 – 23	203(76.4)	1(0.1)	14(5.8)	281(20.5)
Sex				
Male	146(54.8)	167(52.6)	134(53.7)	693(50.5)
Female	120(45.2)	150(47.4)	115(46.3)	678(49.5)
Cooking fuel				
Clean fuel	78(29.3)	74(23.2)	41(16.7)	296(21.6)
Dirty fuel	188(70.7)	244(76.8)	207(83.3)	1,075(78.4)
Residence				
Urban	151(56.8)	134(42.4)	95(38.4)	600(43.8)
Rural	115(43.2)	183(57.6)	153(61.6)	771(56.2)
Region				
Western	27(10.2)	20(6.4)	28(11.2)	136(9.9)
Central	38(14.4)	28(8.7)	17(6.9)	172(12.5)
Greater Accra	68(25.5)	60(18.9)	18(7.2)	179(13.0)
Volta	15(5.5)	28(10.0)	14(5.7)	114(8.3)
Eastern	35(13.2)	30(9.5)	25(10.0)	114(8.3)
Ashanti	39(14.5)	42(13.3)	39(15.7)	262(9.1)
Brong Ahafo	26(10.0)	21(6.8)	21(8.6)	136(12.4)
Northern	7.0(2.7)	49(15.3)	71(28.6)	169(12.4)

Upper East	7.0(2.7)	18(5.5)	12(4.7)	56(4.1)
Upper West	4(1.4)	21(6.6)	4(1.7)	34(2.5)
Mother's education				
No education	(42(15.6)	(91(28.6)	97(39.2)	(363(26.5)
Primary	(48(18.0)	(53(16.7)	54(21.5)	(264(19.3)
Middle/JSS/JHS	(117(44.0)	(124(39.0)	74(29.7)	(562(41.0)
Secondary+	(59(22.4)	(50(15.7)	24(9.6)	(183(13.3)
Wealth index				
Poorest	20(7.6)	90(28.2)	80(32.1)	313(22.8)
Poorer	57(21.4)	57(18.1)	71(28.7)	278(20.3)
Middle	49(18.6)	66(20.7)	41(16.7)	264(19.3)
Richer	79(29.6)	61(19.3)	25(10.2)	270(19.7)
Richest	60(22.7)	44(13.7)	31(12.3)	246(18.0)
Childhood morbidities				
Fever				
Yes	17.7	3.5	10.1	85.4
No	82.3	96.5	89.9	14.6
Acute Respiratory Infection				
Yes	4.9	2.7	3.9	4.6
No	95.1	97.3	96.1	95.4
Diarrhoea				
Yes	14.2	5.6	14.4	14.7
No	85.8	94.4	85.6	85.3
Cough				
Yes	20.2	7.8	16.1	15.7
No	79.8	92.2	83.9	84.3
Anaemia				
Yes	69.8	77.5	77.3	79.1
No	30.2	22.5	22.7	20.9

From the analysis, fifty-two percent (52.3%) of children under 6 months were exclusively breastfed and fourteen percent (14.4%) of the children under two years were exclusively breastfed. Moreover, twenty-two percent (21.7%) of the children under 6 months were predominantly breastfed and eleven percent (11.3%) of children under two years were predominantly breastfed. With complementary breastfeeding, twenty-five percent (25.2%) of children under 6 months were breastfed and sixty-two percent (62.3%) of children under two years were complementarily breastfed.

Table two (2) presents the results on the prevalence of breastfeeding practices by socio-demographic and health characteristics. Among those who were exclusively breastfed, 92.5% were aged under five months and 6.2% were made up of children between six to eleven (6 - 11) months old. Furthermore, 57.6% of children in rural areas were breastfed exclusively compared to 42.4% of children in urban areas. The regional analysis showed that there was a higher prevalence of exclusive (18.9%) and predominant (28.6%) breastfeeding in the Greater Accra and Northern region respectively. Concerning education, there was a higher prevalence of no breastfeeding (44%), exclusive (39%), predominant (29.7%), and complementary (41.0%) breastfeeding among children whose mothers attained Middle/JSS/JHS education compared to mothers with no basic education.

For the wealth index, there was a higher prevalence of exclusive, predominant, and complementary methods among children whose mothers were the poorest compared to the other categories of the wealth index. Besides, only 7.6% of the children of the poorest mothers were not breastfed compared to the higher prevalence in the richer (29.6%) and richest (22.7%) categories.

4.3.1 Bivariate analysis of the determinants of childhood morbidities among respondents

There was a significant relationship between fever and sex of child (p=0.004), maternal education (p=0.035), place of residence (p=0.041), region of residence (p=0.027), cooking fuel (p=0.002), wealth index (0.013), sanitation facility (p=0.025), source of drinking water (p=0.027). However, there was no significant relationship between fever and number of antenatal visits (p=0.32), place of delivery (p-0.12), maternal age at delivery (p=0.74), disposal of child's stools when not using the toilet (p=0.16).

There was a significant relationship between diarrhoea and maternal education (p=0.003), place of residence (p=0.047), region of residence (p=0.001), cooking fuel (p=0.001), wealth index (0.001), sanitation facility (p=0.001), place of delivery (p-0.012), maternal age at delivery (p=0.008). However, there was no significant relationship between diarrhoea and sex of child (p=0.074), the number of antenatal visits (p=0.29), the source of drinking water (p=0.76), disposal of child's stools when not using the toilet (p=0.95).

There was a significant bivariate relationship between acute respiratory infection and cooking fuel (p=0.023). Meanwhile, there was no significant bivariate relationship between acute respiratory infection and sex of child (p=0.32), maternal education (p=0.15), place of residence (p=0.13), region of residence (p=0.44), wealth index (p=0.07), sanitation facility (p=0.98), place of delivery (p=0.26), maternal age at delivery (p=0.07), number of antenatal visits (p=0.65), source of drinking water (p=0.23), and disposal of child's stools when not using toilet (p=0.31).

Apart from region of residence that was significantly associated with cough (p=0.001), there was no significant association between cough and sex of a child, maternal education, wealth index quintile, maternal age at delivery, place of residence, number of antenatal visits, place of delivery,

type of cooking fuel, sanitation facility, source of drinking water, and disposal of child's stools when not using the toilet.

There was a significant relationship between anaemia and maternal education (p=0.001), place of residence (p=0.012), a region of residence (p=0.003), cooking fuel (p=0.001), wealth index (0.001), number of antenatal visits (p=0.018), place of delivery (p=0.001), sanitation facility (p=0.001), However, there was no significant relationship between anaemia and sex of child (p=0.41), maternal age at delivery (p=0.57), source of drinking water (p=0.14), disposal of child's stools when not using the toilet (p=0.82).

4.4 Relationship between breastfeeding in general and childhood morbidities

Table 3: Relationship between any breastfeeding and childhood morbidities

Variables		Unadjusted: OR (95%CI)	p-value	Adjusted: OR(95%CI)	p-value
ARI	Not Breastfeeding	1		1	
	Any Breastfeeding	0.85 (0.40 -1.81)	0.67	0.79 (0.36 – 1.74)	0.56
Fever					
	Not Breastfeeding	1		1	
	Any Breastfeeding	0.65 (0.41 – 1.03)	0.069	0.60 (0.37 – 0.97)	**0.038**
Diarrhoea					
	Not Breastfeeding	1		1	
	Any Breastfeeding	0.92 (0.58 – 1.44)	0.70	0.68 (0.45 – 1.05)	0.08
Cough					
	Not Breastfeeding	1		1	
	Any Breastfeeding	0.67 (0.43 – 1.04)	0.08	0.67 (0.42 – 1.06)	0.09
Anaemia	Not Breastfeeding	1		1	
	Any Breastfeeding	1.63 (0.95 – 2.78)	0.07	1.18 (0.70 – 1.99)	0.53

Table three (3) present the relationship between breastfeeding in general (any breastfeeding) and childhood morbidities. "Any breastfeeding" categorization means the child was breastfed exclusively, predominantly, or complementarily. From the analyses, children under two years who were breastfeeding (any breastfeeding) had 40% reduced odds of fever compared to those who were not breastfed [(AOR: 0.60, CI: (0.37 – 0.97), p=0.038)]. This relationship was robust to adjustment for potential confounders such as sex of child, maternal education, maternal age at delivery, region of residence, place of residence, number of antenatal visits, place of delivery, wealth index quintile, type of cooking fuel, sanitation facility, source of drinking water, and disposal of child's stools when not using the toilet. Similarly, there were 32% reduced odds of diarrhoea [(AOR: 0.68, CI: (0.45 – 1.05), p=0.08)] and 33% reduced odds of cough [(AOR: 0.67, CI: (0.42 – 1.06), p=0.09)] compared to those who were not breastfed but these relationships were not statistically significant.

4.5 Relationship between exclusive breastfeeding and childhood morbidities

Table 4: Relationship between exclusive breastfeeding and childhood morbidities

Variables		Unadjusted: OR (95%CI)	p-value	Adjusted: OR(95%CI)	p-value
ARI	Non-Exclusive Breastfeeding	1		1	
	Exclusive Breastfeeding	0.59 (0.25 – 1.39)	0.23	0.70 (0.30 – 1.63)	0.41
Fever	Non-Exclusive Breastfeeding	1		1	
	Exclusive Breastfeeding	0.23 (0.12 – 0.44)	<0.001	0.24 (0.12 – 0.46)	<0.001
Diarrhoea	Non-Exclusive Breastfeeding	1		1	

	Exclusive Breastfeeding	0.34 (0.19 – 0.64)	0.001	0.30 (0.16 – 0.58)	0.001
Cough	Non-Exclusive Breastfeeding	1		1	
	Exclusive Breastfeeding	0.46 (0.27 – 0.76)	0.003	0.50 (0.30 – 0.84)	0.009
Anaemia	Non-Exclusive Breastfeeding	1		1	
	Exclusive Breastfeeding	0.92 (0.18 – 4.64)	0.92	0.64 (0.07 – 5.50)	0.68

Table four (4) presents' results of the relationship between exclusive breastfeeding and childhood morbidities compared to those who were non-exclusively breastfed (predominantly or complementarily). From the analysis, children under two years who were exclusively breastfed had 76% reduced odds of contracting fever [(AOR: 0.24, CI: (0.12 – 0.46), p<0.001], 50% reduced odds of coughing [(AOR: 0.50, CI: (0.30 – 0.84), p=0.009)] and 70% reduced odds of diarrhoea [(AOR: 0.30, CI: (0.16 – 0.58), p=0.001)] compared to those who were non-exclusively breastfed (predominant and complementary breastfeeding). This was robust to adjustment for potential confounders. There was, however, no significant association between exclusive breastfeeding and childhood morbidities such as acute respiratory infection [(AOR: 0.70, CI: (0.30 – 1.63), p=0.41)] and anaemia [(AOR: 0.64, CI: (0.07 – 5.50), p=0.68)].

4.6 Relationship between exclusive, predominant, complementary breastfeeding and childhood morbidities

Table five (5) presents' results on the relationship between exclusive, predominant, complementary breastfeeding, and childhood morbidities compared to those who were not breastfed.

Table 5: Relationship between categories of breastfeeding and childhood morbidities

Variables		Unadjusted: OR (95%CI)	p-value	Adjusted: OR(95%CI)	p-value
ARI	Not Breastfeeding	1		1	
	Exclusive Breastfeeding	0.54 (0.19 – 1.56)	0.26	0.58 (0.19 – 1.72)	0.32
	Predominant Breastfeeding	0.78 (0.29 – 2.09)	0.63	0.78 (0.30 – 2.04)	0.62
	Complementary feeding	0.94 (0.43 – 2.03)	0.87	0.83 (0.37 – 1.89)	0.66
Fever	Not Breastfeeding	1		1	
	Exclusive Breastfeeding	0.17 (0.08 – 0.38)	<0.001	0.16 (0.07 – 0.36)	<0.001
	Predominant Breastfeeding	0.52 (0.27 – 0.99)	0.047	0.45 (0.23 – 0.88)	0.002
	Complementary feeding	0.80 (0.50 – 1.28)	0.35	0.71 (0.44 – 1.16)	0.17
Diarrhoea	Not Breastfeeding	1		1	
	Exclusive Breastfeeding	0.36 (0.17 – 0.73)	0.005	0.23 (0.11 – 0.50)	<0.001
	Predominant Breastfeeding	1.01 (0.57 – 1.79)	0.96	0.66 (0.39 – 1.12)	0.13
	Complementary feeding	1.04 (0.65 – 1.66)	0.87	0.79 (0.51 – 1.22)	0.28

Cough	Not Breastfeeding	1		1	
	Exclusive Breastfeeding	0.34 (0.18 – 0.64)	0.001	0.36 (0.19 – 0.70)	0.002
	Predominant Breastfeeding	0.75 (0.42 – 1.36)	0.35	0.76 (0.42 – 1.37)	0.36
	Complementary feeding	0.73 (0.46 – 1.16)	0.18	0.72 (0.45 – 1.14)	0.17
Anaemia	Not Breastfeeding	1		1	
	Exclusive Breastfeeding	1.50 (0.28 – 8.0)	0.64	0.82 (0.09 – 7.87)	0.86
	Predominant Breastfeeding	1.48 (0.66 – 3.32)	0.35	0.87 (0.39 – 1.94)	0.74
	Complementary feeding	1.64 (0.95 – 2.83)	0.07	1.21 (0.71 – 2.07)	0.48

In this analysis, breastfeeding practices has been stratified into “not Breastfeeding”, “Exclusive breastfeeding”, “Predominant breastfeeding” and “Complementary feeding. After adjustment for potential confounders, there was 84% [(AOR: 0.16, CI: (0.07 – 0.36), p<0.001)] and 55% [(AOR: 0.45, CI: (0.23 – 0.88), p=0.002)] reduced odds of fever among the children who were exclusively and predominantly breastfed respectively compared to those who were not breastfed. Similarly, there were 77% reduced odds of diarrhoea [(AOR: 0.23, CI: (0.11 – 0.50), p<0.001)] and 64% reduced odds of cough [(AOR: 0.36, CI: (0.19 – 0.70), P=0.002)] among the children who were exclusively breastfed compared to those who were not breastfed. There was however no significant association between any of the categories of breastfeeding practices and ARI and anaemia.

CHAPTER FIVE

DISCUSSION

5.0 Discussion of Results

In Ghana, fever, diarrhoea, and acute respiratory infection are among the top five childhood diseases affecting children (Seidu et al., 2019). The study revealed that 78.8% report being anaemia, 14.4 % cough, 14.2% diarrhoea, 4.0% ARI, and 13.3% fever. This study suggests that anaemia is the most prevalent childhood morbidity in Ghana. However, in other developing countries the most prevalent childhood morbidity is diarrhoea with a very high 93% of prevalence rate in Nigeria, Benin, Mali, and Uganda (Alebel et al., 2018).

In Africa, more than 95% of infants are currently breastfed (Asare et al., 2018), but most of the infants are not exclusively breastfed, since infants are given water and other liquids in addition to breast milk. Although, the rate of exclusive breastfeeding is generally low (30%), especially, in West African countries, the analysis of the GDHS data revealed a higher percentage of exclusive breastfeeding as the majority (52.3%) of children under 6 months were exclusively breastfed. This result is encouraging because of the low (30%) rate of exclusive breastfeeding in other West African countries.

West Africa has the lowest rate (8.17%) of predominant breastfeeding (Issaka, Agho & Renzaho, 2017). Also, this study has shown that twenty-two percent (21.7%) of the children under 6 months were predominantly breastfed and eleven percent (11.3%) of children under two years were predominantly breastfed. The high prevalence of predominant breastfeeding could be due to government policies and individual preferences for such practices. On complementary breastfeeding, twenty-five percent (25.2%) of children under 6 months were complementarily breastfed and sixty-two percent (62.3%) of children under two years were complementarily

feeding. Compared to other countries in Africa, the average rate of complementarily feeding for children under 6 months was 24% (Mezgebo, Lema & Neela, 2020). Hence this result suggests that in Ghana the pattern of complementarily feeding for children under 6 months is similar.

Breast milk tends to have properties that help the baby's immune system function effectively (Palmeira & Carneiro-Sampaio, 2016). Furthermore, this study revealed that children under two years who were breastfed (any breastfeeding) had 40% reduced odds of fever compared to those who were not breastfed. Similar to the findings of my study, Tanzanian children under two years who are breastfed have about 59% reduced odds of fever compared to those not breastfed (Smith et al., 2017). This finding is supported by a study from Ladomenou et al. (2010), who claimed that on average, breastfed babies have fewer infections in their early life. Also, in Swaziland, children under two years who are breastfed have (19%) reduced odds of cough (Tsabedze, 2018). The influence of breast milk on children's exposure to cough and other diseases is because breast milk contains antibodies and other proteins that are transferred from mother to baby during breastfeeding (Rajani, Seppo & Järvinen, 2018). This finding in agreement with a study by Nigatu, Azage, and Motbainor (2019), as they noted that, infants and young children less than six months old, who were breastfed appropriately may decrease the likelihood of infant and young children getting a fever. Additionally, in a study by Rajani, Seppo, and Järvinen (2018), breastfeeding had been shown to have defensive effects against childhood fever diseases. The study also revealed that “any breastfeeding” had no significant relationship with childhood exposure to diarrhoea. This study is supported by Von-Hertzen et al. (2015) that breast milk contains anti-inflammatory and immunomodulatory agents, which boost the immune system of children.

The study results also showed that children under two years who were exclusively breastfed had 76% reduced odds of contracting fever. Similarly, in Nigeria, children under two years who were

breastfed had a lower (40%) risk of contracting fever as compared to those not exclusively breastfed (Gilmore & McAuliffe, 2013). Also, in Bangladesh, children who are exclusively breastfed had lower odds (92%) of contracting fever (Khan & Islam, 2017). Also, the study revealed that exclusively breasted children had 50% reduced odds of coughing. This result is supported by the finding of Akinyemi and Morakinyo (2018), who reported that breastfeeding guarantees children protection against cough and other childhood respiratory tract infections. Moreover, exclusively breasted children had a 70% reduced odds of diarrhoea. Similar to this study, children in Dhaka who were exclusively breastfed have a lower (48.7%) risk of diarrhoea exposure (Bushra, 2019). Generally, these findings suggest that children's exposure to childhood morbidities may differ from one country to the other due to differences in breastfeeding practices.

Fever among children especially those under one year can be attributed mostly to viral infections (Chamseddine et al., 2020). On the relationship between exclusive, predominant breastfeeding and fever, there were 84% reduced odds of fever among the children who were exclusively and predominantly breastfed respectively. A similar trend was observed in Ethiopia as the children who were exclusively breastfed had about 80% reduce risk of exposure to fever. Also, in Nigeria (Dadari, 2019), children who were predominantly breastfed, have a reduced risk of exposure to fever. Generally, both exclusive and predominant breastfeeding had a significant relationship with childhood exposure to fever. Exclusive breastfeeding has a protective effect against childhood fever (Mapoma & Banda, 2019). Furthermore, Dimitrovska and Zisovska (2020) assessed exclusive breastfeeding and its effect on growth, they observed that exclusively breastfed infants had significantly fewer incidents of fever. This study reported that exclusive breastfeeding had a negative influence on children contracting a fever. Hence, this study suggests that exclusive breastfeeding may limit children from contracting fever.

Moreover, there were 77% reduced odds of diarrhoea and 64% reduced odds of cough among the children who were exclusively breastfed compared to those who were not breastfed. This finding is similar to a finding from a Nigerian study which reported 62% reduced odds of diarrhoea among children who were exclusively breastfed (Dadari, 2019). Also, in South Africa, there is a reduced odd of children's exposure to diarrhoea among exclusively breastfed children (Lamberti et al., 2011). This study implies that exclusive breastfeeding had a protective effect on the occurrence of diarrhoea among children under two years. Because, it is expected that infants less than six months old who have been exclusively breastfed may be less likely to be exposed to diarrhoea as compared to non-exclusively breastfed (Nakamura et al., 2020; Muleviciene et al. (2018). This study further revealed that exclusive breastfeeding had no significant relationship with childhood exposure to anaemia. However, in some studies, exclusive breastfeeding reduces the incidence of anaemia conditions among children (Kejo et al., 2018). The occurrence of anaemia is attributed to poor nutrition and poor health, resulting in a reduction in red blood cell counts and a decrease in the concentration of haemoglobin in the blood (Bansal & Crane, 2020). According to Jangid et al. (2020), anaemic conditions among children can also occur when breast milk is replaced by complementary foods that may be inadequate in iron and other essential nutrients such as vitamin B12 and folic acid. This implies that exclusively breastfed children from a healthy mother are less likely to contract anaemia as compared to children who are not exclusively breastfed. However, this study revealed that exclusively breastfeeding children do not have any influence on children contracting to anaemia.

The study used only secondary data set with already predetermined motives on general health issues. These general health issues did not give due consideration to specialty of the study concepts

under consideration. Hence, limiting the researcher on only information available on the secondary data set to achieving the overall study objectives.

However, the researcher was able to explore the secondary data set in extracting the needed data on breastfeeding practices and its effects on some selected childhood morbidity in Ghana. The generalization of secondary data across all household in Ghana enabled the researcher to further explore other variables that possible affected breastfeeding practices and some selected childhood morbidity in Ghana. The findings from the study were in tangent with some of the studies previously done within the Africa, the will provide policy makers in the Ghana to modified policies to better serve breastfeeding practices to enhance coverage and prevent morbidities such as fever, diarrhoea, acute respiratory infection, cough and anaemia among children.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

The main objective of the study was to establish a possible relationship between breastfeeding practices and childhood morbidities in Ghana. Based on the findings, it can, therefore, be concluded that there was a high (52.3%) prevalence of exclusively breastfed children under 6 months old, though, there was a low level of predominantly breastfeeding and complementarily breastfeeding among children under 6 months old. Furthermore, the study revealed a high prevalence of anaemia (78.8%) and a low prevalence of fever (13.3%). On the other hand, there was a lower prevalence of cough, diarrhoea, and ARI.

The study concludes that breastfeeding practices influenced childhood exposure to diarrhoea, fever, and cough. However, the study did not establish any influence of breastfeeding in general on childhood exposure to ARI and anaemia.

Furthermore, in analysing the relationships between exclusive breastfeeding and childhood morbidities, it concludes that exclusive breastfeeding significantly influenced children contracting diarrhoea, fever, and cough. However, the study did not establish a significant influence of exclusive breastfeeding on children contracting ARI and anaemia.

Finally, in analysing the relationship between exclusive, predominant, complementary breastfeeding and childhood morbidities, the study noticed both exclusive breastfeeding and predominant breastfeeding significantly influenced children contracting fever, whiles only exclusive breastfeeding influenced children contracting diarrhoea and cough. Also, exclusive

breastfeeding, complementary feeding, and predominant breastfeeding had no significant relationship with children contracting ARI and anaemia.

6.3 Recommendations

Based on the study findings the following recommendations were made:

1. The government through the MOH should strategize and intensify the campaign on exclusive breastfeeding practice to increase coverage from 52% to at least 90% of the breastfeeding population.

2. The government through the MOH should intensify surveillance on breastfeeding-related morbidities to early detect and manage such cases among children of breastfeeding age.

REFERENCES

Abenavoli, L., Izzo, A. A., Milić, N., Cicala, C., Santini, A., & Capasso, R. (2018). Milk thistle (Silybum marianum): A concise overview on its chemistry, pharmacological, and nutraceutical uses in liver diseases. *Phytotherapy Research*, *32*(11), 2202-2213.

Abuidhail, J., Al-Shudiefat, A. A. R., & Darwish, M. (2019). Alterations of immunoglobulin G and immunoglobulin M levels in the breast milk of mothers with exclusive breastfeeding compared to mothers with non-exclusive breastfeeding during 6 months postpartum: The Jordanian cohort study. *American Journal of Human Biology*, *31*(1), e23197.

Acharya, D., Singh, J. K., Adhikari, M., Gautam, S., Pandey, P., & Dayal, V. (2018). Association of water handling and child feeding practice with childhood diarrhoea in rural community of Southern Nepal. *Journal of infection and public health*, *11*(1), 69-74.

Ackerknecht, E. H., & Haushofer, L. (2016). *A short history of medicine*. JHU Press.

Addo, O. Y., Locks, L. M., Jefferds, M. E., Nanama, S., Albert, B., Sandalinas, F., ... & Garg, A. (2020). Combined infant and young child feeding with small-quantity lipid-based nutrient supplementation is associated with a reduction in anaemia but no changes in anthropometric status of young children from Katanga Province of the Democratic Republic of Congo: a quasi-experimental effectiveness study. *The American Journal of Clinical Nutrition*, *112*(3), 683-694.

Adjei, B. (2018). *Assessing the impact of training on the performance of healthcare professionals: a case study at the Holy Family Hospital, Nkawkaw* (Doctoral dissertation, University of Cape Coast).

Ahmed, K. Y., Page, A., Arora, A., Ogbo, F. A., & Global Maternal and Child Health Research collaboration (GloMACH). (2020). Associations between infant and young child feeding

practices and acute respiratory infection and diarrhoea in Ethiopia: A propensity score matching approach. *PloS one*, *15*(4), e0230978.

Akinyemi, J. O., & Morakinyo, O. M. (2018). Household environment and symptoms of childhood acute respiratory tract infections in Nigeria, 2003–2013: A decade of progress and stagnation. *BMC infectious diseases*, *18*(1), 296.

Alebel, A., Tesema, C., Temesgen, B., Gebrie, A., Petrucka, P., & Kibret, G. D. (2018). Prevalence and determinants of diarrhoea among under-five children in Ethiopia: A systematic review and meta-analysis. *PLoS One*, *13*(6), e0199684.

Alegana, V. A., Okiro, E. A., & Snow, R. W. (2020). Routine data for malaria morbidity estimation in Africa: challenges and prospects. *BMC Medicine*, *18*(1), 1-13.

Al-Ruwaili, M. A., Khalil, O. M., & Selim, S. A. (2012). Viral and bacterial infections associated with camel (Camelus dromedarius) calf diarrhoea in North Province, Saudi Arabia. *Saudi Journal of biological sciences*, *19*(1), 35-41.

Alshareef, M. S. M. (2020). *Breast Feeding Practice and Protection Against Pneumonia During Infancy: A Case Control Study* (Doctoral dissertation, Al-Azhar University-Gaza).

Amos, L. B. (2018). Cough. *Nelson Pediatric Symptom-Based Diagnosis*, 15.

Argaw, A., Wondafrash, M., Bouckaert, K. P., Kolsteren, P., Lachat, C., Belachew, T., ... & Huybregts, L. (2018). Effects of n–3 long-chain PUFA supplementation to lactating mothers and their breastfed children on child growth and morbidity: a 2× 2 factorial randomized controlled trial in rural Ethiopia. *The American journal of clinical nutrition*, *107*(3), 454-464.

Asare, B. Y. A., Preko, J. V., Baafi, D., & Dwumfour-Asare, B. (2018). Breastfeeding practices and determinants of exclusive breastfeeding in a cross-sectional study at a child welfare clinic in Tema Manhean, Ghana. *International breastfeeding journal*, *13*(1), 12.

Asfaw, M., Wondaferash, M., Taha, M., & Dube, L. (2015). Prevalence of undernutrition and associated factors among children aged between six to fifty nine months in Bule Hora district, South Ethiopia. *BMC Public health, 15*(1), 41.

Asgarshirazi, M., Shariat, M., Nayeri, F., Dalili, H., & Abdollahi, A. (2017). Comparison of fecal calprotectin in exclusively breastfed and formula or mixed fed infants in the first six months of life. *Acta Medica Iranica*, 53-58.

Asoba, G. N., Sumbele, I. U. N., Anchang-Kimbi, J. K., Metuge, S., & Teh, R. N. (2019). Influence of infant feeding practices on the occurrence of malnutrition, malaria and anaemia in children≤ 5 years in the Mount Cameroon area: A cross sectional study. *PloS one*, *14*(7), e0219386.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, *84*(2), 191.

Bansal, M. G., & Crane, G. M. (2020). Hypochromic and Hemolytic Anaemias. *Atlas of Diagnostic Hematology E-Book*, 22.

Barbi, E., Marzuillo, P., Neri, E., Naviglio, S., & Krauss, B. S. (2017). Fever in children: pearls and pitfalls. *Children*, *4*(9), 81.

Barker, M., Dombrowski, S. U., Colbourn, T., Fall, C. H., Kriznik, N. M., Lawrence, W. T., ... & Sniehotta, F. F. (2018). Intervention strategies to improve nutrition and health behaviours before conception. *The Lancet*, *391*(10132), 1853-1864.

Béghin, L., Marchandise, X., Lien, E., Bricout, M., Bernet, J. P., Lienhardt, J. F., ... & De Groot, N. (2019). Growth, stool consistency and bone mineral content in healthy term infants fed sn-2-palmitate-enriched starter infant formula: A randomized, double-blind, multicentre clinical trial. *Clinical Nutrition*, *38*(3), 1023-1030.

Begum, S., & Latunde-Dada, G. O. (2019). Anaemia of Inflammation with An Emphasis on Chronic Kidney Disease. *Nutrients*, *11*(10), 2424.

Biggs, H. M., Behravesh, C. B., Bradley, K. K., Dahlgren, F. S., Drexler, N. A., Dumler, J. S., ... & Massung, R. F. (2016). Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever and other spotted fever group rickettsioses, ehrlichioses, and anaplasmosis—United States: A practical guide for health care and public health professionals. *Morbidity and Mortality Weekly Report: Recommendations and Reports*, *65*(2), 1-44.

Binka, E., Vermund, S. H., & Armah, G. E. (2011). Rotavirus as a cause of diarrhoea among children under 5 years of age in urban Ghana: prevalence and serotypes/genotypes. *The Pediatric infectious disease journal*, *30*(8), 718.

Bisrat, Z., Kenzudine, A., & Bossena, T. (2017). Factors associated with early initiation and exclusive breastfeeding practices among mothers of infant's age less than 6 months. *J Pediatr Neonatal Care*, *7*(3), 00292.

Brown, A., Raynor, P., & Lee, M. (2011). Young mothers who choose to breast feed: the importance of being part of a supportive breast-feeding community. *Midwifery*, *27*(1), 53-59.

Brushett, S., Sinha, T., Reijneveld, S. A., De Kroon, M. L., & Zhernakova, A. (2020). The effects of urbanization on the infant gut microbiota and health outcomes. *Frontiers in Pediatrics*, *8*, 408.

Buck, S., Rolnick, K., Nwaba, A. A., Eickhoff, J., Mezu-Nnabue, K., Esenwah, E., & Mezu-Ndubuisi, O. J. (2019). Longer Breastfeeding Associated with Childhood Anaemia in Rural South-Eastern Nigeria. *International Journal of Pediatrics*, *2019*.

Bushra, E. (2019). *Effect of breastfeeding on neonatal morbidity and mortality in Dhaka city* (Doctoral dissertation, University of Dhaka).

Cai, X., Wardlaw, T., & Brown, D. W. (2012). Global trends in exclusive breastfeeding. *International breastfeeding journal*, *7*(1), 1-5.

Cameron, A. C., & Trivedi, P. K. (2013). *Regression analysis of count data* (Vol. 53). Cambridge university press.

Cândido, N. A., de Sousa, T. M., & dos Santos, L. C. (2018). Effectiveness of different interventions in public nurseries based on food and nutrition education: promoting breast-feeding and healthy complementary feeding. *Public health nutrition*, *21*(13), 2454-2461.

Cappellini, M. D., Musallam, K. M., & Taher, A. T. (2020). Iron deficiency anaemia revisited. *Journal of internal medicine*, *287*(2), 153-170.

Card, D. (2020). *Facial Diagnosis of Cell Salt Deficiencies: The many usue and benefits of using cell salts, with color illustrations for facial diagnosis*. SCB Distributors.

CDC. (2012). Pathways to diarrhoea. Retrieved from https://www.cdc.gov/ healthywater/global/diarrhoea-pathways.html

Chamseddine, S., Chmaisse, A., Akel, I., Zein, Z. E., Khalil, S., Raad, S. A., ... & Abboud, M. (2020). Epidemiology and clinical characteristics of viral infections in hospitalized children and adolescents with cancer in Lebanon. *PloS one*, *15*(9), e0239258.

Charara, D. (2020). *Anaemia and its Association with Dietary Intake and Infant and Young Child Feeding practices: A Cross-Sectional Study Amongst 0-2-years-old Syrian Refugee Children in Lebanon* (Doctoral dissertation).

Chen, H., Ma, R., Du, H., Liu, J., & Jin, L. (2020). Early onset children's Gitelman syndrome with severe hypokalaemia: a case report. *BMC pediatrics*, *20*(1), 1-6.

Clark, G. (2013). 5 Secondary data. *Methods in Human Geography*, 57.

Corbetta, G., Orlandi, E., Heus, T., Neggers, R., & Crewell, S. (2015). Overlap statistics of shallow boundary layer clouds: Comparing ground-based observations with large-eddy simulations. *Geophysical Research Letters*, *42*(19), 8185-8191.

Cunha, B. A., Apostolopoulou, A., & Gian, J. (2017). Fever of unknown origin (FUO) due to miliary BCG: The diagnostic importance of morning temperature spikes and highly elevated ferritin levels. *Heart & Lung*, *46*(3), 205-207.

Dadari, H. I. S. (2019). Antibiotics use, knowledge and practices on antibiotic resistance among breastfeeding mothers in Kaduna state (Nigeria). *Journal of Infection and Public Health*.

Dawson, P. (2020). Transfer of microorganisms and respiratory viruses through food. *Medical Research Archives*, *8*(5).

de Back, D. Z., Kostova, E. B., van Kraaij, M., van den Berg, T. K., & Van Bruggen, R. (2014). Of macrophages and red blood cells; a complex love story. *Frontiers in physiology*, *5*, 9.

Deichsel, E. L., John-Stewart, G. C., Walson, J. L., Mbori-Ngacha, D., Richardson, B. A., Guthrie, B. L., ... & Pavlinac, P. B. (2020). Examining the relationship between diarrhoea and linear growth in Kenyan HIV-exposed, uninfected infants. *PloS one*, *15*(7), e0235704.

Dennis, C. L., & Faux, S. (1999). Development and psychometric testing of the Breastfeeding Self-Efficacy Scale. *Research in nursing & health*, *22*(5), 399-409.

Deoni, S., Dean III, D., Joelson, S., O'Regan, J., & Schneider, N. (2018). Early nutrition influences developmental myelination and cognition in infants and young children. *Neuroimage*, *178*, 649-659.

DESHIMARU, T. (2017). Introduction to Pathology and Infection Control. *Mosby's Pathology for Massage Therapists-E-Book*, 1.

Dharel, D., Dhungana, R., Basnet, S., Gautam, S., Dhungana, A., Dudani, R., & Bhattarai, A. (2020). Breastfeeding practices within the first six months of age in mid-western and eastern regions of Nepal: a health facility-based cross-sectional study. *BMC Pregnancy and Childbirth*, *20*(1), 59.

Di Benedetto, M. G., Bottanelli, C., Cattaneo, A., Pariante, C. M., & Borsini, A. (2020). Nutritional and immunological factors in breast milk: a role in the intergenerational transmission from maternal psychopathology to child development. *Brain, behavior, and immunity*, *85*, 57-68.

Dickson, K. B., Benneh, G., & Essah, R. R. (1988). *A new geography of Ghana* (Vol. 34). London: Longman.

Dimitrovska Ivanova, M., & Zisovska, E. (2020). Breast milk effects on clinical signs of acute gastroenteritis in infants up to 6 months of age. *Research in Physical Education, Sport and Health*, *9*(1), 145-150.

Engidaye, G., Melku, M., Yalew, A., Getaneh, Z., Asrie, F., & Enawgaw, B. (2019). Under nutrition, maternal anaemia and household food insecurity are risk factors of anaemia among preschool aged children in Menz Gera Midir district, Eastern Amhara, Ethiopia: a community based cross-sectional study. *BMC public health*, *19*(1), 968.

Erliana, U. D., & Fly, A. D. (2019). The function and alteration of immunological properties in human milk of obese mothers. *Nutrients*, *11*(6), 1284.

Ewusie, J. E., Ahiadeke, C., Beyene, J., & Hamid, J. S. (2014). Prevalence of anaemia among under-5 children in the Ghanaian population: estimates from the Ghana demographic and health survey. *BMC public health*, *14*(1), 626.

Fisk, C. M., Crozier, S. R., Inskip, H. M., Godfrey, K. M., Cooper, C., Roberts, G. C., ... & Southampton Women's Survey Study Group. (2011). Breastfeeding and reported morbidity

during infancy: findings from the Southampton Women's Survey. *Maternal & child nutrition*, *7*(1), 61-70.

Gaharwar, U. S., Meena, R., & Rajamani, P. (2019). Biodistribution, Clearance and morphological alterations of intravenously administered iron oxide nanoparticles in male Wistar rats. *International Journal of Nanomedicine*, *14*, 9677.

García, L. F. (2020). Immune response, inflammation, and the clinical spectrum of COVID-19. *Frontiers in immunology*, *11*, 1441.

Gedefaw, M., & Berhe, R. (2015). Determinates of childhood pneumonia and diarrhoea with special emphasis to exclusive breastfeeding in north Achefer district, northwest Ethiopia: a case control study. *Open Journal of Epidemiology*, *5*(02), 107.

GHS. (2015). 2014 Annual Report: Antenatal. GHS, Accra, Ghana: Author.

GHS. (2016). National Child Health Policy. Retrieved from http://www. moh.gov.gh/policy-documents/

GHS. (2017). Newborn care programme. Retrieved from http://ghanahea lthservice.org/newborn/programme-scat.php?ghspid=3&ghsscid=94

Gilmore, B., & McAuliffe, E. (2013). Effectiveness of community health workers delivering preventive interventions for maternal and child health in low-and middle-income countries: a systematic review. *BMC public health*, *13*(1), 847.

Girmay, A., & Dadi, A. F. (2019). Full immunization coverage and associated factors among children aged 12-23 months in a hard-to-reach areas of Ethiopia. *International journal of pediatrics*, *2019*.

Glashan, E., Eberhardt, T., & Mahmoud, S. H. (2019). Physical Assessment for Pharmacists. In *Patient Assessment in Clinical Pharmacy* (pp. 31-53). Springer, Cham.

Graham, H., Bakare, A. A., Ayede, A. I., Oyewole, O. B., Gray, A., Neal, E., ... & Falade, A. G. (2020). Diagnosis of pneumonia and malaria in Nigerian hospitals: A prospective cohort study. *Pediatric Pulmonology*, *55*, S37-S50.

GSS, GHS, and ICF International (2015). Ghana Demographic and Health Survey 2014. Accra, Ghana: GSS, GHS, and ICF International: Author.

Hajeebhoy, N., Nguyen, P. H., Mannava, P., Nguyen, T. T., & Mai, L. T. (2014). Suboptimal breastfeeding practices are associated with infant illness in Vietnam. *International breastfeeding journal*, *9*(1), 12.

Hanieh, S., Ha, T. T., Simpson, J. A., Thuy, T. T., Khuong, N. C., Thoang, D. D., ... & Biggs, B. A. (2015). Exclusive breast feeding in early infancy reduces the risk of inpatient admission for diarrhoea and suspected pneumonia in rural Vietnam: a prospective cohort study. *BMC Public Health*, *15*(1), 1166.

Hays, S. M. (2020). Head, Eye, Ear, Nose, Mouth, and Throat Disorders. *Pediatric Nurse Practitioner Certification Review Guide: Primary Care*.

Health Direct (2017). Diarrhoea. Retrieved from https://www.healthdirect .gov.au/diarrhoea

Hendaus, M. A., Jomha, F. A., & Ehlayel, M. (2016). Allergic diseases among children: nutritional prevention and intervention. *Therapeutics and clinical risk management*, *12*, 361.

Henrick, B. M., Yao, X. D., Nasser, L., Roozrogousheh, A., & Rosenthal, K. L. (2017). Breastfeeding behaviours and the innate immune system of human milk: working together to protect infants against inflammation, HIV-1, and other infections. *Frontiers in immunology*, *8*, 1631.

Howard, L. M., Zhu, Y., Griffin, M. R., Edwards, K. M., Williams, J. V., Gil, A. I., ... & Grijalva, C. G. (2019). Nasopharyngeal pneumococcal density during asymptomatic respiratory virus

infection and risk for subsequent acute respiratory illness. *Emerging Infectious Diseases*, *25*(11), 2040.

Huffhines, L., Noser, A., & Patton, S. R. (2016). The link between adverse childhood experiences and diabetes. *Current diabetes reports*, *16*(6), 54.

Hviid, M. M., Skovlund, C. W., Mørch, L. S., & Lidegaard, Ø. (2017). Maternal age and child morbidity: A Danish national cohort study. *Plos one*, *12*(4), e0174770.

IBFAN. (2017). Infant and young child feeding. Retrieved from http://www.ibfan.org/

Irawan, R., Widjaja, N. A., & Hanindita, M. H. (2019). Effect of Different Complementary Feeding on Iron Deficiency Anaemia and Growth in Breastfed Infants: Home-Made VS Commercial. *Folia Medica Indonesiana*, *55*(2), 112-116.

Issaka, A. I., Agho, K. E., & Renzaho, A. M. (2017). Prevalence of key breastfeeding indicators in 29 sub-Saharan African countries: a meta-analysis of demographic and health surveys (2010–2015). *BMJ open*, *7*(10).

Jangid, R. K., Kumar, A., Mahapatra, C., Yadav, M., Singhal, S., & Laxminarayan, K. (2020). To study the prevalence and types of nutritional anaemia in under-five children with severe acute malnutrition. *Indian Journal of Child Health*, *7*(6), 270-273.

Jofiro, G., Jemal, K., Beza, L., & Heye, T. B. (2018). Prevalence and associated factors of pediatric emergency mortality at Tikur Anbessa specialized tertiary hospital: a 5 year retrospective case review study. *BMC pediatrics*, *18*(1), 316.

Johnson, R. L., & Rubenstein, S. D. (2013). Anaemia in the emergency department: evaluation and treatment. *Emergency medicine practice*, 2.

Kahveci, B., Melekoglu, R., Evruke, I. C., & Cetin, C. (2018). The effect of advanced maternal age on perinatal outcomes in nulliparous singleton pregnancies. *BMC pregnancy and childbirth*, *18*(1), 343.

Keemer, F. (2011). *Breastfeeding self-efficacy and alternative techniques to overcome maternal or infant breastfeeding challenges: a retrospective descriptive study* (Doctoral dissertation, Queensland University of Technology).

Kejo, D., Petrucka, P. M., Martin, H., Kimanya, M. E., & Mosha, T. C. (2018). Prevalence and predictors of anaemia among children under 5 years of age in Arusha District, Tanzania. *Pediatric health, medicine and therapeutics*, *9*, 9.

Khan, M. N., & Islam, M. M. (2017). Effect of exclusive breastfeeding on selected adverse health and nutritional outcomes: a nationally representative study. *BMC public health*, *17*(1), 889.

Kiemde, F., Tahita, M. C., Lompo, P., Rouamba, T., Some, A. M., Tinto, H., ... & van Hensbroek, M. B. (2018). Treatable causes of fever among children under five years in a seasonal malaria transmission area in Burkina Faso. *Infectious diseases of poverty*, *7*(1), 60.

Kimani-Murage, E. W., Madise, N. J., Fotso, J. C., Kyobutungi, C., Mutua, M. K., Gitau, T. M., & Yatich, N. (2011). Patterns and determinants of breastfeeding and complementary feeding practices in urban informal settlements, Nairobi Kenya. *BMC public health*, *11*(1), 396.

King, A. A., Strouse, J. J., Rodeghier, M. J., Compas, B. E., Casella, J. F., McKinstry, R. C., ... & Miller, J. P. (2014). Parent education and biologic factors influence on cognition in sickle cell anaemia. *American journal of hematology*, *89*(2), 162-167.

Kramer, M. S., & Kakuma, R. (2012). Optimal duration of exclusive breastfeeding. *Cochrane database of systematic reviews*, (8).

Kuriakose, S., Kaimal, R. S., & Varghese Cherian, P. P. (2020). Comparison of incidence of acute respiratory infection in exclusively breastfed infants and not exclusively breastfed infants from 61 to 180 days of age: A prospective cohort study. *Journal of Family Medicine and Primary Care*, *9*(6), 2823.

Ladomenou, F., Moschandreas, J., Kafatos, A., Tselentis, Y., & Galanakis, E. (2010). Protective effect of exclusive breastfeeding against infections during infancy: a prospective study. *Archives of disease in childhood*, *95*(12), 1004-1008.

Lamberti, L. M., Walker, C. L. F., Noiman, A., Victora, C., & Black, R. E. (2011). Breastfeeding and the risk for diarrhoea morbidity and mortality. *BMC public health*, *11*(3), 1-12.

Lassi, Z. S., Rind, F., Irfan, O., Hadi, R., Das, J. K., & Bhutta, Z. A. (2020). Impact of infant and young child feeding (iycf) nutrition interventions on breastfeeding practices, growth and mortality in low-and middle-income countries: systematic review. *Nutrients*, *12*(3), 722.

Lenz, E. R., & Shortridge-Baggett, L. M. (2002). *Self-efficacy in nursing: research and measurement perspectives*. Springer Publishing Company.

Leshem, A., Liwinski, T., & Elinav, E. (2020). Immune-Microbiota Interplay and Colonization Resistance in Infection. *Molecular Cell*.

Leung, N. H., Chu, D. K., Shiu, E. Y., Chan, K. H., McDevitt, J. J., Hau, B. J., ... & Seto, W. H. (2020). Respiratory virus shedding in exhaled breath and efficacy of face masks. *Nature medicine*, *26*(5), 676-680.

Levine, M. M., Nasrin, D., Acácio, S., Bassat, Q., Powell, H., Tennant, S. M., ... & Hossain, M. J. (2020). Diarrhoeal disease and subsequent risk of death in infants and children residing in low-income and middle-income countries: analysis of the GEMS case-control study and 12-month GEMS-1A follow-on study. *The Lancet Global Health*, *8*(2), e204-e214.

Lewin, K. (1947). Group decision and social change. *Readings in social psychology*, *3*(1), 197-211.

Maggini, S., Pierre, A., & Calder, P. C. (2018). Immune function and micronutrient requirements change over the life course. *Nutrients*, *10*(10), 1531.

Malako, B. G., Teshome, M. S., & Belachew, T. (2018). Anaemia and associated factors among children aged 6–23 months in Damot Sore District, Wolaita Zone, South Ethiopia. *BMC hematology*, *18*(1), 14.

Mantadakis, E., Chatzimichael, E., & Zikidou, P. (2020). Iron deficiency anaemia in children residing in high and low-income countries: risk factors, prevention, diagnosis and therapy. *Mediterranean Journal of Hematology and Infectious Diseases*, *12*(1).

Mapoma, C. C., & Banda, C. (2019). Breastfeeding and common childhood diseases in Zambia: does breastfeeding have a protective effect against diarrhoea, fever and acute respiratory infections among children in Zambia?. *African Population Studies*, *33*(1).

Martin, C. R., Ling, P. R., & Blackburn, G. L. (2016). Review of infant feeding: key features of breast milk and infant formula. *Nutrients*, *8*(5), 279.

Mauer, S. K., Moscona, S., & Resnizky, S. (2019). *Psychoanalytic Work with Families and Couples: Clinical Perspectives on Suffering*. Routledge.

Mboya, I. B., Mamseri, R., Leyaro, B. J., George, J., Msuya, S. E., & Mgongo, M. (2020). Prevalence and factors associated with anaemia among children under five years of age in Rombo district, Kilimanjaro region, Northern Tanzania. *F1000Research*, *9*(1102), 1102.

Meczekalski, B., Czyzyk, A., Kunicki, M., Podfigurna-Stopa, A., Plociennik, L., Jakiel, G., ... & Lukaszuk, K. (2016). Fertility in women of late reproductive age: the role of serum anti-

Müllerian hormone (AMH) levels in its assessment. *Journal of endocrinological investigation*, *39*(11), 1259-1265.

Mehlawat, U., Puri, S., & Rekhi, T. K. (2020). Breastfeeding Practices among Mothers at Birth and at 6 Months in Urban Areas of Delhi-Ncr, India. *Jurnal Gizi dan Pangan*, *15*(2), 101-108.

Mezgebo, K., Lema, T. B., & Neela, S. (2020). Food variety, dietary diversity scores and dietary quality of complementary foods consuming by 6-24 months aged children in Jimma town, southwest Ethiopia. *Nutrition & Food Science*.

MOH. (2007). Under five's child health policy: 2007-2015. Retrieved from https://extranet.who.int/.../GHA%202007%20Under%20Five%27s

Mohamed, I. I. (2019). *Household Wealth Index, Nutritional Status And Dietary Practices Of Children Aged 6-59 Months In Mogadishu, Somalia* (Doctoral dissertation, University of Nairobi).

Morice, A. H., Millqvist, E., Bieksiene, K., Birring, S. S., Dicpinigaitis, P., Ribas, C. D., ... & Rigau, D. (2020). ERS guidelines on the diagnosis and treatment of chronic cough in adults and children. *European Respiratory Journal*, *55*(1).

Mortazhejri, S., Hong, P. J., Yu, A. M., Hong, B. Y., Stacey, D., Bhatia, R. S., & Grimshaw, J. M. (2020). Systematic review of patient-oriented interventions to reduce unnecessary use of antibiotics for upper respiratory tract infections. *Systematic reviews*, *9*, 1-16.

Mosley, W. H., & Chen, L. C. (2003). An analythical framework for the study of child survival in developing countries. *Bulletin of the World Health Organization*, *81*, 140-145.

Motee, A., Ramasawmy, D., Pugo-Gunsam, P., & Jeewon, R. (2013). An assessment of the breastfeeding practices and infant feeding pattern among mothers in Mauritius. *Journal of nutrition and metabolism*, *2013*.

Mulatya, D. M., & Ochieng, C. (2020). Disease burden and Risk Factors of diarrhoea in children under five years: Evidence from Kenya's demographic health survey 2014. *International Journal of Infectious Diseases*.

Muleviciene, A., D'Amico, F., Turroni, S., Candela, M., & Jankauskiene, A. (2018). Iron deficiency anaemia-related gut microbiota dysbiosis in infants and young children: A pilot study. *Acta microbiologica et immunologica Hungarica*, *65*(4), 551-564.

Naghashpour, M., Shakerinejad, G., Lourizadeh, M. R., Hajinajaf, S., & Jarvandi, F. (2014). Nutrition education based on health belief model improves dietary calcium intake among female students of junior high schools. *Journal of health, population, and nutrition*, *32*(3), 420.

Nakamura, K., Matsumoto, N., Nakamura, M., Takeuchi, A., Kageyama, M., & Yorifuji, T. (2020). Exclusively Breastfeeding Modifies the Adverse Association of Late Preterm Birth and Gastrointestinal Infection: A Nationwide Birth Cohort Study. *Breastfeeding Medicine*, *15*(8), 509-515.

Newburg, D. S. (2009). Neonatal protection by an innate immune system of human milk consisting of oligosaccharides and glycans. *Journal of animal science*, *87*(suppl_13), 26-34.

Newcomb, R. D., Vetter, R. J., & Cowl, C. T. (2010). Risk Assessment. *Mayo Clinic Preventive Medicine and Public Health Board Review*, 195.

NICE. (2017). Maternal and child nutrition. Retrieved from https:// www.nice.org.uk/guidance/ph11.

Nigatu, D., Azage, M., & Motbainor, A. (2019). Effect of exclusive breastfeeding cessation time on childhood morbidity and adverse nutritional outcomes in Ethiopia: Analysis of the demographic and health surveys. *PloS one*, *14*(10), e0223379.

O'Connor, G. T., Lynch, S. V., Bloomberg, G. R., Kattan, M., Wood, R. A., Gergen, P. J., ... & Sandel, M. T. (2018). Early-life home environment and risk of asthma among inner-city children. *Journal of Allergy and Clinical Immunology*, *141*(4), 1468-1475.

Oddy, W. H. (2017). Breastfeeding, childhood asthma, and allergic disease. *Annals of Nutrition and Metabolism*, *70*(Suppl. 2), 26-36.

Organisation mondiale de la santé, World Health Organization, World Health Organisation Staff, UNICEF., & UNAIDS. (2003). *Global strategy for infant and young child feeding*. World Health Organization.

Oyekale, A. S., & Oyekale, T. O. (2010). Application of health belief model for promoting behaviour change among Nigerian single youths. *African Journal of Reproductive Health*, *14*(2), 63-75.

Palmeira, P., & Carneiro-Sampaio, M. (2016). Immunology of breast milk. *Revista da Associação Médica Brasileira*, *62*(6), 584-593.

Patel, S., Dale, R. C., Rose, D., Heath, B., Nordahl, C. W., Rogers, S., & Ashwood, P. (2020). Maternal immune conditions are increased in males with autism spectrum disorders and are associated with behavioural and emotional but not cognitive co-morbidity. *Translational psychiatry*, *10*(1), 1-10.

Patwari, A. K., & Satyanarayana, L. (1997). Relactation: an effective intervention to promote exclusive breastfeeding. *Journal of tropical pediatrics*, *43*(4), 213-216.

Pérez-Escamilla, R., Buccini, G. S., Segura-Pérez, S., & Piwoz, E. (2019). Perspective: should exclusive breastfeeding still be recommended for 6 months? *Advances in Nutrition*, *10*(6), 931-943.

Pickering, R. (2020). *A Modern Approach to the Birds and the Bees: A Parent's Comprehensive Guide to Talking about Sexuality*. Mango Media Inc.

Poddar, S. (2017). Effect of Certain Indigenous Drugs on Diarrhoea–A Clinical Trial. *Malaysian Journal of Medical Research*, *1*(1), 8-13.

Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International journal of nursing studies*, *47*(11), 1451-1458.

Prajitha, N., Athira, S. S., & Mohanan, P. V. (2018). Pyrogens, a polypeptide produces fever by metabolic changes in hypothalamus: mechanisms and detections. *Immunology Letters*, *204*, 38-46.

Radke, M., Picaud, J. C., Loui, A., Cambonie, G., Faas, D., Lafeber, H. N., & Hascoet, J. M. (2017). Starter formula enriched in prebiotics and probiotics ensures normal growth of infants and promotes gut health: a randomized clinical trial. *Pediatric research*, *81*(4), 622-631.

Raheem, R. A., Binns, C. W., & Chih, H. J. (2017). Protective effects of breastfeeding against acute respiratory tract infections and diarrhoea: findings of a cohort study. *Journal of paediatrics and child health*, *53*(3), 271-276.

Rajani, P. S., Seppo, A. E., & Järvinen, K. M. (2018). Immunologically active components in human milk and development of atopic disease, with emphasis on food allergy, in the pediatric population. *Frontiers in pediatrics*, *6*, 218.

Ramiro-Cortijo, D., Singh, P., Liu, Y., Medina-Morales, E., Yakah, W., Freedman, S. D., & Martin, C. R. (2020). Breast milk lipids and fatty acids in regulating neonatal intestinal development and protecting against intestinal injury. *Nutrients*, *12*(2), 534.

Rana, J., Uddin, J., Peltier, R., & Oulhote, Y. (2019). Associations between Indoor Air Pollution and Acute Respiratory Infections among Under-Five Children in Afghanistan: Do SES and Sex Matter?. *International journal of environmental research and public health*, *16*(16), 2910.

Rathaur, V. K., Pathania, M., Jayara, A., & Yadav, N. (2014). Clinical study of acute childhood diarrhoea caused by bacterial enteropathogens. *Journal of clinical and diagnostic research: JCDR*, *8*(5), PC01.

Reiner Jr, R. C., Wiens, K. E., Deshpande, A., Baumann, M. M., Lindstedt, P. A., Blacker, B. F., ... & Abbastabar, H. (2020). Mapping geographical inequalities in childhood diarrhoeal morbidity and mortality in low-income and middle-income countries, 2000–17: analysis for the Global Burden of Disease Study 2017. *The Lancet*, *395*(10239), 1779-1801.

Rempel, L. A., Rempel, J. K., & Moore, K. C. (2017). Relationships between types of father breastfeeding support and breastfeeding outcomes. *Maternal & child nutrition*, *13*(3), e12337.

Rosenstock, I. M. (1974). The health belief model and preventive health behavior. *Health education monographs*, *2*(4), 354-386.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health education quarterly*, *15*(2), 175-183.

Rowan, H., Lee, M., & Brown, A. (2019). Differences in dietary composition between infants introduced to complementary foods using Baby-led weaning and traditional spoon feeding. *Journal of Human Nutrition and Dietetics*, *32*(1), 11-20.

Ruggieri, A., Anticoli, S., D'Ambrosio, A., Giordani, L., & Viora, M. (2016). The influence of sex and gender on immunity, infection and vaccination. *Annali dell'Istituto superiore di sanita*, *52*(2), 198-204.

Safe Water Network. (2017). Access to safe water: Ghana. Retrieved from http://www.safewaternetwork.org/countries-regions/ghana

Samburu, B. M., Young, S. L., Wekesah, F. M., Wanjohi, M. N., Kimiywe, J., Muriuki, P., & Kimani-Murage, E. W. (2020). Effectiveness of the baby-friendly community initiative in promoting exclusive breastfeeding among HIV negative and positive mothers: a randomized controlled trial in Koibatek Sub-County, Baringo, Kenya. *International breastfeeding journal*, *15*(1), 1-13.

Santos, F. S., Santos, L. H. D., Saldan, P. C., Santos, F. C. S., Leite, A. M., & Mello, D. F. D. (2016). Breastfeeding and acute diarrhoea among children enrolled in the family health strategy. *Texto & Contexto-Enfermagem*, *25*(1).

Schreiber, N. M. F. (2005). Starburst Galaxies: An Infrared Perspective. In *Starbursts* (pp. 233-240). Springer, Dordrecht.

Seidu, A. A., Ahinkorah, B. O., Ameyaw, E. K., Hubert, A., Agbemavi, W., Armah-Ansah, E. K., & Tackie, V. (2020). What has women's reproductive health decision-making capacity and other factors got to do with pregnancy termination in sub-Saharan Africa? Evidence from 27 cross-sectional surveys. *Plos one*, *15*(7), e0235329.

Seidu, A. A., Ameyaw, E. K., Ahinkorah, B. O., Baatiema, L., & Appiah, F. (2019). Ecological zone and symptoms of acute respiratory infection among children under five in Ghana: 1993–2014. *SSM-population health*, *8*, 100414.

Shah, S., Kongre, V., Kumar, V., & Bharadwaj, R. (2016). A study of parasitic and bacterial pathogens associated with diarrhoea in HIV-positive patients. *Cureus*, *8*(9).

Shakya, P., Kunieda, M. K., Koyama, M., Rai, S. S., Miyaguchi, M., Dhakal, S., & Jimba, M. (2017). Effectiveness of community-based peer support for mothers to improve their breastfeeding practices: A systematic review and meta-analysis. *PloS one*, *12*(5), e0177434.

Shiferaw, T. (2020). *Prevalence of under nutrition and associated factors among children of age 6-59 month in Benishangul Gumuz, Debatie woreda, North West Ethiopia*(Doctoral dissertation).

Smith, E. R., Locks, L. M., Manji, K. P., McDonald, C. M., Kupka, R., Kisenge, R., & Duggan, C. P. (2017). Delayed breastfeeding initiation is associated with infant morbidity. *The Journal of pediatrics*, *191*, 57-62.

Smothers, A. (2019). Pruritus, Fever, and Sweats. *Oxford Textbook of Palliative Nursing*, 285.

Stephens, B., Azimi, P., Thoemmes, M. S., Heidarinejad, M., Allen, J. G., & Gilbert, J. A. (2019). Microbial exchange via fomites and implications for human health. *Current Pollution Reports*, *5*(4), 198-213.

Stiller, C. K., Golembiewski, S. K. E., Golembiewski, M., Mondal, S., Biesalski, H. K., & Scherbaum, V. (2020). Prevalence of Undernutrition and Anaemia among Santal Adivasi Children, Birbhum District, West Bengal, India. *International Journal of Environmental Research and Public Health*, *17*(1), 342.

Taksande, A. M., & Yeole, M. (2016). Risk factors of Acute Respiratory Infection (ARI) in under-fives in a rural hospital of Central India. *Journal of Pediatric and Neonatal Individualized Medicine (JPNIM)*, *5*(1), e050105-e050105.

Talbert, A., Jones, C., Mataza, C., Berkley, J. A., & Mwangome, M. (2020). Exclusive breastfeeding in first-time mothers in rural Kenya: a longitudinal observational study of feeding patterns in the first six months of life. *International breastfeeding journal*, *15*(1), 1-9.

Tam, P. C., Ly, K. M., Kernich, M. L., Spurrier, N., Lawrence, D., Gordon, D. L., & Tucker, E. C. (2020). Detectable severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in human breast milk of a mildly symptomatic patient with coronavirus disease 2019 (COVID-19). *Clinical Infectious Diseases*.

Tamburini, S., Shen, N., Wu, H. C., & Clemente, J. C. (2016). The microbiome in early life: implications for health outcomes. *Nature medicine*, *22*(7), 713-722.

Tampah-Naah, A. M. (2019). *Breastfeeding practices and risks of childhood morbidity in Ghana* (Doctoral dissertation, University of Cape Coast).

Tampah-Naah, A. M., Osman, A., & Kumi-Kyereme, A. (2019). Geospatial analysis of childhood morbidity in Ghana. *Plos one*, *14*(8), e0221324.

Teferi, M., Desta, M., Yeshitela, B., Beyene, T., Cruz Espinoza, L. M., Im, J., & Pak, G. D. (2019). Acute Febrile Illness among Children in Butajira, South–Central Ethiopia during the Typhoid Fever Surveillance in Africa Program. *Clinical Infectious Diseases*, *69*(Supplement_6), S483-S491.

Thomas, S., Izard, J., Walsh, E., Batich, K., Chongsathidkiet, P., Clarke, G., & Gilligan, J. P. (2017). The host microbiome regulates and maintains human health: a primer and perspective for non-microbiologists. *Cancer research*, *77*(8), 1783-1812.

Toivonen, L., Karppinen, S., Schuez-Havupalo, L., Teros-Jaakkola, T., Mertsola, J., Waris, M., & Peltola, V. (2020). Respiratory syncytial virus infections in children 0–24 months of age in the community. *Journal of Infection*, *80*(1), 69-75.

Triantis, V., Bode, L., & Van Neerven, R. J. (2018). Immunological effects of human milk oligosaccharides. *Frontiers in pediatrics*, *6*, 190.

Tromp, I., Kiefte-de Jong, J., Raat, H., Jaddoe, V., Franco, O., Hofman, A., & Moll, H. (2017). Breastfeeding and the risk of respiratory tract infections after infancy: The Generation R Study. *PloS one*, *12*(2), e0172763.

Tsabedze, B. S. (2018). *Association between malnutrition and diagnosed drug susceptible tuberculosis amongst children aged zero to fifteen years old in Swaziland* (Doctoral dissertation).

Tuaillon, E., Vilene, J., Dujols, P., Cambonie, G., Rubbo, P. A., Nagot, N., & Van de Perre, P. (2017). Subclinical mastitis occurs frequently in association with dramatic changes in inflammatory/anti-inflammatory breast milk components. *Pediatric research*, *81*(4), 556-564.

UN. (2016). Sustainable Development Goals: Goal 3 – Ensure healthy lives and promote well-being for all at all ages. Retrieved from http://www. un.org/sustainabledevelopment/health/

UNICEF (2015). Breastfeeding: Impact on child survival and global situation. Retrieved from http://www.unicef.org/nutrition/index_24824 .html UNICEF. (2013). Improving child

nutrition: The achievable imperative for global progress. Division of Communication, UNICEF, New York. Retrieved from https://www.unicef.org/nutrition/index_68661.html

UNICEF. (2010). WASH in communities. Retrieved from https://www. unicef.org/ghana/wes.html

UNICEF. (2017). Acute respiratory infection (pneumonia). Retrieved from https://data.unicef.org/topic/child-health/pneumonia/

UNICEF. (2017). Diarrhoea remains a leading killer of young children, despite the availability of a simple treatment solution. Retrieved from https://data.unicef.org/topic/child-health/diarrhoeal-disease/

UNICEF/WHO. (1991). The Baby-Friendly Hospital Initiative. Retrieved from https://www.unicef.org/programme/breastfeeding/baby.htm

Von Hertzen, L., Beutler, B., Bienenstock, J., Blaser, M., Cani, P. D., Eriksson, J., & Kere, J. (2015). Helsinki alert of biodiversity and health. *Annals of medicine*, *47*(3), 218-225.

Wang, H., Bhutta, Z. A., Coates, M. M., Coggeshall, M., Dandona, L., Diallo, K., & Hay, S. I. (2016). Global, regional, national, and selected subnational levels of stillbirths, neonatal, infant, and under-5 mortality, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*, *388*(10053), 1725-1774.

WaterAid. (2017). Ghana: water. Retrieved from https://www.wateraid. org/us/where-we-work/ghana

Whall, A. L., Sinclair, M., & Parahoo, K. (2006). A philosophic analysis of Evidence-Based Nursing: recurrent themes, metanarratives, and exemplar cases. *Nursing outlook*, *54*(1), 30-35.

Whidden, C., Thwing, J., Gutman, J., Wohl, E., Leyrat, C., Kayentao, K., & Chandramohan, D. (2019). Proactive case detection of common childhood illnesses by community health workers: a systematic review. *BMJ global health*, *4*(6).

WHO. (2005). Report of a technical consultation on birth spacing. WHO Press, Geneva, Switzerland: Author.

WHO. (2008). Indicators for assessing infant and young child feeding practices. WHO Press, Geneva, Switzerland: Author.

WHO. (2008). Worldwide prevalence of anaemia 1993-2005. WHO Press, Geneva, Switzerland: Author.

WHO. (2013). Hospital care for children: Guidelines for the management of common childhood illness. WHO Press Geneva, Switzerland: Author

WHO. (2015). Global Health Observation (GHO) data: Causes of child mortality. Retrieved from http://www.who.int/gho/child_health/ mortality/causes/en/

WHO. (2016). WHO recommendation on antenatal care for a positive pregnancy experience. WHO Press, Geneva, Switzerland: Author.

WHO. (2017). Global Strategy for Infant and Young Child Feeding. WHO Press, Geneva, Switzerland: Author.

WHO/UNICEF. (2003). Global strategy for infant and young child feeding. WHO Press, Geneva, Switzerland: Author.

Wibawa, P. G. S. S., Indrarto, F. W., & Samodra, Y. L. (2019). Protective Effect of Exclusive Breastfeeding on Acute Respiratory Infections (ARI) among Children in Tabanan, Bali. *JHE (Journal of Health Education)*, *4*(2), 65-71.

Wiciński, M., Sawicka, E., Gębalski, J., Kubiak, K., & Malinowski, B. (2020). Human milk oligosaccharides: Health benefits, potential applications in infant formulas, and pharmacology. *Nutrients*, *12*(1), 266.

Williams, A. M., Guo, J., Addo, O. Y., Ismaily, S., Namaste, S. M., Oaks, B. M., & Engle-Stone, R. (2019). Intraindividual double burden of overweight or obesity and micronutrient deficiencies or anaemia among women of reproductive age in 17 population-based surveys. *The American journal of clinical nutrition*, *112*(Supplement_1), 468S-477S.

World Health Organization. (2018). Implementation guidance: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services: the revised baby-friendly hospital initiative.

Yarnoff, B., Allaire, B., & Detzel, P. (2013). Associations between infant feeding practices and length, weight, and disease in developing countries. *Frontiers in pediatrics*, *1*, 21.

Yin, R. K. (2018). Case study research and applications.

APPENDIX A

22 August 2014

2014 GHANA DEMOGRAPHIC AND HEALTH SURVEY
WOMAN'S QUESTIONNAIRE

MINISTRY OF HEALTH, GHANA — GHANA STATISTICAL SERVICE

IDENTIFICATION

LOCALITY NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER .....

STRUCTURE NUMBER .....

HOUSEHOLD NUMBER .....

REGION .....

DISTRICT .....

URBAN/RURAL (URBAN = 1; RURAL = 2) .....

NAME AND LINE NUMBER OF WOMAN _____

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY / MONTH / YEAR (2014)
INTERVIEWER'S NAME				INT. NUMBER
RESULT*				RESULT
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS
TIME				

*RESULT CODES:
1 COMPLETED
2 NOT AT HOME
3 POSTPONED
4 REFUSED
5 PARTLY COMPLETED
6 INCAPACITATED
7 OTHER _____ (SPECIFY)

LANGUAGE OF QUESTIONNAIRE: 1 | LANGUAGE OF INTERVIEW: | LANGUAGE OF RESPONDENT: | TRANSLATOR USED: (YES = 1, NO = 2)

LANGUAGE OF QUESTIONNAIRE: **English**

LANGUAGE CODES: ENGLISH = 1, AKAN = 2, GA = 3, EWE = 4, NZEMA = 5, DAGBANI = 6, OTHER = 7 (SPECIFY)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____	NAME _____		
DATE _____	DATE _____		

SECTION 1. RESPONDENT'S BACKGROUND

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is _____. I am working with Ghana Statistical Service and the Ministry of Health. We are conducting a survey about health all over Ghana. The information we collect will help the government to plan health services. Your household was selected for the survey. The questions usually take about 30-60 minutes. All of the answers you give will be confidential and will not be shared with anyone other than members of our survey team. You don't have to be in the survey, but we hope you will agree to answer the questions since your views are important. If I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time.

In case you need more information about the survey, you may contact the person listed on the card that has already been given to your household.

Do you have any questions? May I begin the interview now?

SIGNATURE OF INTERVIEWER: _____ DATE: _____

RESPONDENT AGREES TO BE INTERVIEWED . . . 1 ↓ RESPONDENT DOES NOT AGREE TO BE INTERVIEWED . . . 2→ END

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOUR . . . . . MINUTES	
101A	During the interview I would like to measure your blood pressure. This will be done three times during the interview. This is a harmless procedure. It is used to find out if a person has high blood pressure. If it is not treated, high blood pressure may eventually cause serious damage to the heart. The results of this blood pressure measurement will be given to you after the interview together with an explanation of the meaning of your blood pressure numbers. If your blood pressure is high, we will suggest that you consult a health facility or doctor since we cannot provide any further testing or treatment during the survey. Do you have any questions about the blood pressure measurement so far? If you have any questions about the procedure at any time, please ask me. You can say yes or no to having the blood pressure measurement now. You can also decide at anytime not to participate in the blood pressure measures. Would you allow me to proceed to take your blood pressure measurement at this time? Signature of interviewer: _____ Date: _____ RESPONDENT AGREES . . . . . 1 ↓	RESPONDENT DOES NOT AGREE . . . . . 2→ 102	
101B	Before taking your blood pressure, I would like to ask a few questions about things that may affect these measurements. Have you done any of the following within the past 30 minutes: a) Eaten anything? b) Had coffee, tea, cola or other drink that has caffeine? c) Smoked any tobacco product? d) Conducted any vigorous physical activity or exercises?	YES NO EATEN . . . . . 1 2 HAD CAFFEINE . . . . . 1 2 SMOKED . . . . . 1 2 EXERCISES 1 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
812	Are you covered by any health insurance?	YES . . . . . 1 NO 2	→ 813
812A	Are you registered with the National Health Insurance Scheme (NHIS)?	YES . . . . . 1 NO 2	→ 819 → 816
813	What type of health insurance are you (covered/registered) by? RECORD ALL MENTIONED.	NATIONAL /DISTRICT HEALTH INSURANCE(NHIS) . . . . . A HEALTH INSURANCE THROUGH EMPLOYER . . . . . B MUTUAL HEALTH ORGANIZATION/ COMMUNITY-BASED HEALTH INSURANCE . . . . . C OTHER PRIVATELY PURCHASED COMMERCIAL HEALTH INSURANCE. D OTHER _____ X (SPECIFY)	
814	Does your insurance cover any of the following maternity benefits: a) Antenatal health care? b) Childbirth health care in a health facility? c) Postnatal health care for the mother? d) Postnatal health care for the child? e) Cash benefits during maternity leave? f) Other?	YES NO DK ANTENATAL . . . . . 1 2 8 CHILDBIRTH . . . . . 1 2 8 PNC MOTHER . . . . . 1 2 8 PNC CHILD . . . . . 1 2 8 CASH BENEFITS. . . . . 1 2 8 OTHER 1 2 8	
815	CHECK 813: CODE 'A' FOR NHIS NOT CIRCLED ↓ CODE 'A' FOR NHIS CIRCLED →		→ 817
816	Why have you not registered with the National Health Insurance Scheme (NHIS)? RECORD ALL MENTIONED	NOT HEARD OF NHIS . . . . . A CANNOT AFFORD PREMIUM B DO NOT TRUST . . . . . C DON'T NEED HEALTH INSURANCE D NHIS DOES NOT COVER HEALTH SERVICES I NEED . . . . . E DON'T UNDERSTANDS SCHEME . . . F DON'T KNOW WHERE TO REGISTER. G NO EASY ACCESS TO A HEALTH FACILITY . . . . . H DO NOT LIKE THE ATTITUDE OF STAFF IN AHEALTH FACILITY . . . I THOSE WITH INSURANCE ARE GIVEN SUBSTANDARD SERVICES AND MEDICINE . . . . . J OTHER _____ X (SPECIFY)	→ 828
817	Did you pay your NHIS membership yourself?	YES, PAID MYSELF. . . . . 1 YES, PAID BY A RELATIVE/FRIEND . . . 2 YES, PAID BY EMPLOYER/SSNIT . . . 3 NO, EXEMPT AS ELDERLY . . . . . 4 NO, EXEMPT AS PENSIONER. . . . . 5 NO, EXEMPT AS INDIGENT. . . . . 7 NO, OTHER _____ 6 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
848	What type of service did you receive during this most recent visit?	OUTPATIENT FAMILY PLANNING ..... 01 ANC/DELIVERY/PNC ..... 02 NEWBORN CARE ..... 03 MALARIA ..... 04 FEVER ..... 05 DIARRHOEA ..... 06 HIV/AIDS/STI ..... 07 HIGH BLOOD PRESSURE ..... 08 EAR/NOSE/THROAT INFECTION.... 09 DIABETES ..... 10 EYE INFECTION ..... 11 CHECKUP/PREVENTIVE CARE .... 12 ACCIDENT/INJURY ..... 13 OTHER OUTPT. _____ 14 (SPECIFY) INPATIENT PREGNANCY/DELIVERY..... 15 CHILD ILLNESS ..... 16 HER OWN ILLNESS..... 17 ACCIDENT/INJURY ..... 18 OTHER INPT. _____ 19 (SPECIFY) OTHER _____ 96 (SPECIFY)	
849	How did you pay for the service during this most recent visit?	CASH ..... 1 NATIONAL HEALTH INSURANCE .... 2 OTHER INSURANCE ..... 3 COMBINATION OF ANY OF THE ABOVE ..... 4 OTHER _____ 6 (SPECIFY)	
850	Now I want to ask you about the ease of getting care. In your opinion, was it very easy, easy, fairly easy, difficult, or very difficult to see the health provider?	VERY EASY ..... 1 EASY ..... 2 FAIRLY EASY ..... 3 DIFFICULT ..... 4 VERY DIFFICULT..... 5	
851	Is the location of the health facility very convenient, convenient, fairly convenient, not convenient, or very inconvenient for you?	VERY CONVENIENT ..... 1 CONVENIENT ..... 2 FAIRLY CONVENIENT..... 3 NOT CONVENIENT ..... 4 VERY INCONVENIENT..... 5	
852	Are the hours the health facility open during the day very good, good, fair, poor, or very poor for you?	VERY GOOD ..... 1 GOOD ..... 2 FAIR ..... 3 POOR ..... 4 VERY POOR 5	