

SOCIO-ECONOMIC DETERMINANTS OF CHILD SURVIVAL IN THE GOMOA EAST DISTRICT OF THE CENTRAL REGION OF GHANA.

KNUST

By

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DECLARATION

I hereby declare that this submission is my own work towards the Master of Philosophy Degree in Sociology and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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DEDICATION

This thesis is dedicated to my late father, Samuel McWilliam Nyarko.

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I thank all individuals who in diverse ways made this study a success and most of all to mothers who agreed to partake in this study. I also do acknowledge the immense patience and help from Dr. Kwadwo Ofori-Dua and my supervisor Dr. Eric Henry Yeboah. Lastly, I thank my mum for her encouragement and care throughout my education.



ABSTRACT

Among the important issues of health concerns in every nation is the issue of child survival. The survival of children under age five is highly dependent on the general social, environmental and economic atmosphere they find themselves. This study sought to examine National Health Insurance Scheme and some selected socioeconomic variables in determining child survival chances. Gomoa East District in the Central Region of Ghana was selected for the study. Mixed methods approach was employed, making use of social survey with 260 mothers and face-to-face interviews with 12 purposively selected mothers. Chi-square statistic and Binary logistic regression models were fitted to the survey data collected whereas thematic analysis was done for the interviews. The study revealed that maternal factors such as age, education, religion and parity were significant predictors of child survival. Main source of drinking water for households, household income and child enrolment on health insurance also significantly predicted child survival. Household income was ascertained as working through proper nutrition and payment of medical bills to influence survival chances of children. Household enrolment on health insurance saved the households income for other expenses which would have otherwise gone into health expenditure. Subscription to National Health Insurance Scheme facilitates the increased frequency of the use of health services which positively affected child survival outcomes. Based on the findings from the study, recommendations such as encouraging girl-child education and intensifying the coverage and depth of National Health Insurance Scheme among others were made.

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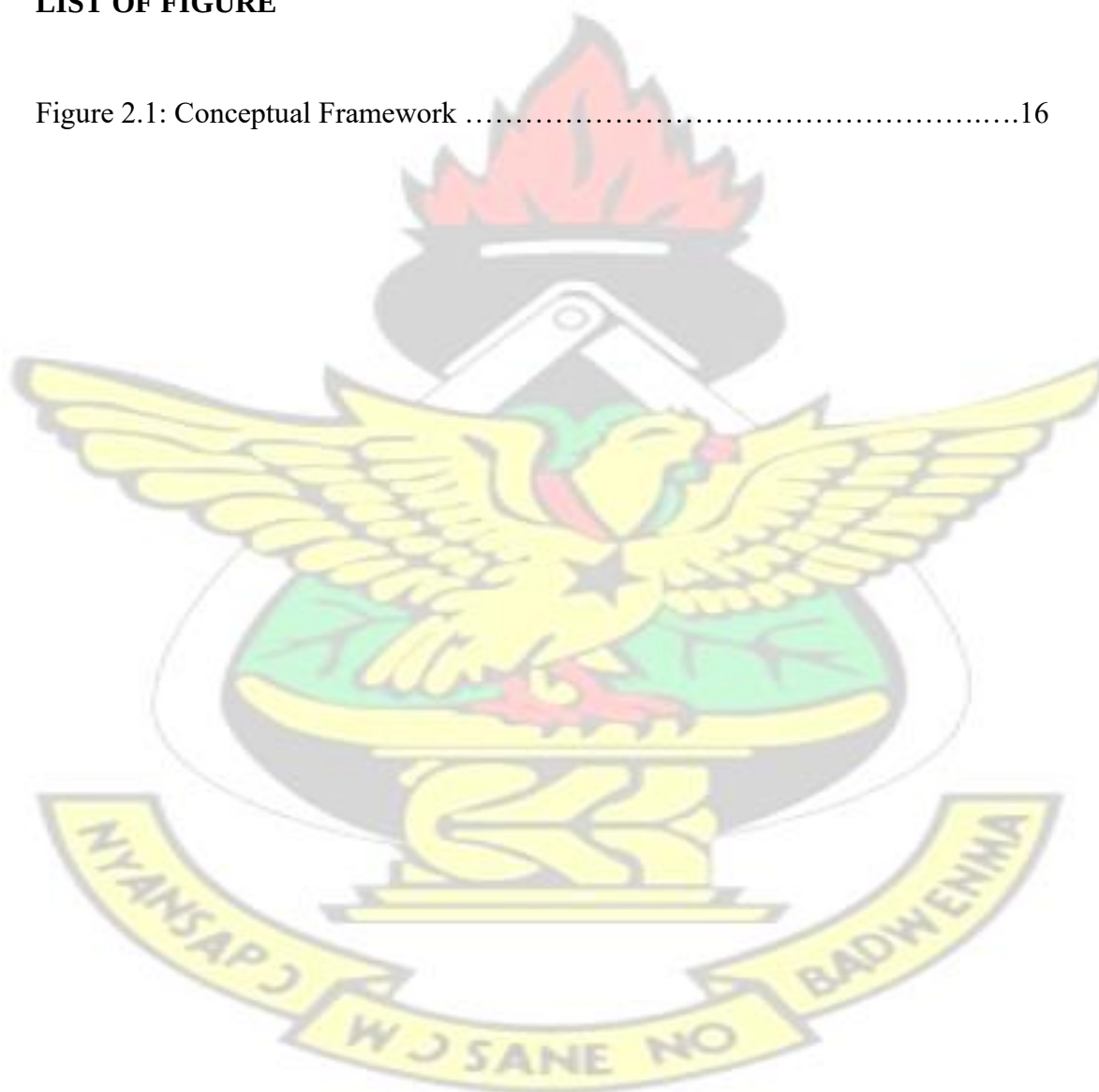
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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The reduction in child deaths is one of the major priorities in every country (United Nations [UN], 2007), but efforts being put to deal with this challenge do not seem to lead to desirable levels of satisfaction (United Nations Children's Fund [UNICEF], 2013). In 2013, 6.3 million children worldwide died before their fifth birth-day, with almost all of such deaths occurring in developing countries. This is equal to nearly 17,000 child deaths every day. Sub-Saharan Africa (SSA) alone accounts for almost 50% of these deaths (World Health Organization [WHO], 2015). In 2015, it was estimated that 5.7 million children died before age five (UNICEF, 2015). This is translated to about 16,000 child deaths per day.

Child survival figures are not the same for all countries, neither are they the same across different regions in the same country. Child survival chances are much higher among high-income countries, at 6 per 1,000 live births than are they among low income countries, at 47 per 1,000 live births in 2015 (WHO, 2015). This shows the variation in child survival rates in advanced and developing countries. This variation is also seen between rural and urban settings within same countries.

The survival of children (12 months to 59 months) is one of the key indicators of socio-economic and health status of a country. This is because more than any other age group of a population, children's survival depends on the social and economic conditions of their environment (Madise, 2003). It reflects the social, economic and environmental conditions that children find themselves and grow in (Syamala, 2004).

It is one of the important considerations for evaluation and planning of public health strategies (Park, 2005).

Factors such as socio-economic status, fertility behaviour, environmental health conditions, nutritional status, infant feeding, and the use of health services have been identified as strong risk factors for child survival. The magnitude of each factor varies in various regions across the world (Mosley & Chen, 1984). Research throughout Africa has shown that parental poverty and low educational attainment are adversely associated with the survival of children through low child survival rates (Bawah & Zuberi, 2005; Gwatkin, 2002; Muhuri, 1995).

Drawing from the social, economic and environmental determinants of child survival, a child survival strategy for the African Region was developed by WHO, UNICEF and the World Bank and adopted by the fifty-sixth WHO Regional Committee in 2006 (WHO, 2006). The strategy aimed to scale up a defined set of effective child survival interventions, including antenatal care, newborn care, appropriate infant feeding, immunization, management of common childhood illnesses and use of insecticide treated nets (ITNs). This strategy was designed because factors such as the socio-economic, biological and environmental determinants operate through the child survival interventions to affect child survival (Mosley & Chen, 1984). This strategy has resulted in drastic improvement in child survival globally (Inter-agency Group for Child Mortality Estimation [IGME], 2015). Despite this improvement, Sub-Saharan Africa (SSA) countries of which Ghana is inclusive continue to record high values of child mortality which is estimated at 83 children in 1,000 in comparison to an average of 6 in a 1,000 in most high-income countries (WHO, 2015).

According to the Ghana Statistical Service (GSS) (2015a), results from the six Ghana Demographic and Health Survey (GDHS), conducted between 1988 and 2014 show a consistent and marked improvement in child survival rates over the period. From 155 deaths per 1,000 live births in 1988 it reduced to 60 deaths per 1,000 live births in 2014. However, this decline is not even or uniform in all regions of the country. It is worthy of note that the poor regions in Ghana have lower child survival figures compared to the resource rich regions.

1.2 Problem Statement

Most of these studies have shown significant association between socio-economic factors and child survival (Caldwell, 1979; Madise & Diamond, 1995), sociodemographic factors and child survival (Hobcraft, 1993; Manda, 1998), biological factors and child survival (Forste, 1994; Gyimah, 2002), environmental factors and child survival (Dos Santos & Henry, 2007) or household facilities and child survival (Mutunga, 2004) through making use of survey or censuses data. For example, Caldwell (1979) reports an association between mothers' education and survival of their children. This is also supported by studies in sub-Saharan Africa (Devlieger, Martens & Bekaert, 2005). These relationships were quantitatively ascertained, but the reasons for the relationships were not qualitatively inquired into except for few studies (Caldwell, 1979).

From the discourse above, these quantitative measures do not provide explanations to why the improvements in child survival and the disparities that exists across regions and within regions. Also the reasons for the changing relationships between child survival and the various determinants were not qualitatively ascertained to give an indepth understanding of the numbers and the relationships. This is clear, as most of these studies resorted to secondary data with no qualitative follow up on their samples.

Following the quantitative measures, child survival chances have been found to be lower in rural areas than in urban areas (Caldwell, 1979; Devlieger et al., 2002), with most studies comparing child survival chances in rural and urban settings (Berckhoff, 1990; Bocquier, Madise & Zulu, 2011; Schoeps et al., 2015). To this effect, literature on child survival studies in purely rural setting through the use of mixed methods approach is in dearth. This current study therefore sought to find out through the use of mixed methods approach the reason behind the low survival chances of children in a particular rural setting as a study area. This combined approach allowed for better understanding of the issue of child survival in rural areas. This study also collected primary data from the mothers of the children and did not resort to secondary data as the other studies.

In addition, few of these studies have dealt with the influence of Health Insurance Scheme (HIS) on survival chances of children. These studies, also making use of secondary data, established relationship between Health Insurance and survival chances of children (Binagwaho, Hartwig, Ingeri & Makaka, 2012; Quimbo, Peabody, Shimkhaba, Florentino, & Solon, 2011; Schoeps et al., 2015). The moderating effect of health insurance on child survival was ostensible in most of these studies. This is because these studies were purely quantitative in nature with no in-depth qualitative inquiry.

Following these studies, some studies in Ghana having made use of already existing data have established relationship between socio-economic factors and child survival (Bawah et al., 2006; Kanmiki et al., 2014) and maternal factors and child survival (Osei-Kwakye, Otupiri, Owusu-Dabo, Browne, & Adjuik, 2010). These studies through quantitative techniques were able to establish varying degrees of relationship between health insurance and child survival without in-depth qualitative augmentation of

reasons for the relationships. That is, the possible reasons for the relationships were left unexplored as data used do not allow for such inquiry (Palloni, 1987). Since most of the studies employed only quantitative designs making use of secondary data in their quest to establish relationships, this current study considered qualitative interviews together with quantitative techniques to enhance our understanding of child survival. This study collected primary data and did not use secondary data and in a typical rural setting. This study purposed to contribute to filling this gap in literature. The almost missing touch of qualitative inquiry was considered by this study through qualitative augmentation of the quantitative techniques. This little touch of qualitative inquiry serves as a breaking ground in an overly quantitative area of study. This adoption of mixed method allowed for an in-depth understanding of the issue at hand and contributed to literature.

For Ghana to be seen as making progress in child survival, it had to reduce her rate of child deaths to 40 per 1000 live births by 2015 (Countdown Coverage Writing Group, 2008). Between 2007 and 2015, Ghana had to achieve an annual rate of reduction of 12.2% in order to achieve the Millennium Development Goal 4 (Countdown Coverage Writing Group, 2008). However, the country was not able to achieve that rate of reduction (GSS, 2015a). This study is therefore, a contribution towards identifying causes for the failure of the country at meeting the MDG4 since it will provide deeper understanding of the quantitative indicators of challenges to the said goal.

1.3 Objectives

The general objective of this study was to examine the relationship between sociodemographic factors of child survival and assess the impact of health insurance scheme on child survival through in-depth information gathering in Gomoa East District in the central region of Ghana. Specifically, this study sought to;

1. Investigate maternal and child enrolment in National Health Insurance Scheme (NHIS) in determining child survival.
2. Examine the interaction between household income and child survival.
3. Examine the effects of maternal factors on child survival.
4. Evaluate the relationship between household facilities and child survival.

1.4 Research Questions

The study was guided by the following research questions;

1. What is the interaction between household income and child survival?
2. Does maternal and child enrolment in National Health Insurance Scheme influence child survival?
3. What is the effect of maternal factors on child survival?
4. What is the relationship between household facilities and child survival?

1.5 Justification

Children in sub-Saharan Africa have the lowest likelihood of survival with one in every nine children dying before age five as of 2011. Moreover within Ghana, disparities exist in child survival figures between regions. In the more resource rich regions of southern Ghana, child survival chances are higher compared to the deprived regions of the north such as the Upper East Region (GSS, 2010). Most of these impoverished regions are mostly rural with low child survival chances. Studies concentrating on rural communities with reference to child survival either resorted to purely quantitative techniques in their study or compared rural communities with urban communities. This makes it quite difficult to ascertain why these rural communities are lagging behind in child survival rates. This study sought to gather indepth interviews to augment the quantitative measures with particular attention in a rural area. Gomoa East District is

located in the Central Region of Ghana with most of the towns being rural. Since most studies in Ghana concerning child survival are concentrated in the northern part of the country, this study was justified by its location and the collection of qualitative data to augment the quantitative data.

1.6 Significance of the Study

The mixed method approach in this study will provide very rich information and understanding of child survival in Ghana. This study serves to inform mothers of good practices that can help save their children. This is because this study concentrated on live children and their mothers and how early childhood illnesses are managed by the households and its implication for the lives of the children. Since most studies concentrated on survival, this study brought to the fore the significance of the health management practices in households concerning children. This study can be a reference for other studies especially in Ghana. Also, the general public will be aware of the most determining factors of child survival and how to guard against it. It will serve to unravel the importance of Health Insurance Scheme in Ghana regarding child survival.

1.7 Scope of the Study

Delineation of parameters or confines of a study is considered its scope. It serves to put the study in perspective and focused so that the study does not deviate. This study concentrated on maternal factors such as education, age, employment, religion and household income and its implication for child survival. Mothers of live children were herein considered. Children between exact age one and five years were considered.

According to Madise (2003), among all the age groups, this group's survival is highly dependent on the social conditions within which they find themselves. Other factors like household facilities such as source of drinking water, type of toilet facility available among others were also investigated into. Indicators of child survival such as

immunization, vitamin supplementation, pneumonia, diarrhoea and use of insecticide treated bed net were also considered. The implications of maternal and child enrolment in National Health Insurance Scheme (NHIS) was also examined. These served to provide the boundary for this research in the study area and not beyond.

1.8 Limitations of the Study

No study goes without limitations. Despite this study's aim of substantially contributing to our understanding of child survival in Ghana, lack of resources was a limitation and so the researcher could not cover large area to include some more diversity. Therefore the findings from this study might not likely be the same for the entire country.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter critically reviews studies of other people in relation to child survival. This review starts by creating an understanding of child survival in the minds of the readers from the perspectives of different authorities and then puts a lens on child survival in Ghana. Theoretical framework for studying child survival and particularly that of Mosley and Chen (1984) is also critically reviewed and assessed in the light of the study. Determinants of child survival (economic, demographic and biological) are also covered making reference to other authors who have documented facts through research on these determinants. The issue of health insurance scheme and its influence on child survival is critically reviewed in order to understand the mechanisms through which

this scheme operates to affect child survival. This chapter ends with a conclusion and summary of the understanding of the researcher on the issue under consideration.

2.2 Understanding Child Survival (conceptualization)

The mention of child survival brings into wake concerns of improving child health and reducing child mortality (UNICEF, 2008). Starting from conception through to birth to exact age five of children are all phases captured in child survival and its interventions. Steps taken to reduce death of children between age zero and age five through improved health by individuals are considered child survival strategies or interventions.

No clear cut definitions have been put forward by any authority, however, the issue of death of a child or the child being alive are common themes found in most discussions on child survival. Here, an understanding is clearly made of child mortality, with child referring to a human offspring from birth to exact age five, commonly termed under-five mortality (UNICEF, 2013). It is considered as the probability of dying before age five. Any strategy aimed at child survival is to reduce early childhood illness and under-five deaths (WHO, 2011). Under-five Mortality Rate (U5MR) is the number of children less than five years who die per 1,000 live births in a population (WHO, 2011).

These under-five deaths classified under child survival is further divided into neonatal mortality, post neonatal mortality, infant mortality and child mortality (Inter-agency Group for Child Mortality Estimation [IGME], 2015). Neonatal mortality is the probability of dying within the first 28 days of life while post neonatal mortality is the probability of a child dying between first 28 days of life and exact age one. Infant mortality is neonatal mortality plus post neonatal mortality and considered as death of children in the first year of their lives. Child mortality is the probability of dying between age one and exact age five.

It is clear from the above discourse that child survival concerns itself with management of early childhood illness, improvement in child health and the consequent reduction in deaths of children under five years of age. This study concerns itself with child survival with concentration on live children and their health.

2.3 Child Survival in Ghana

Survival is a fundamental human right that is guaranteed to all regardless of age and sex. In pursuing the right to life, Ghana has devised a strategy for improved health services for the mother and child (Ministry of Health [MOH], 1996) which includes empowerment, capacity building and service delivery. One of the major objectives is to significantly reduce maternal mortality and enhance child survival by improving access to quality healthcare services and strengthening partnerships. For example the

Article 29 in the Fourth Republican Constitution and the Children's Act 560(6) of 1998, guarantee all children the right to survival through provision of social services such as nutrition and health. All these measures are in place to improve child survival and reduce child mortality.

According to GSS (2015a) and Ghana Health Service (GHS) (2009), Ghana is making progress with regards to child survival in the country. Ghana has enjoyed a steady decline in child deaths in the past 25 years. In 1988, early childhood mortality rate was as high as 110 deaths per 1,000 live births. This declined to 57 per 1,000 in 1993 and to 54 per 1,000 in 1998. In 2003, it was 50 per 1,000 and in 2008 it was 31 per 1,000. The recently conducted Ghana Demographic and Health Survey in 2014 showed a decline to 19 per 1,000. However, under-five mortality is currently at 60 per 1,000 live births.

It is worth noting that this decline in childhood mortality is not in sync with the world's target. According to a Multiple Indicator Cluster Survey conducted by the Ghana

Statistical Service in 2011, twice as many children born to the country's 20 percent poorest population are more likely to die than the 20 percent in the richest quintile. Geographically, the Northern region has the highest number (124) of children who die before age five followed by the Upper West (108) and then the Brong Ahafo regions (104). All these numbers are out of every one thousand children born alive.

In the light of the above, a report by UNICEF (2013), states that Ghana has made progress in child survival since 1990 but with less encouraging annual rate of reduction in child deaths. According to the report, Ghana will not achieve the MDG 4 target to reduce the number of children who die before the age of five according to the latest data on child mortality. This means that despite efforts in improving child survival, child mortality is still high in Ghana compared to other countries.

Various studies in Ghana have documented different determinants of child survival and their dynamics of operation in bringing about child deaths. Nyarko, Tanle and Kumi-Kyereme (2014) established that household size, duration of breastfeeding, type of birth and religious affiliation are strong predictors of child survival chances in Ghana. They made use of the 2008 Ghana Demographic and Health Survey Data. They employed the stepwise logistic regression model in establishing these relationships.

Drawing from the above, a case-control study by Osei-Kwakye et al. (2010) on the determinants of childhood mortality in the Builsa District in the Upper East Region of Ghana found out that the educational level of mothers did not influence the child's risk of death despite the fact that more than 60% of mothers were illiterate. Their study also revealed that children of mothers who have had previous child deaths were eight times more likely to die than those whose mothers have not had previous child deaths. To

them the strongest risk factors that determine the survival of their children were the use of ITNs, vitamin supplementation, number of live children and immunization.

Another study by Bawah et al. (2006) in Kassena-Nankana District in the Northern Region of Ghana on “The Impact of Immunization on the Association between Poverty and Child Survival” also found out that the negative effect of poverty on child survival disappears in the presence of free immunization. They also found that the effect of mothers’ education on child survival is reduced if immunization is controlled for. They used the survival histories of 18,360 children in the district which is generally impoverished and educational attainment was low. They therefore advocated that expanding immunization programmes will go a long way to improve child survival in Ghana.

Still in rural Northern Ghana, a study was conducted by Kanmiki et al. (2014) on the determinants of child mortality. They documented after the study that maternal education, presence of co-wives, age and marital status were strong predictors of child deaths. They relied on survey data on 3,975 women aged 15–49 who have ever given birth and employed the chi-square statistic to test the association of economic, social and demographic variables with child death. Logistic regression model was then used to estimate the relative association of factors that proved significant in the chi-square test.

The above studies in Ghana among others all try to establish relationships between social, economic, demographic and biological factors that determine child survival in Ghana. These show that issues of child survival in Ghana is recognized by academics and national policy makers alike. Clearly, all these studies made use of large data sets with the weakness of not engaging in a qualitative inquiry to gain in-depth

understanding of their findings. For example, while others are finding mothers' education as significantly affecting child survival, others also found it to be insignificant after controlling for certain factors. This means that the reasons for the changing significance of some of these variables remains unexplained. This makes policy implementation and assessment difficult. It is therefore not clear as to which determinant to be tackled as studies on child survival in Ghana are not coherently consistent with their findings.

2.4 Theoretical Framework

A theory is a set of ideas which claims to explain how something works (Haralambos & Holborn, 2005). It may simply be put as concepts organized into groups of statements to explain a phenomenon. A theory is a set of propositions (reducing) of a particular set of phenomenon to an abstract network of concepts (Palloni, 1987). Such network is created with a causal language that makes open the existence of the causal factors and causal mechanisms. Frameworks are considered skeletons of reality that help put ideas and thought into perspectives. The discussion of theoretical framework helps put the study into perspective and arrive at succinct and elaborate study. Among the theoretical frameworks in explaining child mortality is the Analytical Framework Theory (Mosley & Chen, 1984).

2.4.1 Mosley and Chen Analytical Framework Theory (1984)

The theory to be considered for this study is the Mosley and Chen (1984) Analytical Framework Theory. This is a framework which considers the determinants of child survival in developing countries. The reason for selecting this framework is because of its appropriateness in relation to a developing country like Ghana where this study was being conducted. This framework draws on child survival indicators and determinants in relation to what is occurring in developing countries regarding child survival. Mosley

and Chen (1984) argue that we cannot dichotomize the perspectives of the biomedical sciences and that of the social sciences in the study of child survival, which results in one sided view of a coin. To them, if a dichotomy is forced, we lose focus of the effect of some other pressing determinants of child survival or mortality. The mesh of the two brings to bear the effects of biological and social variables and help integrate research methods from both fields.

They contend that traditionally, social science research regarding child survival have focused on levels of socio-economic status and patterns of child mortality. This is used to establish causality inference on child mortality within populations. The correlation between the socio-economic variables and the survival status (dead or alive) of the child are referred to when dealing with child mortality determinants. This is myopic as it relegates to the background some other possible factors of importance in determining child survival. The dependent variable considered under this approach is mortality. The mechanisms by which socio-economic determinants function to bring about mortality and the mortality differentials remains largely an unexplained “black box” (Mosley & Chen, 1984).

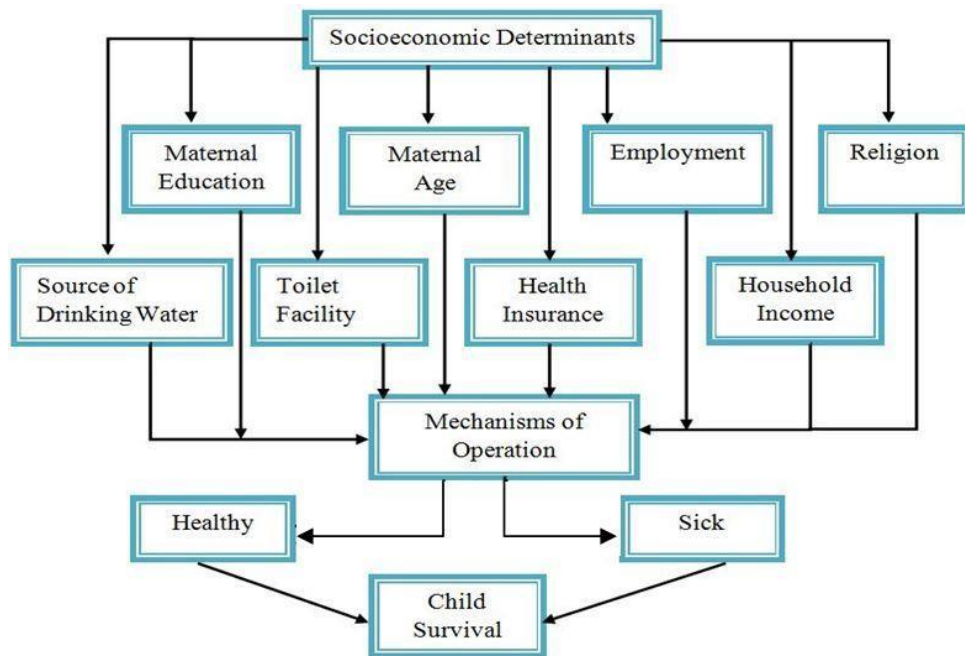
Again, they posit that the biomedical sciences concentrate on issues of the biological processes of diseases and not necessarily mortality. Issues of death are attributed to specific disease processes such as infections or malnutrition and not to other social causes outside of disease causation. With this, intervention target is on personal preventive measures on morbidity in populations. This concentration on biological processes of illness and morbidity also relegates to the background the social causation of morbidity.

The conceptual core of this framework is the idea that all background (socioeconomic and cultural) variables have to operate through a limited set of proximate determinants that directly influence the risk of disease and the outcome of disease processes. This theory asserts that marrying the two extremes and coming out with a coherent framework with a single outcome variable that combines morbidity and mortality is needful. The central idea to this model is the identification of a set of proximate determinants that operate directly to influence the risk of morbidity and possibility of death (Child Survival). The understanding that social and economic determinants affecting child survival operate through these variables should be appreciated. They grouped the proximate determinants into five categories. They are as listed below;

1. Maternal factors (age, parity, birth interval)
2. Environmental factors (air, food/water/fingers, skin/soil/inanimate objects, insect vectors)
3. Nutrient deficiency (calories, protein, micronutrients – vitamins and minerals)
4. Injury (accident, intentional)
5. Personal illness control (personal preventive measures, medical treatment, use of ITNs)

However, this study adapts this framework with changes to suit the focus of this study. Figure 2.1 depicts the pictorial representation of an adapted conceptual framework from Mosley and Chen (1984).

Figure 2.1: Conceptual Framework on Determinants of Child Survival



Source: Author's own construct (2015) – Adapted from Mosley and Chen (1984)

From the framework above, the selected proximate socio-economic determinants which are maternal education, age, employment, religion, household income, source of drinking water, toilet facility and health insurance operate through some mechanisms of interrelationships to affect child's health. This effect is either positive (healthy) or negative (sick). It can be realized from the framework that an otherwise healthy child can become sick due to the operating mechanisms through which the selected socio-economic variables interact. The outcome/dependent variable is child survival as sickness and good health all affect the likelihood of the survival chances of the child.

It is worthy of note that some variables from other studies have been excluded from the framework. For example ethnicity, paternal education, exclusive breastfeeding and place of delivery are not included in the above framework. For ethnicity, the reason for exclusion is that the area of study is largely rural Fante land with the people being Fante. Thus asking the respondents about their ethnicity will yield no significant effect. Paternal education was left out because it has the tendency to influence maternal

education. It is assumed that educated mothers are likely to have educated husbands, with few educated husbands having uneducated wives. This was the main reason for its exclusion in the conceptual framework above. Exclusive breastfeeding was not included because it is highly biological in determining child survival than social, so does the place of delivery.

2.5 Immunization and Child Survival

Although immunization, maternal educational attainment, and poverty are known to covary in many settings, their various independent and joint effects in Africa remain unknown (Attaran 2005). Immunization may offset the effects of poverty by reducing the time and resources parents spend on nursing sick children and thus may divert resources that would otherwise be used in caring for sick children. Immunization programs may provide a basis for addressing health inequity, because the provision of mass immunization does not discriminate between children of the poor and the betteroff or the educated and the less-educated.

In response to the worldwide call to improve child survival, the Expanded Programme on Immunization (EPI) advocated by UNICEF was wholly embraced by Ghana in the early 1980s. As in most developing countries, immunization against the six immunizable childhood diseases (i.e., diphtheria, measles, pertussis, poliomyelitis, tetanus, and tuberculosis) has been instituted as part of Ghana's primary health care program. Access to the antigens is mainly through outreach programs, particularly in remote areas, and through routine child clinic sessions at health care facilities. While the EPI in Ghana in the early 1980s was described as a great success, falling coverage rates characterized the period 1986–91 (UNICEF 1993). In the last decade, however, Ghana has experienced a modest upturn in full vaccination rates, from 55 percent in

1993 to 62 percent in 1998 for all one-year-olds (Ghana Statistical Service and Macro International 1999). Despite this improvement, the worldwide target of 90 percent coverage by the year 2000 is far from being attained.

The lack of reliable data on EPI-targeted diseases as causes of death makes it difficult to assess the magnitude of mortality reductions due to immunization uptake. It has been argued that reductions in disease-specific mortality will not necessarily translate into improvements in child survival in situations where children are at high risk of death from other causes. This argument holds that those “saved” by immunization may be weaker, on average, than those who would have survived without immunization, and therefore more likely to die of other causes (Koenig, Fauveau, and Wojtyniak 1991; Mosley and Chen 1984; Kasongo Project Team 1981). Others have argued against this view, claiming that immunization prevents not only death but also illness, thereby promoting the overall health of the child and reducing mortality by more than the share of deaths directly attributable to the targeted diseases (Kristensen, Aaby, and Jensen 2000; Aaby 1995; Koenig et al. 1991). Further, immunization drives could affect mortality through behavioral as well as biomedical pathways. Health workers generally use designated national immunization days (NIDs) to measure and weigh children and provide a wide range of health-related information. NIDs serve as a contact point with the official health care system for mothers, especially in rural areas, who might otherwise rarely interact with the system.

However, logistical difficulties, particularly in settings such as rural northern Ghana, may limit an immunization program’s potential for impact. In most rural areas, the schedules for EPI outreach may not correspond to the exact time at which a child is due for a particular antigen. For maximum protection against the six childhood killer diseases, it is recommended that a child receive one dose of *Bacillus Calmette-Guérin*

(BCG) at birth; three doses of diphtheria, pertussis, and tetanus (DPT) vaccine and polio drops at ages 6, 10, and 14 weeks; and the measles vaccine at age 9 months. Outreach programs are usually planned to correspond to days of local activity (such as market days, nonfarming/nonfishing days, and so forth) and at reasonable intervals to ensure adequate response to the call to send children to outreach points. Complete uptake may, therefore, not necessarily result in improvements in child survival because vaccinations may be mistimed. In other situations, mothers may fail to return for later vaccines. This is particularly true for the measles vaccine, which should be given nearly six months after completion of the rest of the series. Thus, the full benefit of the immunization routine for the child may not be achieved.

In addition, vaccines may lose their sensitivity during transportation between a health institution and an outreach point because of unsatisfactory storage facilities. Most vaccines need to be stored at low temperatures to maintain their potency. In cases where the cold chain is broken due to unavailability of refrigeration facilities, the antigen may have lost its effectiveness by the time it is administered to a child. This problem of transporting vaccines under unsatisfactory conditions is often encountered in rural areas. In Kassena-Nankana District, however, efforts are made to maintain the cold chain by providing vaccines to nurses just before they begin their outreach duties. Nevertheless, considering that the climate in the district is very hot and temperatures can reach 40°C, even an hour's drive to an outreach point can break the cold chain.

2.5 Factors Influencing Child Survival

Determinants are causal elements or causal factors of a particular phenomenon. They bring about an occurrence. Early childhood survival has been dealt with by authors extensively. However, segregation between the different stages of childhood, that is, neonatal, post neonatal, infant and children are hardly done. However, child survival

determinants are almost always considered more social than biological (Madise, 2003). This section will consider the socio-economic, socio-demographic and environmental determinants of child survival as studied by other authors, critically analyze and draw meanings from them.

The importance of the literacy level of mothers in determining child survival through other mechanisms apart from income was projected by Caldwell (1979) in his study on Nigeria. In his study he came out with the finding that mothers' education works through improved care and feeding practices to affect the survival of children such that the children are kept away from dirt and are protected against diarrhea. He argued that it is not through economic means that mothers' education affects the survival of their children and that controlling for economic means, education affects child survival. Educated women are able to engage in household power shift and thus become empowered to make some health decisions for their children and solicit for information within their social network on issues concerning the survival of their children. A recent study by Bello and Joseph (2014) in Oyo State, Nigeria revealed that poverty and mothers' education are among the strongest determinants of the likelihood of survival of children. They argued that poverty even prevents education of mothers to a stage where it can affect their health and that of their children. These two studies (Bello & Joseph, 2014; Caldwell, 1979) all lose focus of the fact that education and income reinforces each other. In the information age, education is costly but also pays more in terms of income if one is educated. The benefits transcend beyond income to other improved ways of doing things such as personal illness control practices.

Short birth intervals, size of baby at birth, parity among others have been found to be associated with child survival. A study by Madise, Banda and Benaya (2003), in Zambia found that small birth size and short birth intervals are associated with low survival

chances of children through high child mortality rates. Manda (1998) also making use of the 1992 Demographic and Health Survey (DHS) in Malawi found that birth interval and maternal age affects the survival chances of their children and is largely limited to the period of infancy. As the child increases in age, the influence of social and economic variables on the survival risk is enhanced. His study made a critical contribution to the literature on child survival by revealing the diminishing effects of some factors as the child grows away from infancy.

Most deaths of children under age five in sub-Saharan African and other developing countries have been linked to the household environment (Fayehun, 2010). Fayehun (2010), hypothesized that variations in household facilities affect children's survival chances in developing countries, using the demographic and health data from eight sub-Saharan African countries. According to WHO (2009), safe drinking water and access to improved sanitation within the household environment improves the survival chances of children. In some African countries, child survival chances have increased as a result of the provision of safe drinking water and sanitary facilities (Rutstein, 2000). This was in response to studies that advocated for such household facilities.

Although several variables have been outlined as reducing child survival chances, childhood illnesses resulting in death are attributed to below standard household facilities (Rutstein, 2000; UN, 2001). Among the serious threats to global health are household environmental facilities (UNICEF, 2001; World Bank, 2000). Safe household environments assure residents in the household of good health and safety. Health hazards such as poor ventilation, poor air quality, stagnant waters around houses, houses close to dump sites, lower than standard buildings and toilet facilities reduces the survival chances of children. Studies have shown that household facilities are

generally poor in developing countries (Rutstein, 2000; WHO, 2005; WHO, 2009; World Resources Institute, 1999), accounting for the high incidents of child deaths in the developing regions of the world especially sub-Saharan Africa.

Fayehun (2010) asserts that women and children in African traditional homes are at risk of inhaling smoke from burning coal due to women's traditional role of food preparation. In this light Timaeus and Lush (1995) found that child morbidity and mortality have been strongly associated with household environmental conditions in urban areas of Ghana, Egypt, Brazil, and Thailand. Children in developing countries are thus exposed to these health hazards.

2.6 Child Survival Interventions

Child survival interventions or strategies are steps taken for children aged less than five years of age by other individuals and communities to reduce risks or severity of adverse health conditions that affect the survival of children and infants (USAID, 2002). Child survival interventions according to USAID include breastfeeding, immunization, Oral Rehydration Therapy (Oral Rehydration Salt [ORS]), female education, child growth monitoring and promotion, family planning, food fortification and use of ITNs. The chief of these is the integrated management of childhood illness since it incorporates almost all the other interventions. All these interventions are geared towards enhancing the survival chances of children.

2.6.1 Integrated Management of Childhood Illness (IMCI)

Since the 1970s, there has been a tremendous increase in child survival chances. However, the increase in child survival chances has not been uniform worldwide, with some countries registering decreased survival chances. The integrated management of childhood illness is a WHO initiative to help deal with some of the basic problems that

children face at the early stages of life. According to WHO (2005), IMCI is an approach which considers the whole well being of the child. It aims to reduce illness, disability and death among children.

IMCI has three main components which are;

1. Improving case management skills of health-care staff
2. Improving overall health systems
3. Improving family and community health practices

The basic tenet of the IMCI is to concentrate on case management of common childhood illness with particular attention to those which easily cause child deaths. It is not a generic guidelines to be followed but it is tailored to be country specific taking into consideration the epidemiology of the country and the health system of that country (WHO, 2005). The learning materials for the training of health staff and the communities also reflect the country's health system and epidemiology.

At the community level, parents are taught how to care for their children at home, solve feeding problems and returning to health facilities upon seeing certain symptoms. The health staff are trained on how to assess signs that indicate severe diseases, mild diseases, child nutrition, immunization and effective use of drugs for the children.

When assessing a sick child, a combination of individual signs leads to one or more classifications, rather than to a diagnosis. IMCI classifications are action oriented and allow a health care provider to determine if a child should be urgently referred to another health facility, if the child can be treated at the first-level facility (e.g. with oral antibiotic, antimalarial, ORS, etc.), or if the child can be safely managed at home. In the cases where a child can be safely managed at home, the caregivers or mothers are

given strict instructions as to how to attend to the child and when it is necessary to bring the child back to the health facility.

2.7 Health Insurance

Globally, health systems are called upon to move towards universal health coverage for all (WHO, 2010) and is defined as “access to adequate health care for all at an affordable price”. Risk pooling system based on finance has been advocated for by authorities as this has the capability of including the poor and serve as a buffer to the very poor in society (Carrin, Mathauer, Xu, & Evans, 2008). Some have advocated covering the financially at risk in the informal sectors into a common community based health insurance schemes as this will help pool resources together for their own benefits (Jacobs, Bigdeli, Pelt, Ir, Salze, & Criel, 2008; Preker & Garrin, 2004). In developing countries, emphasis has been put on community-based health insurance schemes rather than the national top-down tax-based social health insurance schemes (International Labour Organization [ILO], 2007). The community bottom-up approach has been known to be very effective with flat rates not modeled according to one’s ability to pay (Bennett, 2004; Bennett & Kelley, 2004).

High income and middle income countries have made progress in regard to the above on health system coverage (Hsiao & Shaw, 2007). Though developing countries are making progress with a mixture of the community-base health insurance schemes and tax-based top-down approach to health financing, breadth (number of beneficiaries) and depth (service coverage) are throttled (Carrin & James, 2004; ILO, 2007; McIntyre et al., 2008). The reason for this has been argued by Ginneken (2007) that the advanced countries where the formal sectors override the informal sectors, taxbased and other social health insurance schemes are possible whereas the less developed economies have majority of the people self-employed or unemployed making this type of scheme

very difficult as it can cover only about 5% of the whole population. This is still making most of these countries rely on out-of-pocket payment for health service utilization, making most of them rely on self medications leading to health consequences (Doorslaer et al., 2007). Health expenses in these economies have been posited by Xu et al. (2003) and Xu et al. (2007) as pushing some households below the poverty line, which has implications for health especially that of children.

The link between health insurance and child health has been an issue of investigation in recent times (Binagwaho et al., 2012; Quimbo et al., 2011; Schoeps et al., 2015). Health insurance has been acclaimed to enhance child health and increasing the chances of survival. For example a study by Schoeps et al. (2015) on Health Insurance and Child Mortality in Burkina Faso using the Nouna Health and Demographic Surveillance System, which is a Community Based Health Insurance System, they found that the risk of death before the age of five years was significantly lower in insured children as compared to their non-insured counterparts. They employed the Cox proportional hazards model.

Another study by Quimbo et al. (2011) in the Philippines relied on data from a randomized policy experiment known as the Quality Improvement Demonstration Study (QIDS). They applied the difference-in-difference regression model and found a reduction in the likelihood of wasting and having an infection by children with health insurance thereby improving survival status of such children.

Following from the above, Binagwaho, et al. (2012) used the 2010 Rwanda Demographic and Health Survey data and realized that despite a weak effect on overall health outcomes, the insurance scheme seems to have contributed to improvements in stunting and mortality at the critical ages (before the age of two), indicating the relative

importance of other determinants of child survival such as maternal education, household income etc.

2.7.1 Health Insurance in Ghana

Ghana is one of the few developing countries which introduced the NHIS in Africa. Hitherto, there was the free health care immediately after independence. However, this was possible due to the small population size (8 million) as at then (Assensoh & Wahab, 2003). The increased in population lead to increased burden on the government and as a means of dealing with this burden, the government introduced the “cash and carry” system in the late 1980s (Arhin-Tenkorang, 2001). This however affected the health of the poor who could not afford healthcare leading to high childhood mortality rates of 155 per 1,000 live births. In order to include the poor in healthcare, Community Based Health Insurance Scheme was initiated in the 1990s, but failed to cover most of the population. In 2003, only 1% of the population was covered (Sulzbach, Garshong & Owusu-Banahene, 2005). As part of the strategies to improve maternal and child health, and make healthcare accessible to the poor, Ghana introduced the National Health Insurance Scheme (NHIS) in 2003 in accordance with Act 650 (2003) of the national health insurance law (Arhinful, 2003). Due to this there is the free maternal healthcare, all in the quest to positively affect child health and reduce child mortality through improved maternal health outcomes.

In Ghana, a study by Owoo and Lambon-Quayefio (2013) using village-level data from the 2008 Ghana Demographic and Health Survey, they found out that mothers who were enrolled on the NHIS were more likely to use antenatal services and have healthy children. To them, this goes to positively affect child health as these mothers have a high likelihood of enrolling their children. Singh et al. (2015) also studied mothers in the Northern and Central Region of Ghana and found that respondents with insurance

were significantly more likely to indicate that an illness need not be severe for them to take a sick child for care. The insurance has reduced financial burden of mothers allowing them to visit the hospital in case of any illness of their children. Their findings tend to agree that NHIS has the tendency of improving child survival. However, their studies did not make it clear the experiences of these mothers in the use of NHIS in improving the health of their children. Their studies were quantitative establishing causal relationships without regard to mechanisms through which insurance operates to improve child survival.

2.8 Summary

The foregoing discourse has shed light on what is meant by child survival in literature and by other authorities. Child survival in Ghana has been explored in-depth and with the realizations that most studies rely on quantitative techniques and establish causal relationships with little attention to the mechanisms through which the causal factors operate. This current study sought to employ interviews in addition to quantitative data collection method to try to explain child survival. Mosley and Chen's (1984) analytical framework theory for the study of child survival is most suited for this study as it combines morbidity and mortality into one single outcome variable of child survival. The review of their work brought to light the need to integrate both the biomedical and socio-economic spheres of child survival, making it holistic in approach.

Upon empirically reviewing other works on the determinants of child survival, it was realized that most of the studies used secondary data and employed statistical models on the data to come out with their findings. This is because most of these studies considered survival outcome as the child being dead or alive, neglecting morbidity, hence the need for large data sets for their studies. Though this study collect data from quiet a number of women, it did not consider survival outcome as only mortality but

will consider morbidity and the management of such morbidity in the household. Survival interventions and child survival strategies have proven to be effective upon the review of the literature. But the simple question is how? That is what this study seeks to help ascertain through the use of mixed methods approach.

KNUST



CHAPTER THREE

RESEARCH METHODS

3.1 Introduction

The research methods that one follows have implications for the research outcome. The research methods encapsulates the research approach, research design, sources of data, population, sample size estimation, sample selection, measurement of variables as well as data collection instrument and methods and data analysis. Ethical consideration is also discussed in this chapter.

3.2 Philosophical Orientation

This study adopted the mixed methodological approach incorporating post-positivism and interpretivist philosophical paradigms. The post positivist holds that knowledge is conjectural and based on deductive logic (Crowther & Lancaster, 2008). This paradigm is more attuned to quantitative measures which can be manipulated outside the feelings and opinions of the researcher. It must be noted however, that this paradigm admits the experiences of study participants as observable data. Because of the wider criteria for data acceptability than is the case of pure positivism, postpositivism is often used to describe an approach to research where large amounts of qualitative data can be categorized to produce quantitative data to be analyzed using statistical methods. In this study, mothers lived experiences with the children and observable facilities in the households were recorded and categorized to facilitate the use of statistical methods in this study.

The interpretivist paradigm however, emphasizes on understanding and interpretation as opposed to explanation and verification (Schwandt, 2001). The paradigm argues that people, unlike inanimate objects are thinking beings and interpret their environment

based on their feelings and understanding of events. According to Kinsella (2006), this paradigm has the characteristics of seeking understanding, situating location of interpretation and the role of language and history. It is comfortable with ambiguity and resists the idea that there can be one single authoritative reading of a text and recognizes the complexity of the interpretive endeavour (Kinsella, 2006). The qualitative enquiry of this study rests upon this paradigm. Understanding mothers from their point of view regarding how household income and health insurance affect the survival chances of their children draws from the interpretivist paradigm. The researcher did not apply his meaning and understanding to the qualitative data collected from the field but presented and interpreted in the context of the understanding of the sampled mothers.

A combination of these two made for a better understanding of the issue at hand. It allowed for the interpretation and explanation of any quantitative relationship ascertained for deeper insight.

3.3 Research Design

This study adopted the mixed methods design/approach. The use of the mixed method was informed by the overly use of only quantitative methods in studying child survival across both rural and urban settings by most child survival studies and in few instances the use of only qualitative methods. This study therefore combined these two methods into a coherent study to better understand child survival in rural setting. The mixed method helped gather in-depth qualitative data together with quantitative data, which put together enriched the study. Studying child survival in such a rural area using mixed method afforded the researcher the opportunity to holistically ascertain what other studies using only single approaches could not achieve in-depth.

This approach provided an opportunity for developing better, more context specific instruments for qualitative interviews and quantitative survey. This is put by Cresswell (2009) that we end with the assumption that the combination of methods provides a better understanding than either the quantitative or qualitative method alone. Mixed method was used because this method of data collection and analysis made it easy to check for validity and reliability of the survey data. The adoption of this method helped deal with the weaknesses of both quantitative and qualitative methods alone.

This mixed method employed social survey and personal qualitative interviews with the respondents. The sequential approach to mixed method was used. That is, qualitative interviews with the mothers followed the quantitative survey. The rationale for this approach is that the quantitative data and its subsequent analysis provided a general understanding of the research problem which informed the direction of the qualitative interviews. The qualitative data and its analyses refined and explained those statistical results by exploring participants' views in more depth. The results of the survey informed the questions that were asked during the qualitative interviews. This was because the follow-up with the qualitative interviews after the survey allowed the researcher to probe into some issues which cropped up during the survey.

3.4 Research Setting

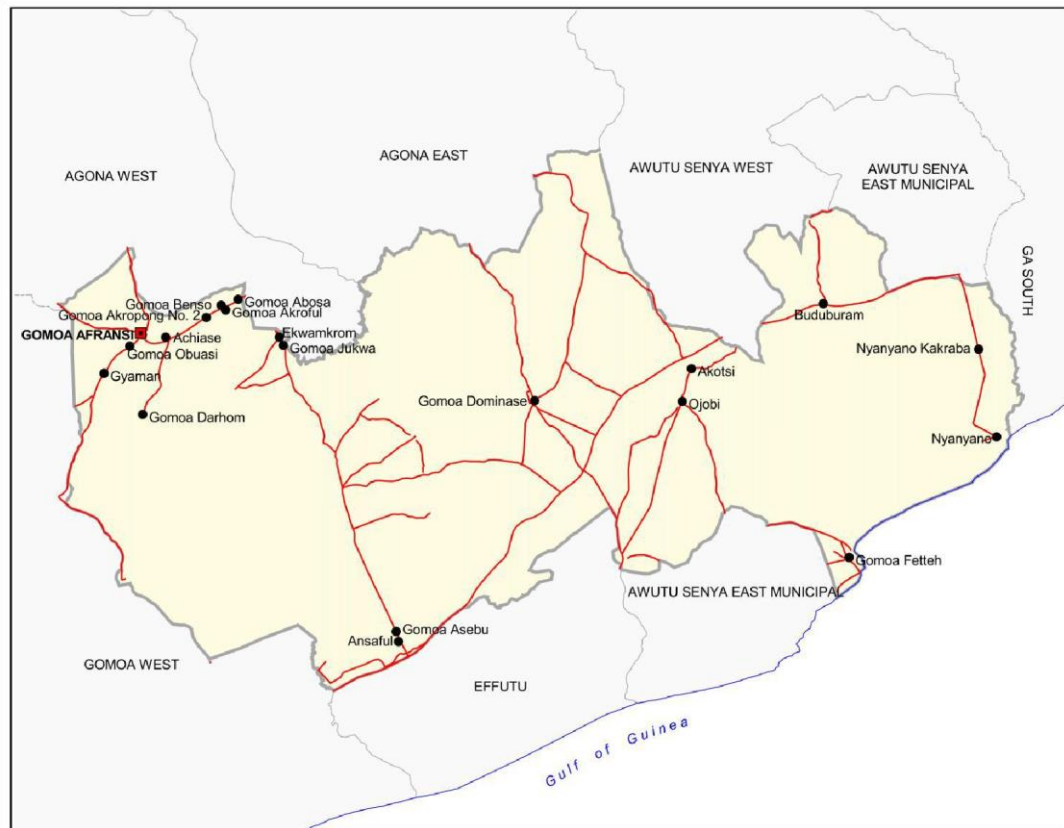
This study was carried out in two communities in Gomoa East District in the Central Region of Ghana. Gomoa East District is one of the 17 districts in the Central Region of Ghana. Its capital is Gomoa Afransi. It has 24 towns with population of 207,071 with 108,748 females and 52,898 households (Gomoa East District Assembly [GEDA], 2015). Most houses in the district are compound with no toilet facilities and therefore occupants depend on the few public toilets. Houses with no in-built bathrooms normally have their bathrooms outside the main house or are made as attachment to the

main house with sludge drains into empty spaces creating breeding grounds for mosquitoes and other harmful germs causing a public health scare (GEDA, 2015). According to the assembly, the main water sources in the district include rivers and streams, hand dug wells, ponds/dams, spring water, bore holes and stand pipes. Sanitation facilities in the district include latrines in some schools, Kumasi Ventilated Improved Pit (KVIP), Ventilated Improved Pit (VIP), Traditional Pit and Pan/bucket. In the household, facilities include water closet, VIP, KVIPs, etc.

Health care in the district is delivered at the community and sub-district levels. There is no district hospital but two health centres and six community clinics and Community-based Health Planning and Services Zones at Gomoa Obuasi and Bubuduatta providing general treatment and preventive health services. The district has eighty-nine (89) health workers providing various services (Gomoa East District Assembly, 2015). These include Medical Assistants, Technical officers, nurses and administrative personnel. Immunization programmes continue to be run in the district. The district has HIV prevalence rate of 2.4% as against the national rate of 1.3% and regional rate of 1.1%.

According to the Ghana Poverty Head Count by the Ghana Statistical Service (2015b), Central Region ranks eight among the 10 regions. Within the region, 11 districts including Gomoa East District have incidence and depth of poverty above the regional average of 19.6% and 5.7% respectively. Gomoa East District has incidence of poverty of from 20% to 29%. The estimated number of poor persons is more than 20,000. Education level in the district is low as only 18.5% of the population of 142,877 older than 11 years have only primary school education. Among the few educated in the district, the difference between the male educated and the female educated is not large.

Figure 3.1: District Map of Gomoa East



Source: GSS GIS (2015)

3.5 Population

The population of interest for this study constituted all women of child bearing age (15-49 years) in the district (Gomoa East District) who had at least one child who was between the age of one and five years. These individuals formed the study population because they had children who were less than five years old but more than one year old and could provide the needed information for the study. The exclusion of mothers whose children were less than one year old was informed by findings from other studies that such children's survival is largely biologically determined than social. The total number of mothers who were eligible to be included in the study was not readily available. Section 3.6 gives a detailed account of how the sample size was estimated.

3.6 Sample Size Estimation

Total mothers who were eligible were estimated from the number of houses in the towns selected for the study. Since the study's concentration was in typical rural setting, two communities in the Gomoa East District were selected. The communities selected were Gomoa Darhom and Ojobi. Gomoa Darhom has no CHPS compound but Ojobi has one. Both communities have population of below 3,000 each and with no Senior High School facility (GSS, 2010), which is typical of rural areas.

In order to estimate the total number of mothers based on households in the two selected communities, the total number of houses in the selected communities were counted. Ojobi had a total of 416 houses whereas Gomoa Darhom had a total of 429 houses. This gave total houses of 845. The researcher assumed that in each house was at least one household which was likely to have an eligible mother who could be interviewed. This was because according to the District Analytical Report of the 2010 Population and Housing Census on Gomoa East District, Gomoa Darhom and Ojobi had a total of 1,382 households. Based on this figure, the researcher assumed and estimated the total number of houses in the two communities. It was therefore estimated that the total eligible mothers were 845 based on the total number of houses. Therefore, sample size was estimated using the following formula;

$$SS = \frac{z^2(p)(1-p)}{c^2}$$

Where: Z = the Z-value of the confidence level of actually selecting a representative sample. At 95% confidence level, the z-score was 1.96.

P = How much variance the researcher expected in the responses.

That was, the probability of picking a choice and was given by .5.

This was the most forgiving number and ensured that the sample was large enough.

C = Confidence interval, expressed as decimal. This is the same as margin of error that the researcher was willing to allow and was given by .06.

$$\text{Therefore, Sample Size (SS)} = \frac{1.96^2(.5)(1-.5)}{.06^2} = \frac{.9604}{.0036} = 267$$

Estimated sample size was 267 mothers in the two selected communities who had children and with children's age from one to less than age five. This sample size sufficed as it was more than 10% of the estimated population.

3.7 Sample Selection

In order to select representative sample for each community, the proportional allocation sampling was done. That is, sample allocation was dependent on the number of houses in each community. Each community was considered a stratum.

Therefore, the sample of 267 was allocated as follows;

$$\text{Sample size selected from Ojobi} = \frac{416}{845} \times 267 = 131 \text{ eligible mothers}$$

$$\text{Sample size selected from Gomoa Darhom} = \frac{429}{845} \times 267 = 136 \text{ eligible mothers}$$

After the proportional allocation, the simple random sampling technique was used to select the houses, within which the mothers were selected for the survey. The houses in Ojobi and Gomoa Darhom were numbered from one to 416 and one to 429 respectively. For each of the communities, the numbers given to the houses were written on strips of paper and put in two separate opaque jars. The proportionally allocated sample sizes for

each community were selected from the jars without replacement. The houses representing the chosen numbers were visited for the survey.

Each house was considered as having at least one household with an eligible mother.

This was done for only the quantitative survey.

The selection of mothers for the qualitative interview was purposively done with some convenience. Six mothers each were selected from each of the two communities based on their willingness to be interviewed. This gave a total of twelve interviews.

3.8 Data Sources

Both primary and secondary data were used for this study. The primary data constituted data collected from the field of study. This data was sourced from the mothers who answered to the survey questionnaires and those who were interviewed. Data regarding maternal factors such as age, educational level, marital status, occupation and parity were collected. Health history of their children, household facilities and health insurance enrolment among others were also collected.

The secondary data on the other hand constituted data collected from the Gomoa East District Assembly and the publications of the Ghana Statistical Service. From the District Assembly was collected the names of the towns in the district, the general characteristics of the district and other information deemed important, some of which were presented under the study setting/location. An official letter from the researcher's academic institution was sent to the District Assembly to introduce the researcher before access to such information was granted. The publications of the Ghana Statistical Service were retrieved from the official website of the Ghana Statistical Service.

3.9 Data Collection Instruments and Methods

Two instruments were used in collecting data for this study. These instruments were the questionnaire for the quantitative surveys and the interview guide for the qualitative interviews. On the questionnaires were mostly closed ended questions and some open-ended questions as probes.

Since the researcher employed the sequential approach to data collection, the questionnaires were first administered to help capture large number of respondents, whose responses served to inform the direction of the qualitative interviews. The questionnaires allowed the researcher to reach large number of mothers in a short period without affecting the reliability and validity of the data collected. Its initial analysis afforded the researcher the chance to understand the general issue in the study area regarding child survival. The interviews gave an in-depth understanding to most of the findings from the survey. It gave explanatory reasons for the outcome of the survey.

The administration of the questionnaire was done by the researcher and two other trained research assistants. The questionnaire was explained in-depth to the research assistants. The questionnaires were translated into Fante Language when data was being collected from the mothers. The researcher and the two trained research assistants are natives of the district and so could speak and understand the Fante language as well as the English Language. Data was collected from mothers in the homes of the mothers.

However, the interviews were done by the researcher himself. The interviews were conducted in Fante Language, audio recorded and transcribed. The interview guide was justified on the basis of its ability to collect rich in-depth data from the sample.

Data collection took place from December 29, 2015 to January 15, 2016.

3.10 Data Analysis

The quantitative data collected was coded, and entered into computer software. The Statistical Package for Social Sciences (SPSS version 20) was used. After field visit each day, cleaning of data was done and input into the software by the researcher. After all the quantitative data had been entered, frequencies were run to check to make sure that the total number of questions on the returned questionnaires was all properly entered. This was done for the quantitative survey data. First, descriptive data analysis of frequencies and percentages were performed on the data. The nonparametric test of Chi-square was also performed to ascertain relationship between the independent variables and the dependent variable (child survival). Binary logistic regression models were fitted to the data. For the qualitative interviews, the researcher employed qualitative data analysis software called NVivo. Here, the interviews were transcribed and imported into the software. The contents were analyzed by the researcher and themes were generated by the researcher. The themes were then discussed to augment findings from the quantitative survey. This software only served to organize the transcripts and stored them as a data base based on the themes that the researcher coded into it.

The independent variables were maternal factors such as age, marital status, occupation, parity, religion and education. Main source of drinking water, toilet facility, material for cooking and type of bathroom were also independent variables captured under household facilities. Maternal and child enrolment on health insurance were also considered as part of the independent variables. These are all found in the questionnaire (Appendix I).

The dependent variable in this study was child survival. This was a composite variable which was calculated from a group of six main selected indicators of child survival as

per recommendations from the WHO/UNICEF Technical Consultation on Measuring Progress towards Child Survival (2007). The six main variables collated and composed into a single dependent variable (child survival) were children with vaccination cards, having received Vitamin A dose in the last six months preceding the survey, having had diarrhea in the last two weeks preceding the survey, having had cough in the last two weeks preceding the survey, having had fever in the last two weeks preceding the survey and sleeping under insecticide treated bed net the night preceding the survey. In sum, the presence or absence of any of the indicators (Vaccination, Vitamin A, Diarrhea, Cough, Fever and ITNs) influenced the child's likelihood of survival.

Score of one to six was calculated based on the six indicators of child survival selected for this study. A child who gets positive scores from one to three points was considered less likely to survive or has low chance of survival while a child who gets positive scores from four to six points was considered more likely to survive or has high chances of survival. The presence of any of these variables (ITNs, Vitamin A supplementation, and Vaccination) adds a positive score while the presence of the other variables (Diarrhea, Cough and Fever) adds a negative score and vice versa. For example the absence of ITNs (-), diarrhea (+), cough (+) and the presence of vitamin A (+), vaccination (+) and fever (-) will score a child four positive points. This means that the child is more likely to survive or has high chance of survival. In the absence of for example ITNs (-) and vaccination (-) and the presence of vitamin A (+), diarrhea (-), cough (-) and fever (-) the child scores one positive point. This then means such a child is less likely to survive.

Household income was calculated using the Principal Component Analysis (PCA), which is a Factor Analysis of an asset-based measure of the relative wealth of

households through the use of common household items. The household items considered were Television/Radio, Fridge, Bicycle, Cemented floor, Motorcycle, Cellular phone, Car and Stand pipe in the home. The absence or presence of these factors was considered.

The estimation of relative wealth using PCA is based on the first principal component. Formally, the wealth index for household i is the linear combination,

$$y_i = \alpha_1 \left(\frac{x_1 - \bar{x}_1}{s_1} \right) + \alpha_2 \left(\frac{x_2 - \bar{x}_2}{s_2} \right) + \dots + \alpha_k \left(\frac{x_k - \bar{x}_k}{s_k} \right)$$

Where, $\bar{x}_k$ and s_k are the mean and standard deviation of asset x_k , and α represents the weight for each variable x_k for the first principal component. This was done with Statistical Package for Social Sciences software. The factor analysis under the dimension reduction function was used. The researcher first clicked on Analyze, and then pointed to Dimension Reduction and then selected Factor. The household variables were then selected and the principal component analysis was performed. After this was done, the households' income scores were categorized into five, that is, poorest, poor, medium, wealthy and wealthiest quintile.

3.11 Ethical Consideration

Ethics in research regards norms of conduct distinguishing between what is accepted and what is not in research. Works or studies of other people used in this research have been duly acknowledged through proper citation. Data collected from the selected sample was kept confidential. In order to protect the identity of stakeholders in this research, the anonymity of the respondents was assured through the use of *noms de guerre*.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSES

4.1 Introduction

This chapter analyzes and presents data collected from the survey. It must be noted that after data cleaning, 260 questionnaires were properly suited for analysis. This gave a response rate of 97%. The results from the field work and its analysis starts off with univariate analysis and then considers the bivariate analysis. The frequencies and descriptive analysis revealed the general distribution of the responses for reader comprehension before the follow up with inferential statistical analysis. It is worthy of note that binary logistic regression was used as the inferential statistical tool to help establish the relative significance of the various determinants in predicting child survival.

4.2 Univariate Analyses

This section only presents counts and percentages on mothers and their children. Frequencies were run and were presented and analyzed. With univariate analyses each variable is explored separately to ascertain the frequency distributions. This analysis is done in sub-sections based on maternal factors, household facilities, health insurance, household income and child survival indicators.

4.2.1 Maternal Factors

Maternal factors are those questions which were asked specifically to ascertain some information about the mothers who were sampled for the study. This was in the quest to help know some general background information of the mothers.

Table 1 Frequency Distribution of Maternal Factors

Maternal Factors	Categories	Frequency	Percent
Age group	15-20 Years	11	4.2
	21-26 Years	113	43.5
	27-32 Years	70	26.9
	33-38 Years	41	15.8
	39-44 Years	5	1.9
	45-49 Years	20	7.7
	Total	260	100.0
Marital status	Single	114	43.8
	Married	146	56.2
	Total	260	100.0
Parity	One	101	38.8
	Two	47	18.1
	Three	42	16.2
	Four	15	5.8
	More than four	55	21.2
	Total	260	100.0
Main occupation	Farmer	21	8.1
	Trader	154	59.2
	Unemployed	44	16.9
	Other	41	15.8
	Total	260	100.0
Religion	Christianity	238	91.5
	Islam	22	8.5
	Total	260	100.0
Education	No formal education	42	16.2
	Primary	35	13.5
	Junior High School	146	56.2
	Senior High School	37	14.2
	Total	260	100.0

Source: Field Survey (2015)

Table 1 is a frequency distribution of maternal factors and some demographic characteristics of mothers who formed the sample for the study. Since the concentration of the study was on females of child-bearing age, their ages ranged from 15 years to below 50 years. Of the total of 260 mothers, as many as 113 mothers

(43.5%) were between the ages of 21 to 26 years. This was followed by those aged from 27 years to 32 years old representing 26.9%. It is thus worthy of note that mothers in their mid-twenties to mid-thirties constituted the majority. This finding is in consonance with the findings from the 2008 and 2014 GDHS (GSS, 2015). The findings from both surveys found that majority of women of child-bearing age were in their twenties to thirties. Married mothers in this study were more than mothers who were single as can be gathered from Table 1.

Parity has been found by many studies to influence child survival (Bicego, 1990; Zerai, 1996; Manda, 1999). Due to this, data on mothers' parity was also collected. Those mothers who have had only one child were the highest with an observed frequency of 101(38.8%) of the 260 mothers. Those with parity of two to four were 40.1% whereas those who had more than four children represented 21.2%. It can be realized that more than 50% of the mothers had parity of two or less. This may be attributed to the relatively young age (15 years to 26 years) of the sampled mothers in the study.

Most of the mothers were traders and represented as much as 59.2% of the sample. Mothers who were farmers formed the least percentage (8.1%) of the mothers. It was realized that those considered farming as the main form of occupation had no other economic activity except farming and selling their farm produce. Though, the study area was a farming community, most of the farming activities were done on subsistence level, so that most of the traders and the unemployed were engaged in this subsistence form of farming. Very few actually took it up as a form of employment as evidenced in Table 1. Some (16.9%) of the mothers were unemployed. Those who were engaged in other jobs which paid were 15.8%. Some of the occupations of these mothers were hairdressing and sewing. There were other mothers also who did whatever brought

money into their pockets. During the qualitative interview, this was what a mother had to say about her employment status;

Yes, I work. I do not have a permanent job though. I do anything that fetches me money. For example, last week I had to help masons by fetching water for them. (Ekua, 26 years old mother of one child)

As can be realized from the words of Ekua, she considers herself employed since she is able to do menial jobs for wages. She can therefore be considered as underemployed.

Two main religions were ascertained from the data collected from the field. More than three-quarter of the mothers (91.5%) were Christians while only 8.5% were Muslims. Churches of various denominations were found. Among which were Methodist, Pentecost, Seventh Day Adventist, Anglican and Presby. Only one of the communities selected had a Mosque.

Regarding education, the general educational level of the mothers was low. From the data gathered, 16.2% of mothers had no formal education. The reason for the use of “formal education” was to give a universal measure of education as used by most studies concerning child survival. Since it would be difficult to ascertain level of education which is not formalized, such as the informal education in the households, formal education was used instead. Mothers who had attained only primary education were 13.5%. This percentage increased significantly for those who had attained Junior High School education to 56.2% but decreased for those who had attained Senior High School education to 14.2%. Many studies have documented the significant influence of maternal education on the survival outcome of their children (Bello & Joseph, 2014; WHO, 2015). This means that maternal education is very important factor in child survival.

4.2.2 Household Facilities

Children live in a physical environment and how they relate to that environment needs to be emphasized when it comes to the survival of these children. The children are affected by the various facilities they use in their households such as water, toilet facility and materials for cooking among others. Based on this, some facilities in the households of the sampled mothers were identified. The availability of some of these facilities was asked from the mothers while in certain situations the research ascertained the presence or otherwise of these facilities through observation. Table 4.2 shows the frequency distribution of the household facilities of the sample.

Table 2: Household Facilities

Household Facilities	Categories	Frequency	Percent
Source of drinking water	Pipe-borne water	240	92.3
	Bottled/Sachet water	20	7.7
	Tube well/borehole	0	0
	River	0	0
	Tanker truck	0	0
	Total	260	100.0
Toilet facility	Flush toilet	27	10.4
	Pit latrine	100	38.4
	Public toilet facility	133	51.2
	Free range	0	0
	Bucket/Pan	0	0
	Total	260	100.0
Cooking material	Firewood	66	25.4
	Coal pot	140	53.8
	Gas stove	54	20.8
	Electric stove	0	0
	Total	260	100.0
Sewage disposal	Yes	103	39.6
	No	157	60.4
	Total	260	100.0

Source: Field Survey (2015)

Investigating into the main source of drinking water, most of the households (92.3%) had pipe-borne water as their main source of drinking water. Public stand pipe is common in the study area as observed by the researcher. It was common to find individuals queued at the public pipe stand to fetch water. This was then followed by those households which had bottled and/or sachet water as their main source of drinking water with 7.7% only. This is a clear indication that there were only two main sources of drinking water among the selected mothers' households.

Considering toilet facilities, only 10.4% of the households used flush toilet. Some of the households of the mothers also used pit latrine either in or outside the house. Most of these pit latrines, especially the ones outside of the houses had logs on which the householders squat to ease themselves. Public toilet facility was the most common toilet facility used by the households of the sampled mothers. This was not surprising as public toilet facilities were found in all the communities visited by the researcher. However, since most of the households did not have flowing taps, this influenced the number of households with flush toilet facilities.

Means of cooking was also examined by this study. Due to rising cost of electricity or the high cost of electric stove, none of the households of the sampled mothers used electricity for cooking. The commonest means for cooking was the use of coal pot. Those who used this means for cooking represented more than half of the sample (53.8%). Those who used firewood for cooking followed with 25.4%. Only 20% used gas stove for cooking. A plausible explanation for majority of the households using coal pot and firewood for cooking can be attributed to the low cost of such means of cooking compared to the gas stove. During the qualitative interview, the 12 mothers were asked

which of the means of cooking they would want to do away with. This was investigated into to find out if mothers were aware of the health implications of using firewood for cooking. It was realized some did know. Two of them who used firewood replied they would like to change from firewood to gas stove. This is what one had to say;

As for me, I want to move from using firewood for cooking to gas stove. Gas stove does not produce smoke and it is also very fast, but it costs too much. When I get money I will stop using the firewood and switch to gas stove. (Linda, 32 year old mother of two children)

From the response, it can be realized that some of the mothers would like to stop using smoky means of cooking but are limited by finance. They do acknowledge the emission of smoke and probably know the health implications thereof, but cannot do anything about it because of limited finance to get “modern means of cooking”.

Stagnant water breeds mosquitoes which are likely to cause malaria which can negatively affect the survival chances of children. Because of this, the mothers were asked if they had any sewage facility through which waste water drains. By sewage facility this study meant where waste water in the household drained into gutters outside the house. More than half (60.4%) did not have proper sewage disposal facilities. Liquid waste had to be carried outside the house and disposed of. Those who threw away waste water after bathing had bathrooms which had buckets or pans into which waste water from the bathrooms drained into. Others also had dug pits to collect waste water after bathing. The person who bathed will then have to come and get rid of the waste water. The reason for these common types of bathrooms was because the general drainage systems in the communities were poor.

4.2.3 Health Insurance Scheme

Medical fees or charges have been known to be a great deterrence to seeking professional medical care. Health insurance schemes have therefore been initiated by many nations to reduce cost of accessing professional medical care. This is where community or national resources are pooled together and managed to spread the risk of payment of medical fees. Per one of the specific objectives of this study of investigating the influence of health insurance scheme on the survival chances of children, mothers were asked a few questions regarding health insurance scheme enrolment of the mothers and the children.

Table 3: National Health Insurance Scheme

Health Insurance	Categories	Frequency	Percent
Mother enrolment on NHIS	Yes	171	65.8
	No	89	34.2
	Total	260	100.0
Child enrolment of NHIS	Yes	151	58.1
	No	109	41.9
	Total	260	100.0

Source: Field Survey (2015)

Mothers were asked if they had subscribed to the National Health Insurance Scheme. More than half, that is 65.8% of the mothers said they were enrolled. This was contrasted by 34.2% who said they were not enrolled. Regarding child enrolment on health insurance, 151(58.1%) mothers said they had enrolled their children on the scheme while 41.9% said they had not enrolled their children on the scheme. In order to probe and as part of the follow-up interviews, mothers were asked of the rationale behind the enrolment of their children on the insurance scheme. One common theme of

reducing hospital expenses ran through their various responses or answers to that question. These are what some of them had to say when asked why they enrolled their children on health insurance scheme.

We were asked to write the names of our children for the health insurance. We were told it cuts down on the cost to be incurred if the child gets sick and is sent to the hospital for treatment. The people at the hospital said if we don't register our children, there are some medicines we cannot buy because they are expensive, but with the health insurance card of the child, it will be given to us for free. (Nyamekye, 41 years old mother of 4 children)

The reason why I enrolled my child on the health insurance scheme is that, I may not have money when the child gets sick. It is with the health insurance that I will go to the hospital to seek treatment for my child. So that is why I registered my child for the health insurance. (Esi, single mother of one)

My husband told me we should go and register for the health insurance because it will make us spend less on hospital bills, so all of us have the health insurance card. My husband paid for the health insurance premium. He said the money which would have gone into hospital medicines can be used to buy food for the home. (Joyce, mother of two children)

From the answers of these mothers, the understanding that health insurance scheme reduces the hospital cost induced them to enroll their children. As can be seen from Joyce's answer, the reduced cost will increase the money in hand to feed the family. This has motivated the whole family to register for the health insurance scheme. One particular mother who was interviewed did not have the child enrolled on the health insurance scheme. When asked why the child was not enrolled on the scheme, this was what she said;

I don't have money to register the child for the health insurance. They said I have to pay every year but I don't know how much. I will find money and register for it.
(Rita, 24 years old mother of one child)

She was asked further of what she does if the child gets very sick. This was her reply;

Hmmnnn... I just go to the drug store and tell the man there that my child is sick. I tell him what is happening to the child and he gives me medicine to give to her. But one time Mr. Mensah (a nieghbour) gave me money to take her to the hospital. She had fever.

This is a woman who doesn't have money to enroll the child on the health insurance scheme. From her answer, it can be inferred that she would have enrolled the child if she was financially able. Financial constraint then becomes an obstacle to enrolling children on the Ghana National Health Insurance Scheme by mothers. It must be noted that health insurance premium in Ghana is a flat rate fee charged to every Ghanaian who enrolls on the scheme. This according to Bennett (2004) and Bennett and Kelley (2008), does not allow for modulation regarding one's ability to pay. That is, the insurance premium does not modify or adjust insurance premium according to subscribers' ability to pay.

4.2.4 Household Income

Income affects almost all aspects of human lives, from education to health and social status in the community among others. Since this study was conducted among mothers who found it difficult to estimate their income, selected household assets were used to calculate wealth quintile for each household. This was done using the Principal Component Analysis (PCA). This is a wealth indicator that is able to effectively discriminate between economically well-off and worse-off individuals (Filmer &

Pritchett, 2001). This is because household assets are wealth which can be easily liquidated.

Table 4: Household Income

Wealth quintile	Frequency	Percent
Poorest	53	20.4
Poor	66	25.4
Medium	78	30.0
Wealthy	34	13.1
Wealthiest	29	11.2
Total	260	100.0

Source: Field Survey (2015)

Households which fell into the poorest wealth quintile were 20.4% of the total of 260 households. From Table 4 it can be observed that those mothers from medium wealth quintile households had the highest frequency/percentage, followed by the poor households and then the poorest.

4.2.5 Child Health

According to the WHO and UNICEF's (2007) Technical Consultation on Measuring Progress towards Child Survival, the key health indicators for child survival are Vaccination, Nutrient Supplement, Diarrhoea, Pneumonia evidenced by fever and cough, and the use of Insecticide Treated Bed Net (ITN). Based on their recommendations, countries under the Demographic and Health Survey Programme include these indicators under child health in their surveys. In Ghana, such questions are found under the Women's Questionnaire of the Demographic and Health Survey Questionnaire. These indicators were selected for this study and are presented in Table 5. Since this study's concentration was on children from the age of one year to less than five years, the selected indicators in this study best suits them as most have social causes.

Table 5: Child Health/Survival

Child Survival	Category	Frequency	Percent
Vaccination card	Yes	235	90.4
	No	25	9.6
	Total	260	100.0
Vitamin A dose	Yes	229	88.1
	No	31	11.9
	Total	260	100.0
Measles vaccination	Yes	252	96.9
	No	8	3.1
	Total	260	100.0
Diarrhoea in the past two weeks	Yes	84	32.3
	No	176	67.7
	Total	260	100.0
Fluid given at diarrhoea onset	ORS	57	21.9
	GRHF	27	10.4
	Not applicable	176	67.7
	Total	260	100.0
Anything else given for diarrhoea	Yes	35	13.5
	No	49	18.8
	Not applicable	176	67.7
	Total	260	100.0
Cough	Yes	145	55.8
	No	115	44.2
	Total	260	100.0
Treatment sought for cough	Yes	127	48.8
	No	18	6.9
	Not applicable	115	44.2
	Total	260	100.0
Source of treatment for cough	Hospital/clinic	28	10.8
	Pharmacy/Chemical shop	81	31.2
	Shop/Market	7	2.7
	Traditional practitioner	11	4.2
	Not applicable	133	51.2
	Total	260	100.0
Fever in the past two weeks	Yes	58	22.3
	No	202	77.7
	Total	260	100.0
Treatment sought for fever	Yes	58	22.3

	Not applicable	202	77.7
	Total	260	100.0
Source of treatment for fever	Hospital/clinic	26	10.0
	Pharmacy/Chemical shop	23	8.8
	Traditional practitioner	4	1.5
	Shop/Market	0	0
	Other	5	1.9
	Not applicable	202	77.7
	Total	260	100.0
Use of insecticide treated bed net	Yes	137	52.7
	No	123	47.3
	Total	260	100.0
Child survival	Less likely to survive	141	54.2
	More likely to survive	119	45.8
	Total	260	100.0

Source: Field Survey (2015)

From Table 5, it can be seen that mothers who had vaccination cards for their children were 90.4%. Close to ten percent did not have vaccination cards for their children. It is in the vaccination cards that any vaccine given to the children are recorded. The mothers have to go with the card anytime they go to the hospital with their children. It contains the child's health records from birth to age five. Mothers whose children have received vitamin A dose in the past six months preceding the survey were 88.1% and those who children have not received vitamin A dose in the last six months preceding the survey were 11.9%. These women were further asked to explain why their children did not receive the Vitamin A dose. Most of these mothers had stopped taking their children for weighing. When children are taken to the hospitals or CHPS compounds for weighing, they are given the dose of Vitamin A for free. Ghana Health

Service also engages in the house-to-house administration of Vitamin A dose through the Community Health Nurses. Some of the mothers whose children had not received

Vitamin A dose in the past six months preceding the study were not at home when the Community Health Nurses embarked on their home visits. Vitamin A dose is given for free by the Ghana Health Service as a nutrient supplement for children under the age of five. According to a study by Osei-Kwakye et al. (2010) a child who does not receive vitamin A dose in the last six months is ten times more likely to die than a child who did receive it.

Measles vaccination had been received by as much as 96.9% of the children whose mothers responded to the questionnaires. Only 3.1% had not been vaccinated against measles. Measles is an acute and highly contagious viral disease marked by distinct red spots followed by a rash and occurs primarily in children under five years. It is known to cause childhood deaths.

Children who had diarrhoea in the last two weeks preceding the survey were 32.3% while those who did not have diarrhoea in the last two weeks preceding the survey were 67.7%. Among those who had diarrhoea and were given Oral Rehydration Salt (ORS) were 21.9%. This was followed by those children who were given some other Government Recommended Home-made Fluid (GRHF) to drink. These formed 10.4% of the total of 84 children who had diarrhoea two weeks preceding the survey. A question was further asked to find out if mothers whose children had diarrhoea during the two weeks preceding the survey gave anything else to the children to drink to cure the diarrhoea apart from the ORS or the GRHF. Those who gave additional medication to the children were 13.5% while the rest only adhered to the ORS or the GRHF. Those mothers who had given something else in addition to the ORS or the GRHF were asked of what they gave to their children. Two main categories of treatments were given – the orthodox medicine Zinc Tablets and herbal medicines.

These mothers either gave the children zinc tablets dissolved in water or some herbal medicines they knew could cure diarrhoea or recommended by someone from the community. The commonest traditional herbal medicine used by the mothers for curing diarrhoea was grinding cassava and squeezing the water out of it, putting some salt in the juice and giving it to the child to drink.

Another indicator of child survival investigated was cough. That is children who have had cough in the last two weeks preceding the survey. More than half, that is 55.8% of the children of mothers who took part in the study had cough in the last two weeks preceding the survey. However, 44.2% did not have cough in the said time. The mothers were asked if they sought treatment for the cough. As much as 48.8% from the 55.8% did seek treatment for their children's cough while the remaining 6.9% did not seek any treatment for the cough of their children. Of these mothers, one was asked why she did not seek treatment for the child's cough. This is what she said;

Oh, it happened sometime and I did not give him anything to take. It just went by itself the next day or so. It is children's sickness. I only give him treatment only when I think it is getting serious.

Of the 48.8% who sought treatment for the cough of their children, only 10.8% sought treatment from the hospital/clinic. Others also sought treatment from the pharmacy or chemical shop, which the mothers usually referred to as the drug store. The source of treatment for childhood illness is very important for child survival as hospitals or clinics may likely run some medical tests before administering medication. Chemical or pharmacy shops do not normally run those tests but administer medications based on symptoms as described by the mother which are less reliable than laboratory tests.

Those who sought treatment from the shop/market few and 4.2% sought treatment from traditional medical practitioners. These traditional medical practitioners are people in the communities who are known for their knowledge in herbal medicine (Twumasi, 2004).

Regarding childhood fever, only few of the mothers (22.3%) said their children had fever in the last two weeks preceding the survey. Majority (77.7%) said their children did not have fever in the last two weeks preceding the survey. All those whose children had fever sought treatment for the fever. Ten percent of the 22.3% of these mothers sought treatment from the hospital/clinic. This was closely followed by those who sought treatment from the pharmacy/chemical shop with 8.8%. None sought treatment from the market or shops. Mothers who consulted traditional medical practitioners were 1.5% while 1.9% sought treatment from other sources such as a friend. This is shown in table 4.5.

It can be seen from the sources where mothers sought treatment for their children that pharmacy shops were mostly used by these mothers. This is not surprising as the distance to the hospital might require a taxi ride and this for most women is not affordable. This may have induced them to seek treatment from the chemical shops in the communities. Information gathered from the field showed that there were no pharmacies in those communities except licensed chemical shops.

ITNs have been found to be very effective in preventing malarial in children (Quimbo et al., 2011). One hundred and thirty seven mothers representing 52.7% had their children sleeping under insecticide treated bed nets the night before the survey.

However, 47.3% of the sampled mothers' children did not sleep under insecticide treated bed net the night before the survey. The use of insecticide treated bed nets have

been known to drastically improve child survival chances (Alaii et al., 2003). It is also considered as part of the indicators of child survival because of its potency to reduce malaria and consequent death in children.

The outcome variable – Child Survival, which is a composite variable based on the selected indicators for child survival in this study, also shows that 54.2% of children of mothers in this study have low chances of survival while 45.8% have high chances of survival.

4.3 Bivariate Analyses

This section is a bivariate analysis of the effect of selected factors on child survival. The non-parametric test of chi-square statistic was calculated and presented. The bivariate analyses are presented in percentages in tables together with the chi-square statistic and the level of significance. This statistical test was performed with SPSS at 95% level of confidence. This is done in sub-sections with the four main groups of determinants of child survival selected for this study, that is, maternal factors, household facilities, household income and health insurance scheme.

4.3.1 Maternal Factors and Child Survival

Cross-tabulation of maternal factors and child survival was done. This was to help ascertain if there exists any relationship between child survival and the selected maternal factors through the use of Chi-square statistic at alpha level of .05. Chisquare test is a non-parametric test which is used to test the significance of relationship between two variables measured at the nominal or ordinal level. Though chi-square does not show the direction of relationship between the variables, an inspection of the cell percentages gives a general idea of the direction of relationship (Healey, 2012). It must

be noted that the results in the cells are displayed by counts (frequencies) and percentages for reader comprehension. This is shown in Table 6.

Table 6: Maternal Factors and Child Survival

Maternal factors	Child survival		Chisquare χ^2	P-value
	Low chance of survival	High chance of survival		
<i>Age group of mothers</i>			27.111	.000*
15-26 Years	61 (42.3%)	53 (57.7%)		
27-38 Years	56 (50.4%)	55 (49.6%)		
39-49 Year	14 (56.0%)	11 (44.0%)		
<i>Marital status of mothers</i>			1.098	.295
Single	66 (57.9%)	48 (42.1%)		
Married	75 (51.4%)	71 (48.6%)		
<i>Parity</i>			23.437	.000*
One	49 (48.5%)	52 (51.5%)		
Two	40 (85.1%)	7 (14.9%)		
Three	19 (45.2%)	23 (54.8%)		
Four	9 (60.0%)	6 (40.0%)		
More than four	24 (43.6%)	31 (56.4%)		
<i>Current occupation of mother</i>			3.797	.284
Farmer	13 (62.0%)	8 (38.0%)		
Trader	89 (57.8%)	65 (42.2%)		
Unemployed	21 (47.7%)	23 (52.3%)		
Other	18 (44.0%)	23 (56.0%)		
<i>Religion of Mothers</i>			13.026	.000*
Christian	121 (50.8%)	117 (49.2%)		
Moslem	15 (68.1%)	7 (31.9%)		
<i>Education of mothers</i>			16.307	.001*

No formal education	26 (62.0%)	16 (38.0%)
Primary	10 (28.6%)	25 (71.4%)
Junior High School	90 (61.6%)	56 (38.4%)
Senior High School	15 (40.5%)	22 (59.5%)

Source: Field Survey (2015)

* $p < .05$

From Table 6 the chi-square statistic for the relationship between age group of mothers and child survival can be seen. The p-value shows a significant relationship between the two variables (Age group of mothers and Child survival). It must be noted that some of the age group categories have been combined. This is because some of the observed frequencies had less than five observations. There was therefore the need to combine some of the observed frequencies to get frequencies of more than five observations in a cell which could be used for the calculation of the chi-square statistic. It can be seen that the percentage of children with high chance of surviving decreases with increasing age. This relationship was found to be statistically significant. This is supported by many studies that have found that the age of mothers has significant contribution to the survival of their children (Madise et al., 2010; Manda, 1998). It is asserted that older mothers (35 years or more) have degenerating reproductive systems which are more likely to affect their children. This biological effect decreases the survival chances of the children born to them. This was ascertained through the qualitative interviews. Hannah, a mother of three and 42 years old had this to say when she was asked how she thinks her age influences the survival chances of her children;

Kwaku is my last child. I don't want to give birth again because when I was giving birth I suffered because I couldn't push as I used to push the other two children when I was younger. Kwaku mostly has high temperatures and coughs a lot.

The response of this mother shows how she perceives that her age has something to do with the survival chances of her last child. She attributes the frequent temperature rise of her child to her giving birth to the child at a later age (40 years). She asserts that the child generally look unhealthy through high body temperatures and frequent coughs. This is most likely to negatively affect the survival chances of the child. It can be argued that biological deterioration due to aging contributes to determining the survival chances of children as mothers are generally unhealthy and are likely to give birth to unhealthy children. Hannah is inherently making comparison between her youthful days when she gave birth to her first child and your adult age when she gave birth to her third child.

From the cross tabulation of number of children (parity) and child survival, it can be realized that relationship exists between mothers' parity and child survival. This is evidenced by the chi-square statistic and p-value of less than .05, showing a significant relationship between the two variables. This finding agrees with the finding of Bicego (1990) that child survival and parity are related. Doreen, a mother of four responds to this with the following;

My last child gets sick very often compared to the childhood of my other three children. I was told by the doctor that I should consider family planning because if I should give birth again that child may not survive. He said my body is growing weak.

The response of Doreen shows that her growing body will not auger well for a new baby as advised by a doctor. Regarding religion and child survival, as much as 50.8% of Christian mothers had children with low chance of survival while 68.1% of Muslim mothers had children with low chance of survival. A plausible reason may be based on the teachings of these two separate religions. The high survival chance of children of Christian mothers may be attributed to the teaching in the Bible that "Cleanliness is next to Godliness". Better hygienic conditions in the households are likely to contribute

to high survival chances of children. It can be seen by inspection that survival chances are higher for Christian mothers' children than children of Muslim mothers. The chi-square statistic as can be seen from the table is also significant at .05 alpha level ($\chi^2 = 13.026, P = .000$).

The chi-square statistic test for relationship between education of mothers and child survival was also statistically significant. It can be seen from Table 6 that survival chances of children increased for those with primary education (71.4%) than those with no formal education (38%). This decreased to 59.5% for those with Junior High School education. The reason for this decrease may likely be because there is no significant addition to knowledge from the primary school to the junior high school. It has been found that formally educated mothers are more likely to adopt better care practices for their children than the uneducated (WHO, 2015), proving the importance of maternal education in child survival.

4.3.2 Household Facilities and Child Survival

Table 7 is a bivariate table for household facilities and child survival. The selected household facilities were main source of drinking water, toilet facility, cooking material and adequate sewage facilities. The chi-square statistic together with the probability value has been provided for easy understanding of the relationship that exists between child survival and the household facilities.

Table 7: Household Facilities and Child Survival

Household facilities	Child Survival		Chi-square χ^2	P-value
	Low chance of survival	High chance of survival		
<i>Source of drinking water</i>			3.228	.072
Pipe borne water	134 (55.8%)	106 (44.2%)		
Bottled/Sachet water	7 (35.0%)	13 (65.0%)		
<i>Toilet facility</i>			12.724	.002*
Flush toilet	19 (70.3%)	8 (29.7%)		
Pit latrine	64 (70.4%)	36(29.6%)		
Public toilet facility	58 (43.6%)	75 (56.4%)		
<i>Cooking material</i>			5.794	.055
Firewood	33 (50.0%)	33 (50.0%)		
Coal pot	85 (60.7%)	55 (39.3%)		
Gas stove	23 (49.6%)	31 (57.4%)		
<i>Sewage disposal facility</i>			1.529	.216
Yes	51 (49.5%)	52 (50.1%)		
No	90 (57.3%)	67 (42.7%)		
Source: Field Survey (2015)				*p < .05

No significant relationship was found between child survival and of source of household drinking water as indicated in Table 7. This is because the chi-square statistic for the relationship between source of drinking water and child survival is not significant at the .05 alpha level.

Statistically, significant relationship was found between household's toilet facility and child survival. This is evidenced with a chi-square obtained of 12.724 and a p-value of .002. This finding agrees with a finding by Fayehun (2010) among Sub-Saharan African countries of which Ghana is inclusive. Material for cooking was not found to be statistically significant with child survival. It can also be seen from the Table 7 that how households with adequate sewage facility has no significant relationship with child survival ($\chi^2 = 1.529$, $P = .216$). By cell inspection, it can be observed that majority of the children from households which use flush toilet have low chance of survival. This need not be so as flush toilets are more hygienic than pit latrines. This finding necessitated extra chi-square analysis. Chi-square test between toilet facility and level of education showed significant relationship ($\chi^2 = 65.909$, $P = .000$). However, cell inspection (Table shown in appendix II) showed that majority of the mothers who used flush toilets had no education with few having junior high school and senior high school education. This finding is important as it shows the importance of maternal education despite the use of hygienic toilet facilities.

4.3.3 Health Insurance and Child Survival

Health insurance has been an issue of investigation when it comes to child survival (Binagwaho et al., 2012). However, varying relationships have been found by different authors. While some are finding significant relationships, others also find insignificant relationship after including other variables such as household income (WHO, 2009). Table 8 shows the cross tabulation of relationship between maternal enrolment in health insurance, child enrolment in health insurance and child survival.

Table 8: Health Insurance and Child Survival

Child Survival

Health insurance	Low chance of survival	High chance of survival	Chi-square χ^2	P-value
Maternal enrolment on NHIS			.960	.327
Yes	89 (52.0%)	82 (48.0%)		
No	52 (58.4%)	37 (41.6%)		
Child enrolment on NHIS			5.028	.025*
Yes	73 (48.3%)	78 (51.7%)		
No	68 (62.4%)	41 (37.6%)		
Source: Field Survey (2015)			*p < .05 From	

Table 8, the relationship between maternal enrolment on health insurance and child survival is not significant. However, the relationship between enrolment of children on health insurance and child survival is significant at the set alpha level. The chi-square value was 5.028 with a p-value of .025. By inspection, it can therefore be realized that children enrolled on the health insurance scheme have high chances of survival than those children who are not enrolled. Relationship between payer of health insurance premium and child survival was also significant at .05 significance level ($\chi^2 = 7.549$, $P = .023$). This means that child enrolment on health insurance scheme has significant influence on child survival.

Mothers who formed the sample for the interview were asked if their incomes affect the survival chances of their children and how. This was to help understand how household income affects the children's health. All the 12 mothers said income definitely affects the survival chances of their children. Two main themes were ascertained from their answers regarding how household income affects the survival of their children. The "how" was to find out the mechanism through which the income operates to affect the survival chances of children.

The first theme after analyzing the answers of the mothers had to do with health expenditure. The mothers were of the opinion that with income they can take care of the medical bills of the children and that they will be willing to go any length to ensure the children survive. Eunice, 25 years old and mother of one child says;

If you have money, you will take your child to the government hospital instead of the CHPS compound when he is sick. If there is money in the house, it is good.

Beatrice also says;

Do you know that the health insurance does not cover all medicines given to you at the hospitals? So if I have my money, I just go and buy those medicines that the health insurance does not cover. As for me if I have money, I don't mind the cost of taking my child to the hospital.

These women see income as very essential in the health needs of their children. With household income they are able to offset any health expense despite health insurance scheme. The other theme from their interview answers was with reference to nutrition. The mothers envisaged that with more money, they can provide balanced diet for their children and other foods which are good for children's growth. Abena stated that *"My money affects my child's survival. I can buy baby food like 'Cerelac' (cereal meal for babies) which will make her grow well and not get sick."*

4.3.4 Household Income and Child Survival

Household income and child survival have been an issue of investigation for some time now (Bawah et al., 2006). The relationship has always been in the positive direction. That is, children from poorer households have low chance of survival than those from richer households. Cross tabulation of household wealth quintile and child survival is shown in Table 9. The chi-square statistic has also been shown in the table.

Table 9: Household Income and Child Survival

Household income	Low chance of survival	High chance of survival	Chi-square χ^2	P-value
Wealth quintile			.960	.000*
Poorest	37 (69.8%)	16 (30.2%)		
Poor	41 (62.1%)	25 (37.9%)		
Medium	27 (34.6%)	51 (65.4%)		
Wealthy	15 (44.1%)	19 (55.9%)		
Wealthiest	21 (75.0%)	8 (25.0%)		

Source: Field Survey (2015)

* $p < .05$ From the

Table 9 it can be seen that wealth quintile and child survival has a relationship. It is worth noting that this relationship was significant at the set alpha level. This shows a strong relationship between household income and child survival. This is in consonance with a finding by Gadomski et al. (2001), who found that poor households have children whose chance of survival were slim. This is because such households are not able to afford basic medical care and proper nutrition for the children. This has the likelihood of affecting child health and consequently child survival. It can be observed from Table 9 that most of the children from the wealthiest wealth quintile households have low chance of survival. This necessitated further bivariate analysis of wealth quintile and child enrolment on health insurance scheme. Chi-square test of relationship between household income and child enrolment on health insurance scheme showed a significant relationship ($\chi^2 = 58.207$, $P = .000$). By cell inspection, it was ascertained that majority (66%) of the children in the wealthiest quintile were not enrolled on the health insurance scheme (Table shown in appendix II). This may be a probable explanation for most of the children in the wealthiest quintile having low chance of survival. This means that even in the face of high income child enrolment on health insurance is still very important.

4.4 Multivariate Analyses

Binary logistic regression model was fitted to the data. This was to help ascertain the probability of the survival chances of the children given the various explanatory variables. This statistic is used because having a categorical outcome variable (Child survival) with two main response categories is best suited for logistic regression. Five main models were fitted based on the group of variables included in each model. This was done to ascertain the likelihood of the selected variables in predicting child survival. The confidence level for all the models was 95% ($p = .05$). Based on the number of models, this section has been further divided into sub-sections to take into consideration the group of variables included in each model. The variable groups are maternal factors, household facilities, health insurance and household income.

4.4.1 Maternal Factors as Determinants of Child Survival

From Table 10, the first model containing all maternal explanatory variables of child survival is presented. The model is a good fit and explains 30% (Cox & Snell R Square) to 40% (Nagelkerke R Square) of the variation in child survival. This model correctly classifies 75.8% of cases based on the classification table (Appendix II).

Table 4.10: Binary Logistic Regression Model 1

Maternal factors		B	Exp (B)	S.E	p
<i>Age group of mothers</i>		-.276	.758	.201	.168
				--	--
<i>Marital status of mothers</i>	Single	0	1	--	--
	Married	1.018	2.767	.365	.005*
<i>Parity</i>	One	0	1	--	--
	Two	-1.251	.286	.547	.022*
	Three	.970	2.637	.577	.093
	Four	.715	2.044	.692	.302
	More than four	1.593	4.920	.679	.019*

Current occupation of mothers	Farmer	0	1	-	--
	Trader	1.812	6.124	.934	.052
	Unemployed	2.038	7.674	1.002	.072
	Other	2.853	17.337	1.014	.005*
Religion of mothers	Christian	0	1	-	--
	Moslem	-6.043	.002	1.333	.000*
Education of mothers	No formal education	0	1	--	--
	Primary	3.371	29.110	1.027	.001*
	Junior High School	-.134	.875	.578	.817
	Senior High School	1.183	3.264	.679	.081
Cox & Snell R Square		.306			
Nagelkerke R Square		.409			
Hosmer&Lemeshow Test		9.727			
Constant		-2.288	.101	1.235	.101

Source: Field Data (2015)

***p < .05**

It can be seen from the mode (model 1) that the age of mothers is considered as a continuous variable. Age of mothers related negatively to child survival.

Survival chances of children of married mothers are twice more likely than those of single mothers. This is highly significant. Parity of three and four have no explanatory power of significance to child survival. Children of mothers who have more than four children are 4.9 times more likely to survive than those children whose mothers have only child. This is significant at .05 alpha level. This significance of high odd ratio for parity of more than four may likely be attributed to better childcare practices of mothers of higher parity. Mothers of higher parity may have experience with childcare practices and so are able to properly care for their children.

Compared to farmers, children of others who are engaged in other forms of employment had children who are 17 times more likely to survive than farmers' children. This is significant at the set alpha level. Children of traders and the unemployed mothers are not significant in explaining child survival.

Compared to children of Christians, children of Muslims are 99.8% less likely to survive. This high percentage necessitated additional analysis of relationship between mothers' religion and education and child enrolment on health. It was ascertained that 55% of the Muslim mothers had no formal education and the remaining 45% had only primary education (see appendix II). This is an indication of relatively low education level of Muslim mothers. It was also found that more than 70% of the Muslim mothers had not enrolled their children on the health insurance scheme (see appendix II).

Mothers with primary education have children who are 29 times more likely to survive than children of mothers who have no formal education. It is worthy of note that this is highly statistically significant at the chosen alpha level. This confirms the findings from the seminal study by Caldwell (1979) in Nigeria who found that educating women is very important in improving child survival. His study found that mothers who were educated up to the primary level of education had healthy surviving children than those who had no education at all. It is worth noting from the model in Table 10 that children of mothers who have attained Junior High School are 17% less likely to survive than children of mothers with no formal education, showing the importance of maternal education in determining child survival. However, this prediction is not statistically significant in the model (model 1).

4.4.2 Household Factors as Determinants of Child Survival

With reference to household facilities, model 2 in Table 11 correctly classifies 68.1% (see appendix II) of the cases and explains 10% to 14% of the variance in the dependent

variable (child survival). From Table 4.11 (model 2) only household facilities were entered into the model. Children from households which used bottled/sachet water are 3.9 times more likely to survive than children from households which use pipe borne water. This survival likelihood is statistically significant.

Children from households which used pit latrine were 11% more likely to survive than children from households which used flush toilet. This however, was not significant and could have occurred by chance, since only a small percentage (10.4%) of the households of mothers used flush toilet facilities.

Children from households which use coal pot for cooking are 54% less likely to survive than those from households which used firewood. This is not statistically significant. Though there is an increase in likelihood of children from households which use gas stove for cooking to survive, this likelihood is not statistically significant. This can however be because the percentage of households which use gas stove (20.5%) is small compared to those who use coal pot (53.8%) and firewood (25.4%).

Table 4.11: Binary Logistic Regression Model 2

Household facilities		B	Exp (B)	S.E	p
Source of drinking water	Pipe borne water	0	1	--	--
	Bottled/Sachet water	1.377	3.965	.558	.014*
Toilet facility	Flush toilet	0	1	--	--
	Pit latrine	.110	1.117	.493	.823
	Public toilet facility	1.225	3.403	.461	.008*
Cooking material	Firewood	0	1	--	--
	Coal pot	-.774	.461	.346	.065
	Gas stove	.029	1.029	.396	.942

<i>Sewage disposal facility</i>	Yes	0	1	--	--
	No	-.541	.582	.303	.074
<i>Cox & Snell R Square</i>	.109				
<i>Nagelkerke R Square</i>	.146				
<i>Hosmer&Lemeshow Test</i>	20.671				.061
<i>Constant</i>		-.229	.795	.520	.660
Source: Field Data (2015)					*p < .05

4.4.3 Health Insurance's Determinant of Child Survival

Model 3 in Table 12 explains the likelihood of a child surviving based on the child's enrolment on health insurance scheme. The model correctly classifies 56.2% (see Appendix II) of the cases and explains 21% to 28% of the variance in the dependent variable. Maternal enrolment on health insurance has not significant explanatory power regarding child survival. This outcome may be as a result of the fact that mothers who are enrolled on health insurance are more than those not enrolled.

Non-significant relationship exists between maternal enrolment on health insurance and child survival. However, children not enrolled on the health insurance scheme are 52% less likely to survive than those who are enrolled on the scheme. This is significant at .05 level of alpha. This supports a finding by Binagwaho (2012) who used the 2010 Rwanda Demographic and Health Survey data. He also found an existing relationship between child enrolment on health insurance and child survival.

Table 4.12: Binary Logistic Regression Model 3

Health insurance		B	Exp (B)	S.E	p
<i>Maternal enrolment on NHIS</i>	Yes	0	1	--	--
	No	.231	1.259	.357	.518
<i>Child enrolment on NHIS</i>	Yes	0	1	-	-
	No			-	-

	No	-.718	.488	.343	.037*
<i>Cox & Snell R Square</i>	.021				
<i>Nagelkerke R Square</i>	.028				
<i>Hosmer&Lemeshow Test</i>	1.950				.163
<i>Constant</i>		.048	1.049	.165	.771
Source: Field Data (2015)					*p < .05

4.4.4 Household Income as Determinant of Child Survival

Model 4 in Table 13 shows household income and children's likelihood of survival. The model explains 9% to 12% of the variance in the dependent variable and correctly classifies 65% of the cases.

Regarding household income, children in the medium wealth quintile are 4.3 times more likely to survive than those in the poorest quintile. This is highly significant ($p = .000$).

Children in the wealthy category of the wealth quintile are 2.9 times more likely to survive than those in the poorest wealth quintile. It must be noted that the likelihood of survival increases for children as wealth increases. This finding corroborates the assertion by Mustapha and Odimegwu (2008) that children from poor families are less likely to survive than those from rich families.

Table 4.13: Binary Logistic Regression Model 4

Household income		B	Exp (B)	S.E	p
<i>Wealth quintile</i>	Poorest	0	1	--	--
	Poor	.344	1.410	.392	.381
	Medium	1.474	4.368	.382	.000*
	Wealthy	1.075	2.929	.457	.019
	Wealthiest	-.127	.881	.512	.804
<i>Cox & Snell R Square</i>	.090				
<i>Nagelkerke R Square</i>	.121				
<i>Hosmer&Lemeshow Test</i>	.000				1.000
<i>Constant</i>		-.838	.432	.299	.005

4.4.5 Determinants of Child Survival (All Variables in Model)

All the selected variables in each group of determinants (maternal factors, household factors, health insurance, and household wealth) of child survival are included in model 5 in Table 14. This is to help know the relative contribution of each variable in explaining child survival after controlling for all the variables. It can be seen that the model explains as much as 55% to 73% of the variance in child survival (dependent variable) and correctly classifies 87.3% of case. It can be seen that after controlling for other variables, maternal age (still considered as a continuous variable) becomes a very significant determinant of child survival, so that increasing maternal age is associated with decreased chances of child survival and vice versa. When all other variables were not controlled for except other maternal factors (model 1), maternal age is not significant and with lower Beta value (-.276) than when all the variables are controlled for (-1.380).

Table 4.14: Binary Logistic Regression Model 5

All Variables		B	Exp(B)	S.E.	p
Age of mothers		-1.380	.252	.489	.005*
Marital status of mothers	Single	0	1	--	--
	Married	4.486	88.723	1.117	.000*
Parity	One	0	1	--	--
	Two	-3.813	.022	1.501	.011*
	Three	.164	1.178	1.255	.896
	Four	1.637	5.139	1.287	.204
	More than four	1.121	3.067	1.337	.402
Current occupation of Mothers	Farmer	0	1	--	--
	Trader	-1.145	.318	1.814	.528
	Unemployed	.025	1.025	2.250	.991
	Other	1.595	4.927	1.760	.365

Religion of mothers	Christian Moslem	-	.000	2.315	.000*
		12.710			
Education of mothers	No formal education	0	1	--	--
	Primary	-3.114	.044	2.087	.136
	Junior High School	-7.213	.001	2.244	.001*
	Senior High School	-5.616	.004	2.398	.019*
Source of drinking water	Pipe borne water	0	1	--	--
	Bottled/Sachet water	4.889	132.825	1.444	.001*
Toilet facility	Flush toilet	0	1	--	--
	Pit latrine	.539	1.714	1.399	.700
	Public toilet facility	1.827	6.213	1.289	.156
Cooking material	Firewood	0	1	--	--
	Coal pot	-.249	.779	.976	.798
	Gas stove	1.620	5.052	1.351	.230
Sewage disposal facility	Yes	0	1	--	--
	No	-2.730	.065	1.132	.016*
Mother enrolment on NHIS	Yes				
	No	-.948	.388	1.142	.407
Child enrolment on NHIS	Yes	0	1	--	--
	No	-4.562	.010	2.094	.029*
Wealth quintile	Poorest	0	1	--	--
	Poor	-5.269	.005	1.987	.008*
	Medium	-2.873	.057	1.292	.026*
	Wealthy	5.526	251.197	1.539	.000*
	Wealthiest	.505	1.656	1.327	.704
Cox & Snell R Square		.551			

Nagelkerke R Square	.737				
Hosmer&Lemeshow Test	89.451				.000*
Constant		-.053	.948	2.961	.986

Source: Field Data (2015)

* $p < .05$

From Table 14, children of married mothers are 88 times more likely to survive than children of single mothers. This likelihood is 50% more than when all variables were not controlled for. An increase in Beta value from one to four was also evident together with increase in level of significance (.000).

Considering parity after controlling for all the variables (Table 14), children of mothers who have two children are 97% less likely to survive than those children whose mothers have only one child. This outcome is significant and higher (72%) compared to when all variables were not controlled for (Table 10). This means that in the presence of the other variables, there is further decrease in the likelihood of survival for children whose mothers are of higher parity.

Though survival chances of children whose mothers are engaged in other forms of employment is 17 times significantly higher than those whose mothers are farmers (model 1), this survival chance reduces to five times and not significant (model 5) after controlling for all other variables.

With reference to religion (model 5), children of Muslim mothers are 99.9% less likely to survive than those of Christian mothers. Education of mothers in bringing about increased likelihood of survival of children which is significant (model 1), does not become significant after controlling for all the variables in Table 14 (model 5).

After controlling for other variables in model 5, children from households which use bottled/sachet water's survival chances significantly increases from four times to 132

times compared to those children whose households use pipe borne water as the main source of drinking water. Though there is increase in likelihood of surviving for those who use coal pot and gas stove, none is significant. It is worth noting that the survival chances of children from households which do not have proper sewage disposal facility improve from 42% less likely to survive to 35% less likely to survive. This low chance of surviving is significant.

Maternal enrolment on health insurance scheme does not make any significant contribution to the model (model 5). It should be noted however that children who are not enrolled on health insurance are 90% less likely to survive than those who are enrolled on the health insurance. This is not the case when all variables were not controlled for (model 3 in Table 12).

Survival chances of children decreases for the poor and medium wealth quintile and prove to be significant. However, those children in the wealthy quintile are 251 more likely to survive than those in the poorest quintile with p-value of .000 at .05 alpha level. This means that after controlling for other variables, survival chances are very high for children in the wealthy quintile of the population. This is shown in Table 14 in model 5.

4.5 Conclusion

This chapter presented and analyzed the data collected from the field. Both the quantitative data and some qualitative data have been presented and analyzed. However, discussions of the major findings from the data and its position within literature are done in the discussions chapter of this study. It is worth noting that all statistical significance was ascertained with alpha level of .05 or 95% confidence level.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

In the preceding chapter (chapter four) the data was presented and analyzed. This chapter is devoted to an in-depth discussion of the findings and endeavours to situate it in the literature. It is worth mentioning that these discussions are done under subheadings with reference to the research objectives of this study.

5.2 Health Insurance Scheme and Child Survival

Child enrolment on health insurance was significantly related to child survival. This is supported by many studies (Quimbo et al., 2011; Schoeps et al., 2015). These studies have claimed enhanced survival chances for children enrolled on health insurance schemes. It must be noted that most health insurance schemes have the characteristic of pooling resources together against health risks in times of need of any of the members. This according to WHO (2010) is considered as “access to adequate health care for all at an affordable price”. The risk pooling grants each member of the scheme access to basic medical services.

Other studies, however, show weak and non-significant association between health insurance and child survival in the face of other factors. This current study proved otherwise such that child enrolment on health insurance still proved significant in determining child survival when other factors were included in the final model of the logistic regression, showing the importance of health insurance in rural areas. This might have been so because mothers were able to save money due to the reduced cost in terms of medical expenses. The saved income goes into the nutrition of the children

as ascertained through the interviews, which in the long run improves the survival chances of the children as envisaged by some mothers. It must be noted that this study brought to light that the health insurance does not cover all health care services for the children which corroborates public knowledge to that effect. This also agree with an assertion by Soors, Waelkens and Criel (2008) that the services most included in an African health insurance packages are those that are most frequently needed and used: curative services at first-line level, generic drugs and uncomplicated deliveries. Referral care and transport to a hospital are covered to a lesser extent. Dror (2001) goes further to explain why. First of all, from the insurer's side, the inclusion of expensive risks is not an option for small schemes, as it endangers solvency when the number of claims become high.

This study found that mothers enrolled on the health insurance scheme were more likely to enroll their children on the scheme. This may be as a result of the benefits that the mothers enjoyed from the health insurance scheme and the perceived benefits their children will also enjoy. However, it was apparent that most of the reasons were financial, making the reason for maternal and child enrolment on the health insurance scheme likely to be financially motivated. This financial motivation is informed by the fact that mothers were spending less when they went to the hospital with the health insurance cards than when they did not go to the hospital with the cards. This finding is in agreement with the finding by Owoo and Lambon-Quayefio's (2013) study using village level data from the 2008 GDHS.

From the interviews, most of the mothers were of the view that they took their children to the hospital for checkups even when the children are not sick only if they have money for transportation. This is what Serwaah, a mother of one said;

With the health insurance scheme, I sometimes take her to the hospital so that they examine her to know if she is fine. I usually do that when I have money for transport and if it has been a while since she attended the hospital.

This finding corroborates a finding from a study by Singh et al. (2015) in the Northern and Central Region of Ghana that mothers did send their children to the hospital even with the mildest sickness. According to Singh et al. (2015), mothers do not take chances with their children's health when the children have health insurance cards. It may be that the reason for the consonance between this study and that of Singh et al. (2015) is that both are in the same rural setting.

5.3 Interaction between Household Income and Child Survival

Findings from the study revealed that most of the mothers were within the poor and medium wealth quintile. This had implications for child survival as there was a significant positive relationship between household income and the survival chances of the children in this study. It can therefore be inferred that occupation and area of residence certainly do have influence on one's income, and consequently child survival. That is low income results in low survival chances and vice versa. The rural poor are likely to be at risk of inability to afford basic medical care and are also likely to patronize low standard medical care services.

This finding agrees with findings from other studies on child survival. For example the multiple indicator cluster survey conducted by the Ghana Statistical Service in Ghana in 2011 showed that children in the country's 20% poorest population were two times more likely to die than those in the 20% richest quintile. According to Bello and Joseph (2014), poverty is among the strongest determinants of child survival. It is worth noting that the majority of mothers found in the middle to the poorest quintile show the general

economic picture of the study area. Rural areas are not economically vibrant areas resulting in generally low levels of income. Studies have shown that diseases and death are more pronounced in the poor areas of any population (Kiros & Hogan, 2001; Wagstaff, 2000). This might have accounted for the majority of the children having low chances of survival in this study as the study area is a typical rural Ghanaian community.

It should be noted that both income and health insurance were found to be significant determinant of child survival. However, those in the wealthiest quintile had most of their children having low chances of survival while those in the wealthy and medium income categories had majority of their children having high chances of survival (Table 9). Through further investigation it was realized that the majority of the wealthiest had children with low survival chances because they had not enrolled their children on the health insurance scheme compared to households from other income categories. This was ascertained through cross-tabulation (Appendix II-Table 1) of income and child enrolment on health insurance scheme. By cell inspection, it was realized that majority of the wealthy, medium, poor and poorest had enrolled their children on the health insurance scheme. The chi-square test of relationship between household income and child enrolment on health insurance was significant at .05 alpha level (Appendix II-Table 2). This new finding is striking as health insurance has proved very important in determining child survival than income. It can be argued that rural children's enrolment on health insurance scheme has the likelihood of increasing the frequency with which mothers in rural areas access medical care for these children. That is to say there is increased frequency of access to medical care with health insurance than with high income. The importance of household income in determining child survival is therefore diminished in the presence of health insurance scheme. That is, though household income is a significant determinant of child survival, children from high income

households who are not enrolled on the health insurance scheme have reduced likelihood of survival. This can be attributed to the fact that the rural rich will have to pay out of pocket which is still likely to be expensive reducing their frequency of attendance to hospitals and other medical facilities reducing children's likelihood of survival. It must be noted that rural wealth is highly relative and so the rural rich might still have difficulty in paying out of pocket for medical expenses. In effect, comparing rural wealthiest household to urban wealthiest household is likely to show some disparities. It can therefore be asserted that in rural areas, no matter the level of one's income, enrolling children on health insurance scheme is very important as this further enhances the survival chances of the children. This may be peculiar to rural areas as this study is rural oriented. However, this study does not discount the relative importance of income in determining child survival.

In order to find out how household income affects child survival, especially for those not enrolled on the health insurance scheme, the qualitative interviews revealed that the basic mechanism through which income influences child survival was through the payment of medical bills and nutrition. Mothers envisaged that with income, they were able to pay for the medical costs of the children. This was especially true for both mothers who had enrolled their children on health insurance scheme and those who had not enrolled their children on the health insurance scheme. This meant that a child who would have been treated at home because of lack of finance will be taken to the hospital or clinic if there was money. This is what Abraku said in response to how her income affects her child's survival.

With the income I get from trading, I take my child to the hospital anytime he gets sick. I am able to buy most of the drugs prescribed for him. I sometimes find it difficult when the money I have on me is not enough to buy all the prescriptions.

I think my income helps my child through covering the cost of healthcare.

Another mother, Yaa, mother of three and 39 years had this to say; *“If I have money, I will be able to buy medicine for my children, especially the one not covered by health insurance.”*

The above responses from these two mothers clearly show that household income affects child survival through taking care of medical costs. According to Bennett and Kelley (2004), community health insurance schemes rarely cover all health care services from the start. This means that households should make some cash available in case the insurance scheme does not cover some health care services. This improves the children’s access to professional medical care which has the tendency to positively affect survival chances of children.

Gwatkin, Wagstaff and Yazbeck, (2005) posit that unlike the wealthy who are more educated and likely to use modern medical systems, the poor, especially in the rural areas do not comprehend modern medical care and its benefits and therefore negatively affecting the survival chances of their children under five years of age. This is because the rural poor are likely to treat sicknesses in the house especially if they are far from health facilities in terms of distance and are not enrolled on the health insurance scheme.

It can be asserted that rich households have broad range of alternatives to choose from when it comes to accessing professional healthcare for any member in their households. This is because their income affords them the free room to choose the so to say relatively expensive and most effective medical care. However, the importance of health insurance scheme cannot be ruled out as found by this current study.

However, the poor consider medical care as expensive and are not likely to be able to afford basic medical care services (Hogan, 2000).

Proper feeding and nutrition was also found to be a mechanism through which household income operate to affect child survival. A study in Egypt by Casterline, Cooksey and Ismail (1989) on household income and child survival showed that income has little effect on child survival but is more pronounced in the first year of growth when other socio-economic variables are controlled. According to them, the mechanisms underlying the income effects were not evident from their analysis. However, this current study has showed that household income is important in determining child survival through payment of medical bills and nutrition but is enhanced through health insurance enrolment. With income, foods properly suited for children can be purchased by mothers. This will help the children get the necessary nourishment for growth since the initial stages of growth is very critical in terms of nutritional needs. This is what some mothers said;

Of course, our money affects our children's health. Because I am able to buy food for the children anytime their provisions get finish. (Martha, 27 years and mother of two)

Yes, my money can make my child live. I will buy good food for him, take him to the hospital and buy nice dress for him. So you see, money can do a lot of things for my child. (Stella, 25 years old mother of one)

It can be realized that rural mothers do know and understand that proper feeding practices are enhanced through increased income. To them, if they have enough money, they can meet the nutritional needs of their children.

The understanding that income of households affects child survival through proper feeding practices and ability to afford professional medical care has been established by this study. However, a study by Osei-Kwakye et al. (2010) shows that the influence of parental poverty on child survival in rural Ghana is reduced in instances where children are given free nutrient supplementation by the government. This means that nutrient supplementation (such as free vitamin A dose given to children by the Ghana Health Service) reduces the likelihood of childhood deadly diseases and the cost to be incurred as a result of medical expenses. To Osei-Kwakye et al. (2010), the nutrient supplementation helps cater for the nutrient deficiency of children in poor households. This stands in contrast to the finding of this current study as it has been found in this current study that household income and use of free vitamin A supplementation are significantly related (Appendix II-Table 4). By inspection (Appendix II-Table 3), all children in the wealthy and wealthiest households had received free vitamin A supplementation while fourteen percent of children in the medium wealth quintile had not received free vitamin A supplementation and 38% in the poorest households had also not received free vitamin A supplementation. This shows that those households in the high income categories are more likely to have access to free vitamin A supplementation than the poor households. The probable explanation for such a finding might be that rural poor households are likely to always go to the farm and with their children. It might be safe to say that as health workers go from house to house to administer the vitamin A supplementation to the children, mothers of the poor households might be with their children on the farm or . This might have deprived their children from receiving the vitamin A supplementation. Vitamin A supplementation is also given to children when their mothers go for postnatal care with the children. It was gathered from the interviews that mothers of children are to usually put on white and

expensive attire when going for postnatal care with their children which deters the rural poor from regularly going for postnatal care. This has implication for the child receiving vitamin A supplementation and consequently the survival chances of the child. Vick, mother of two children said;

In this community, you have to put on nice clothing, usually white to show your triumph in giving birth when you are going out for “weighing” (postnatal care where the weight of children are weighed). You have to try and look good even if you don’t have the means.

From the response above, it can be gathered that there is the general understanding that mothers are to spend money on clothing if they want to regularly attend antenatal care with their children. The rural rich therefore are at an advantage and can regularly attend postnatal care with their children. Their children will then receive the vitamin A supplementation.

5.4 Effects of Maternal Factors on Child Survival

The selected maternal factors under investigation in this study were maternal age, marital status, parity, occupation, religion and education. The ability of these various factors in determining child survival was tested using chi-square and binary logistic regression at .05 significance level. Maternal age was found by this study to be a strong determinant of child survival in the study area. Other studies support this finding. Abdul-Rahman (2011), using hospital data in Tamale in Northern Ghana also found maternal age to be strongly related to child survival. Maternal age at birth was also found by Manda (1998) and Kanmiki et al. (2014) to be statistically significant in determining child survival. They assert however, that this effect is mostly limited to periods of infancy with diminishing effect as the child grows.

According to Bicego (1990), maternal age of more than 35 years or less than 20 years have adverse effect on the survival chances of children compared to maternal age of between 20 years and 35 years. Zeleke's (2009) findings in South Africa also corroborate these findings. From this study's finding and that of others, it can be asserted that mothers who are less than 20 years are likely to have underdeveloped reproductive systems or are not matured enough to care for a child. Those mothers more than 35 years are also more likely to be in the early stages of degeneration in their physiology which has the likelihood to affect the survival chances of the child.

Though marital status of mothers did not have any significant relationship with child survival (Table 6), children of married mothers were more than twice more likely to survive than children of single mothers (Model 1). This probability of survival of children of married mothers was highly significant after the inclusion of other explanatory variables of child survival in the final model (model 5). Zeleke (2009) argues that married mothers have income buffer from the husband which goes a long way to positively affect the survival chances of their children. A study by Remes, Martikainen and Valkonen (2010) on the effects of family type on child mortality found no difference in child survival chances between children from married mothers and those from single mothers. Their study stands in contrast to findings from this study and that of Zeleke (2009).

From the bivariate analysis, parity was significantly related to child survival. This is supported by other studies such as the study by Madise et al. (2010) in Zambia. A study by Kayode, Ansah, Agyepong and Amoakoh-Coleman (2014) on the individual and community determinants of child survival found that children of birth order five and over are less likely to survive than those of lower birth order. Other studies have also corroborated this finding (Bicego, 1990; Manda, 1999; Zerai, 1996).

According to Hobcraft et al. (1984), occupation of mothers has no influence on survival chances of their children. Findings from this current study are in consonance with their findings. It must be noted however, that, relationship existed per the findings of this study but not statistically significant. Other studies have found otherwise, such as the study by Johnson and Hobbs (1982) which found out that maternal occupational status and child survival are significantly related. Johnson and Hobbs (1982) argue that employed mothers have healthy surviving children compared to the unemployed mothers. This is likely to work through increased income and proper nutrition.

Relationship between religion and child survival was found to be very significant. When subjected to logistic regression, children of Muslim mothers are 99.8% less likely to survive than children of Christians. This shows the importance of religion in determining child survival. It should be noted that this finding may be due to the small number (8%) of Muslim mothers in the study area, so that generalization from this finding should be done with caution. It was also realized that only small percentage (23%) of the Muslim mothers had their children enrolled on the health insurance scheme. Majority (55%) of the Muslim mothers had no education and the remaining 45% had only primary education (Appendix II-Table 5). These might have accounted for the low survival chance of children of Muslim mothers as education and health insurance have been found to be very significant determinants of child survival. This finding is supported by Odeyemi (2014) and Jütting (2003) who assert that Christian mothers are more likely to enroll their children on health insurance schemes which has the likelihood of enhancing the survival chances of their children. A study by Mustafa and Odimegwu (2008) in Kenya finds otherwise, that religion has no influence on the survival chances of children.

This study has shown that at least primary education for mothers has the tendency of likely increasing the survival chances of children. Caldwell (1979) also makes the same assertion based on his study in Nigeria. Kanmiki et al. (2014) also corroborate this finding by opining that maternal education and marital status have strong influence on child survival. These studies go further to stress that this association is strongest in Sub-Saharan Africa than the Western world. This current study found significant relationship between mothers' education and child enrolment on health insurance scheme (Appendix II-Table 6). This relationship in effect positively influenced child survival chances of educated mothers. Osei-Kwakye et al. (2010) however found education to have no effect on child survival in the presence of vitamin supplementation, use of ITNs and immunization. With this current study, it was found that even in the presence of vitamin A supplementation, education was found to have significant effect on child survival (Appendix II-Table 7) with free vitamin A supplementation having no significance. It must however be taken into account that this study and that of Osei-Kwakye et al. (2010) were both done in rural settings. It may be argued that during the study of Osei-Kwakye et al. (2010), vitamin supplementation and immunization had become a national policy to improve child survival in their study area (Bulsa District in the Upper East Region of Ghana).

The general level of education of mothers in this study's area was low as less than 15% had attained Senior High School education. The Spearman Rank Correlation coefficient was calculated to find out if there exists a relationship between household income and education. Spearman rho of .137 was ascertained with significance level of .067. This simply means that income has no effect on education in the study area. It can therefore be argued that in rural areas income has no influence on education as rural individuals are all likely exposed to virtually the same educational opportunities in the community.

However, this cannot be said of urban areas where there is the competition between private educational institutions and public educational institutions in educational quality resulting in high educational costs especially in the private educational institutions. In such conditions, income is very necessary. An important finding to be discussed is Mass/Public Education, as during the interviews the mothers talked about education on child care on the communities Public

Announcement (PA) System. This was what one mother said;

I remember a nurse on the community PA system one Saturday telling us how to care for the children when they are sick and the foods we should be giving to them to eat. (Ekua, mother of one child and 26 years old)

From the response of Ekua it can be asserted that education is very important. Education is likely to work through improved child care practices and income to influence child survival. Studies have found relationship between income and educational level. That is, they both influence each other. This study found same with chi-square statistic of 50.776 and p-value of .000. This has been argued for by Mensch et al. (1985) that educating mothers increase their income. They further opined that publicly educating mothers on the proper care for their children has the potency to improve survival chances than only classroom education. Others (Cleland, 1990) also argue that education works through empowerment of women to affect child survival. Confidence of mothers is improved as educated mothers are more able to face the modern bureaucratic nature of healthcare seeking for their children.

5.5 Relationship between Household Facilities and Child Survival

The use of pit latrine and public toilet facilities were common among the sampled mothers. This stems from the fact that only few of the households had access to flowing

taps which was evidenced by the presence of few public stand pipes in the communities. Most of the households had no alternatives than to use pit latrine or public toilet facilities.

This current study did not find any significant relationship between child survival and main source of drinking water. It must be noted however that when other household facilities were include in the model (model 2), children in households which used sachet/bottled water are more than three times more likely to survive than those who use pipe-borne water. This shows the importance of source of drinking water in determining child survival. This is because lack of access to safe drinking water encourages the spread of certain vector-borne illnesses: onchocerciasis (river blindness) and dracunculiasis (guinea worm), which are transmitted by vectors associated with water, causing debilitating illness. Since children are in the early stages of their biological development, they are at higher risk of contracting these illnesses (Burger & Esrey, 1995).

Source of cooking materials was not found to be significantly related to child survival in this study. Though the study area was rural, this finding stands in contrast to an assertion by Rutstein (2000) that rural women and young children are at high risk of exposure to the smoke emitted from burning coal, firewood, and other sources of fuel, due to women's traditional role in food preparation which has the tendency to affect the survival chances of children.

5.6 Chapter Summary

This chapter has presented and discussed pertinent findings from the study. Inferences and literature support have been presented and scrutinized. From the discussions, it was realized that despite the importance of household income in determining child survival,

health insurance enrolment of the children also proved crucial. As per the settings of the study, it was also envisaged that income has no influence on education and that individuals in the study area are presented with the same educational opportunities of affordability. Mothers' education still proved important even in the presence of free vitamin A supplementation in determining child survival.



CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This is the last chapter of the thesis and it is devoted to summarizing the major findings of the study and conclusion of the study. Recommendations based on the findings are made for policy and research. The summary is made based on the four specific objectives of the study, with the quest to answer the research questions.

6.2 Summary of Findings

6.2.1 Background to Main Findings

The study found that only few of the children did not have vaccination cards in which their health records were written. Majority of the children had received vitamin A dose in the past six months preceding the survey and have not had diarrhoea in the last two weeks preceding the survey. Of the children who had diarrhoea, ORS was administered by the mothers. Majority of the children had had cough in the last two weeks preceding the survey and with most of them being sent to the pharmacy/chemical shop for medication. Fever was not common among the children, with the few who had fever seeking treatment from the hospital. Close to half of the total number of children in this study did not sleep under ITNs the night before the survey, indicating non-ownership of ITNs by the mothers for their children.

6.2.2 Interaction between Household Income and Child Survival

This study found that most of the children's households were in the poor and medium wealth quintile. Significant relationship was found between household income and child survival chances. This was supported by many studies while other studies also made clear the diminishing effects of income in the face of free nutrient

supplementation. However, health insurance scheme proved very crucial even in the presence of high income.

It was realized from the qualitative interviews that households' income operates through payment of medical bills to affect child survival. It was found that high income families were able to pay for prescribed drugs which were not covered by the health insurance. Such households are able to afford private health care for their children. The other means through which household income operate to affect child survival was proper nutrition of children. With high income, households were able to afford prescribed diet for the children. The children therefore receive balanced diet which has the potency to positively affect the children's chances of survival. Income therefore influences child survival through food nourishments. These two main mechanisms of operation of household incomes (proper nutrition and payment of medical bills) to an extent provided explanation to the significant relationship ascertained between household income and child survival.

6.2.3 Health Insurance Scheme and Child Survival

Majority of the mothers were enrolled on the health insurance scheme as well as their children. Regarding maternal enrolment on health insurance and child survival, there is no statistically significant relationship between these two. However, child enrolment on health insurance is significantly related to child survival to the point where wealthiest households which did not enroll their children on the health insurance scheme had children with reduced chances of survival despite the importance of income. This study found that reducing health care spending was the main motive for enrolment of children in the health insurance scheme.

It was gathered from the interviews that health insurance affects child survival through reducing health expenditure and increasing the money at hand of households which then goes into nutrition. This finding is very important as it made clear the path through which health insurance works to affect child survival.

Another path through which health insurance affected the survival chances of children is through enhancing access to professional medical care. Mothers send their children to the hospital for checkup not because the children are sick but because they have health insurance with which they do not pay for the medical checkup.

6.2.4 Maternal Factors and Child Survival

The study found that most of the mothers were in their early twenties to early thirties and married. Those mothers with parity of one were the majority. There were more Christians and traders with majority having attained only Junior High School education.

With the bivariate analysis, age group of mothers, parity, religion of mothers and maternal education were all significantly related with child survival. That is, these maternal factors and child survival were dependent. Only marital status and occupational status of mothers did not have any significant relationship with child survival.

When only maternal factors is subjected to logistic regression model, children of married mothers are more than twice more likely to survive than those of single mothers. Children of Muslim mothers are also less likely to survive than children of Christians. Education proved to be very significant, as children of mothers who have primary education were 29 times more likely to survive than children whose mothers had no formal education. Primary school education, in the face of other factors became insignificant but rather Junior High School education and Senior High School education

became very significant in predicting the likelihood of a child surviving. Public education on proper child care by Ghana Health Service was also found.

It was evident that education works through proper child care practices in positively affecting the likelihood survival of children. When all factors were controlled for, children of married mothers were 88 time more likely to survive than children of single mothers. Age group of mothers was also negatively related to child survival.

6.2.4 Relationship between Household Facilities and Child Survival

When all selected factors were considered, main source of drinking water was significant in predicting the likelihood of a child surviving as children from households whose main source of drinking water was sachet/bottled were more likely to survive. However, when only main source of drinking water was considered, it was not strong in predicting child survival. The study found that most of the households in this study had pipe borne water as their main source of drinking water. This was due to the presence of running taps in the communities with public stand pipes. This affected the type of toilet facilities used by most of the households, such that most of the households used pit latrine or public toilet facilities at they did not have flowing taps in their homes but made use of the public stand pipes.

Main source of cooking materials was not strong in predicting child survival when other selected factors were not controlled for (model 2). This ability to predict child survival for household with poor sewage disposal was significant as children from such households were 35% less likely to survive than children from households which have adequate sewage disposal facility (model 5).

6.3 Conclusion

This study set out to investigate child survival in the Gomaa East District in the Central Region of Ghana. Two typical rural areas were selected for the study. Survey instrument was used to collect quantitative data and 12 mothers were interviewed using unstructured interview guide.

The importance of some maternal factors such as education has proved very important in determining child survival in the study area. At least Primary to Junior High School education has been shown to greatly influence child survival in this study. This was ascertained to work through improved child care practices and boldness to utilize healthcare facilities by mothers. Higher parity was likely to negatively influence child survival. This was likely to happen through frequent body temperature rise of children and coughs as ascertained by the mothers of children who were of higher parity. Religion is among the most significant predictors of child survival.

This study concludes that household facilities do affect the survival chances of children, especially main source of drinking water for households and the type of bathroom drainage. This study stresses the importance of health insurance scheme in predicting child survival through increased income in the households to provide nutritional needs of children and ease of accessing professional medical care. Household income has also been ascertained as significantly contributing to child survival.

Overall, this current study have been able to show the various paths along which household income, health insurance, maternal education and marital status as well as other selected factors take to affect child survival through the use of qualitative interviews to augment quantitative techniques.

6.3.1 Study's Contribution to Knowledge/Literature

This study has made some contribution to knowledge, basically through the application of qualitative interviews to augment the quantitative techniques. It has brought to the fore the importance of qualitative techniques in an overly quantitative dominated area of research with child survival. It has served to unravel the seeming blurred mechanisms through which various factors affect child survival. This addition to knowledge of the importance of qualitative techniques in the area of child health cannot be overlooked.

This study has contributed to literature by establishing the significant importance or otherwise of some maternal and household factors, health insurance and household income in predicting child survival. It has made clear the means through which some of these factors operate to influence child survival. Household income for instance had been found through this study to operate through child nutrition and payment of medical expenses in determining child survival. So that high income families are likely to have properly nourished children and are more likely to survive than children from low income households. The same can also be said of payment of medical expenses. It has also been added to literature of the ways through which education works to determine child survival. Health insurance has also been shown to operate through increasing access to healthcare to influence child survival. Health insurance has proved to be very important in determining child survival regardless of income levels. This finding is a major contribution to literature.

6.4 Recommendations

Based on the findings of this study and the literature reviewed, recommendations were made for policy and practice on one hand and for further research on the other hand.

6.4.1 Recommendations for Policy and Practice

This study recommends that girl-child education should be promoted. The promotion of girl-child education has been known by many studies and corroborated by the findings of this study as one of the significant determinants of child survival. As this study found, maternal education to at least Senior High school level will more likely improve the survival chances of children. It is also argued that increased maternal education is likely to increase maternal income which in the long run can positively affect the survival chances of their children. It is therefore recommended that attention be paid to female education in Ghana through the institution of scholarship schemes. Mass education was also found in this study as contributing to child survival through sensitizing mothers on proper child care practices. Mass education should therefore be engaged in by the government and other stakeholders in order to improve child survival chances.

It is also recommended based on the relative importance of health insurance in this study that the government continues to make insurance premiums more affordable so that individuals can enroll on the scheme. Efforts should be made on the part of the government to include more basic health care services and medications for children so that the financial burden on mothers can be eased. Health insurance enrollment and renewal should be made free for children less than five years of age in the quest to improve their survival chances. The Ghana Health Service should not stop with the free administration of Vitamin A supplementation as this study found its importance in improving child survival chances.

Women should be advised on the use of contraceptives in order to delay conception as this study found a very strong relationship between maternal age and child survival. Maternal age at birth of more than between 20 years and 35 years is recommended as

this study found through the qualitative enquiry that a mother was advised that due to her body growing weak at the age of 40 years she should not give birth. Also a mother realized that her last child in her late adulthood was not healthy as compared to those she gave birth to when she was younger. Reducing parity on the part of mother can also help to likely save their children.

Lastly it is recommended that the health services covered by the national health insurance scheme should be expanded to include those services not currently covered for children. This will further help to improve child survival chances as it will relieve mothers of extra medical expenses.

6.4.2 Recommendations for Further Research

The researcher recommends that an entirely qualitative research technique be used to study child survival in a similar research setting. Due to the various mechanisms ascertained through which some of the selected factors operate to affect child survival, purely qualitative study into child survival is likely to reveal yet some other mechanisms through which various factors known to influence child survival operate through. Qualitative study will make for a more experiential understanding of the issues of child survival as perceived by the mothers and the households.

Since the sample for this study was small (for a quantitative study on child survival) and in a rural area, a similar study with large sample size and in both rural and urban areas will make for an interesting study. Comparison of the two settings can be done in such a study. Such a study can clearly bring out the disparities that exist between urban and rural settings regarding child survival.

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APPENDIX I

Questionnaire

SOCIO-DEMOGRAPHIC DETERMINANT OF CHILD SURVIVAL IN GOMOA EAST REGION OF THE CENTRAL REGION OF GHANA.

I am a Masters Student from the Department of Sociology and Social Work – Kwame Nkrumah University of Science and Technology, conducting research on the above topic. This is part of the requirement for the award of Master of Philosophy in Sociology.

Questionnaire No.____

Maternal Factors

1. How old are you? ☐ 15-20 ☐ 21-26 ☐ 27-32 ☐ 33-38
 ☐ 39-44 ☐ 45-49
2. What is your marital Status? ☐ Single ☐ Married ☐
 Divorced/Separated
3. How many children do you have? _____
4. What is your current occupation? ☐ Farmer ☐ Trader
 ☐ Salaried worker ☐ Unemployed ☐ Other, please
 specify _____
5. What is your Religion? ☐ Christian ☐ Moslem ☐ Traditional
 ☐ No religion ☐ Other, please specify

6. What is your highest level of education? ☐ None ☐ Primary
 ☐ Primary/JSS ☐ Secondary/SHS ☐ Higher

Household Facilities

7. What is the main source of drinking water for members of your household? ☐
☐ Piped water ☐ Tube well/borehole ☐ Water from spring ☐ Surface water
☐ Rain water ☐ Tanker truck ☐ Bottled/sachet water
8. What kind of toilet facility does members of your household use? ☐ Flush
 toilet ☐ Pit latrine ☐ Bucket/pan ☐ No
 facility/Bush
9. Which of the following materials do you use in cooking? ☐ Firewood ☐ Coal
 Pot ☐ Gas Stove ☐ Electric Stove

10. Do you personally have to throw away the waste water after bathing? ☐ Yes ☐ No

Yes ☐ No ☐

NHIS

11. Are you enrolled on NHIS? ☐ Yes ☐ No

12. Is your child(ren) enrolled on NHIS? ☐ Yes ☐ No

Household Income (Using Wealth Quintile Measure)

This household has the following;

☐ Television/Radio

☐ Motorcycle

☐ Fridge

☐ Cellular Phone

☐ Bicycle

☐ Car

☐ Cemented Floor

☐ Stand pipe in the home

SECTION B: CHILD HEALTH

13. Do you have vaccination card for (NAME)? ☐ Yes ☐ No

14. Has (NAME) received a dose of vitamin A in the previous six months?

☐ Yes ☐ No

15. If No, why?

16. Has (NAME) been vaccinated against Measles? ☐ Yes ☐ No

17. Has **(NAME)** had diarrhea in the last two weeks? ☐ Yes ☐ No

a. If no, move to question 24.

18. Was he/she given any of the following to drink since he/she started having diarrhea?

☐ A fluid made from ORS ☐ A government recommended
homemade fluid

19. Was anything else given to treat the diarrhoea? ☐ Yes ☐ No

20. If yes to question 22, what was given?

21. Has **(NAME)** been with cough any time in the last two weeks? ☐ Yes

☐ No

a. If no, move to question 27.

22. If yes to question 24, did you seek advice or treatment from any source? ☐

Yes ☐ No

a. If no move to question 27.

23. Where did you seek advice or treatment? ☐ Hospital//clinic

☐ Pharmacy/chemical shop ☐ Shop/market ☐

Traditional practitioner ☐ Other,

please specify _____

24. Has **(NAME)** been with fever in the last two weeks? ☐ Yes ☐

No

a. If no, move to question 30.

25. If yes, did you seek advice or treatment from any source? ☐ Yes ☐

No

26. Where did you seek advice or treatment? ☐ Hospital//clinic

☐ Pharmacy/chemical shop ☐ Shop/market ☐

Traditional practitioner ☐ Other, please specify

27. Did (NAME) sleep under insecticide treated bed net last night? ☐ Yes

☐ No

Interview Guide

SOCIO-DEMOGRAPHIC DETERMINANT OF CHILD SURVIVAL IN GOMOA EAST REGION OF THE CENTRAL REGION OF GHANA.

I am a Masters Student from the Department of Sociology and Social Work – Kwame Nkrumah University of Science and Technology, conducting research on the above topic. This is part of the requirement for the award of Master of Philosophy in Sociology.

1. Do you think you income has a part to play in keeping (NAME) healthy?
2. How do you think your environment can make (NAME) sick?
3. Why did you or did you not go in for health insurance?
4. How is the health insurance helping (NAME) stay healthy?
5. Do you always seek help from the clinic or CHPS compound and why?
6. Tell me about a time (NAME) got very sick.
7. What do you normally do in your capacity to prevent (NAME) from getting sick?

8. Have you ever been educated by a nurse on any particular childhood illness and how to guard against it ever before?

Thank You

APPENDIX II

Table 1: Wealth Quintile * Child enrolment on NHIS Crosstabulation

		Child enrolment on NHIS		Total
		Yes	No	
Wealth Quintile	Poorest	Count	37	53
	Poor	% within Wealth Quintile	69.8%	100.0%
	Medium	Count	58	66
	Wealthy	% within Wealth Quintile	87.9%	100.0%
	Wealthiest	Count	16	78
		% within Wealth Quintile	30.2%	100.0%
		Count	8	34
		% within Wealth Quintile	12.1%	100.0%
		Count	12	29
		% within Wealth Quintile	54	100.0%
		Count	22	260
		% within Wealth Quintile	34.5%	100.0%
Total		Count	151	260
		% within Wealth Quintile	109	100.0%
			41.9%	100.0%

Table 2: Chi-Square Tests Wealth Quintile and Child enrolment on NHIS

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square	58.207 ^a	4	.000
Likelihood Ratio	62.149	4	.000

Linear-by-Linear Association	19.226	1	.000
N of Valid Cases	260		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.16.

Table 3: Vitamin A dose * Wealth Quintile Crosstabulation

			Wealth Quintile					Total
			Poorest	Poor	Medium	Wealthy	Wealthiest	
Vitamin A dose		Count	33	66	67	34	29	229
	Yes	% within Vitamin A dose	14.4%	28.8%	29.3%	14.8%	12.7%	100.0%
	No	Count	20	0	11	0	0	31
		% within Vitamin A dose	64.5%	0.0%	35.5%	0.0%	0.0%	100.0%
Total		dose Count	53	66	78	34	29	260
		% within Vitamin A dose	20.4%	25.4%	30.0%	13.1%	11.2%	100.0%

Table 4: Chi-Square Tests

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square			
Likelihood Ratio	51.443 ^a	4	.000
	56.286	4	.000
Linear-by-Linear Association	21.820	1	.000
N of Valid Cases	260		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.46.

Table 5: Religion * Highest level of education of mothers Crosstabulation

		Highest level of education of mothers				Total
		No formal education	Primary	Junior High School	Senior High School	
Religion	Christianity	Count	30	25	146	238
		% within Religion	12.6%	10.5%	61.3%	100.0%
	Islam	Count	12	10	0	22
		% within Religion	54.5%	45.5%	0.0%	100.0%
	Total	Count	42	35	146	260
		% within Religion	16.2%	13.5%	56.2%	100.0%

Table 6: Chi-Square Tests

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square	42.008 ^a	3	.000
Likelihood Ratio	55.300	3	.000
Linear-by-Linear Association	34.711	1	.000
N of Valid Cases	260		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.67.

Table 7: Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
	1		14.070	3	.003	0
No formal education	1.360	.504	7.274	1	.007	3.898
Primary	-.012	.366	.001	1	.975	.989
Junior High School	.827	.476	3.020	1	.082	2.287
Senior High School	-.147	.416	.124	1	.724	.864
Vitamin A Supl. (1)						
Constant	-.444	.338	1.724	1	.189	.641

a. Variable(s) entered on step 1: Q6, Q17.

Table 8: Correlations

		Highest level of education of mothers	Wealth Quintile
		1.000	.137
Highest level of education of mothers	Correlation Coefficient	.	.067
	Sig. (2-tailed)	260	260
	N	.137	1.000
Wealth Quintile	Correlation Coefficient	.067	.
	Sig. (2-tailed)		
Spearman's rho	N	260	260

*. Correlation is significant at the 0.05 level (2-tailed).

Household toilet facility * Highest level of education of mothers Crosstabulation

	Highest level of education of mothers				Total
	No formal education	Primary	Junior High School	Senior High School	

Household toilet facility	Flush toilet	Count	12	0		5	27
		% within Household toilet facility	44.4%	0.0%	10	18.5%	100.0%
	Pit latrine	Count	8	0	37.0%	22	100
		% within Household toilet facility	8.0%	0.0%	70.0%	22.0%	100.0%
	Public toilet facility	Count	22	35	66	10	133
		% within Household toilet facility	16.5%	26.3%	146	7.5%	
	Total	Count	42	35	56.2%	37	100.0%
		% within Household toilet facility	16.2%	13.5%		14.2%	100.0%
		Count					
		% within Household toilet facility					

Chi-Square Tests Household toilet facility and Highest level of education of mothers

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square	65.909 ^a	6	.000
Likelihood Ratio	76.269	6	.000
Linear-by-Linear Association	2.843	1	.092
N of Valid Cases	260		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 3.63.

Religion * Highest level of education of mothers Crosstabulation

		Highest level of education of mothers				Total
		No formal education	Primary	Junior High School	Senior High School	
Religion	Christianity	30	25	146	37	238
	Count					
	% within Religion	12.6%	10.5%	61.3%	15.5%	100.0%
	Islam	12	10	0	0	22
	Count					
	% within Religion	54.5%	45.5%	0.0%	0.0%	100.0%
Total	Count	42	35	146	37	260
	% within Religion	16.2%	13.5%	56.2%	14.2%	100.0%

Chi-Square Tests Religion Highest level of education of mothers

Crosstabulation

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square	57.119 ^a	3	.000
Likelihood Ratio	58.614	3	.000
Linear-by-Linear Association	43.983	1	.000
N of Valid Cases	260		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is 2.96.

Religion * Child enrolment on NHIS Crosstabulation

		Child enrolment on NHIS		Total
		Yes	No	
Religion	Christianity	146	92	238
	Count			
	% within Religion	61.3%	38.7%	100.0%
	Islam	5	17	22
	Count			
	% within Religion	22.7%	77.3%	100.0%

	Count	151	109	260
Total	% within Religion	58.1%	41.9%	100.0%

Chi-Square Tests Religion and Child enrolment on NHIS Crosstabulation

	Value	df	Asymp. Sig. (2sided)	Exact Sig. (2sided)	Exact Sig. (1sided)
Pearson Chi-Square	12.335 ^a	1	.000	.001	.000
Continuity Correction ^b	10.800	1	.001		
Likelihood Ratio	12.461	1	.000		
Fisher's Exact Test					
Linear-by-Linear Association	12.287	1	.000		
N of Valid Cases	260				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.22.

b. Computed only for a 2x2 table

Classification Tables

Health insurance and Child Survival – Classification Table^{a,b}

	Observed	Predicted		
		Child Survival		Percentage Correct
		Low chance of survival	High chance of survival	
Child Survival	Low chance of survival	141	0	100.0
	High chance of survival	119	0	.0
Step 0	Overall Percentage			54.2

a. Constant is included in the model.

b. The cut value is .500

Maternal Factors and Child Survival – Classification Table^a

	Observed	Predicted			
		Child Survival		Percentage Correct	
		Low chance of survival	High chance of survival		
Step 1	Child Survival	Low chance of survival	114	27	80.9
		High chance of survival	36	83	69.7

Overall Percentage			75.8
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a. The cut value is .500

Household Factors and Child Survival – Classification Table^a

	Observed		Predicted		
			Child Survival		Percentage Correct
			Low chance of survival	High chance of survival	
Step 1	Child Survival	Low chance of survival	101	40	71.6
		High chance of survival	43	76	63.9
	Overall Percentage				68.1

a. The cut value is .500

Wealth Quintile and Child Survival – Classification Table^a

Wealth Quintile and Child Survival Classification Table					
	Observed		Predicted		
			Child Survival		Percentage Correct
			Low chance of survival	High chance of survival	
Step 1	Child Survival	Low chance of survival	99	42	70.2
		High chance of survival	49	70	58.8
	Overall Percentage				

a. The cut value is .500

Classification Table^a

Classification Table				
	Observed	Predicted		
		Child Survival		Percentage Correct
		Low chance of survival	High chance of survival	

Child Survival	Low chance of survival	120	21	85.1
	High chance of survival	12	107	89.9
Step 1	Overall Percentage			87.3

a. The cut value is .500

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