

**NATAL CARE AND ITS IMPLICATION ON CHILD MORBIDITY IN
GHANA**

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DECLARATION

This is to certify that this thesis is the result of research undertaken by Joy Kafui Awovi Ahiabor, towards the award of Master of Philosophy Degree in Economics at the Department of Economics, University of Ghana, Legon.

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ABSTRACT

The fundamental reason for this study is the issue of child morbidity of pre-school children in Ghana. The aim of government with the help of the Ghana Health Service (GHS) and other stakeholders has been to reduce the level of child morbidity which leads to child mortality in Ghana. This study on natal care and its implication on child morbidity would help the government in formulating appropriate policies to curb this problem. This study uses Acute Respiratory Infection (ARI) which is an infection of the lungs and the respiratory tract as a proxy for child morbidity. The specific aim of this study is to examine the nature of natal care and child morbidity and also to ascertain if natal care, mother's income, and other demographic factors have an influence on child morbidity. For the mother's income, the study used paid/unpaid maternity leave to determine her income to purchase health care and its influence on child morbidity.

The study used data from the Ghana Demographic and Health Survey (2014) using the probit estimation method to estimate the health, demographic and income factors that influence child morbidity in Ghana. It showed evidence that some stages of natal care, unpaid maternity leave, and other demographic factors have a significant impact on child morbidity in Ghana. Specifically, the first post-natal care visits other than the first week after delivery positively and significantly influence the possibility in the occurrence of an acute respiratory illness in under five children. The study also showed that for mother's income which determines her health care purchases, unpaid maternity leaves significantly and positively influences child morbidity. Other demographic factors as child's age and household death experiences also have a positive significant influence on child morbidity in Ghana.

DEDICATION

This thesis is dedicated to the Almighty God and to my parents Rev. Dr. Benjamin Ahiabor and Mrs. Rejoice Ahiabor.

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
AIDS	Acquired Immune Deficiency Syndrome
ARI	Acute Respiratory Infections
CHPS	Community-based Health Planning
DALY	Disability-Adjusted Life Years
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
HIV	Human immune Virus
IMR	Infant Mortality Rate
MDG	Millennium Development Goal
MMR	Maternal Mortality Rate
PNC	Post Natal Care
PMTCT	Prevention of Mother-To-Child Transmission
SBA	Skilled Birth Attendance
SDG	Sustainable Development Goal
SSA	Sub Saharan Africa
SOWC	State of World 's Children

STD	Sexually Transmitted Diseases
SDG	Sustainable Development Goals
TB	Tuberculosis
UNICEF	United Nation
WDC	Workforce Development Council
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.0 Background of study

Stakeholders in the global health sector have made a tremendous effort to improve upon the health care of children all over the world which has seen some successes. Though these successes are not at its all-time high as the reduction of child morbidity is still a daunting task to these experts. According to Kippenberg et al, (2005) about two-thirds of newborn or child deaths from the global perspective can be attributed to child infections, prematurity, and asphyxia which are illnesses that are preventable. 99% of these illnesses happen in less developed countries. Child morbidity is a cause of mortality among children though not all diseased children end up dying. The Sustainable Development Goals (SDGs) as part of the Agenda 2030 adopted by the General Assembly in 2015 had one out of its seventeen goals being good health and wellbeing which seeks to reduce neonatal and under five years mortality to as low as 12 per 1000 live births and 25per 1000 births respectively. It also seeks to end the epidemic of tuberculosis and other diseases in all countries. To make this goal attainable, all countries especially low to middle-income countries where child mortality rates, especially newborn mortality rates, are high, need to make more effort.

Globally, for some years now, there has been a tremendous improvement in the world's population health in terms of reducing mortality rates. Sub-Saharan Africa was not left out in the reduction in mortality rates and an increase in life span. Until the recent onset of HIV/AIDS in the last decade, this resulted in an improvement in human welfare (Becker et.al 2005). Child morbidity in this part

of the world is a very crucial issue to be dealt with by the actors in this sector. Child morbidity can be as a result of several conditions which includes respiratory infections, HIV/AIDS among others.

One major problem confronting the developing world is the rate of mortality of pre-school children as a result of morbidity from acute respiratory infections (WHO, 2017). The incidence of child morbidity is usually determined by the nature of pre-delivery, delivery and post-delivery attention given to these children in their prime times.

With reference to the developed world, during the last hundred years, acute respiratory infections were the major causes of infant and child mortality for both infants and adults. On the other hand, the recognition of acute respiratory infections as a serious problem in public health among children in developing countries was until recently. The magnitude of ARI causing child morbidity in developing countries was first documented and published in the early 1960s (Garenne et al, 1992). In recent times, the World Health Organization and its related international bodies have prioritized interventions to resolve ARI (WHO, 2017). In 1976 at the World Health Assembly, the contribution of ARI to child mortality raised increasing concerns. This led to the creation of the ARI Technical Advisory group in 1983 by WHO in Geneva.

Dealing with child morbidity also requires that we deal with the health of the mothers as well since the health of the mother will have a direct influence on the health status of an unborn child during the antenatal and the delivery stages specifically. The labor supply of the mother hence her income level affects child morbidity. Research has shown that improvement in the prenatal care and nutrition levels of the mother has a direct influence on maternal labor productivity especially among the vulnerable families (Ranis et al, 1985; Tambi, 2017). If there is the provision of quality clinical services to the mothers during this stage, it can go a long way to impact on her labor supply and income levels and hence; the health of the child (Mahiti et al, 2015)

According to Mahiti et al (2015), the benefits of antenatal and delivery care for children has advantages in that, these care services have enabled health care providers to determine the problems the pregnant mothers encounter by checking for diseases affecting the mothers in order to counsel them on the best practices in order to avoid the transfer of these diseases to the unborn children and also to ensure safe delivery which will be devoid of certain birth complications. World Health Organization (2013) reported that the post-natal period which is the days and weeks after child delivery are the most tender and important phase of a mother and infant child's life, but unfortunately the most neglected period of quality health service delivery. Lack of necessary care within this period could cause serious ill health that could lead to death. The kind of skilled health care attention given during pregnancy and delivery are much higher than after childbirth. Child deaths are mostly recorded during this period.

Ghana as a developing country is not new to child morbidity. World Health Organization (2017) estimated that almost 10 million under 5 children die every year from medical conditions that could have been treated simply with health care interventions. Most of these diseases and deaths largely happen in sub-Saharan Africa of which Ghana is part. From this background, natal care will have the tendency of impacting on the Child morbidity rate in Ghana.

1.1 Statement of the problem

Children are very vulnerable and for this reason, need a lot of attention and care. GDHS (2014) reported that pneumonia and other respiratory tract infections have been the major cause of child ill health and death in Ghana. ARI has a wide range of effects like a bacterial and viral infection of the lungs and respiratory tracts. Other varieties of triggers include exposure to air pollution, low birth weight, malnutrition, and overcrowding, which are all important risk factors. Acute respiratory infections contribute to almost 33 percent of all deaths in pre-school children in developing countries. Many risk factors for respiratory diseases have already been identified and exposure to outdoor concentrations of air pollution has been pointed out as possibly being one of them (Gouveia & Fletcher, 2000) Mother's report from the GDHS (2014) estimated 4 percent ARI symptoms in children under the age of five, but it is necessary to note that children in remote areas are likely to experience symptoms of ARI two times more than their counterparts living in urban areas.

Several studies have outlined factors confronting child health with relation to post-natal care of children including neonates and infants as emanating from factors such as diseases (Diarrhea, Pneumonia, asphyxia, Malaria among many others). Some studies have cited that more than one million child mortalities as a result of morbidity that occur in Africa are within the first week of life, half of them on the first day of life. Fengxiu Ouyang et al. (2013) claimed that between 3 to 4 million stillbirths occur annually across the world as a result of maternal morbidity and almost 97-99% could be found in less developed countries. The continuous incidents and cases of childhood diseases and mortality in Ghana have generated a lot of concern among various stakeholders of public health in the country.

The perinatal rate in Ghana as of 2014 was 38/1000 of all pregnancies in the five years prior to the survey (GDHS, 2014). WHO (2009) and other partners also estimated that stillbirth was as high as 38/1000 pregnancies. Prior to the Ghana Demographic and Health Survey (GDHS, 2014), they identified about 4% of pre-school children with ARI symptoms. The issue of concern is the continuous morbidity of children in the country through Acute Respiratory Illnesses such as pneumonia bronchiolitis in the phase of interventions in post-natal care for children. Perhaps it is the emphasis on the antenatal and delivery care for the children or an increase in a mother's income level to purchase proper health care that could offer a drastic reduction in the morbidity of children in the country.

Studies have examined that maternal employment affects the health status of low-income, elementary-school-aged children using instrumental variables estimation and experimental data from a welfare-to-work program implemented in the early 1990s. In a secondary analysis using fixed effects techniques on longitudinal survey data collected in 1998 and 2001, we find a comparable adverse effect of maternal employment on child health that supports the external validity of our primary result. It was found that employment among low-income women have a modest adverse effect on the general health status of young children (Gennetian et. al, 2010).

It is based on this reason the study sought to explore the impact of natal care encompassing antenatal, delivery and post-natal care and a mother's income level on the morbidity of children.

1.2 Research Question

To achieve the objectives of this research, the following research questions are set and answered to that effect

- i. What is the nature of natal care practices in Ghana?
- ii. Does natal care and mother's income level during the natal period influence the occurrence of child morbidity?

1.3 Research Objectives

The main aim of this research is to explore the impact of natal care (antenatal, delivery and post-natal care) on child morbidity in Ghana. In order to achieve this main objective, the following specific objectives are set to that regard.

- i. . To analyze the nature of natal care and child morbidity in Ghana.
- ii. To ascertain if natal care and mother's income level during natal period influences child morbidity.

1.4 Significance of the Study

The main aim of most research is to find solutions to developing a problem and contribute to the existing stock of knowledge. The outcome of this study presents some significance to researchers. This study will present a holistic picture of Child Morbidity situation in Ghana. The nature of Child morbidity in Ghana, the effects of diseases specifically acute respiratory illnesses on children under five years and the implication of natal care on child morbidity will be revealed from this study. The impact of Acute Respiratory Illnesses on children necessitates the institutionalization

of sound practices to curb this menace. It would also seek to identify statistically the effect of a mother's income level on Child Morbidity.

In practice, the study will feed into the design of child and maternal health programs in Ghana that will bridge both household and institutional management expectation to public health at the national level.

Moreover, by assessing current strategies adopted by health experts in improving child and maternal health, stakeholders will be able to understand how their current efforts have gone in solving the problem of child morbidity and also inform further strategies.

Generally, the results from this study will assist policy makers to understand natal care towards child morbidity and possibly mortality. To the academia, the findings from this study will help provide additional literature on child morbidity and natal care and also inform further studies into this subject matter.

1.5 Scope of the Study

This study is centered on ascertaining the relationship between Natal Care and Child morbidity in Ghana. In achieving this, it is prudent to identify the causes of child morbidity on Ghana. This study is however centered on children aged 0 to 5 years. This age range is considered because, it is considered as a vulnerable age range for morbidity of children in Ghana (UNICEF, 2012). The scope of the study is however broad as it is measured by the number of visits to the antenatal clinic and post-natal clinic before and after delivery respectively in Ghana. This is however specifically centered on Acute Respiratory Illness of the children as the proxy for measuring child morbidity.

1.6 Organization of the Study

The study is presented in six (6) chapters in a well-structured and coordinated order.

Chapter one (1) gives an overview of child morbidity and Natal Care in Ghana which is captured under the background, the statement of problem, the actual and specific objectives, the research questions, hypothesis, Significance of the study, Scope of the study, limitations, and organization of the study.

Chapter two (2) on the other hand reviewed relevant literature in relation to Acute Respiratory Illnesses among children and Natal Care in Ghana. Theoretical reviews were done to that effect in this chapter. Discussion of past research pertaining to the study was also stated in this chapter.

The focus of chapter three (3) is to outline the overview of child morbidity and its causes in Ghana. Also, the chapter captured natal care in Ghana and how it is delivered in the country.

The methodology employed for the study was captured in Chapter four (4) Data types, Sources, Population and sample, methods of data collection and analysis were all covered in this chapter.

Chapter five (5) captures the data analysis and discussion of the study and finally, Chapter six (6) looks at the findings of the research, conclusion, and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed relevant previous literature on Natal Care and implication on Child morbidity. The childhood health issues considered in this study include the impact of Natal Care on Child Morbidity with emphasis on Acute Respiratory Illnesses since it is a leading cause of illness among children. The chapter, however, examines into details, Natal Care, Child Morbidity and Mortality in Ghana. The literature was however reviewed under two parts namely theoretical framework and Empirical Review.

2.2 Theoretical Framework

2.2.1 Morbidity

Morbidity is of high interest to the various public health actors throughout the world. The condition of diseases affecting the society has been an issue which requires urgent attention by the stakeholders involved. There have been many factors that influence morbidity and among these factors include health habits. An increasing number of studies now link better health habits with substantially lower morbidity, notwithstanding the occasional assertion that better health habits might lead primarily to longer life and thus to an increased need for medical care (Milliman and Robertson, Inc. 1987).

The Grossman model of 1972 is a theoretical and empirical investigation to study the demand for health and medical care. Grossman derives the demand for health from an optimal control model

in which health capital is both a consumption and an investment good. In his method, the individual chooses his level of health and therefore his life span. Initially, an individual is endowed with a certain amount of health capital, which depreciates over time but can be replenished by investments like medical care, diet, exercise, and others. For that matter, the level of health is not treated as exogenous but depends on the number of resources the individual allocates to the production of health. The production of health capital also depends on variables which modify the efficiency of the production process, therefore changing the shadow price of health capital. For example, more highly educated people are expected to be more efficient producers of health who thus face a lower price of health capital, an effect that should increase their quantity of health demanded. While the Grossman model provides a suitable theoretical framework for explaining the demand for health and the demand for medical services, it has not been too successful empirically. However, empirical tests up to this date have been exclusively based on cross-section data, thus failing to take the dynamic nature of the Grossman model into account.

Other substantial literature on outcomes of child health are seen to be measured by both morbidity and mortality. The Mosley-Chen (1984) model is no exception. The model was developed to clarify understanding of the many factors influencing family reproduction of healthy children to aid in health policy formulation. The model shows five groups of proximate determinates influencing child survival in developing countries. Myers (1994) sees this model as a combination of social science and medical research in a close-fisted way. These determinants are grouped into five categories: maternal factors; environmental contamination; nutrient deficiency; injuries; and personal illness control. The model motivates the idea that there can be different mortality rates for countries with the same income per capita because of the various determinants that influence child survival (Hanmer et.al, 2003). In the absence of data that perfectly capture all proximate

determinants, socioeconomic factors should explain some of the residual variations in child survival. Mosley and Chen distinguished between socioeconomic determinants at the individual, household, and community levels. At the individual level, maternal education has been considered an important determinant of child mortality. Education may affect child survival chances through knowledge of health production (Grossman 1972; De Poel et.al, 2009) but also through the empowerment of women within the household and the consequent priority given to child health in household resource allocation (Caldwell 1979; Hobcraft 1993; De Poel et.al, 2009). At the household level, income and wealth can raise survival chances through the purchase of food, medicines, and access to health care, but may also operate through exposure to environmental contamination, which Mosley and Chen identified as one of the five proximate determinants of mortality. At the community level, the model discussed factors related to the ecological setting, political economy, and health system. However, because community-level data are seldom available, few empirical studies have assessed the relative roles of these factors (Sastry 1996; De Poel et. al,2009). To the extent that community-level determinants are important, there should be cross-community variation in the prevalence of infant mortality, which, in the absence of sufficient data on relevant community characteristics, could be captured in a model by community-specific intercepts.

The World Health Organization (1996) estimated that approximately 50,000 people made up mostly of children die each day of an infectious disease. Human populations have been characterized by infectious disease for thousands of years (Brachman, 2003). Although some global infectious diseases are near eradication, some continue to dwell among the global population more especially children under the ages of 5 years. Ghana has undertaken major efforts in decreasing infant and child morbidity but still, the number of death cases from diseases remains

unacceptably high. Currently, one in 12 children dies before the age of five. Child mortality and morbidity in Ghana are driven by a host of intersecting factors which include Low access to quality services, Risky environment, and intergenerational poverty among others.

WDC (2015) reported tuberculosis as an acute respiratory illness that is the world's deadliest disease infecting about 33 percent world's population in particular children and it has prevalent in the human population for about 5000 years today. The disease left its earliest marks on human populations in Egypt and spread to India, China, and eventually Europe (Daniel, 2006).

2.2.2 Child Morbidity

In the early 90s, child morbidity led mortality for children below 5 years was 100 deaths or more per 1000 live births in about 55 countries. By the end of the decade, about 50 of those countries where unable to meet the 1990 World Summit for Children goal of decreasing the under-five morbidity rate to less than 70 deaths per 1000 live births. However, United Nation introduced a new target to curve under-five morbidity by two-thirds (compared with 1990) before 2015 (UN, 2001).

The child morbidity rate may be defined as the number of sick children that occur per thousand live births in any population in one calendar year. From this definition, it is obvious that the child morbidity rate does not consider stillbirth, but only live births and infants. Child morbidity rate comprises of two parts viz. neo-natal morbidity rate and postneonatal morbidity rate. The neonatal morbidity rate also comprises of two parts viz. early neonatal morbidity rate and late neonatal morbidity rate. Neonatal morbidity is the likelihood of falling sick in the first month (28 days) after birth and post-neonatal mortality is the likelihood of falling sick after the first month of birth

but before the 12th month. Therefore, focusing on infant morbidity as a single measure disguises the unequal share of neonatal and post-neonatal morbidity. According to one estimate, 50-60 percent of infant deaths i.e. nearly 5 million neonates die each year in the world as a result of morbidity, of which 96 percent are in developing countries (UN, 2015)

Child morbidity rate is the age-specific morbidity rate under the age of five years per thousand children in the same age group in a given year. The child morbidity rate is a more specific narrative of the social situation in a country than the rate of infant morbidity. It reflects the real environmental health hazards (e.g. poor hygiene, malnutrition, infections, and accidents) including economic, educational and cultural characteristics of the family (Park and park, 1970). Childhood morbidity consists of sicknesses occurring among children from birth until the exact age of five. The age distribution of childhood morbidity is influenced by the causes of death in a community. In communities where immunization coverage and malnutrition are problems, child morbidity constitutes the majority of under-five morbidity. The ratio of under-five morbidity can thus provide insight into the causes of childhood morbidity in a country.

According to Gouveia et al., (2000), Acute respiratory illnesses are the leading cause of child morbidity and mortality worldwide. These casualties from developing countries can be attributed to bacterial pneumonia, herophilus influenza and Staphylococcus aureus. Other causes of Childhood morbidity include malaria, diarrhea, and measles among other diseases. Statistics on the occurrence of pneumonia among children have been reported in several community-based studies. The gross morbidity of ARI in children from third world countries ranges from twice that of developed countries (Berman et al., 1985). In third world countries such as Ghana however, most cases of ARIs are presented in the forms of pneumonia and bronchiolitis.

2.2.3 Acute Respiratory Illnesses and Child Morbidity and Mortality

Childhood pneumonia is one of the severe forms of acute respiratory infection and has been identified as the leading cause of deaths among under-five children worldwide and in most developing countries, specifically in places where access to care is incomplete and interventions to improve care is scarce. According to the WHO (2000) about 1.9 million childhood deaths, each year are attributable to childhood pneumonia. Even though the implementation of safe and affordable interventions aided reduction in pneumonia deaths over the years, these rates are still high across the world.

Pneumonia, diarrhea, and malaria are the three major child killer diseases across the world but the reduction in malaria prevalence is greater than the reductions in pneumonia and diarrhea. Pneumonia, diarrhea, and malaria claimed about 3 out of every 10 under-five children across the world in 2013. Pneumonia accounted for 15% of all under-five deaths globally (UNICEF, 2014). The under-five deaths that occur as a result of pneumonia and diarrhea are found to be concentrated in 15 countries. These countries bore about 71% of the global pneumonia and diarrhea-causing deaths (International Vaccine Access Centre, 2014).

Outside the neonatal period, ARI is also known as a major cause of infant and child mortality (WHO, 2017). The most appropriate way to determine the current load of ARI in the least developed countries is to compare and contrast ARI mortality to that of advanced countries. This shows the possibility of a reduced number of deaths with the improvement in living conditions and health service coverage which includes the availability of antibiotics. This comparison coupled with the high incidence of ARI mortality occurrence in many developing countries shows that effort should be made to control ARI (Preston, 1976).

In the least developed countries, a child under the age of five years dies every 6 seconds on average because of pneumonia (WHO, 2017). Monturi (2010) also claimed that ARI has proven to be a primary contributor to the loss of disability-adjusted life years (DALYs) in children below the age of five (Monturi, 2010). This problem can be curbed by increasing awareness on the effect of ARI deaths emanating from environmental, social and health factors and also instituting long and short-term control methods which are appropriate, locally effective and community-specific. To add to the study of mortality, evaluation of the magnitude and patterns of morbidity underlying mortality are prudent to assess a child's health needs in a social, economic and health perspective. Statistical information about the occurrence of ARI in the general population are rare to come by, the reason being that respiratory infectious cases are not mentioned among the diseases that must be notified to the health statistical departments. A study conducted in India on rotaviral infections showed that on average, a child living in an urban slum has approximately six to seven episodes of respiratory illnesses in a year within the first three years of life (Gladstone et.al. 2009).

The occurrence range has also been found to be the same in other countries as Kenya, Costa Rica, India, Ethiopia and in the United States. The data available also suggest that the mean duration varies around seven to nine days with one or more respiratory symptoms per episode. Disease experience seems to differ based on the incidence and severity of acute lower respiratory infections in particular pneumonia (Pio & Ten, 1984).

In Ghana, pneumonia is the second largest cause of neonatal and under-five deaths aside from malaria infections. It caused about 16% of childhood deaths in the year 2010 (WHO/UNICEF 2010). The implication is that pneumonia aside from malaria would have to be looked at carefully if Ghana intends to reduce childhood death drastically. Annually, about 16,200 under-five children die as a result of this disease (GHS report, 2010). An estimate of children under-five suspected to

have pneumonia in Ghana in certain periods was captured by UNICEF (2014). This estimate indicates that 2008 recorded the highest percentage of suspected pneumonia cases in Ghana. About 51% of these cases were reported in 2008. Suspected pneumonia cases that were reported between 1993 and 2011 were lowest in the year 1998 in terms of percentages. Only 26% of these cases were reported in the year 1998. Considering this record, it could be realized that cases suspected to be pneumonia almost doubled in terms of percentages in 1998 and 2008. However, 2011 recorded a decline in these cases. It was only 41% of these cases that were reported this year. The years 1993, 2003 and 2006 recorded 43%, 44%, and 34% respectively in terms of the suspected pneumonia cases in Ghana.

2.2.4 Natal Care for Children

The Natal period is crucial to a mother and child's health and survival. The hours and days after the delivery of a child is seen as the most vulnerable time of a child. The lack of proper health care can lead to death or disability in infants and children. 25 percent of child deaths occur in the first month after delivery. These deaths usually occur before child care health assistants start to provide care which is usually in the sixth week when immunization is being done. Low health care attention during the post-natal stage has an unwanted influence on maternal, newborn and child health (MNCH) programmes along the continuum of care. For instance, the lack of support assistance for healthy home behaviors like breastfeeding can have negative effects like undernutrition in children. Also, new births and their mothers are usually left to follow up during the PNC period for the prevention of mother-to-child transmission (PMTCT) of HIV (Warren et al. 2006). Cultural practices such as giving a newborn cold baths, discarding colostrum and giving them food other than breast milk soon after birth can be traitorous the survival of the new child. Applying ash,

butter and other substances like cow dung to the umbilical stump increase the risk and possibility of getting an infection.

Antenatal care, on the other hand, is very much centered on the health of the child through the health of the mother. Antenatal care (ANC) is the care that a woman receives throughout her pregnancy and some weeks post-partum. The reason for providing ANC is to screen mostly healthy pregnancies to detect early signs and risk factors for abdominal conditions or diseases and also to follow this detection with effective and timely intervention (Lumbiganon et al., 2004).

Regardless of available antenatal services, accessing these services is still a problem even in developed countries. Antenatal care has the potential of solving ill health issues, yet a lot of mothers find it difficult to access it. A theory by Phillippi et. al. (2013) explains this situation is the motivation and facilitation theory of prenatal care. Maternal motivation is the mother's desire to begin and maintain care. Facilitation represents the goal of the clinic to create easy, open access to person-centered beneficial care. This simple model directs the focus of research and change to the interface of the woman and the clinic and encourages practice-level interventions that facilitate women entering and maintaining prenatal care (Phillippi & Roman, 2013).

ANC is also a platform for other programs that improve public health such as prevention of HIV/AIDS, sexually transmitted diseases (STD) and tuberculosis (TB). This approach will strengthen the link between women and health services during and after childbirth and may reduce morbidity and a healthy lifestyle (WHO, 2005)

Delivery care has its key problems during child delivery as the assistance and attendance of skilled birth attendance (SBA). The WHO refers to “a skilled birth attendant” as a health specialist trained and competent in the procedures needed to manage normal childbirth, eminent postnatal period,

identify complications and provide emergency solutions and referrals to higher levels of health care if necessary (Manithip, 2012). Manithip (2012) did a study using primary data collected on current pregnant women on factors that relate to their ANC utilization shows that 69% of births worldwide were attended to by skilled birth attendants. While most advanced countries have achieved universal health coverage, less than 50% of all births in Africa take place with a skilled attendant. Some African countries still have birth attendance of less than 20%.

Natal Care for Children has been classified under various types namely Prenatal Care, Natal care and Postnatal Care. Stout (1997) defined prenatal care as any health care services provided to a pregnant woman until birth. Although this definition is based on her trace of the historical precedence and aim of prenatal care, which she clarified, was a response to detect and prevent eclampsia. It is too basic and may fail to capture the broad perspectives of care for which prenatal care presently undertakes. A more appropriate definition that portrays the aims of current prenatal care was given by Klerman (1990). He acknowledged that PNC is not a single intervention but an integration of several factors composing of early and continuing risk assessment, health promotion, and medical and psychosocial interventions and follow-ups. This definition absorbs better the essence and objectives of prenatal care and coincides with that given by WHO. According to WHO, the reason for prenatal care is to screen predominantly healthy women to detect early signs of or risk factors for abnormal conditions or diseases and to follow this detection with effective and timely intervention” (Carroli et al, 2001; Lumbiganon et al, 2004).

In summing up, prenatal care can be defined as a holistic, systematic, and evidence-based approach to care during pregnancy, targeted at ensuring the well-being of the woman and fetus, enhance women’s positive posture towards childbirth, and prepare a safe and good starting point for the newborn child (Dragonas’et al, 1998; WHO, 2003). It must be timely focused, contextually

sensitive, and individually specific, following general recommendations. It covers all medical, physical, and socio-demographic examinations and risk assessments during pregnancy. Health education and counseling services have also been included in a parental care package so that attitudinal, behavioral and sociodemographic risks surrounding pregnancy, childbirth, and the postpartum period can be managed. This is why it cannot be any health care provided during pregnancy can be classified as health care but care with a target, administered by well-trained personnel, considering the various factors that may affect the process of pregnancy and childbirth. It is anticipated that when the various components of prenatal care are well coordinated, there would be positive effects, not only in pregnancy and labor but on the behavioral patterns of women towards maternal health care and care for the newborn.

2.3 Empirical Review

2.3.1 Studies on Mortality and Morbidity

Childhood mortality is often used as broad indicators of social development or as specific indicators of health status. Influenza poses a serious risk to children and can cause severe health complications and even death. ARI is the commonest acute infection in children in every country. Jamison et al. (2006) reported that ARIs and Lower Respiratory Tract Infections accounted for 1.9 million and 2.2 million deaths in children globally. Influenza is caused by a virus that attacks mainly the upper respiratory tract – the nose, throat, and bronchi and rarely also the lungs. Influenza is communicable and can be transferred from one person to another.

2.3.2 Studies on the Use of Antenatal Care

Arthur (2012) investigated the effect of wealth on maternal health care utilization in Ghana. Using an ordered logistic regression model, he attempted to explain the effect of wealth and some other socioeconomic determinants have on ANC use in Ghana. This was done by employing data from the GDHS (2008) and a particular emphasis on demographic characteristics and other human behavioral characteristics were taken into consideration. Also, the number of visits to health centers and hospitals for ANC were employed in the data gathering process of maternal health care utilization in Ghana.

From the findings of the study, it was gathered that the implementation of the free maternal health policies in the country has contributed significantly to the reduction in maternal mortality in the country. Results also showed that wealth does have a positive and significant effect on the use of ANC. This is as a result of the revelation from the study that women in higher wealth groups have the tendency of visiting antenatal clinics more frequently than women in the lower wealth group. Though this ANC service is free, it may come with its accompanying costs like cost of medication and number of hours spent in the hospitals which might be of advantage to the wealthy but not for mothers in lower wealth groups and informal trades like market women.

It is however concluded from the study that though maternal ANC services are free in Ghana, the financial position of beneficiaries is still key to the utilization of this service. Some of the variables concluded to have effects on the utilization of ANC services included transportation, education, and residence, number of children living, expectant mother's age and health insurance.

2.3.3 Factors Influencing Post Natal Care

A Study conducted by Dhaka et.al (2007) at Nepal on the utilization of postnatal reported that the utilization of PNC services was minimal in Nepal. The study revealed that only 21 percent of the new mothers were given PNC. Also, only 17 percent of mothers received the first postnatal check-up within two days of delivery. The reason was as a result of low social status, poverty, and ethnicity. The social-cultural practices surrounding childbirth such as maternal seclusion after delivery and cultural beliefs also play an important role in non-utilization of PNC services in Nepal (Dhakal et al., 2007). Chipakacha (1994) claimed that out of the 47% of women that attended antenatal care at health facilities, 82% of them gave birth at home and none attended postnatal care services in Botswana. This is due to cultural beliefs, for instance, maternal seclusion.

2.3.3.1 Maternal Age

Women have different experiences and influence in their search for PNC. The influence may differ based on the age of the women. Younger women are expected to visit modern health facilities more than older women due to lack of childbirth experience. The older women with more exposure and knowledge in childcare do not often utilize modern health care. The older women are likely to depend on past experience thus fail to utilize health care services. A study conducted by Sharma et al (2007) in Nepal using Nepal Demographic Health Survey (2011), they found out that women under the age of 35 years utilized postnatal more than those above 35 years. A study conducted by Ntimba and Mbago (2005) also showed that the age of a mother can significantly explain the occurrence of infant and child mortality. Mothers who had their first child before the age of twenty are 2.4 times more likely to have child death than those who had their first child between the ages 20-34. Generally young mother that are below twenty years and those between ages 40-49 had a

higher chance of child mortality than those born to mothers aged 20-39 years (Mustafa and Odimegwu, 2008; Kembo and Ginneken, 2009). A study by Dede (2013) using Tanzanian Demographic Health Survey (2010) after running regressions had results also indicating that, among the children who died at the age of 0-11months, mothers who were aged between 25-29 years had more child deaths than mothers who were aged between 45-49 years contrary to other studies. This result does not conform to other studies where women aged less than 20 years and 40+ years are expected to experience a high rate of IMR (Dube, 2012).

2.3.3.2 Women's level of awareness

In developing countries, health outcome showed that the media play a very significant role in disseminating information on issues related to health. Ways of disseminating information include; radio, television, newspapers, and magazines. A study by Shariff & Singh (2002) in India reported that women's exposure to information through the media significantly increases the utilization of delivery and postnatal care. Efforts should be geared towards educating women about the risk that comes along with given birth in homes of traditional birth attendants. Igberase et.al.(2009) suggested that women should be advised on the need to visit maternity homes and health centers early to avoid birth complications. When women are provided with information on the prevention of maternal mortality, community participation and mobilization will enable us to reduce maternal mortality to some extent.

2.3.3.3 Women's Autonomy

Autonomy is referred to as the ability to influence one's personal environment through control over resources and also take decisions on issues that concern him/her or close family members. The autonomy of women can be viewed as their ability to determine events in their lives with any influence from a husband or other relatives (Bloom et al., 2001, p.68). A study done in a North Indian city showed that women's autonomy as defined by the extent of movement seems to be a major determinant of postnatal care utilization among the poor to middle-income women (Bloom et al, 2001). In Nepal, women's autonomy is a strong predictor among many other predictors of infant mortality. Mothers' literacy and decision-making power regarding health care appear to be the most powerful predictors among many others for reducing infant mortality. Hence, in order to reduce infant mortality further, ongoing female education should be sustained and broadened to include every woman in order to reach the MDG goal for the year 2015 (Adhikari & Sawangdee, 2011).

2.3.4 Studies on the Utilization of Antenatal Care Services in Developing Countries

Nketiah-Amponsah et.al (2013) examined the key socio-economic and demographic factors that influence the utilization of antenatal care services in Ghana utilizing Ghana Demographic and Health Survey (GDHS, 2008) data. The study employed a negative binomial model with the intensity of utilization (number) of antenatal care visits as the dependent variable. The study revealed that socio-economic factors such as wealth, age, enrollment on health insurance (especially for rural women), educational level, birth order, religion and region of residence are significant factors that influence the intensity of antenatal care services utilization. There was a positive relationship between utilization and wealth status. The study

also revealed a significant relationship between the region of residence and antenatal care utilization

Dickson et. al. (2017) also did a study using data from the six rounds of the Ghana Demographic and Health Survey (GDHS). The study employed the logit model to explore the relationship between socio-economic characteristics of respondents and providers of antenatal care services. The results revealed that most of the antenatal care services were provided by nurses over a given period. Women from remote areas were more probable to utilize antenatal care services provided by traditional birth attendants whilst those from urban areas were more likely to utilize antenatal care from doctors and nurses. It was recommended that, to improve the utilization of antenatal care services they should encourage women in rural areas especially those from the savannah zone to utilize antenatal care services from skilled providers through social and behavior change communication campaigns.

2.3.5 Study on Demographic Factors Causing Child Morbidity

This is to determine and review existing literature on some demographic factors that influence child morbidity.

2.3.5.1 Place of Residence

Over the years, mortality levels in rural areas are consistently higher than those in urban areas. Data spanning ten years from the GDHS 1998, 2003 and 2008 all show mortality levels in urban areas as lower than those in rural areas (Agoe, 2013). Some existing literature have found that mothers living in rural areas have a chance of their children dying as compared to

the mother's living in urban areas (Desta, 2011, Gyamfi, 2002). Another paper by Mostafa (2012) found that place of residence has a significant association with neonatal mortality and child survival, where people in rural areas die more than people in urban areas. In Ghana, mortality rates are lower in urban regions like Greater Accra and much higher in other rural regions like Northern and Upper West (Agoe, 2013). Results from a research by Dede (2013) on the determinants of infant mortality in Tanzania showed that place of residence had no significant relationship with infant mortality showing that 5.6% of infant mortality is from residence in urban areas and 4.5% deaths are from residents in rural areas which contradicts earlier accretion. The research also mentioned that this could be as a result of even distribution of amenities like toilets and health facilities due to less population in rural areas compared to urban areas which are overpopulated.

2.3.5.2 Mother's Education

Educating a woman is seen as a very profitable investment with regards to child survival because education has a strong relationship with infant and child mortality. A woman's education plays a very significant role in antenatal care utilization and child survival. Education has been established to have a direct relationship with antenatal care (Martin, 2014). A study by Mostafa (2012) showed that the education of a mother influences the choice and skills in health care practices and is more prudent in ensuring neonatal mortality. Educated mothers are likely to have more antenatal visits as to uneducated mother (Mullany, 2007). In a related study by Aslam (2012) investigating the relationship that exists between parental level of schooling and parental health-seeking behavior to child health outcomes in Pakistan reveals that a mother's health knowledge and her empowerment within a household

as a result of her level of schooling is more critically associated positively with long term child health outcomes in the OLS equation used. Poor maternal education is the main constraint to good health, childcare practices and ultimately child survival (Martin, 2014). There is an indirect relationship between mother's education and a child's risk of dying with under-five mortality for mothers with no education being higher than mothers with education (Agoe, 2013). Medical literature suggests support for the hypothesis that mother's education is more important for children older than 24 months of age (Medrano, 2008). Maternal education is a powerful and significant determinant of child health status in countries like Bangladesh. Maternal education positively affects the number of children receiving vaccination. To ensure and improve the health condition of children in Bangladesh it is prudent that maternal education is given top priority (Huq,2008). Policy recommendation in Bangladesh is no different from that of Ghana. In low and middle-income countries in the sub-region, the situation is not different from the incidence of diseases such as acute respiratory infection (ARI), diarrhea diseases and fever among children. Using the GDHS (2018) and employing logistic regression, a paper by Nketiah-Amponsah (2016) shows that higher maternal education significantly and consistently reduces the incidence of diarrhea, ARI, and fever among children aged under-five in Ghana.

Contrary to the above studies, Dede (2013) showed results that infant mortality is more frequent among mothers with complete and higher educational attainment followed by mothers with incomplete primary educational attainment. This result may be attributed to the fact that mothers with secondary education and higher have little time to take care of their newborn babies.

2.3.5.3 Household Wealth

Household wealth determines the frequency and utilization of antenatal care by women (Martin, 2014). In a study by Arthur (2012) using the GDHS (2008), both univariate and multivariate analysis was employed and estimated using ordered logistic regression model to show that in Ghana wealth has a significant influence on the adequate use of antenatal health care. Shrestha (2012) indicated that about 50% of poorest women had no ANC in Nepal. Similarly, Sharma (2002) showed that the percentage of women with adequate visits of ANC (minimum 4 times) increased from 4 percent (low economic status) to 42 percent among high economic status women in Nepal. Wealth status also affects child mortality rates in Ghana. Children in households in the highest wealth quintile have the lowest mortality rates for both child mortality and under-five mortality (Agoe, 2013).

2.3.6 Study on Income Factors Causing Child Morbidity

A study in England showed high infant mortality in children who had working mothers, reasons being they do not have adequate time to care for their children hence the early introduction of artificial feeding and poor living conditions (Nair et al, 2011). Another study by Dede (2013) on the determinants of infant mortality in Tanzania showed results that 5.2% of the deaths occurred to children born by mothers who were employed while 3.8% occurred to children born by mothers who were not employed in the period of one year preceding the survey in 2010. This brings to bear the importance of mothers taking time off work as maternity leave to cater to their children. The issue now is if these mothers should be entitled to a salary during maternity leave. Heymann et.al (2011) employed ordinary least squares (OLS) regression models to explore whether paid maternity leave policies have an impact on

neonatal, infant, and under-5 mortality rates. The study revealed that paid maternity leave significantly reduced child mortality. The results also showed that family income is a strong predictor of infant and child morbidity and mortality rates. Paid parental leave increases the income available to both parents and children in hard times. In addition, women who receive paid leave are more likely to stay employed after the child's birth and not suffer a long-term wage penalty or penalty in their household income. It is thereby convenient to use paid maternity leave as a proxy for the income level of a mother in relation to child morbidity.

2.4 Conclusion

Empirical studies above have shown that demand for natal care is dependent on many demographic and income factors to reduce the level of child morbidity. Child morbidity resulting from inadequate natal care has theoretically been shown that the demand for health care is a derived demand from the demand for health.

Moreover, empirical studies indicate the demographic and income factors of the mother as well as the household does have an effect on the demand for natal care.

CHAPTER THREE

OVERVIEW OF CHILD MORBIDITY AND NATAL CARE

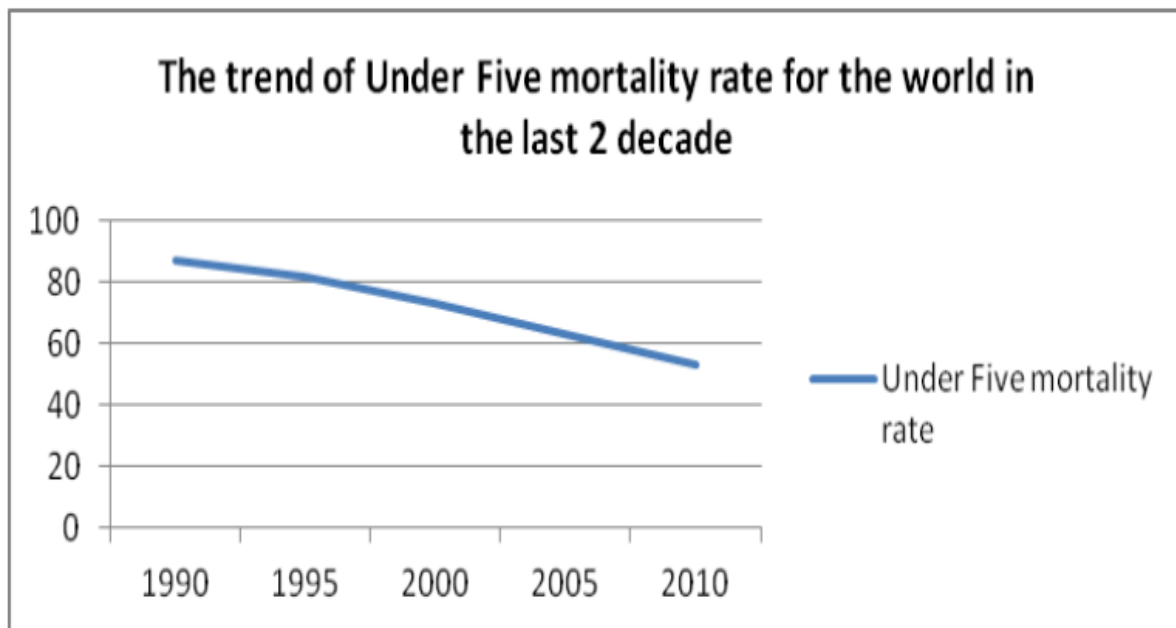
3.0 Introduction

This chapter is aimed at outlining the overview of child morbidity and its causes in Ghana. Also, the chapter captured natal care in Ghana and how it is delivered in the country. The significance of this chapter is to present a picture on the incidence of child morbidity in the country and the nature of care that is given to children in the world, Africa and Ghana.

3.1 Child Health and Morbidity in the Global Perspectives

Since the convention of the right of the child was adopted after the United Nations' general assembly in 1989, tremendous improvement has been achieved in enhancing the health conditions among children globally. The convention consolidated the gains from the Alma Ata conference in 1978 and formed a key building block for the MDGs which were functioned to achieve better health conditions among children. Currently, health conditions among children are better than they were two decades ago. The proportion of children who die before their fifth birthday globally were reduced from 12 million in 1990 to 6.9 million in 2011. This represents a 41 percent reduction of under-five mortality rate globally (You, New and Wardlaw, 2012).

Figure 1: Under Five Mortality Rate From 1990 to 2011



Source: UNICEF, 2012

Aside from the declining under-five mortality rate observed around the globe, the disease burden and epidemics that beleaguered children have also declined over the years. Improved vaccines together with increased immunization have reduced the recorded cases of diseases. UNICEF (2012) report on State of the World 's Children (SOWC) estimated that about 2.5 million under-five deaths were avoided annually through immunization of children against childhood killer diseases.

The early stages of childhood are one and the important period in the life of a human being is the time when many foundations for future child and adult health and development are laid. As described by Halfon et al (1992), children differ from adults with respect to health according to "4Ds", that is a developmental vulnerability, dependency, differential morbidity, and the difference in demographics. Developmental vulnerability refers to the plasticity of infants and

young children involving sensitive and possible critical periods for development. Although the existence of critical periods is debated, the time from pregnancy and through the first two to five years of life is considered sensitive. The first two years period is crucial for physical growth and brain development.

Respiratory diseases predominantly pneumonia accounted for higher deaths in children under age five (Rudan et al., 2008). It was estimated that two million children die yearly from pneumonia worldwide. This means that more children die from pneumonia than AIDS, malaria, and measles combined (UNICEF, 2010). The second most dangerous disease that torments children worldwide is diarrhea. Four billion global cases of diarrhea were recorded among children below five years in 2010 and it is believed that the disease led to more than 1.5 million under-five mortality (representing 17 percent of the global cases). Malaria and malnutrition also greatly affect children worldwide. WHO (2006) estimated malaria cases to be around 250 million worldwide of which one million death cases were reported. This translates into a child dying of malaria every 30 seconds. A joint study conducted by WHO, World Bank and UNICEF also reported that 165 million pre-school children were estimated to be stunted in 2011 whilst 16 percent of them were underweight in the same year. The problem of malnutrition and hunger among children persist in many regions of the world. 270 million children lack access to basic healthcare provisions (UNICEF, 2004). It is regrettable when one considers the fact that a lot of children suffer and die from diseases that are easily preventable such as pneumonia, diarrhea, and malaria.

A child can be affected by a range of threats to his/her health. In spite of being easily preventable diseases, pneumonia and other acute respiratory infections, together with diarrhea, are major causes of under-5 morbidity globally (Liu et al., 2015). The latest DHS rounds from Bolivia (2008), Colombia (2010) and Peru (2014) reported on cases of children aged 0-59 months with symptoms

of illness during the two weeks prior to the survey. The report shows that symptoms of diarrhea in children were 26 percent for Bolivia (Coa & Ochoa, 2008), 13 percent for Colombia, and 12 percent for Peru (INEI, 2015). Equivalent proportions of pre-school children with reported symptoms of acute respiratory infections the two weeks prior to the survey were 20 percent in Bolivia (Coa&Ochoa,2008), 9 percent in Colombia (Ojeda et al.,2011), and 17 percent in Peru.

3.2 Child Health and Morbidity in the Ghanaian Perspective

Childhood mortality is usually used as proxies for social development or as specific indicators of health status. Childhood mortality rates can aid in assessing a country's effort towards achieving the Sustainable Development Goals (SDG), which aims at attaining good health and well-being by the year 2030. The neonatal mortality recorded between 2009 and 2014 was 29 deaths per 1,000 live births. The postneonatal rate recorded in the same period was 13 deaths per 1,000 live births. This implies that the probability that Ghanaian child who survives the first month of life will die in the remaining months was reduced by more than half. Infant mortality rate was 41 deaths per 1,000 live births in the same period and the child mortality rate was 19 deaths per 1,000 children surviving to age 12 months. The overall under-5 mortality rate was 60 deaths per 1,000 live births. Sixty-eight percent of all deaths among pre-school children in Ghana occur before a child's first birthday.

The neonatal, infant and under-five mortality rate were decreased by 33, 36 and 46 percent respectively in 2003. Health policies such as the Community-based Health Planning and Services (CHPS), National Health Insurance Scheme, free maternal delivery services and malaria control interventions were all introduced in the same year.

GDHS (2014) report revealed that under-5 mortality and child mortality were higher in remote areas relative to urban areas. The remote areas recorded 75 deaths per 1,000 live births while the urban areas also recorded 64 deaths per 1,000 live births. Analysis based on regions also revealed wide differentials in infant and under-5 mortality. The minimum under-5 mortality was recorded in the Greater Accra region (47 deaths per 1,000 live births) and the highest was also recorded in the Northern region (111 deaths per 1,000 live births). The results from other regions are; Upper West (92 deaths per 1,000 live births), Ashanti (80 deaths per 1,000 live births), Upper West (64 deaths per 1,000 live births).

According to the Ghana Demographic Survey report 2014, the following constitute child morbidity situation in Ghana

- **Diarrhea:** Diarrhea is a leading cause of morbidity and mortality among young children. Diarrhea is most common among children aged 12–23 months (16-17%) and declines as age increases. The difference in diarrhea prevalence by urban-rural residence is small, in terms of regions Brong Ahafo recorded the highest prevalence of 17%. Among children with diarrhea, 45% were taken to a health provider or health facility. Children in rural areas are slightly more likely (49%) than those in urban areas (38%) to be taken for treatment (GDHS,2014)
- **Acute Respiratory Infection:** 4 percent of children below 5 years had symptoms of ARI prior to the survey. About 53% of these children were taken to consult a health provider. For geographical differences, it is necessary to note that for children in rural areas they have two times more the probability of experiencing symptoms of ARI as compared to those in urban locations (GDHS, 2014).
- **Fever:** Fever is the commonest illness among children age 12- 35 months (17%). It is a symptom of malaria and other acute infections in children. Children from rich households

have equal chances of being sent to a health facility as those from poor households (54% versus 55%). Seeking treatment for children with fever is higher in urban areas and increases with a mother's education (GDHS,2014).

- **Malaria:** Malaria is extremely pervasive in Ghana and constitutes one of the leading causes of morbidity and mortality among pregnant women and pre-school children. 22 and 9 percent of under-5 mortality and maternal death were attributed to malaria (The President's Malaria Initiative, 2007). Pre-school children are known as the most vulnerable groups, and as such, malaria diagnosis and treatment should be given priority. (GDHS,2014).

Child health is a very crucial element of the demographic development of a country. Children are seen to be very vulnerable in terms of health which makes health care delivery to children very important. Child Health according to the Ministry of Health, Ghana is the promotion and maintenance of optimal growth and development of children from birth to the age of 18 years (GHS, 2013). Stated further by the Ghana Health Service, Child health in Ghana is divided into three phases namely Children under Five (Birth-5years), School Age Children (5-15 Years) and Adolescent (10-19years) (GHS,2013).

According to the Ghana Demographic Health Survey (2014), there has been steady progress made by Ghana in terms of Child health and nutrition for the past five years. This has been partly as a result of the fact that the majority of children born in Ghana have received basic vaccinations required for their health more than they received it five years back (GDHS,2014). Child health is a very disturbing public health issue, for children's sake and because good child health sets one up for life long health and functioning well-being. In sub-Saharan African (SSA) countries such as Ghana, child physical health is of particular concern due to the high rates of illness and mortality in this region. The major causes of morbidity and mortality in children in SSA include measles,

diarrhea infections, respiratory infections, malaria, HIV and nutritional deficiencies. Respiratory infections, diarrheal infections, malaria and nutritional deficiencies (malnutrition) remain the major diseases plaguing pre-school in Ghana. Malnutrition is the underlying cause of 40% of all deaths in pre-school children in Ghana and almost three out of every ten children in Ghana are stunted (UNICEF-GHANA,2013). There have been major interventions by the government of Ghana and her partners such as WHO and UNICEF to combat childhood diseases in the country.

Ghana Health Service (2010) also reported that pneumonia was the leading cause of under-five morbidity and mortality in Ghana. 16,200 children, representing 20 percent die every year in Ghana. This implies that pneumonia should also be given a greater attention if Ghana intends to reduce childhood death drastically.

3.3 Priorities of Child Health Care

In Ghana, there exist important areas with regards to Child health. This prioritizes areas according to the Ghana Health Service is neonatal health.

3.4 Neonatal Health

Ghana currently is faced with a challenge in regards to the promotion of neonatal health and the avoidance of neonatal morbidity and mortality. Key factors that have been associated with neonatal health include preterm births, low birth weights, birth trauma, and hypothermia (Kirkwood et. al, 2010).

Nurses and other professionals direct most of the public health practice on prophylactic treatment and health-promoting education (American Nurses Association, 2007). According to Edmond et

al. (2007), if a mother is delayed breastfeeding her newborn, the probability that the infant will lose their lives is 2.6 times higher in Ghana. Breastfeeding has been revealed to have an impact on the health of children. The American Academy of Pediatrics stated that breastfeeding protects children against bacteremia, diarrhea, respiratory tract infection, necrotizing enterocolitis, otitis media, urinary tract infections, late-onset sepsis in preterm infants, type 1 and type 2 diabetes, lymphoma, leukemia, Hodgkin's disease, and childhood overweight and obesity” (American Academy of Pediatrics, 2012).

3.5 Natal Care in the Ghanaian and Global Perspective

3.5.1 Antenatal Care

In Ghana, the prudent objective of ANC is to detect and curb health problems such as ARI during pregnancy. Within this period all health screening and complications advice as given to mothers in preparedness for delivery. ANC put a high value on health information to determine what kind of service is best for a mother and her unborn child. The GDHS (2014) provides adequate data on the kind of ANC service provided, number of ANC visits, stage of pregnancy at first visit and information given to mothers during this period. The survey showed that for mother’s most recent birth in the five years before the survey, 9 out of 10 mothers, that is 97% received antenatal care from a skilled health provider. It is necessary to note that for the three Northern regions in Ghana that are known to have several rural communities have less than 10% of mothers receiving ANC from a doctor compared to the 34% doctor visits in the Greater Accra and Ashanti regions. The mother-doctor visit is twice high in urban relative to rural residences in Ghana.

The WHO recommends that a mother should have at least 4 or more ANC visits with the first visit in the first trimester of pregnancy that is without complication. From the GDHS (2014), 87% of pregnant women had four or more ANC visits for their recent birth prior to the study with about 92% in urban residence and 83% in rural residence which is an increase from the 2008 GDHS which recorded 78% of pregnant women. The survey also showed that 64% made their first visit before the fourth month as compared to 55% in 2008.

Table 3.1: Distribution of Women by ANC visits (%)

Frequency of ANC visits	Frequency	Percentage
0	106	2.6
1 visit	44	1.1
2-3 visits	356	8.6
4 visits and above	3616	87.3
Don't know/missing	20	0.5
Total	4142	100

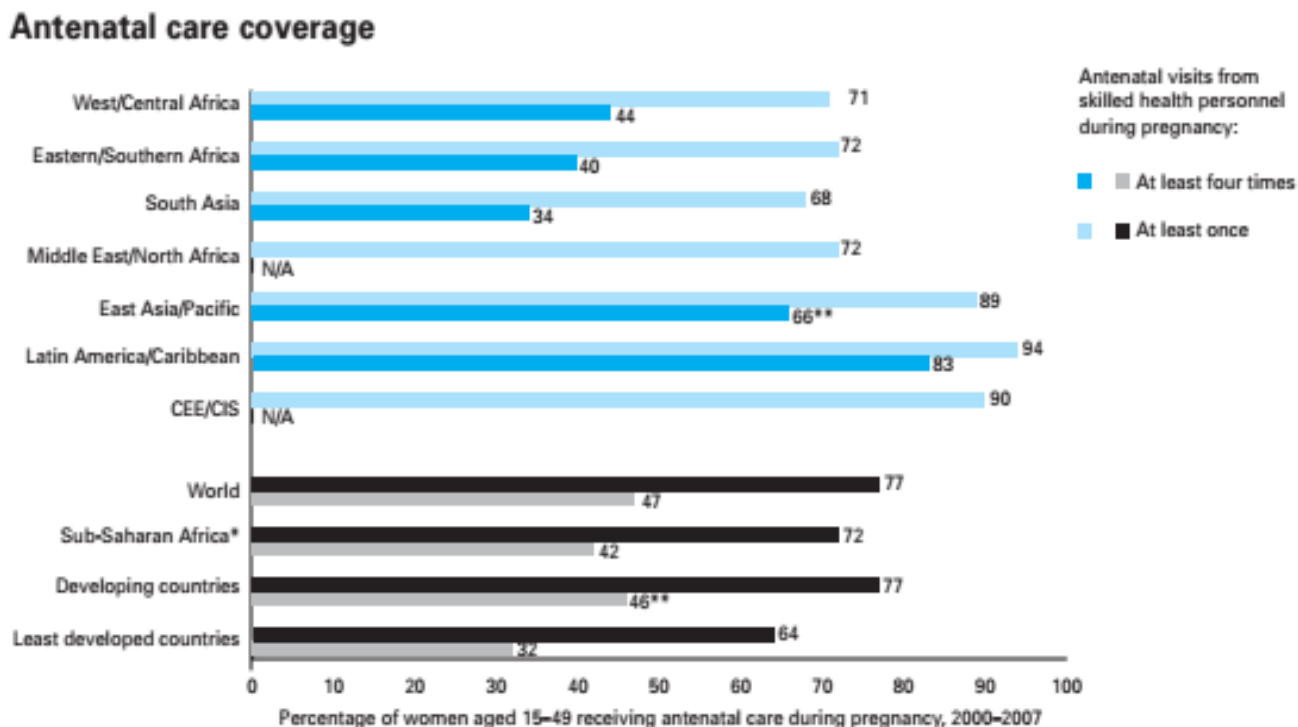
Source: Computed from 2014 GDHS.

The quality of ANC in the GDHS (2014) was measured by the essential health services provided to the pregnant mother. Questions were asked about where they had received specific screening and given advice on pregnancy complications. The survey revealed that 84% of pregnant women who underwent laboratory tests during pregnancy were informed of signs of possible complications. There was also a substantial regional difference; 95 percent of pregnant women were found to have signs of pregnancy complications in Greater Accra compared to 54 percent of

women in Upper West. However, the percentage gap between rural and urban was very low (87 percent versus 81 percent).

Based on study conducted by WHO on maternal health, about 70% of women globally had at least one antenatal visit with a qualified health professional during pregnancy. Coverage was extremely high for advanced countries with 98% of women having at least one visit. This depicts those policies that targets making antenatal care available to women have been successful. The South Asia recorded the lowest antenatal care visit with only 54% of pregnant women having at least one antenatal care visit. 68% of women in SSA had at least one antenatal visit. The antenatal care visit in other regions ranges from 82% to 86%. Figure 2 depicts antenatal coverage;

Figure 2: Antenatal Care Coverage in Sub Saharan Africa

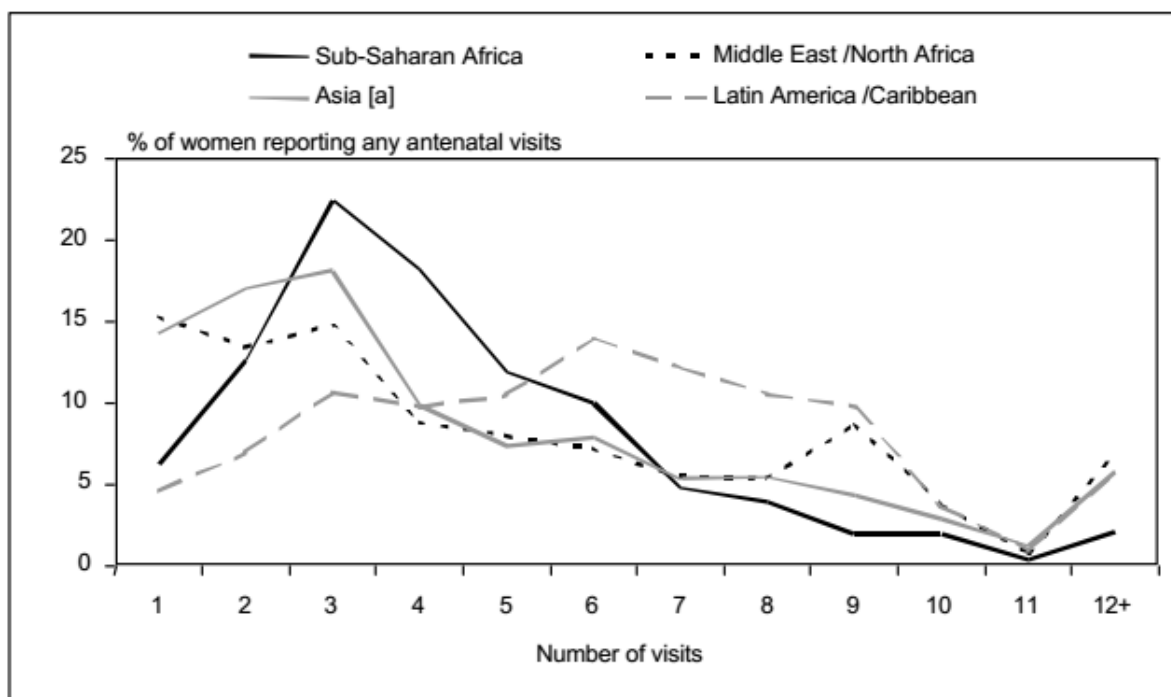


* Sub-Saharan Africa comprises the regions of Eastern/Southern Africa and West/Central Africa. ** Excludes China.

Source: UNICEF/WHO, (2009)

Most women in Latin America and the Caribbean had a minimum of four antenatal visits. The median number of antenatal visits in these regions was 6. Whilst the situation is most striking in Latin America and the Caribbean, greater number of pregnant women in some developing countries also report 9 or more visits. Whereas this may be necessary in complicated pregnancies, it raises the question as to whether limited resources are being utilized effectively for the antenatal care of women with normal pregnancies. Also, in their quest to access antenatal care, women have to travel long distances. Some also stay in long queues and these add up to the cost incurred in accessing antenatal health care. Figure 3 depicts antenatal visit for women;

Figure 3: Women Reporting Antenatal Visits.

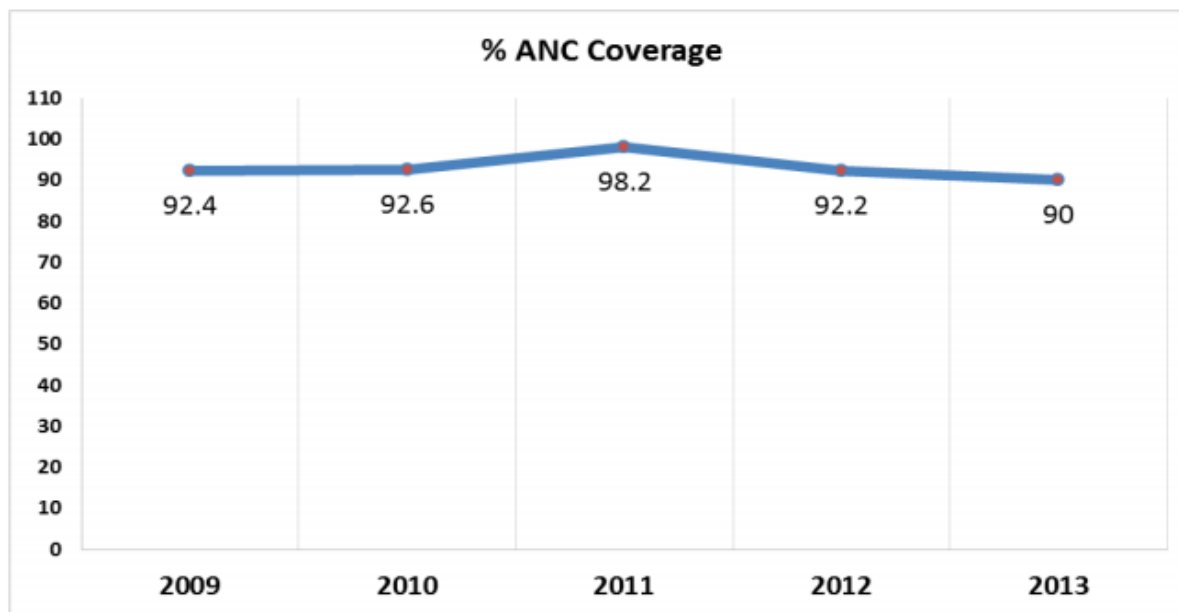


Source: AbouZahr and Wardlaw (2003)

Antenatal care coverage is an indicator of access and utilization of care during pregnancy. It measures the proportion of women who receive care at least once during pregnancy within a given year. Antenatal coverage reduced from 98.2% in 2011 to 92.2% in 2012 and further decreased to

90% in 2013. Policies should be put in place to reverse the persistent reduction in antenatal care coverage.

Figure 4: Antenatal Coverage in Ghana from 2009 to 2013



Source: Ghana Health Service, 2013

3.5.2 Delivery Care

Delivery care was introduced earlier than ANC. The key issue during childbirth is the attendance of a skilled birth attendant (SBA). The shortest and most crucial stage of natal care is labor and delivery, most maternal deaths occur during this stage due to complications. No matter the quality of antenatal care, delivery can be complicated, hence the need to have a skilled birth attendant. Some limitations to quality delivery care include the cost of service and distance to health facilities. To help resolve these problems free maternity services and community-based health planning service (CHIPS) should be available to provide better delivery care (GDHS, 2014).

Mothers were asked to provide information on the place of delivery of their children in the last five years prior to the 2014 survey. There is a direct relationship between the number of births delivered in a health facility and the number of ANC visits. Births that occur in urban areas are much more likely to occur in a proper health facility than of rural areas (90 versus 59 percent). Delivery in a health facility varies widely by region from 63 percent of births in Upper West to 93 percent of those in Greater Accra.

Children delivered at home usually occur without assistance from health professional whilst children delivered in a health facility get access to a trained health professional. The GDHS (2014) showed that 74% of births in Ghana are attended to by skilled health professionals.

The United Nations has called on all countries to increase their efforts toward skilled birth attendance and set targets of 80% coverage by 2005, 85% by 2010, and 90% by 2015. WHO also recommended that a target of a minimum of 40% of all births assisted by SBA by 2005, 50% by 2010 and 60% by 2015 should be achieved in countries with very high MMR. Dykes et.al (2007) also reported that 69% of births globally were supported by skilled birth attendants between 2005 and 2010. Whilst several developed countries have nearly achieved universal coverage, only a maximum of 50% of all births in Africa take place with skilled attendance. Some countries in Africa even recorded less than 20% (Stanton et al.,2007; Adegoke & Broek,2009).

3.5.3 Post Natal Care

Many African women and their newborns do not have access to health during the early postnatal period, this put them in increased risks of illness, disability, and death. The first 24 hours after birth is the most critical and important postnatal period, as most maternal and infant death occur

around this time. Yet PNC programmes are among the weakest of all reproductive and child health programmes in the region. According to Warren et al., (2006); Opportunities for Africa's Newborns, revealed that there are feasible, sustainable and cost-effective measures that could be adapted to reach mothers and their newborns, especially for the 18 million African women who deliver at home. For example, about fifteen percent (15%) of women in Madagascar receive a postnatal visit by a health professional at home. The same study also reported that one pilot study was done in rural Kenya also have retired midwives facilitating childbirth at home and visit the mother and baby two or three times in the first week

The GDHS (2014) shows that 30 percent of last births in the two years preceding the survey received a postnatal checkup with 23 percent of births received a checkup in the first two days after birth. 23% of those who received postnatal check-up in the first two days were from urban areas and 22% from rural areas. A large majority of newborns (70 percent) did not receive any postnatal checkup.

CHAPTER FOUR

METHODOLOGY

4.0 Introduction

This chapter describes the theoretical framework employed in the study followed by the presentation of the methodology to achieve the study's objectives. This chapter has five (5) sections. The conceptual framework is discussed in the next section. Section 4.2 discusses the estimation techniques followed by the model specification in section 4.3. Explanations of the explanatory variables in the model in Section 4.4. Finally, the data sources and types, sampling size and sampling technique are discussed in Section 4.5.

4.1 Conceptual Framework

Deaton et al. (2005) conceptualize the determinants of child morbidity in three main factors. These are demographic, health care systems and economic factors. For this research, I would consider some health factors which include Antenatal care, Delivery care, Postnatal care, vaccination, death of children and birth experience as estimates in determining the form of health care given to mother and their child before, during and after childbirth. Other factors as demographic factors are necessary inclusions in this estimation. These factors include mother's age, child's age, wealth, location, mother's education, and marital status. Also concerning economic factors, the study would use the income of the mothers as a measure. A study by Ruhm (2000) indicated that parental leave and child health using data from 16 European counties showed results that paid leave is found to be significant in reducing the death of infants. For this purpose, it is necessary to include the income status of the mother during natal care.

4.2 Estimation Model Technique

This section introduces a suitable method applied for empirical estimation in this study. Probit will be used to estimate the impact of natal care on Child Morbidity.

4.2.1 Probit

The dependent variable is the key determinate of the choice of model to use. In cases where the dependent variable is quantitative, it is appropriate to estimate its expected or mean value given the values of the regressors. In other cases where the dependent variable Y is binary, the goal would be to find the probability of something happening. Therefore, the qualitative response regression models that emerge from the normal cumulative distribution function (CDF) is what is known as the Probit model which is sometimes called the normit model (Gujarati, 2004). In other words, the binomial Probit model is an estimation technique for dummy dependent variables equations to avoid the problem of the linear probability model by using a variant of the cumulative normal distribution (Studenmund, 2006).

For this study, Child Morbidity either occurs or does not occur, which is a qualitative response. The binary regression model is often used for these types of study. In developing a probability model for binary response variable three methods are usually used which include the linear probability model (LPM), the logit model and probit model (Gujarati, 2005).

Resulting from Balangun and Yusuf (2011), the binary probit model through the maximum likelihood estimation method suits this study. The probit model is preferred to the linear probability model (LPM) because the LPM does not constrain the probabilities to lie within the range of 0 and 1 since the ordinary least square estimation can give results where $y_i > 1$ or $y_i < 0$.

Using Probit model, the assumption that a child under the age of five either falls ill or not depends on a hidden factor that is determined by one or more explanatory variables as x_i and y_i and a dependent variable.

The theoretical model is specified as

$$P_i = P(y_i^* < y_i)$$

$$P_i = P(y_i^* < \beta_0 + \beta_i X_{ji}) = F(y_i)$$

$$P_i = F(y_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{z_i} e^{-\frac{s^2}{2}} ds \dots \dots \dots (4.1)$$

To obtain information on, the utility index, we take the inverse of **(4.1)** to obtain:

$$y_i = F^{-1}(P_i) = \beta_0 + \beta_i x_i + \mu_i \dots \dots \dots (4.2)$$

Where F^{-1} is the inverse of the normal cumulative density function (**CDF**).

Translating the model in equations (4.2) into a real-world problem, the study hypothesizes that Antenatal care, Delivery care, Postnatal care, vaccination, death children, birth experience, mother's age, child's age, wealth, location, mother's education, marital status, paid and unpaid maternity leave are used in determining the probability of a child's health.

4.3 Model Specification

$$\mathbf{Res} = f(D, H, E)$$

Where; **D**: *Demographic factors*

H: *Health factors*

E: *Labour Income*

$$Pr(\mathbf{Res}=1|\mathbf{X}_i) = \Phi(\beta_0 + \beta_1 \mathbf{ANC}_i + \beta_2 \mathbf{DelC}_i + \beta_3 \mathbf{PNC}_i + \beta_4 \mathbf{Vac}_i + \beta_5 \mathbf{DthC}_i + \beta_6 \mathbf{BthEx}_i + \beta_7 \mathbf{MAge}_i + \beta_8 \mathbf{CAge}_i + \beta_9 \mathbf{With}_i + \beta_{10} \mathbf{Loc}_i + \beta_{11} \mathbf{MEduc}_i + \beta_{12} \mathbf{MarSts}_i + \beta_{13} \mathbf{Pleave}_i + \beta_{14} \mathbf{UPleave}_i + \epsilon)$$

To determine if this health, demographic and income factor has an influence Child morbidity the following variable where employed; **Res** which is Acute Respiratory Illness the dependent variable. Independent health variables are Antenatal Care denoted as \mathbf{ANC}_i , Delivery Care as \mathbf{DelC}_i , Postnatal Care as \mathbf{PNC}_i , Vaccination as \mathbf{Vac}_i , Number of Dead Children as \mathbf{DthC}_i and Birth Experience as \mathbf{BthEx}_i . Some demographic factors also include Mother's Age denoted as \mathbf{MAge}_i , Child's Age denoted as \mathbf{CAge}_i , Wealth denoted as \mathbf{With}_i , Location denoted as \mathbf{Loc}_i . Mother's Education denoted as \mathbf{MEduc}_i , Marital Status as \mathbf{MarSts}_i , and finally Paid Maternity Leave and Unpaid Maternity Leave as \mathbf{Pleave}_i and $\mathbf{UPLeave}_i$ respectively.

4.4 Definition of Variables

In this section, I would be elaborating more on the nature of variables that would be used in determining the impact of natal care on child morbidity in Ghana. These choice variables include

health, demographic and income factors of the survey respondents. The section would also explain and describe the dependent variables and each independent variable below.

4.4.1 Dependent Variable

Child Morbidity: According to Garenne et al., (1992), Acute respiratory illnesses are the leading cause of child morbidity and mortality worldwide causing approximately 4 million or one-third of all child deaths. This dependent variable child morbidity, that is, acute respiratory illness is presented as a dummy and has the value of ‘1’ when the child has acute respiratory illness and ‘0’ when the child does not have acute respiratory disease. Acute Respiratory Illness is captured by considering children who took medication for cough and respiratory issues. Mothers were asked: ‘has the child taken any medication for cough and respiratory illness’. For this study, I am looking to determine if the health, demographics and income factors of natal care have an effect or impact on infant health and hence it seeks to determine if nature of natal care has an effect on child health or not.

4.4.2 Independent Variables

Antenatal Care: ANC is an essential part of primary healthcare and its provision has expanded globally. There is limited evidence on the impact of ANC offered to pregnant women on child health outcomes (Kuhnt & Vollmer, 2017). This variable is presented as a continuous variable and describes the number of visits mother makes to a health care unit before birth. It shows the number of antenatal care visits made during pregnancy. This helps to ascertain the health services made available to the mother and also determine the health status of the mother which trickles down to

the health of a child during pregnancy. The expected sign for this variable as shown in Table 4.1 is negative, meaning it is expected that the more frequently a mother visited a health care unit for antenatal care the less likely it is that her child would be sick.

Delivery Care: This variable demonstrates the nature and environment in which child delivery occurs. Titaley et.al (2011) did a study to explore the relationship that early neonatal death has with the place of delivery (home, public hospital, private hospital, other public birthing centers, and other private birthing centers). I categorized public, private and other health facilities as a modern place of delivery and respondents' homes and other places as captured in the GDHS as a traditional place of delivery. The variable is presented as a dummy where '1' means the child was born in a modern environment that is to say a health facility and '0' if the child was born in a traditional environment. The expected sign in Table 4.1 is negative, meaning it is less likely that a child born through modern means would experience ill health during the first five years of its life.

Postnatal Care: The level of postnatal care a child receives would be determined by the duration of the first postnatal visit after delivery. A study using Indonesia Demographic Health Survey to determine the risk of early neonatal mortality used deaths occurring within the first 7 days of life as outcome variables for the study and showed results that neonatal death out of the entire under-five child deaths recorded increased from 66% in 1994 to 78% in 2007 (Titaley, Dibley & Roberts, 2011). This means that the first 7 days of an infant's life is very crucial in determining a child's health. Hence to determine if post-natal care has an influence on child morbidity by using the time of first PNC visit after delivery, PNC is preferably be presented as a dummy taking the value of '1' if first postnatal visit took place more than a week after delivery and '0' if its first postnatal visit took place within than a week after delivery. The expected sign as shown in Table 4.1 is

positive, this means the longer postnatal first visit takes the more likely it is for a child to have ill health.

Vaccination: A study by Hollm-Delgado et.al (2014) to determine whether Bacille Calmette Guerin (BCG) vaccination is linked to the risk of ARI among children under 5 years of age showed results that BCG vaccination was associated with a 17% to 37% risk reduction of ARI and hence concluded that BCG had a significantly lower risk of suspected ARI. Hence for the purpose of this research vaccination would be determined by whether a child has received Bacille Calmette Guerin (BCG) vaccine. It would be presented as a dummy, that is, the child received BCG or not. It would take the value of '1' if the child has received BCG and '0' if otherwise. The expected sign is negative which means a child who has received the BCG vaccine is less likely to experience ill health in the first five years.

Dead Children: This variable is a head count of the number of child death between the age of zero and five years in a household. The variable is a continuous variable and the expected sign is positive. In Indonesia, influenza otherwise known as ARI is an acute viral infection that spreads easily from one person to another of any age group especially children (PCD, 2018). This report mentions that ARI is the most common acute infection in children in every continent responsible for 1.9million and 2.2million childhood deaths (Jamison et al., 2006). Due to the infectious nature of ARI the more child deaths a family experiences which may be caused by ARI the more likely it is that a child in that family has ARI.

Birth Experience: The number of successful pregnancies is the birth experience of the mother. This was captured in the data as a total number of childbirths respondents have experienced. This is a continuous variable and has its expected sign as negative. This suggests that the more birth experiences a mother has the less likely it is for her child to be of ill health.

Mother's Age: This variable shows how old a mother is. It is a continuous variable which is measured in years and has an expected sign of either negative or positive meaning the older the mother age the likelihood that the child would be of ill health is lower or the younger the mother age the likelihood that the child would be of ill health is also low. For this reason, mothers age would be presented as a quadratic variation by finding the square of mother's age. Hence expected results would be, as the age of a mothers increase initially the probability of her child to be of ill health increase to a point and starts reducing as age increases.

Child's Age: This variable as the name denotes is the age of the child. It is a continuous variable measured in years and has an expected sign of either positive or negative. That is, the older a child grows the higher or the lower the likelihood of the child falling ill.

Wealth: This variable measures the financial worth of the family. It is a categorical variable ranging from 1 to 5 where '1' is Poorest, '2' is Poorer, '3' is Middle income, '4' is Richer and '5' is Richest. The expected sign is negative. This means we expect that the richer a family is the easier it is to afford good health care and the less likely it is for the child to be of ill health.

Locality: This variable shows the location of the household which is either urban or rural and is presented as a dummy, that is, '1' for Urban and '0' for Rural. This helps in measuring the availability of good health facilities and social amenities. The expected sign for this variable is negative meaning a household living in an urban area is less likely to have their child experiencing ill health since good health care is readily available to access.

Mother's Education: This variable provides information on a mother's intellectual level which can be used as a proxy to determine a mother's exposure to child care procedures before, during and after delivery. Education increases routine antenatal care utilization which improves child

health as a result (Halim, Bohara & Ruan, 2011; Acheampong & Avorgbedor, 2017). This variable is categorical variable ranging from 0 to 3 where ‘0’ means the mother has no education, ‘1’ means the mother has primary education, ‘2’ the mother has secondary education and ‘3’ the mother has higher education, that is, tertiary and beyond. The expected sign for this variable is negative meaning the higher a mother’s level of education the greater the exposure she has to child health care practices and the less likely it is for the child to experience ill health. For the purpose of this study mother’s education would take the form of a dummy, that is, “1” if the mother has at least a primary education and “0” if uneducated.

Marital Status: This variable tells us the marital status of the mother to determine if she has any form of assistance from a spouse in taking care of the child. The expected sign for this variable is either positive or negative. For the purpose of this study marital status would be presented as a dummy, that is, “1” if married or living with a partner and “0” if otherwise.

Maternity Leave: This variable is to represent the financial state of the mother within the time of natal care. Paid maternity leave increase the income available to both parents and children during a critical time and secures a mother’s employment after childbirth to secure from suffering long-term wage penalty on individual income and household income (Heymann, Raub & Earle, 2011). For women in the labour force it is necessary to take some time off during the period of childbirth to cater for child breastfeeding and immunization (Heymann, Raub & Earle, 2011). This variable seeks to determine the effect of paid and unpaid labour income or wages on the health of the child. The expected sign is negative and positive respectively.

Table 4.1: Variables Definitions, Unit of measurements and hypothesize sign

Variables	Unit of Measurement	Expected Sign
Mother's Age	<i>Continuous</i>	+/-
Location	<i>Dummy (1 if it's Urban and 0 if otherwise)</i>	-
Wealth	<i>Dummy (1 if middle income and above, 0 if otherwise)</i>	-
Child's Age	<i>Continuous</i>	+/-
Birth Experience	<i>Number of births experienced by mother</i>	-
Antenatal care	<i>Number of Antenatal Visits</i>	-
Marital Status	<i>Dummy (1 if married, 0 if otherwise)</i>	+/-
Mother's Education	<i>Dummy (1 if Educated, 0 if Uneducated)</i>	-
Dead Children	<i>Number of dead children</i>	+
Place of Delivery	<i>Dummy (1 if Modern, 0 if otherwise)</i>	-
Post-natal Care	<i>Dummy (1 if one week and beyond, 0 if less than a week)</i>	+
Vaccination	<i>Dummy (1 if yes, 0 if no)</i>	-
Maternity Leave	<i>Category (0 if no leave, 1 if paid leave, 2 if leave unpaid)</i>	+/-

Source: Author's compilation based on GDHS 2014

4.5 Data Source and Analyses

This section elaborates more on the source and nature of data that is being used and also the kind of analyses being done.

4.5.1 Source of Data

This is secondary data obtained from the 2014 Ghana Demographic Health Survey (GDHS). The survey is a nationally represented survey cutting across all the ten regions in Ghana populated by 9,396 women between the ages of 15-49 and 4,388 men between the ages 15- 59 from interviewed households amounting to 11,835. The objective of the survey was to provide recent and reliable information on housing characteristics, child mortality, maternal and child health, nutrition and mothers labour income. The survey provides information among children aged between 0-59 months in relation to child disease treatment, prevention and prevalence, and adult disease as well.

4.5.2 Data Analysis

The data collected were analyzed using STATA and SPSS. In particular, SPSS was used to present the descriptive statistics. STATA 12 on the other hand, was used to present the result of the probit analysis.

CHAPTER FIVE

RESULTS AND DISCUSSIONS

5.0 Introduction

This chapter presents and discusses the results of the study. The chapter is divided into three major sections. Section 5.1 is an overview summary of statistics of health, demographic and income characteristics of natal care practices that determine Child Morbidity. Section 5.2 presents the descriptive statistics of each variable from the sample size. Section 5.3, looks at the results of econometric analysis of the determinants of Acute Respiratory illnesses in Ghana.

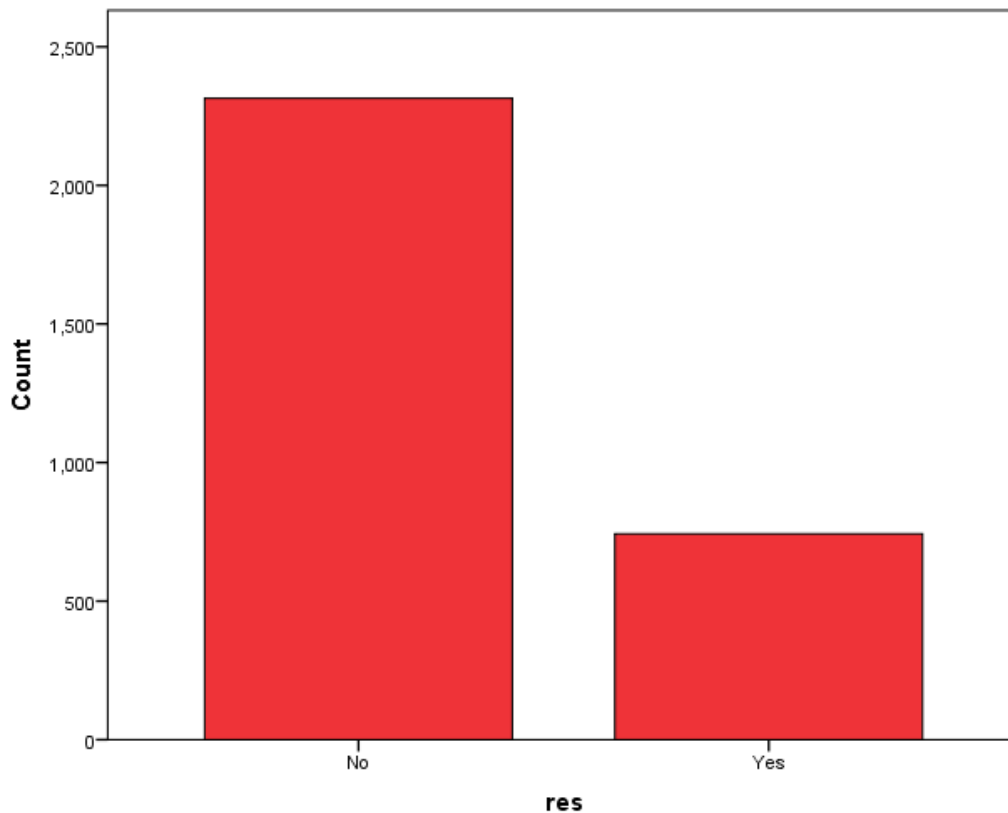
5.1 Descriptive Statistics

This section talks about the descriptive statistics of the dependent and independent variables used in this study.

5.2.1 Dependent Variables

From the survey, approximately 743 children have ARI, which represents about 24% of the sample. **Figure 5.1** shows the proportion of the sample size of 3,057 that recorded no cases of Acute respiratory illness and those who had respiratory issues. Those who responded no cases of respiratory illness were about 2,314 (76%) of the entire sample size and 24% which is 743 responded yes to respiratory illnesses.

Figure 5.1: A Bar Chart showing the number of children with Respiratory Illnesses



5.2.2 Independent Variables

Mother’s Age: The average age of a mother in the research is 31 years and a standard deviation of 7.034 for the sample size. Mother’s age ranges from 15 to 49 years.

Location: The survey also considered the geographical location of respondents which helps substantiate their accessibility to health care and other social amenities. As seen in **Table 5.1**, comparatively 58% of the respondents live in rural areas over 42% living in urban areas in Ghana. For respiratory cases captured by this research, 58% of them occur in rural areas with a standard deviation of 0.495 (**Table 5.2**) as reported by respondents. The remaining 42% occurred in urban cities.

Wealth: The wealth of a household is a clear indication of the kind of health care respondents can provide their infant children. The survey shows in **Table 5.1** that about 36% of the sample size is categorized as a household with the poorest wealth and just 17% in the middle standard category. About 70% of the entire sample population is living within and below middle-income status. This suggests the kind of health care purchases a household would make for their children. Only a small fraction of the sampled households, that is, 14% can provide the best health care for their families. The results showed that for children suffering from ill health, about 73% of them come from household within and below the middle-income status. The standard deviation for ARI cases is 1.442 as shown in **Table 5.2**. This confirms earlier accession that a household's health care purchase decision is based on their wealth. For the purpose of this study the wealth has been represented as a dummy, that is, 0 if below middle income and 1 if middle income and above.

Child's Age: The sample population is characterized by pre-school children. The mean of child's age is 1.6 years and standard deviation of 1.437. This is because this stage is the most fragile stage of an infant life, children with ill health have a frequency of 29% at age one. The frequency of child illnesses in the sample population reduces as the child's age increases.

Marital Status: The sample shows that about 68% of the respondent being married and 18% living with a partner as shown in **Table 5.1**. Only 14% do not have support from their spouse or partner for reasons of being Single, widowed, divorced or separated. The marital status of the respondent is either married even if the respondent is living with a partner and the other statuses marital as not married.

Mother's Education: This sampled population has mothers with secondary school education as its highest number of observations with a percentage of 42% this means most of these mothers can read and write which is an added advantage to child care practices but contrary to our assertion the

data also shows that about 34% of these mothers have no education this is because mothers with higher levels of education have little time for childcare (Dede, 2013). For children with ill health, 41% are recorded under mothers with secondary school education and 37% for mothers with no education with a mean and standard deviation of 0.67 and 0.469 respectively (Table 5.2). Mother's education is grouped into two; mothers with education and those with no education to get a clear interpretation of the results. **Table 5.1** shows that educated mothers are 66% of the sample size and the uneducated who do not have even primary education is 34%. Children with respiratory issues have 63% of their mother's being educated and the remaining 36% being uneducated.

Dead Children: Households who have not experienced the death of a child less than 5 years are about 80% of the sample population and the remaining 20% had experienced one to five dead children within the last four years. The frequency of child deaths reduces from one to five occurrences as seen in **Table 5.1**. Households that had not experienced child death had 76% of their children experiencing ill health in their household.

Birth Experience: For this variable, respondents were asked the total number of children ever born. Data gathered from the sample size had the minimum birth experience of a mother to be one and the maximum thirteen times. On average, a mother has experienced childbirth about three times.

Antenatal Care: The level of Antenatal care provided is determined in this research by the number of antenatal visits respondents made during their time of pregnancy. As shown in **Table 5.1** a respondent in the sample size made about 7 antenatal care visits before the child was born. The mean and standard deviation for antenatal care is 6.80 and 6.531 respectively.

Place of Delivery: This research determines the level of delivery care based on the place of delivery, that is, either a modern health facility or at home through traditional means. The survey in **Table 5.1** shows that about 73% of respondent had their children in health facilities and the remaining 27% through traditional means. Place of delivery for children with ARI had a mean of 0.70 and a standard deviation of 0.457.

Post-natal care: The nature of post-natal care is determined by the time of the first visit after delivery. The survey in **Table 5.1** showed that 63% of the sample population had their first post-natal visit after the first week of delivery and the remaining 37% in the first week after delivery. For children with ARI, about 65% of them are children who had their post-natal checkup after a week of delivery and had a mean and standard deviation of 0.65 and 0.476 respectively.

Vaccination: The child here has either received a vaccination or has not received a vaccination. The survey shows that about 81% of the entire sampled children have been vaccinated but yet still for children with child morbidity about 81% of them still experiences ARI. The mean of vaccination for children with ARI is 0.81 and a standard deviation of 0.727.

Maternity Leave: Maternity leave is the period a mother takes off work during pregnancy and after the childbirth (Heymann et.al, 2011). Employer either chooses to pay or not pay these mothers during their leave period. Result for this study has shown that about 5.8% of mothers out of the entire population are entitled to a paid leave and 12.2% of mothers are not entitled to a paid leave, whilst the rest are not entitled to a leave. The standard deviation is 0.674 and the mean 0.30.

Table 5.1: Descriptive Statistics of Independent Dummy Variables

Variables	Frequency (N=3057)	Percentage (%)	Child Morbidity Cases	
			Frequency (n=743)	Percentage (%)
Location				
• Urban	1307	42.7	314	42.3
• Rural	1750	57.3	429	57.7
Marital Status				
• Married	2617	85.6	629	84.7
• Not Married	440	14.4	114	15.3
Mother's Education				
• Educated	2032	66.5	471	63.4
• Uneducated	1025	33.5	272	36.6
Wealth				
• Middle Income & Above	1444	47.2	328	44.2
• Below Middle Income	1613	52.8	415	55.8
Place of Delivery				
• Modern	2236	73.1	522	70.3
• Traditional	821	26.9	221	29.7
Post Natal Care				
• 1 week and beyond	1924	62.9	485	65.3
• Less than a week	133	37.1	258	34.7
Vaccination				
• Yes	2472	80.9	601	80.9
• No	585	19.1	142	19.1
Maternity Leave				
• No	2508	82	589	79.3
• Paid Leave	177	5.8	43	5.8
• Unpaid Leave	372	12.2	111	14.9

Source: Author's compilation based on GDHS 2014

Table 5.2 Mean and Standard Deviation of Independent Variables

VARIABLES	TOTAL SAMPLE (3,057)		CHILDREN WITH ARI (743)		CHILDREN WITHOUT ARI (2,314)	
	<i>MEAN</i>	<i>STANDARD DEVIATION</i>	<i>MEAN</i>	<i>STANDARD DEVIATION</i>	<i>MEAN</i>	<i>STANDARD DEVIATION</i>
<i>Mother's Age</i>	30.75	7.034	30.90	7.105	30.70	7.012
<i>Location</i>	0.43	0.495	0.42	0.494	0.43	0.495
<i>Wealth</i>	1.59	1.437	1.49	1.419	1.62	1.442
<i>Child's Age</i>	1.53	1.313	1.64	1.254	1.50	1.330
<i>Birth Experience</i>	3.38	2.101	3.41	2.122	3.37	2.095
<i>Antenatal care</i>	6.80	6.531	6.64	4.325	6.86	7.095
<i>Marital Status</i>	0.86	0.351	0.85	0.361	0.86	0.348
<i>Mother's Education</i>	0.66	0.472	0.63	0.482	0.67	0.469
<i>Dead Children</i>	0.26	0.602	0.31	0.644	0.24	0.587
<i>Place of Delivery</i>	0.73	0.443	0.70	0.457	0.74	0.438
<i>Post-natal Care</i>	0.63	0.483	0.65	0.476	0.62	0.485
<i>Vaccination</i>	0.81	0.393	0.81	0.393	0.81	0.394
<i>Maternity Leave</i>	0.30	0.674	0.36	0.727	0.28	0.655

5.3 Analysis of Empirical Results from Econometric Estimations

This section provides an interpretation of the regression results from the Probit. The Probit estimation result of the determinants of Child Morbidity is presented in Table.

5.3.1 Probit Regression Estimates of the Determinants Acute Respiratory Infection

The determinants of acute respiratory illness in children are estimated by the Probit estimation model and the results are displayed in **Table 5.3**. The model assesses the influence of antenatal care, delivery care, post-natal care, child's age, mother's age, mother's education, marital status, birth experience, vaccination, number of dead children, wealth, household location and maternity leave on child respiratory illness. From **Table 5.3** the model has a Wald chi-square value of 33.22 which is statistically significant at 1%. This implies that the explanatory variables considered in the model jointly explain the Child acute respiratory illness (dependent variable). The model also has a Pseudo R-squared value of 0.98%. Child acute respiratory illness is statistically influenced by 4 variables. These determining variables are Child's age, number of dead children, postnatal care and unpaid maternity leave. All four variables with definite signs assumed their expected signs. Antenatal care, delivery care, mother's age, location, wealth, birth experience, marital status, mother's education, vaccination, and paid maternity leave were not statistically significant.

Table 5.3: Probit model for determinants of Child Morbidity in Ghana

Dependent Variable: Acute Respiratory Infection

Variables	Coefficient	Marginal Effect	P-value
Mother's Age	0.0057	0.0017	0.845
Mother's Age ²	-0.000	-0.0000	0.938
Location	0.1039	0.0206	0.118
Wealth	-0.0291	-0.0094	0.690
• Poorer	-0.0640	-0.0204	0.440
• Middle	-0.2014	-0.0613	0.035
• Richer	-0.1906	-0.0582	0.076
• Richest			
Child's Age	0.0441	0.0136**	0.027
Birth Experience	-0.0336	-0.0103	0.122
Antenatal care	-0.0021	-0.0006	0.547
Marital Status	-0.0486	-0.0150	0.516
Mother's Education	-0.0518	-0.0160	0.407
Dead Children	0.1280	0.0396***	0.008
Place of Delivery	-0.0717	-0.0222	0.244
Post-natal Care	0.0954	0.0296*	0.067
Vaccination	0.0273	0.0085	0.674
Maternity Leave			
Paid	0.0794	0.0248	0.488
Unpaid	0.1959	0.0635**	0.011
Con	-0.7685		
Number of Observations = 3,057			Wald chi2 (18) = 35.50
			Prob>chi 2= 0.0082

Pseudo R²= 0.0106

Log likelihood= -167704288

Note: ***, **, * significant at 1%, 5% and 10% respectively

Source: Author's compilation based on GDHS 2014

Table 5.3 shows that the coefficient of child's age is positive and statistically significant at 5%. For interpretation, as a child's age increase the child is more likely to contract an acute respiratory illness. The marginal effect shows that an increase in the age of a child by one year will increase the child's probability of contracting an acute respiratory illness by 1.4%. One possible reason for this finding may be attributed to the fact that as children grow into toddlers and ages further, they begin to play most of the time and easily pick up germs and bacteria. With Ghana having many issues with environmental pollution these children with developing immune systems have a very high possibility of contracting respiratory infections.

The coefficient of dead children is also positive and significant at 10% as shown in **Table 5.3**. This means as the number of deaths in infant children a household experiences the more likely it is that their children may suffer from child illnesses. The marginal effect shows that as the number of deaths increases by one in infant children a household experiences increase the probability that a child in that household has an illness by 3.9%. It is logical to assume that the cause of death other than by accident is illness. For a household experiencing an increasing number of child deaths, there is a high possibility of these deaths being attributed to a familiar illness among these children. This means living children of that household may also have this illness as well. The chances of an accident reoccurring among children in the same household are likely to be marginally low as compared to diseases. Hence the positive relationship between the increasing number of dead children and child morbidity.

The coefficient of post-natal care is positive and significant at 10%. This means that first PNC visit other than the first seven days increases the likelihood of a child experiencing child illness. The marginal effect shows that post-natal first visit of a child beyond seven days after delivery increases the probability of that child having an acute respiratory infection by 2.9%. This result confirms a study using Indonesia Demographic Health Survey to determine the risk of early neonatal mortality used deaths occurring within the first 7 days of life as outcome variables for the study which showed results that neonatal death out of the entire under-five child deaths recorded increased from 66% in 1994 to 78% in 2007 (Titaley, Dibley & Roberts, 2011). This shows that the first few days after delivery of an infant life is very crucial and for this reason, it is necessary that a mother ensures the child gets health care check from some medical personnel at least within the first week after delivery to determine and certify the child's wellbeing. The longer it takes for a child to have his/her first post-natal care the higher the likelihood of him contracting an illness.

The coefficient of Unpaid Maternity Leave is positive and significant at 5%. This means that mothers who go on maternity leave without pay have the likelihood of their children having a case of acute respiratory cases as compared to those who do not go for leave. The marginal effect shows that for every unpaid maternity leave of a mother, the probability that the child would suffer from child illness is 6.3% as to a mother who did not go for leave. For a mother to access good antenatal health care during pregnancy demands high monetary expenses. Hence for a mother not receiving pay during and after her period of pregnancy has a negative effect on household income and as such affect the kind of health care purchases a mother would make (Heymann, Raub & Earle, 2011).

Natal Care and its influence on Child Illnesses

The objective of this study is to define natal care and what its implications are on child morbidity by focusing individually on the three stages of natal care which are Antenatal care, Delivery Care and Post-natal care to identify their individual effects on child illnesses.

Results have shown that of the three natal care variables (antenatal care, delivery care, and post-natal care) explored, only post care had a significant effect on child morbidity (Acute Respiratory Infection). The three stages of natal care have two stages dependent on the health state of the mother being trickled down to the child's health and the remaining one being directly the health state of the child. Considering the fact that respiratory illnesses are caused by viral and bacterial affects the lungs and respiratory tracts which are contracted when exposed to polluted environment it is logical to conclude that Antenatal and delivery care's impact on a child's health is dependent on the health status of the mother does not have direct effects on a child which may be the reason why the results for these two variables were not significant. Post-natal care on the other hand which is the childcare after delivery from Table 5.3 was significant at 10% and positively related to the child morbidity. When children are born their immune system is gradually building up and for this reason, any exposure to a polluted environment may result in bacterial infection in their lung and respiratory tracts. This is why it is important to have a postnatal checkup within a week after delivery and regularly to quickly identify any form of infection. Children born to mothers who had a postnatal checkup of their children a week or more after delivery are approximately 2 percentage points more likely to experience ARI.

Mother's Income during Maternity Leave and its implication on Child Morbidity

The health care service one may acquire is highly dependent on the income of the respondent during and after pregnancy (Heymann, Raub & Earle, 2011). Just like the wealth of a household, the household health care purchase decision is dependent on the wealth or income level of respondents. To determine the impact of natal care on child illnesses, it is necessary to consider the income level of the mother during pregnancy. For a working mother who goes on a maternity leave without pay, the results show that the coefficient of unpaid maternity leave is significant and positively related to child illnesses. This means children born to mothers on unpaid maternity leave are 6 percentage points more likely to experience ARI. This is because an unpaid mother on maternity leave suffers from a reduction in household income and hence cannot afford to purchase the best health care services before, during and after childbirth (Heymann, Raub & Earle, 2011). This affects her frequency of antenatal care, the place of delivery and also the time of first postnatal care visit.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.0 Introduction

The purpose of this chapter is to provide summary and conclusions of the study, make policy recommendations and suggest areas for further research. Section 6.1 presents the summary of the study, Section 6.2 the conclusions, Section 6.3 the limitation of the study, Section 6.4 the recommendations and Section 6.5 suggests areas for further study.

6.1 Summary

The objective of this study was to analyze the nature of natal care and child morbidity in Ghana using acute respiratory illness as a proxy for child morbidity. It also ascertained if natal care in its three stages, that is, ante-natal, delivery and post-natal care had an influence on child morbidity. The study again sought to determine the influence of a mother's income during and after pregnancy on child morbidity using paid and unpaid maternity leave as a proxy for the mother's income.

The survey used secondary data sourced from the Ghana Demographic Health Service (GDHS) for a survey done for the period from 2010 to 2014. The 2014 GDHS is a national level survey of the health status of women and men in the reproductive ages and children under the age of five, designed to provide estimates of key indicators on the health status of women and children for the whole country. The survey covered 9,396 women between the ages of 15-49 and 4,388 men between the ages of 15- 59 from 11,835 interviewed households. For the purpose of this study, the sample size was reduced to 3,057 respondents.

The study estimated the determinants of child morbidity which included health, demographic and income factors. A probit estimation was used to estimate the overall determinants for child respiratory illnesses and to determine those that significantly affect child health.

6.2 Conclusions

The study revealed that for the three stages of natal care post-natal care does have an effect on child health and not antenatal care and delivery care. This is because for the first and the second stages of natal care, the health of the child is predominately dependent on the health of the mother and for this reason, proper care is taken by the mother to ensure that she and her child is in good health. The mother, in this case, has full control in ensuring her health and that of her baby. The baby is not directly exposed to the environment because the mother shields the child from any harm, but after delivery, the baby is directly exposed to environmental hazards like bacterial and viral infections that affect the baby without affecting the mother first. Hence, without proper post-natal care, the child would be exposed to germs which may get into his/her lungs and respiratory tract and cause respiratory infection of the child. The longer it takes for a child to have his/her first post-natal visit, the probability that the child would be of ill health is 2.9% points.

The survey also revealed that some health variables are significant determinants of a child ill-health. These factors include the number of child deaths a household has experienced. This study revealed that an increase in the number of children's deaths a household experiences increases the probability of a child in that household being ill by 3.9% point. The study revealed that a child born to a mother who has experienced repeated death of children has a high likelihood of being ill. This shows that there is a significant positive relationship between child mortality and child morbidity as mentioned in the earlier chapters of this study.

Some demographic factors were significant and hence affecting child morbidity. One of these factors is the child's age, which had a positive relationship with child respiratory illness. An increase in the age of a child increases the probability of the child having a respiratory illness to 1.4% points. As the child grows, he/she is more exposed to the polluted environment and hence exposed more to bacterial infections which may affect the lungs and the respiratory tract and causes child respiratory illnesses.

Unpaid maternity leave is positively related to child morbidity. This finding is supported by the fact that to access the best natal health care demands a lot of financial resources and it is difficult for a mother with unpaid maternity leave to make the best health care purchases needed.

6.3 Limitations of the Study

One of the major limitations of this study is that the data used does not include monetary values for neither mothers' income or household income.

6.4 Recommendations

A couple of observations emerged from the study which requires close attention by government and other stakeholders in reducing the level of child morbidity. These are :

- Post-natal care in Ghana was found to be positive and significant to the occurrence of ill health of children in Ghana. Mothers and health professionals should focus more on the provision of postnatal care from skilled health professionals and also ensure timely health checkup after delivery. Government and its stakeholders can help facilitate this by increasing the education and awareness of the need for a timely post-natal checkup to mothers and health professionals.

- Since unpaid leave raises the probability of ill health, policy recommendation is to enforce paid maternity laws in institutions to protect mothers. This would help mothers assess quality natal care without financial constraints.

6.5 Area for Further Research

The study covered only acute respiratory illness as the proxy for child morbidity in Ghana and showed how natal care influences child morbidity. Further studies are needed to cover all the six killer diseases as single proxies for child morbidity. The recommended research would determine if post-natal, child's age, dead children experienced and unpaid maternity leave are truly significant factors that influence child morbidity. Another area of study could be to determine how child morbidity affects the labour supply of mothers on the labour market and also determine if other demographic factors other than those in this research have an effect on child morbidity.

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