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DETERMINANTS OF ANTENATAL CARE UTILIZATION AMONG WOMEN IN GHANA

BY

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ACCEPTANCE

Accepted by the faculty of social studies, University of Ghana, Legon in partial fulfillment for the requirement of the Master of Art Degree (Population Studies).

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DECLARATION

I hereby declare that except for references to other researchers' works which have been duly acknowledged, this dissertation is the result of my own research and it has neither in part nor in whole been presented elsewhere for another degree.

…….. ……

CHRISTIAN MAWUKO DIKENOO. DATE

(STUDENT)

DEDICATION

This work is dedicated to my mother, Ruth Dikenoo and my daughter, Christabel Yayra Dikenoo.

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ABSTRACT.

Antenatal care is the most important health input that can help reduce maternal mortality and child birth complications. Though it appears that most women are attending ANC, a lot of them are not completing the attendance. For ANC to function to contribute to saving of life, it must be completed. Completed ANC involves attending and utilizing ANC for a minimum of four times for uncomplicated pregnancies, so that subsequent visits may only be required upon detection of complication (WHO, 2010).

The study examined the maternal characteristics that determine complete ANC attendance among women in Ghana. The general objective of the study was to examine the determinants of ANC utilization among women in Ghana. Data for the study was obtained from the 2008 Ghana Demographic Health Survey (GDHS) data set collected quinquenially by the Ghana Statistical Service, (GSS) and the Ghana Health Service (GHS) under the auspices of United States Agency for International Development (USAID), United Nations Fund for Population Activities (UNFPA) and United Nations International Children Emergency Fund (UNICEF) among others. The sample size was 2,909 women (15-49 years) who had given their recent birth within five years preceding the 2008 GDHS. The study employed descriptive techniques such as percentages, cross tabulations to establish associations between the dependent and independent variables using the Pearson's Chi-square. The binary logistic regression was used to determine the variables that were statistically significant in determining complete ANC utilization among the women.

The findings indicate that maternal age, type of place of residence, parity, timing of first ANC and health insurance ownership were statistically significant determinants of complete ANC use among the women. Other variables like wealth quintile, religion and ethnicity also show some statistical relationship with ANC attendance.

Three hypotheses were formulated. The first one was, "the higher the age of a woman, the less likely she is to seek complete ANC". However, this hypothesis was rejected due to lack of sufficient statistical evidence. The second hypothesis was "primiparous women were more likely, than the multiparous to seek complete ANC." This hypothesis was confirmed and accepted. Finally, the third hypothesis, "women covered by health insurance were more likely to seek complete ANC compared to those who were not" was also confirmed and accepted.

It was recommended among other things that women seek ANC early and receive recommended number of visits to ensure desirable pregnancy outcomes.

CHAPTER ONE
INTRODUCTION

1.1 Background to the study

Care during pregnancy is important for the health of the mother and the development of the unborn baby. Pregnancy is a crucial time to promote healthy behaviors and parenting skills. Complete antenatal care (ANC) links the woman and her family with the formal health system, increases the chance of using a skilled attendant at birth and contributes to good health through the life cycle. Inadequate care during this time breaks a critical link in the continuum of care, and affects both women and babies (World Health Organization, (WHO) 2010).

In response to the unacceptable maternal mortalities in the global environment, the United Nations (UN) in 2000 established an agreed universal framework of International Development Goals and targets known as the Millennium Development Goals (MDGs) to be pursued by governments and civil society to meet the needs of people in the poorest regions of the world.

Eight goals were adopted but goal five, the focus of this study, seeks to improve maternal health with two targets: the first is to reduce by three-quarters between 1990 and 2015 the Maternal Mortality Ratio. The second target entails the achievement of universal access to reproductive health by 2015 (Ahmed & Cleeve, 2004). This could have been realized if adequate provision, patronage and utilization of ANC were guaranteed. But barriers of access to health care, inadequate essential supplies and trained personnel, lack of emergency transport systems and poor referral services are responsible for incomplete utilization of ANC, contributing to maternal deaths in developing countries (United Nations (UN), 2005).

The importance of maternal health services in reducing maternal and infant mortality has been emphasized in a number of studies. A study by Magadi et al. (2000) showed that the uptake of maternal health services, which includes antenatal care, in developing countries has significant consequences for both the safe transition of the mother through pregnancy and child birth, and the survival and health of the child during early infancy. The importance of complete utilization of ANC to avert these deaths is imperative. Coverage of four or more ANC visits as well as the number of visits disaggregated by trimester is important for every expectant mother to assess. This is because the effectiveness of certain ANC interventions such as tetanus vaccination ITps for malaria and prevention of mother to child transmission (MTCT) of HIV depend on repeated visits and the trimester they occur.

Indeed, under-utilization of health services has been mentioned as the major factor in maternal mortality in developing countries. In developing countries maternal mortality rates are estimated at about 480 deaths per 100,000 live births (WHO, 2010), and over half a million women in this part of the world die each year from complications relating to pregnancy and childbirth (WHO, 2005; Simkhada, 2007).

According to WHO (2010), Ghana's maternal mortality rate was estimated to be 560 deaths per 100, 000 live births; and in January 2015, UN report stated that 3,000 maternal deaths occurred in Ghana in 2013 (UN, 2013).

This appalling situation emanates from the fact that millions of women in these countries lack access to adequate care during pregnancy. Inadequate access and under-utilization of modern healthcare services are major reasons for poor health in the developing countries including Ghana. Inadequate access to ANC facilities leads to incomplete utilization in much the same way as under-utilization, which eventually lead to undesirable pregnancy outcomes. The need to reverse the upsurge in maternal deaths through access and complete utilization of ANC is

sacrosanct. Deliberate efforts to take advantage of the global support from the international organizations-WHO, UNFPA, UN, UNICEF-should be emphasized in order to translate the MDG 5 target two into reality. This can be achieved through adequate provision and complete utilization of ANC services.

1.2 Statement of the problem

Despite the widespread availability of free antenatal care services, most women in Ghana attend their first antenatal clinic late in pregnancy and fail to return for adequate number of care. This potentially leads to avoidable perinatal and maternal complications.

Studies have revealed that every minute, at least one woman dies from complications related to pregnancy or childbirth, which means 529,000 women die from child birth or maternal issues per year. In addition, for every woman who dies in childbirth, around 20 more suffer injury, infection or disease, which translates into approximately 10 million women each year. (United Nations International Children Emergency Fund (UNICEF), United Nations Population Fund (UNFPA), & WHO, 2010).

Thus, ANC offers an entry point for integrated care, promoting healthy home practices, influencing care seeking behaviors, and linking women with pregnancy complications to a referral system. Women are more likely to give birth with a skilled attendant if they have had at least one ANC visit (Lincetto et al, 2013). Complete ANC utilization saves the lives of the mother and the unborn child, ensures save and uneventful delivery, and ensures postnatal optimal health of both the mother and the infant (Abou-Zahr & Wardlaw, 2003).

The introduction of the National Health Insurance Scheme (NHIS) has also made it possible for the exemption package for expectant mothers to be expanded to cover antenatal, delivery and postpartum care.

Estimates suggest that about 95 percent of women in Ghana received antenatal care at least once and about 78 percent had four or more visits. (Ghana Statistical Service (GSS), Ghana Demographic Health Survey (GDHS), 2008, ICF Macro 2013). Meanwhile, for ANC to achieve its intended purpose, it must be complete. Complete utilization of ANC in the study refers attendance of at least four ANC visits, and initiating it in the first trimester. Many pregnant women simply start the ANC and do not complete it, nor have a minimum of four visits. These women do not receive the adequate components of the service and are prone to child birth related complications. Consequently, this predisposes pregnant women to the risk of maternal and neonatal deaths.

Increasing the proportion of people identified with the access and utilization of complete ANC, and consequently the number of births delivered by skilled birth attendants, (SBA) are primarily the internationally agreed health and development goals; and paramount focus for antenatal care. The present study therefore examined the determinants of ANC utilization in Ghana.

1.3 Rationale for the studies

Access and use of antenatal care services among expectant mothers is one of the most important health inputs in reducing maternal mortality. Adequate utilization of appropriate and recommended antenatal care services ensures safe motherhood and reduces both maternal and neonatal deaths (UNFPA/ WHO, 2004). Safe motherhood according to (WHO) is "Creating the circumstances within which a woman is enabled to choose whether she will become pregnant and if she does, ensuring she receives care for prevention and treatment of pregnancy complications, has access to skilled birth attendants, has access to emergency obstetric care if she needs it and care after birth so that she can avoid death or disability from complications of pregnancy and childbirth." (WHO, 2010).

Many health problems experienced by pregnant women can be prevented or detected and treated by trained health workers during ANC visits. Complete antenatal care is associated with a better overall pregnancy outcome. It also gives the mother education, helps to identify and treat illness and encourages employment of skilled attendance at birth, and prepares the mother for any emergencies (Kvale et al., 2005). Complete ANC includes the pregnant woman's ability to attend ANC at least for a minimum of four times, and arrangements made for further attendance upon detection of complications of pregnancy, leading to uneventful delivery.

Complete antenatal care can help prevent factors associated with newborn mortality such as low birth weight and complications from infectious diseases, including reducing mother to child transmission. (Kalayou et al, 2012). ANC is also an opportunity to promote the use of skilled attendance at birth and healthy behaviors such as breastfeeding, early postnatal care, and planning for optimal birth spacing.

In Ghana, ANC attendance is high; about 85 percent of pregnant women were receiving ANC in 2004 (Ministry of Health, (MoH), 2007); and has fallen from 97.8 percent in 2008 to 92.1 percent in 2009 (WHO, 2010). However, ANC utilization is incomplete with most pregnant women. Estimates suggest that complete utilization of ANC in Ghana is about 78 percent, though ANC coverage rate is about 95 percent (GDHS, 2008; ICF Macro, 2013). The 2008 Ghana Demographic Health Survey (GDHS) report indicated that even though about 78 percent of women who were supposed to seek ANC actually had at least four visits, only about 55 percent of them started in the first trimester.

The discrepancy between the ANC coverage and the actual proportion of women who have complete ANC utilization is crucial, taking into consideration the provision of free maternal health care and health insurance by the Government of Ghana for pregnant women to seek free maternal care.

Consequently, this has contributed to high maternal deaths from preventable diseases and complications. It is estimated that about 3,000 maternal deaths occurred in Ghana in 2013. (UN, 2014). Meanwhile, ANC period can be used to inform women and families about danger signs and symptoms of complications. It will also make them knowledgeable about the risks of labour and delivery which will provide the route for ensuring that pregnant women do, in practice, eventually deliver with the assistance of a skilled health care provider (WHO, 2012).

The attainment of Millennium Development Goals (MDG) four and five is very crucial for the development of the country and wellbeing of the citizenry. Attainment of the fifth goal is sacrosanct, because by September 2015, countries pursuing the goals should have fulfilled the two targets: first, reducing maternal deaths by three quarters and second, by giving universal access to reproductive health. These targets can only be met when the obstacles (demographic and socio-economic) to ANC utilization are identified and removed; and gravidic women can freely access and completely utilize ANC.

The findings of this study will therefore provide research evidence on the determinants of ANC utilization among women in Ghana.

1.4 Objectives of the Study

The general objective of the study is to examine the factors accounting for utilization of ANC among women 15-49 years in Ghana. The specific objectives are:

i. To describe the socio-demographic characteristics of the respondents.

ii. To find out differentials, if any, in ANC utilization between rural and urban women of ages 15-49 years in Ghana.

iii. To examine the determinants of ANC utilization among women 15-49 years in Ghana.

iv. To make policy recommendations based on the findings of the study

1.5 Hypotheses

Three hypotheses were formulated. These hypotheses were tested at the multivariate level to either accept or reject them for their alternatives, at 0.05 significance level.

1. The higher the age of a woman, the less likely she is to seek complete ANC.
2. Primiparous women are more likely, than women of higher parity, to seek complete ANC.
3. Women who are covered by health insurance are more likely to seek complete ANC than those who are not.

1.6 Organization of the Study

This Research Report is organized into seven chapters. Chapter one contains the Introduction, which contains Background, Problem statement, Rationale, Objectives, Research questions the Limitations of the study and Hypotheses.

Chapter two contains the review of related literature and the conceptual framework. The third chapter is the methodology which comprises the research design, the data source, data collection tool, limitations, unit of analysis, measurement of variables, methods of analyses and definition of terms.

Chapters four and five are made of the Profile of the study area with the univariate analysis, and the bivariate analyses respectively.

Chapter six described the result of the model used and outlined the significant determinants of ANC use in Ghana and testing of hypotheses.

The final chapter describes the Summary of findings, Conclusion and Recommendations

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter is a review of related literature on the works done by earlier researchers on the determinants of antenatal care (ANC). The chapter explored a wide range of literature on various socio-demographic variables that the researcher perceived to have effect on the utilization of ANC.

2.2 Antenatal Care.

Antenatal care refers to the care that is given to an expectant mother from the time that conception is confirmed until the beginning of labor (Viccars, 2003). Adequate utilization of antenatal health care services is associated with improved maternal and neonatal health outcomes. (Onasoga et al, 2012).

The World Health Organization (WHO, 2010), defines ANC as "care before birth", and includes education, counseling, screening and treatment to monitor and to promote the wellbeing of the mother and baby. The Reproductive and Child Health/Public Health Division-Ghana Health Service, (RCH/PHD-GHS, 2007) annual report defines ANC as "the health care and education given during pregnancy". The Ministry of Health (MoH, 2007) report states that "the objective of antenatal care is to promote and maintain the health of pregnant women". It aims to establish contact with pregnant women in order to detect and manage current health problems. During this period women and their care-givers can develop delivery plans based on their needs, resources and circumstances. It must be stated that, it is only complete ANC use that would significantly help in identifying and mitigating the risk factors in pregnancy.

ANC coverage is defined as the percentage of women who used ANC services provided by skilled health personnel for reasons related to pregnancy at least once during pregnancy, as a percentage of live births in a given time period, usually one year. (UN, 2010).

ANC is an umbrella term which encloses the medical procedures and care that are carried out during pregnancy. It is the care a woman receives throughout her pregnancy and is important in helping to ensure a healthy pregnancy state and safe childbirth.

The objective, therefore, of antenatal care is to ensure that every wanted pregnancy results in the delivery of a healthy baby without impairing the mother's health. Major goals of ANC are to:

- promote and maintain the physical, mental, and social health of mother and baby by providing education on nutrition, personal hygiene, and birthing process;
- detect and manage complications during pregnancy, whether medical, surgical, or obstetrical;
- develop birth preparedness and complication readiness plan;
- help prepare mother to breastfeed successfully, experience normal puerperium, and take good care of the child physically, psychologically, and socially. (WHO, 2012).

2.3 Determinants of Complete and Incomplete Utilization of ANC.

According to WHO (2012), traditionally, women are expected to make their first antenatal visit in the third month of pregnancy, this translates to about 12-13 antenatal visits for the duration of a pregnancy. In Ghana, over 90 percent of women reported seeing a health professional at least once during pregnancy for the most recent birth in the five-year period before the 2008 GDHS (GSS, 2009).

Empirical evidence shows that four visits are sufficient for uncomplicated pregnancies and further visits are necessary only in cases of complications (Villar et al. 2001); hence the World Health Organization currently recommends at least four ANC visits in the course of pregnancy. An effective ANC package depends on competent health care providers in a functioning health system with referral services and adequate supplies and laboratory support.

World Health Organization (WHO) recommends that for a woman to be adjudged to have had a completed ANC, she must have minimum of four visits or more. The recommended schedule of visits is as follows: "the first visit should occur by the end of 16 weeks of pregnancy, the second visit should be between 24 and 28 weeks of pregnancy, the third visit should occur at 32 weeks, and the fourth visit should occur at 36 weeks (ICF Macro, 2013). Further attendance is only necessary upon detection of complications.

Delivery care and emergency obstetric care, is a key element of the package of services aimed at improving maternal and newborn health. In light of evidence from a 2001 systematic review, WHO began promoting a new model of ANC for low-income countries. The organization has seen that the elaborate traditional model, developed largely in the West was not within the grasp of the developing countries.

The updated model was based on 'reduced but goal-orientated' clinic visits. This was christened as the 'focused' ANC, consisting of (at least) four visits to a health facility during an uncomplicated pregnancy. Although a more recent systematic review has raised questions about the efficacy of focused ANC and revised evidence-based guidelines are being compiled, focused ANC remains the WHO recommendation for low-income countries.

The currently recommended focused ANC package incorporates a range of interventions. Clinical research investigating the contribution of components of ANC to improving maternal mortality is ongoing, but some ANC interventions have been shown to be effective for the

detection, treatment or prevention of conditions associated with serious morbidity or mortality. Monitoring of chronic conditions, anaemia, for example; screening for and treatment of infections, (including sexually transmitted infections), prevention of mother-to-child transmission of HIV (PMTCT); insecticide treated bed nets (ITNs) and intermittent preventive treatment of malaria (IPTp). Tetanus immunization, micronutrients supplementations and monitoring of signs to help detect early complications, are other components of the focused goal-oriented antenatal care. (GDHS, 2008).

2.4 Socio-economic and demographic determinants of ANC use.

2.4.1 Maternal Education.

Wong et al (1987), on decision concerning prenatal care by expectant mothers found out that low level of education is highly correlated with "no prenatal care". And sage of a modern facility for urban dwellers with no education was low and only rural dwellers with college education were using more of public ANC.

Rural women resort to using more traditional care and medicines than modern health facilities. The study was a survey of health facilities, practitioners and 3,000 pregnant women who turned out to support the fact that women with college education, high school women in urban areas tend to use modern antenatal care than their corresponding uneducated mothers.

According to Wong (1987), educational level of women increased the propensity of expectant mothers to choose either to enroll in public health service or to resort to seeking private ANC.

Maternal education is seen as being strongly correlated with the number of visits to prenatal care facility in both rural and urban areas. The likelihood of this category of women to receive ANC from a professional health attendant also increases with level of education.

The 2008 GDHS report indicates that the higher the educational level of a woman the more the chances of receiving ANC from a health professional; and statistics range from 96% to 98% for those with no education, to 100% for those with at least secondary education. Again the report indicated that almost all mothers with at least some secondary education receive prenatal care services from a health professional, compared to 94% of mothers with primary or no education. Educated expectant mothers tend to detect pregnancies earlier, become aware of danger signs in time, are more abreast with the mass media, since they can read, write and understand the official languages so as to make informed choices and take meaningful decisions. Thus, since ANC is more beneficial in preventing adverse outcomes when sought earlier, the educated mother happens to initiate ANC earlier, continues through to delivery to achieve safe and uneventful delivery, and optimum health benefits (Bloom et al. 1999).

Increased maternal education has influence on maternal and child healthcare. Studies conducted by Elo (1992); analyzing different earlier studies, indicated that there is a positive relationship between maternal education and her health seeking behavior. The study went on to stipulate that educated women are more likely to make use of available public health services and modern medicine than the uneducated.

A study conducted in India, by Govindasamy and Ramesh (1997) on the relationship between maternal education and utilization maternal and child health services confirms the findings from other studies that high maternal education is important in the utilization of maternal and child care services.

A higher level of maternal education improves child survival tremendously, as a result of preventive health services by mothers with high education as opposed to women with little or no education. The level of education of the mother is a very key factor that determines the

level of utilization of maternal health services (Arthur, 2012). According to Grossman (1972), education makes a person efficient in the use of health services and may enable the individual to choose a more health-conscious behavior to improve health. The studies by Ortiz (2007), Abor & Abekah-Nkrumah (2009), and Addai (2000), are among some studies that have found a positive and significant association between education and maternal health care use. Overbosch et al (2004), concluded in Ghana that, "Women's attitude to antenatal care seems to be influenced by their schooling, since more years of education of a pregnant woman is associated with a choice for sufficient antenatal care". Thus, in the campaign to raise the utilization of maternal health care services, there is the need to encourage women to pursue higher education.

A study by Elo (1992) reveals that female education changes the traditional balance of power within the family leading to changes in decision making and allocation of resources within the household. Stated more explicitly, educated mothers tend to have some degree of autonomy, participate in decision making regarding reproductive health, home and family business and becomes more informed and resourced to face the vicissitudes of life. Education therefore emerges as the single most significant predictor of complete utilization of ANC even if other socio-economic factors are taken into account. (Anita, 2012).

Consequently, higher schooling enhances a woman's knowledge of modern health care facilities enhances her ability to communicate with modern health care providers, and having realized the value she places on good health, results in heightened demand for maternal health care.

A recent study in India, in Central Nepal, among women 15-49 who had given birth within one year before the survey, revealed that the use of antenatal care services gradually increases with an increase in mother's level of education (Matua, 2004). Women with higher education

were twice more likely to receive antenatal care than women with no education. This means that education is a determining factor in the utilization of ANC services which is in contrast with the findings of Simkhada et al (2007). As compared to those with higher education, women with lower education were more likely to attend ANC services irregularly (Pandey et al. 2014). Moreover, more than half of the respondents taking part in the cross-sectional study were not aware of the possible ramifications of not having complete ANC.

The client's level of education could again influence her utilization of the health facilities as well as the understanding of the importance of seeking health care promptly. Low educational status has been identified as a major barrier to the utilization of health care services especially ANC. These women could easily be persuaded by their grandmothers or Traditional Birth Attendants (TBAs) not to attend ANC and to deliver their babies at home. (Mottew 1997, cited by Mathole et al 2005). Lack of education can also negatively affect the women's comprehension of important information and the ability to make informed decisions including the awareness of their own rights (Matua 2004; Irinoye et al 2001).

These findings imply that pregnant adolescents who may have attained only low level of education may not value utilizing ANC services.

This accentuates the fact that women of low educational background are more likely to have incomplete antenatal care of minimum four visits, let alone endeavor to make sure there are no complications. Meanwhile high educational levels of both husband and wife have been observed to promote positive health seeking behaviors according to Matha et al. (2004).

2.4.2 Marital status

Studies by Anita et al. (2013) revealed that marital status was also associated with most maternal health outcomes. Single women were predisposed to use the Maternal Health

Service (MHS) more than married women. More than half (52.6%) of the single mothers were teenagers and about 54 percent were living with their parents/relatives, as revealed by Anita et al. (2013). This may have influenced the use of the maternal health service (MHS) as teenagers may lack the independence and power to make decisions and may be compelled to accept decisions made on their behalf. This could explain for the situation where some respondents claimed they used the services based on the advice given to them when they were young, by their mothers and others. (Anita et al., 2013)

Reviewing over 28 papers on ANC from the Journal of Advanced Nursing (JAN) Review Papers, Simkhada et al. (2007) revealed that married women were more likely to receive and seek ANC earlier than single or unmarried women (McCaw-Binns et al. 1995, Glei et al. 2003). The paper revealed that unmarried women in Kenya, who started childbearing before 20 years had fewer antenatal visits than married women who started at a later age (Magadi et al. 2000). Eight studies have found that ANC utilization is strongly associated with age of women at marriage and at pregnancy. In rural northern India, according to Pallikadavath et al. (2004) and Sharma (2004), in Nepal, age at marriage was positively associated with access or attendance for ANC. Antenatal check-ups were more likely among women who married at the age of 19 or above, compared with those who married younger. (Pallikadavath et al., 2004). However, age at marriage was not a statistically significant predictor of utilization of ANC in Jordan.

2.4.3 Maternal Age

Elo (1992) was of the view that maternal age as a risk factor was very important in seeking antenatal care (ANC). Controlling for women other background characteristics and education, it was identified that older women were more likely to seek ANC than younger women.

Meanwhile a study by Lin-Li Dai (2014) and Yuan-yuan Mao et al. (2014) found that the number of prenatal care visits decreased with increased maternal age, BMI at first pregnancy visit and gestational weight gain. Yuan-Yuan's findings are in line with that of Nkechi et al. (2013) that the primagravidae women are more likely to seek ANC than the pluriparous. This finding is laudatory as the primagravidae, becoming pregnant for the first time may out of fear of complications, due to lack of well-developed biological system, resort to seeking ANC earlier than women of higher parities.

Another study conducted by Anita and Albert (2013), on the 'factors influencing the utilization of maternal health services in the Akuapim North District in the Eastern region of Ghana', found out that women who were relatively younger had higher propensity to attend ANC more and often initiate it in the first trimester. This corroborates findings from Lin-Li Dai (2014) and Nkechi (2013) altogether. But this did not support Elo's findings.

COIMBRA, Liberata et al. (2003) identified maternal age as an important factor in determining adequate utilization of ANC. They identified maternal age of less than 18 years as very crucial and such people tend to seek ANC more than the pluriparous women of 35 years and above.

According to Chaibva (2008), a woman's age might influence her decision to initiate ANC late, or not to attend ANC at all. She claimed that pregnant adolescents might tend to hide their pregnancies because they might be unmarried, attending school, afraid of or prejudicial against health care providers, or they might be simply too young and ignorant to appreciate the value of ANC (Chaibva, 2008).

Similarly, according to Matua (2004), as cited by Chaibva, (2008), pregnant adolescents might shun ANC services for fear of being labeled "promiscuous". On the other hand, older adolescents who have had uneventful pregnancies and deliveries with previous pregnancies

might see no reason to attend ANC. In 19 out of 26 developing countries, women who were 19 years or younger were reportedly less likely than older women to seek ANC from health professionals (Reynold et al 2006).

According to Pandey et al. (2014), the relationship between age at first pregnancy and the utilization of ANC services was found to be statistically significant. As the age at first pregnancy increases, the chances of receiving ANC services also increase. The proportion of women receiving ANC services among women at younger ages at first pregnancy was 17 percent. That figure increased to 86 percent when the age at first pregnancy increased to 31 years and above. Antenatal care is particularly related to birth order. The study also revealed that women with lower parity are more likely to receive ANC services in contrast to women with higher parity which is similar with the findings of various studies that parity had a statistically significant effect on adequate attendance. This study results contradict the findings by Onasoga et al. (2012).

It is worthwhile to note that younger mothers who were predisposed to using ANC care earlier, resort to delivering at the health facility and tend to seek the assistance of trained medical practitioners at delivery than the older women (Daniels and Ahenkan, 2013). This discovery contradicts what Paul and Rumsey (2002) found that type of assistance utilized during delivery does not differ significantly by age. However, the kind and nature of assistance given to each category of women may depend on the heath seeking behavior of the age cohorts in question.

Some researchers are of the view that older women tend to use ANC services less but make use of delivery services more. But Sharma et al., (2007) found rather that these people were not simply under using the ANC facility and patronizing the delivery service; rather, both ANC and delivery services were less utilized by these older women.

The majority of women in their thirties attend ANC early and more frequently than teenagers and older women. (Matthews et al. 2001). A qualitative study also showed that women below 35 years preferred frequent clinic visits to be reassured that the baby was growing well and to learn its position, whereas older women who did not experience any problems, were not concerned about having frequent visits (Mathole et al. 2004). However, some of the studies suggested that women's age was not a significant predictor of utilization of ANC (Celik & Hotchkiss 2000, Overbosch et al. 2004).

According to Nkechi et al. (2013) for the primagravidae, pregnancy disclosure influenced timing of ANC. Across all the sites of the study area in the Akuapim District of the Eastern Region, all types of respondents reported that adolescents and unmarried younger women hid their pregnancies and delayed ANC to avoid the potential social implications of pregnancy: exclusion from school, expulsion from their natal home, partner abandonment, stigmatization and gossip. These modalities and sub modalities invariably militate against early initiation of ANC in the first trimester as required. In contrast; older women did not make active efforts to hide their pregnancies. However, they would only directly disclose their pregnancy to close relatives and their husband. Therefore, older women may tend to initiate ANC in time, all other things remaining the same, as they are lawfully free to give birth.

Pandey et al. (2014) conducted a study on the socio-economic and demographic determinants of ANC service utilization Central Nepal and came out with some findings, among which are the fact that younger women (≤25 years) are more likely to receive antenatal care than older women. The relationship between age and the utilization of ANC services was found to be statistically significant. Women in lower age group were more likely to have ANC services for more than four times than the women in higher age group. As in a study by Swenson women who were under the age of 30 were more likely to receive ANC services than were those over 30 years of age.

There are therefore mixed findings on maternal age and ANC. While scholars like Pandey (2014) and Elo (1992) found positive relationship between maternal age and complete ANC utilization, others like Matua (2004) and Lin-li Dae (2014) had rather found inverse relationship between maternal age and ANC use. In my view primiparous adolescents and gravidic women above 35 years of age, becoming pregnant for the first time, should seek ANC completely compared to the pluriparous of lower age groups.

2.4.4 Ethnicity and Religion and ANC utilization.

Pandey et al. (2014) again found out that the patronage of ANC use also varies with ethnicity. His finding was that within ethnic group, disadvantaged groups such as Janajatis (Magar, Rai, Tamang, Danuwar) were less likely to receive ANC services than the Brahmin and Chetri. Upper caste groups like Brahmin, Chetri and Dalit women were more likely to complete the recommended number of ANC checkups than the women in disadvantaged janajatis. Similar to other studies the relationship between ethnicity and ANC visits was found to be statistically significant.

Studies by John Kuumuori (2015), in Ghana revealed that the proportion of women who received any form of skilled antenatal care and delivery service in the five years (2003–2007) preceding the survey was 96 percent and 55 percent respectively. Though Ghana has made effort in improving access to skilled maternal health care services, disparities still exist among ethnic groupings. Though the ethnic difference in utilization of antenatal care was seen to be small, fewer births to women from majority ethnic groups such as the Akan (21%) took place at home compared with births to women from minority ethnic groups such as the Ewe (58.8%), Guan (42.7%), Grusi (53.4%), Mole-Dagbani (74.7%) and Gruma (58.8%).

Consultation of a skilled health care provider for delivery among the different ethnic groups also ranged from a low of 27 percent for births to Mole-Dagbani women to a high of 69

percent among births to Akan women. Minority ethnic groups reported lower utilization levels for most of the components of skilled maternity care in Ghana. However, ethnic disparities in utilization of all the components of ANC in Ghana were less compared to delivery in health facilities and assess to skilled attendance at birth (Kuumuori, 2015).

Within religion, Christians are more likely to go for ANC visits than the Hindus and Buddhists. Similar to this study, results from various studies show the significant association between the religion and attendance of ANC services. (Pandey et al., 2014).

A study conducted in Komenda in the Central Region of Ghana by Fischer (2002) revealed that some maternity homes resort to certain beliefs and practices to substitute provision of focused ANC from experts. For instance, the women were likened to Eve in the Bible. 'Since all women are like Eve, if a pregnant woman is a Christian, she must serve God, and he'll protect her. "But women will be saved through childbearing – if they continue in faith, love and holiness with propriety." I Timothy 2:15 (NIV)'.

Antenatal care is focused around herbs. 'It is crushed, a powder is added to it, and then it is mashed into an 'enema' for the mother'. This herb is given to nourish and protect the baby. The herbs prescribed by the priest determine what sort of food the mother should or should not eat. Often, groundnuts and sugar are believed to react with the herbs and, consequently, must be avoided. (Fischer, 2002).

2.4.5 Parity and ANC use.

The number of children that a woman gives birth to has influence on her maternal health seeking behavior. According to COIMBRA et al. (2003), a woman of high parity seems to be a risk factor for inadequacy in the use of ANC. To them, several studies have shown that high parity (four and above) is frequently related to the risk of inadequacy in the use of ANC. Multiparty puts women at greater risk of obstetric complications, implying greater need for

ANC services (Bai et al., 2002). On the other hand, women with higher parity may seek fewer services, due to knowledge and experience gained from past births, the lack of child support for younger children and negative comments from the birth attendants at the health facility (Gage & Calixte, 2006).

Multiparous women, having had experiences from earlier births, become more confident during pregnancy and consider prenatal care less important and thus relegate its relevance to the background. (COIMBRA, et al., 2003).

Eleven studies found strong associations between parity and ANC utilization .Higher parity was generally a barrier to adequate use of ANC (Celik & Hotchkiss 2000, Overbosch et al. 2004, Sharma 2004), but high parity women tended to use the service more often than primiparous women in Ethiopia (Mekonnen & Mekonnen 2003). Similarly, women's first ANC visit was earlier in higher parity women in India (Matthews et al. 2001, & Gubhaju 2001).

Meanwhile multiparity and maternal age are strongly associated. It is for this reason that other studies advocate for increased use of ANC to women of 35 years and above, especially those around that age group who are becoming pregnant for the first time. Such women, most often than not, suffer complications of pregnancy especially with teenage primagravidae.

Age and the number of living children of the mother may also affect her use of ANC. Empirical studies on age presents mixed evidence. For instance Chandhiok et al. (2004) found a reduction in the proportion of women obtaining ANC services with increasing age in India and Honduras respectively; on the other hand Celik & Hotchkiss, (2000) and Ortiz (2007) found a positive relationship between ANC and age in Turkey and Colombia respectively. Thus, the influence of age on the use of maternal health cannot be determined prior to investigation. Alongside age is the number of living children of the expectant mother

which proxies a mother's experience with ANC utilization. The expectant mothers' use of ANC may be influenced by their previous experience. This may be positive (a pleasant experience at the health center) increasing the use of the service or negative (an unpleasant experience at the health center), thereby reducing her use of ANC. Complications experienced during earlier pregnancies also have a positive association with the use of ANC (Arthur, 2012). According to Overbosch et al. (2004), "Pregnancy is a natural process and women with some experience might consider antenatal care less necessary". This may be due to the fact that after encountering the service, the expectant mother may think that she knows enough to take care of subsequent pregnancies (Arthur, 2012). Elo (1994) and Raghupathy (1996) stipulated that the higher the number of previous pregnancies, the lesser the patronage of ANC. While Magadi et al., (2000) report a negative association between a higher number of previous pregnancies and early attendance to antenatal care.

Another studies by Simkhada et al., (2007), after reviewing about 28 different papers found a statistically negative relationship between parity and adequate use of ANC. There is an inverse relationship between parity and adequate utilization of ANC services.

Parity had a complex impact upon ANC initiation. For example, unaccustomed to the experience of pregnancy, the associated signs and symptoms, some primagravidae were more likely to seek advice and assistance and initiate ANC earlier. However, this lack of familiarity with the signs of pregnancy also prompted uncertainty: less likely to recognize a pregnancy, they were more prone to unintentionally delay ANC. Nonetheless, these decisions were not taken alone and on the basis of advice from older women, primagravidae hastened their first ANC visit. For example, if a mother became aware of her daughter's pregnancy – and, on occasion, this seemingly occurred before the adolescent realized herself – she would assist her in attending ANC as soon as possible (Nkechi et al., 2013).

Results from qualitative studies conducted in various countries in the sub-Saharan Africa showed that for the primagravidae, pregnancy disclosure influenced timing of ANC. Across all the sites, all types of respondent reported that adolescents and unmarried younger women hid their pregnancies and delayed ANC to avoid the potential social implications of pregnancy: exclusion from school, expulsion from their natal home, partner abandonment, stigmatization and gossip. In contrast, older women did not make active efforts to hide their pregnancies. However, they would only directly disclose their pregnancy to close relatives and their husband. Although ambivalent towards others discovering their pregnancy, which they considered inevitable as the pregnancy progressed, women were wary to be accused of boastfulness by spreading the news openly (Pell et al. 2013).

2.4.6 Socio-economic status and wealth and ANC use.

A cross-sectional descriptive study conducted by Pandey et al., (2014) in Central Nepal on women 15-49 years, found out that there was a significant difference in the utilization of antenatal care services between the women engaged in service and the women in agriculture. Nearly 81 percent of women involved in service received antenatal care, compared with only 35 percent of women in agriculture. Women in waged labor and in service were more likely to attend regular ANC services than any other occupation which contrasts with the study result provided by Gubhaju & Matsumura, (2001) and Gill et al., (2007).

Wealth signifies the economic status of the individual/family. Several studies have found wealth to influence the use of health services positively. Ortiz (2007) concluded that wealthier mothers have more chance of attending a first visit and additional visits than poorer mothers in Colombia. Celik & Hotchkiss (2000) showed that household wealth is positively and significantly associated with choosing health facility for delivery. Similarly, Gage (2007) has found household poverty and personal problems to be negatively related to the use of maternal health care. Abor & Abekah-Nkrumah (2009) have identified empirically that, as

compared to those in the poorest quintile, those in the poorer households in Ghana are more likely to deliver in a health facility, with those in the middle wealth quintile being more likely to use antenatal services and deliver at a health facility. Wealth is expected to have a positive relationship with ANC since the use of the service is associated with the cost of consultation and the purchase of recommended medication alongside other indirect costs such as transportation cost. Thus, it is expected that the higher the wealth of the woman, the more likely is she to use ANC, because she may be able to afford the cost and other expenses that come with using the service (Arthur, 2012). According to the GHDS (2008) report, there is a positive relationship between professional antenatal care coverage and wealth quintile, with women in the highest wealth quintile more likely to receive care from a health professional than those in the lowest wealth quintile, although the difference is small (99 and 93 percent, respectively). The wealth quintile is derived from a wealth index for the household. The index has been divided into five quintiles in the data set; the lowest quintile (poorest), 2nd quintile (poorer), 3rd quintile (middle), 4th quintile (wealthier) and the 5th quintile (wealthiest).

Those women who find themselves in the first and second quintile are more prone to having incomplete antenatal care. Wealth gives command over goods and services. Those who have none do not have any power. There are homes, where apart from the backyard farm which gives some vegetables and some foodstuff from the farm, for their meals, may not touch money for a whole week. Such mothers cannot attend antenatal care especially where there are no remittances. For fear of being even reprimanded for being shabbily dressed and unkept by the nurses, may decide not to venture, even upon securing transportation to the nearest ANC center. Women in families with high income were three times more likely to receive ANC services than the women in the families with low income. Similar findings have been

reported in previous studies that women from less income are less ANC attendants than those of more income.

Conversely, women from low-income families were less likely to seek prenatal care, visit the town health center or local private clinic; whereas women from high-income families used country hospitals or higher medical institutes which provided better quality care. These findings led to the recommendation that low income should be taken as "high-risk factor" for poor maternal health (WHO, 2010).

2.4.7 Place of Residence and Proximity to ANC center.

Place of residence (rural/urban) and Geographical location (region) may also affect the utilization of ANC services. According to Abor & Abekah-Nkrumah (2009), urban dwellers may be relatively closer to healthcare facilities than rural dwellers in most developing countries. Overbosch et al.(2004) report that "currently, more than a third of the rural women have to travel more than 5km to the modern provider of ANC in Ghana". Thus, accessibility to health care services may be much easier for the urban dwellers than the rural dwellers, thereby increasing the probability of an expectant mother in the urban center using ANC compared to her rural counterpart. In Ghana for instance, there are villages in some regions which are already prone to default in the use of ANC, simply because of their location. There are far to reach hinterlands across most of the regions in Ghana which are hardly accessible by road. These villages lack most, if not all, of the basic necessities in life. Their roads are not passable especially in the rainy season, place of abode is a problem, what to eat is not guaranteed, no viable sourse of income, malnourished and no better source of drinking water. Even the water sources they have are the ones they share with their livestock. Some of these villages are scattered around the country, in most of the regions-the three Northern Regions (the hardest hit), the northern Volta, hinterlands in the cocoa growing areas in the Brong Ahafo, Eastern, Western and Ashanti Regions, as well as coastal villages who are even

poorer than those having fertile lands. Urban poor communities in Central and the Greater Accra regions are no exception.

Celik & Hotchkiss (2000) and Abor & Abekah-Nkrumah (2009) are some studies that have concluded that differential access to health care facilities between the rural and urban centers reduced utilization of maternal health care services for the rural dwellers.

Closely related to this is the distance to the health facility and transportation problems one may encounter in accessing health services. Thus, these can greatly hinder the utilization of the ANC services since they serve to discourage the expectant mother who may have to travel along bad road networks or may have to travel for long distance before being able to access a health center for ANC. Even if the mother does it the first time, further visits may be hindered due to the struggle to get to the health facility, thereby reducing adequate utilization. Proximity to the health center is seen to be a single most important factor that will stand in the way of adequate utilization.

Holding all other determinants constant, distance to health center plays a paramount role. Proximity will facilitate access, determine cost, measure the opportunity cost of the women's time and also give an idea about the level of risk inherent in access.

2.4.8 Health insurance, Timing of first ANC and ANC attendance.

Wiley et al. (2013) conducted a study on the influence of National Health Insurance Scheme (NHIS) on ANC utilization. They used the 2008 GDHS data. Their findings were that regardless of socio-economic and demographic factors, women who enrolled in the NHIS made more ANC visits than those who did not.

Until 2005 and early 2008, ANC was only available with a charge, although delivery was free in public facilities. However, alongside this, women who had enrolled in the newly implemented NHIS would receive a complete benefit package. Realizing the inequities and

inefficacies of these separate health policies; and in an attempt to better address its commitment to Millennium Development Goals (MDGs) 4 and 5, the Ghana government in 2008 tucked maternal care under the umbrella of the NHIS by creating an exemption for pregnant women from having to pay premium or renewal fees (Wiley et al., 2013).

Witter & Garshong (2013) found that the introduction of the NHIS increased access to health care by taking away the out-of-pocket costs. Again, there has been some preliminary evidence to suggest that members of the scheme were more likely to utilize health care (Sekyi & Domanban 2012; Aboagye & Agyemang 2013) and in a more timely manner (Sulzbach et al. 2005). Wiley, et al. (2013) has come out with findings regarding timing of first ANC attendance by pregnant women. To them, the NHIS can only impact the timing of ANC if women are aware they are pregnant, and many women in sub-Saharan Africa (SSA) do not even realize they are pregnant until the second trimester, making early ANC impossible (Myer & Harrison 2003; Gross, Pell et al. 2013).

Secondly, according to (Dixon et al. 2011) the poor are less likely to be enrolled in the NHIS and thus, women of higher socio-economic status are more likely to already be enrolled when they discover they are pregnant, making early ANC for the poor inconsistent. Other obstacles make early ANC initiation still a problem to most expectant mothers. According to (Pell et al. 2013) for instance, women must provide a laboratory-certified pregnancy test to the NHIS agent, who can then enroll them in the NHIS for free. Owing to this, by the time a woman has realized she is pregnant, travels to a health center, completes a pregnancy test, travels to the NHIS office to initiate and complete paper work with the agent which sometimes involves multiple visits because NHIS officers may not be present, and then finally receives her temporary enrolment card, she may very well be beyond her first trimester (Wiley et al. 2013).

Nketia et al. (2013) also found robust evidence that rural residents with health insurance were over 22 percent points more likely to have increased ANC utilization compared to rural women with no health insurance in Ghana. Ranji et al. (2009); quoted in Nketia et al. 2013, also reported that access to health insurance is significantly associated with access to prescription medicines among adult women through lowering of out-of-pocket cost, which underscores the important role that health insurance plays in influencing demand for ANC. This result also corroborates the finding by Jewell (2009) who found ownership of health insurance as an important determinant of the intensity of prenatal care use in South America.

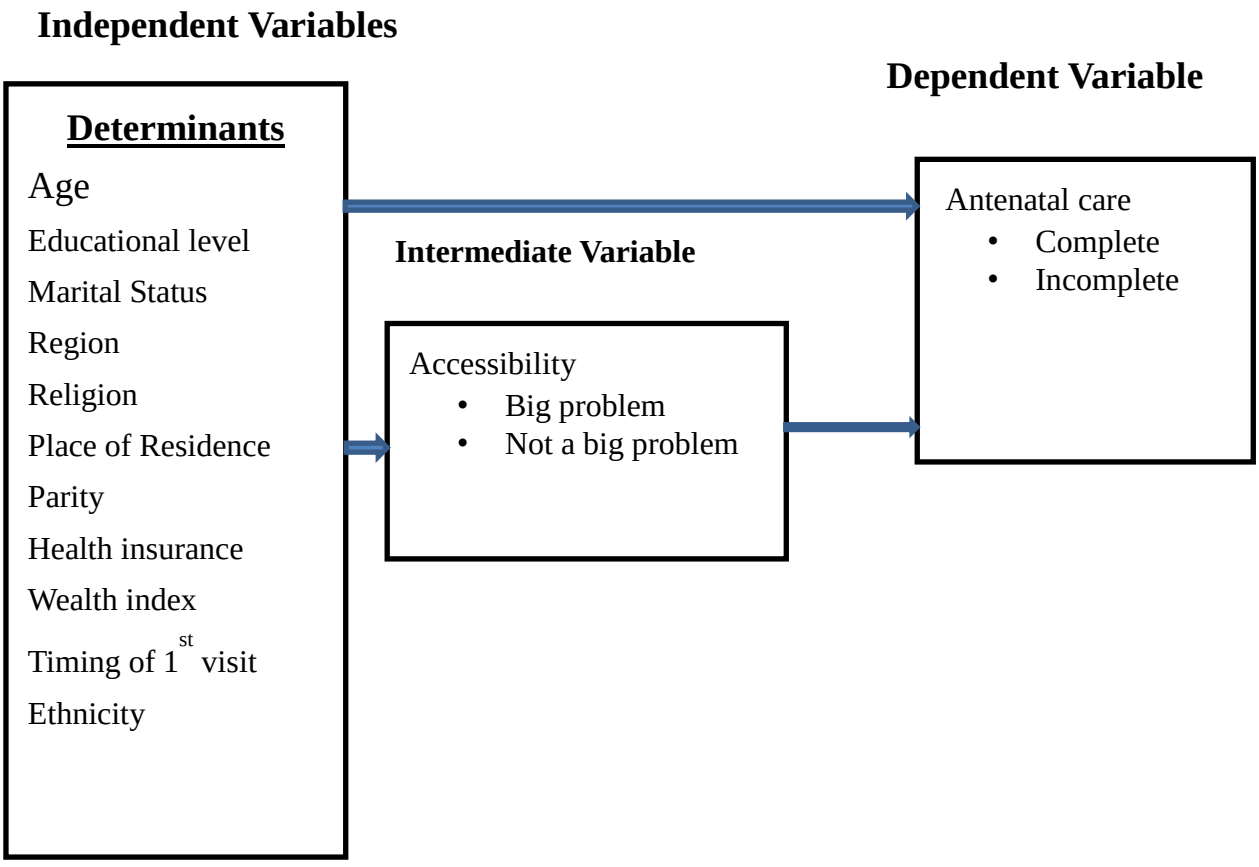
2.5 CONCEPTUAL FRAMEWORK.

The conceptual framework was adapted from a behavioural model of health services utilization developed by Anderson (1995). He stipulated that the use of Maternal Health Services has been assumed to be determined by a sequence of factors. These factors he termed as predisposing, enabling and need. Predisposing factors centre on the idea that some people have a greater tendency to use health services than others. Such factors include age, marital status, educational level and occupation. Enabling factors are seen as supporting resources which may be resources from an individual or those that exist at the community level. Such factors include income, having a health insurance, availability of health facilities and personnel and access to vehicles. Need factors explain the reasons why someone will use the ANC.

In much the same way, in studying the utilization of complete ANC among women in Ghana, predisposing factors are maternal age, marital status, educational level, parity religion, and ethnicity. Enabling factors can be stated as wealth quintile, health insurance ownership, and accessibility to the health facility. Need factor is determined by the individual. That one is not measured in the study.

These predisposing factors are linked by an enabling factor (accessibility) to the dependent variable. Given maternal age, holding age differences and differences in need constant, the woman who is nearer to the health facility will have complete ANC compared to the distant woman. Certain categories of women patronize ANC more than the others and this becomes easier when the distance is shorter. Women at parity are more likely to use ANC compared to higher parities, and this becomes easier when the distance is not a problem. Timing of first ANC may be easier for a woman closer to the facility than the one farther, holding all other things constant.

Conceptual Framework



Source: Adapted from Anderson, (1995).

CHAPTER THREE

METHODOLOGY

3.0 Introduction.

This chapter describes the research design, study population, the sample and sampling procedure used and also the data collection tools that were used to collect the data. It also contains the data source and limitations inherent in the data set. Moreover, it also describes the unit of analysis and methods of analyses of the data.

3.1 The Research Design.

This is a survey research which employed the use of questionnaires to collect data from a nationally representative sample. The questionnaires were administered on each individual through face to face structured questions from which responses were collected and coded for analysis. The research is a quantitative research, employing frequencies, bivariate and multivariate analysis and other relevant statistical methods.

3.2 Data Sources.

The data used for the research is from the 2008 Ghana Demographic Health Survey (GDHS). This was the fifth in succession, after it had been started in 1988, following a five- year interval.

The 2008 GDHS was undertaken by the Ghana Statistical Service (GSS) and the Ghana Health Service (GHS). Technical support was provided by ICF Macro, an ICF international company through the MEASURE DHS program. Funding for the project was provided by United States Agency for International Development (USAID), through its office in Ghana. It also came from the Government of Ghana with support from the UNFPA, UNICEF, the Ghana Aids Commission (GAC) and the Danish Development Agency (DANIDA).

The 2008 GDHS is designed to provide data to monitor the population and health situations in Ghana. The survey collected information on fertility levels, marriage, sexual activity, fertility preferences, awareness and use of family planning methods, antenatal care, HIV/AIDS and sexually transmitted diseases and other related demographic variables. The information collected serves as updated estimates of basic demographic and health indicators.

The survey was carried out by the Ghana Statistical Service (GSS), and Ghana Health Service (GHS) from September to December 2008, on a nationally representative sample of more than 12,000 households using a household questionnaire to illicit information on wide range of demographic indicators.

3.3 Sample Design and Sampling Procedure.

The 2008 GDHS was implemented in a representative probability sample of more than 12,000 households. The sample were selected taking into account allowing separate estimates of key indicators for each of the 10 regions in Ghana, as well as for urban and rural dichotomy to be assessed.

The survey used a two-stage sample design. The first stage involved selecting sample points or clusters from a master sampling frame constructed from the 2000 Population and Housing Census (PHC). In all, 412 clusters were selected from a master sampling frame. Systematic sampling with probability proportional to size was used to determine the first clusters.

A complete household listing was conducted in all the selected clusters to provide a sampling frame for the second stage selection of households.

The second stage involved the systematic sampling of 30 of the households listed in each of the clusters. The paramount objective of this second stage is to ensure adequate numbers of completed individual interviews, to provide estimates for key indicators with acceptable

precision, and to provide a sample large enough to identify adequate numbers of under- five deaths to provide data on causes of deaths.

The sample size was 2,909 women who have given their most recent birth before the survey.

3.4 Data Collection Tool.

The questionnaire was the main tool used to collect data for the survey. The household questionnaire was used to list all the usual members and visitors in the selected households. Some basic information was collected on the characteristics of each person listed. Information elicited includes age, sex education and relationship with household head. The main objective of household questionnaire was to identify men and women who are eligible for the individual interviews.

The household questionnaire collected information on the characteristics of the households' dwelling unit: source of drinking water, type of toilet facility, ownership of various durable goods among others.

Three questionnaires were used for the 2008 GDHS: the household questionnaire, the women's questionnaire and the men's questionnaire. The content of the questionnaires were in conformity with the model questionnaire developed by MEASURE DHS. The household questionnaire enabled a household to be chosen for the men or women questionnaire to be administered to that household. Women questionnaire was used to collect data on women aged 15-49 in half of the selected households. Questions asked covered a wide range of topics some of which are on education, residential history, media exposure, reproductive history, knowledge and use of family planning methods, fertility preferences and antenatal care.

The men's questionnaire was administered to men 15-59 years of age living in half of the selected households in the GDHS 2008 sample. Similar background information was taken

from men but theirs were relative short because they do not have reproductive record. (Ghana Statistical Service (GSS) et al.2009)

3.5 Unit of Analysis.

The study examined the determinants of antenatal care among pregnant women. Therefore the unit of analyses is women between the ages of 15- 49 years.

3.6 Measurement of variables.

Variable	Level of measurement	Definition
Age of respondent	ordinal	Age was recoded and classified as: 15-24, 25-34, 35-49. To assess the age differentials in ANC visits.
Highest education attained	ordinal	Education was categorized as: no education, primary education, secondary and above.
Type of place of residence	nominal	Rural/urban
Region of residence	nominal	Region of residence was recoded and Ashanti region put first, to serve as reference category because they form the majority of respondents.
Marital status	nominal	Categorized as: Never married, Currently married and Formally married.
Parity	ordinal	Parity was categorized into: 1, 2-3, 4-6, 7+.
Distance to health facility	ordinal	Respondents were to state whether distance was ‘a big problem,’ or ‘not a big problem’.

Religion	nominal	Recoded and categorized into: Orthodox, Protestants, Muslims and Other Religions, since teachings and dogmas vary between religions.
Ethnicity	nominal	Categorized into: Akan, Ga/Adangme, Ewe, Northern tribes (Mole Dagbani, Gruma among others) and Others.
Frequency of ANC visits	ordinal	Main outcome variable of the study. Categorized as: <4 (incomplete) and 4+ (complete)
Timing	ordinal	This variable describes the timing of first ANC visit. Classified as: <4 months, 5-6 months 7 months and over.
Wealth index	ordinal	Classified the respondents in wealth status as being: Poorest, Poor, Moderately rich and Rich.
Health Insurance ownership	nominal	Those not covered by health insurance (No) were coded '0' and those with 'Yes' given '1'.

3.7.1 METHODS OF ANALYSES.

The methodology applied in the study is divided into two sections: variables construction and statistical analysis.

3.7.2 Variable construction

Predictor Variables/Independent variable: Background characteristics of women, such as age group of the respondents, place of residence, level of education, religion, wealth quintile of women, birth order of the child, region of residence, ethnicity and marital status. Others are timing of first ANC visit, health insurance ownership, and access to health facility.

3.7.3 Outcome Variables /Dependent variable.

Ante-natal care is the main dependent variable of the study. It has been categorized as less than four visits and four and more visits. In complete utilization of ante-natal visits is coded as one for those women who attended less than four ante-natal check-up, and two for those who had complete ANC attendance.

3.7.4. Statistical analysis

Frequencies and simple percentages were used to describe the distribution of the respondents**.** When assessing association between the independent and the dependent variables at the bivariate stage; the Pearson Chi-square was used to show statistical association between the predictor variables and the outcome variable. A multivariate technique of binary logistic regression was used. This technique was used because the outcome variable is two (incomplete, complete), and all the predictor variables are mostly categorical. This model has been used to estimate the Odds Ratio of differentials in the ANC utilization by socio-economic and demographic background characteristics of women. The bivariate stage only established association between the predictor variables and the outcome variable. The multivariate stage actually described the intensity and the direction of the relationship between the two variables, by the values of beta (B) and exponential beta (Exp.B).Virtually, the whole analysis has been performed by using statistical software SPSS (version 20).

3.8. Definition of terms.

Complete utilization of ANC:

This refers to visiting the health facility and obtaining ANC, with recommended and routine services from a qualified medical practitioner, four at least four times.

Incomplete utilization of ANC:

This refers to not being able to make the recommended number of four visits, and not receiving routine services from a qualified health practitioner.

Parity:

Parity in demography refers to number of births a woman has had.

Primiparous:

Giving or having given birth for the first time.

Primagravidae:

A woman who is becoming pregnant for the first time**.**

Gravida

Pregnant woman.

Multiparity.

A woman with more than one ordinal number of children.

Antenatal Care Coverage:

Antenatal care (ANC) coverage is defined as the percentage of women who used ANC services provided by skilled health personnel for reasons related to pregnancy at least once

during pregnancy, as a percentage of live births in a given time period usually one year. (UN, 2010)

3.9. Limitations.

The data collected may have been deficient due to the fact that most women, especially young adult women might try to report wrong ages. This would eventually lead to age heaping around certain age groups; mostly ages ending with digit zero and five. This could affect the results of the study. It is also possible that women could lie about their parity level and total children ever born for that matter. Some women could inadvertently report such information since they may not be sure or just to give an answer to avoid being pestered further. Errors about coding and recoding could also affect the results of the study, and undermine the findings.

Another limitation to this study is that the data collection for the GDHS (2008) took place shortly after the implementation of the NHIS maternal exemption policy was created. Thus, caution should be taken when interpreting results and conclusions for their application to the present day with the same data set.

Finally, the data collected did not include qualitative information which could be used to substantiate the findings. More other things might deter women from achieving recommended ANC visits which the data could not contain because of its purely quantitative nature

CHAPTER FOUR
PROFILE OF THE STUDY AREA AND THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION

4.1Profile study the Area

The Republic of Ghana lies in the center of the West African coast, and shares borders with three French-speaking nations namely, Côte d'Ivoire to the west, Togo to the east, and Burkina Faso to the north. The south is bordered by the Gulf of Guinea and the Atlantic Ocean.

Ghana has a total land area of about 238,533square kilometers and is about the size of Britain. (GSS, 2010). Out of this land area, 227,533 square kilometers are occupied by land and 11,000 square kilometers occupied by water. Its southernmost coast at Cape Three Points is 4° 30' north of the equator. The longitudinal distance from the coast runs inland for some 670 kilometers to 11° north. The distance across the widest part, between longitude 1° 12' east and longitude 3° 15' west, measures about 560 kilometers. The Longitude Zero Degrees, also called The Greenwich Meridian or the Prime Meridian, passes through London and traverses the eastern part of Ghana at Tema.

Ghana's drainage system is mainly dominated by the Volta Lake and its three major tributaries. The three main tributaries took their sources from Burkina Faso, with the Black Volta, which drained three countries (Ghana, Burkina Faso and Cote d'Ivoire), precisely taking its source from Bobo Dioulasso in Burkina Faso. The Black Volta is approximately 720 miles (1,160 km) long and entered Lake Volta in Ghana. The lake Volta itself is about 250 miles (400km) long and occupies about 45 percent of the total land surface of Ghana. It is the largest artificial lakes in the world. Other drainage systems exist across the country

supplying the country's water needs; examples are the Rivers Pra, Densu, Ayensu and ankobra.

The country is mainly a low lying one except for the hills on the eastern border. Mountain Afadjato is the highest point in Ghana, rising to a height of over 800 meters above sea level.

Three ecological zones are distinct in Ghana: the sandy coastline backed by the coastal plain, which has various drainage basins, the highly forested middle belt and western parts, and the northern Savanna which is drained by the tributaries of the Lake Volta.

Two distinct rainy seasons are marked in Ghana. The major rainy season commences in April and ends in June, and the minor one runs from September to November. But the northern part of the country experiences mainly one rainy season which starts from March to September.

Ghana's population as at the 2010 population and housing census was estimated at 24,658,823 people, of which 12,633,978 (51.2%) were females and 12,024,845 (48.8) were males.

The inter-censal growth rate for the 2010 census was 2.5 percent and the national average population density was 103 people per sq.km. However, the highest density was 1,236 people per sq. km. in the greater Accra region and 35 people per sq. km., the lowest, was recorded in the Northern Region. (GSS, 2014)

Accra is the administrative capital of Ghana with a population of about 2.573 million people. There are ten (10) administrative regions in Ghana and 216 Metropolitan, Municipal and District Assemblies.

Ghana has a dependency ratio of approximately 71.6 percent and a crude birth rate of 31.4 per 1,000 population. The total fertility is about 4.09 children per woman and a crude mortality rate of 7.37 deaths per 1,000 populations. (CIA Fact Book, 2014)

Life expectancy at birth for men is estimated at 63.38 years and that of females is 68.19 years. Infant mortality in Ghana is 38.5 deaths per 1,000 live births. Maternal mortality rate is 350 deaths per 1000 live births. (WHO, 2010) On average, the literacy rate is 71.5 percent, of which 78.3 percent for males and 65.3 percent for females. Ghana is dominated by Christians. Christians constitute about 71.2 percent of the population, followed by Muslims who constitute approximately 17.2 percent. 5.2 percent are traditionalist, 0.8 percent made up of other religions and the remaining 5.2 percent being non-religious (CIA World Facts Book, 2014).

Ghana has more than half (51.9 percent) of the people living in urban areas. The country practices multi-party democracy and has unitary system of governance with four years term in office for an elected president, with vibrant parliamentary system. She also practices decentralization system, where power is delegated to the local governance through the assembly system.

4.2 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS.

This chapter describes the demographic and socio- economic characteristics of the respondents including age, religion, parity level, marital status, ethnicity among others.it used simple percentages, tables and graphs to show the distribution of respondents according to the various socio-demographic variables.

4.2.1 Demographic Characteristics of Respondents.

These characteristics include age, parity, and marital status.

4.2.2 Distribution of respondents according to age.

Table 4.1 shows the distribution of the respondents by their age distributions. The age distribution showed that more than two-thirds (71.8 percent) of the women were 34 years or

younger. The modal age group was 25-34 years which is an indication that most of the women were in the prime reproductive period.

Age	Frequency	Percentage
15-24	684	23.5
25-34	1,404	48.3
35-49	821	28.2
Total	**2909**	**100**

Table 4.1. Distribution of respondents by age.

Source: GDHS, 2008.

4.2.3 Distribution of respondents according to marital status.

Table 4.2 shows the distribution of respondents according to their marital status. It is indicated that a vast majority (92.2 percent) of the women were currently married. Less than a tenth (7.8 percent) were either never married or formally married.

Marital status	Frequency	Percentage
Never married	**143**	**4.9**
Currently married	**2,682**	**92.2**
Formally married	**84**	**2.9**
Total	**2,909**	**100**

Table 4.2 Distribution of respondents by marital status.

Source: GDHS, 2008.

4.2.5. Distribution of respondents by parity level.

Table 4.3 shows the parity level of the women. Majority of the women (62 percent) were between parities one to three. About one out of every four women has given birth to only one child, (parity one) and one out of ten has seven children or above.

Category	Frequency	Percentages
Parity 1	688	23.7
Parity 2-3	1107	38.0
Parity 4-6	839	28.8
Parity 7+	275	9.5
Total	**2909**	**100.0**

Table 4.3 Distribution of respondents by parity.

Source: GDHS, 2008.

4.3 SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS.

The socio-economic characteristics of the respondents describe attributes relating to their religious affiliation, wealth quintile, ethnicity, highest education attained and the rest.

4.3.1 Distribution of respondents by religion.

The Pie chart below shows the distribution of respondents by their religious affiliations. Religion was classified into four categories. The categories are the Orthodox, Protestants, Muslim and other religions. Christians form the majority of the respondents (70%) and almost half of the women belong to Protestant churches. Close to a fifth of the women were Muslims.

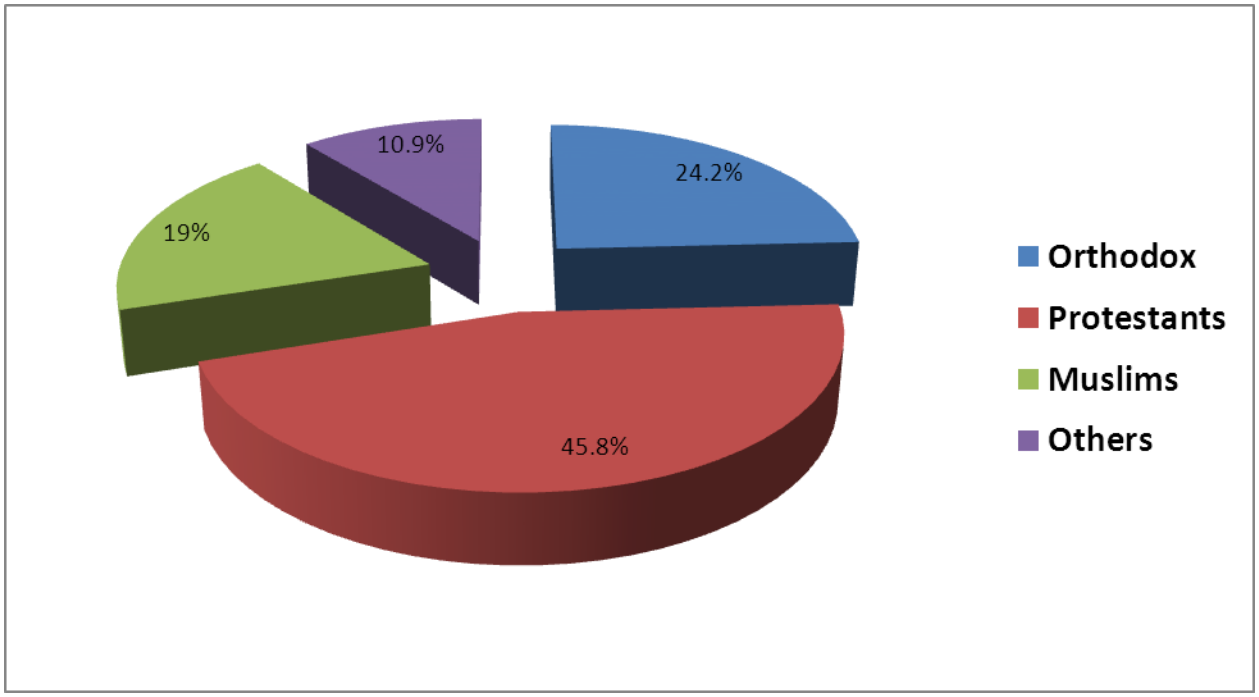


Fig. 4.1 A pie chart showing distribution of respondents by religion.

Source: GDHS, 2008.

4.3.2 Distribution of respondents according to wealth quintile.

Table 4.4 describes the wealth quintiles of the women. The table shows that close to half (48 percent) of the women were poor. About a quarter of the women belonged to the poorest wealth quintile and a third of them were rich.

Wealth Quintile	Frequency	Percentage
Poorest	744	25.6
Poor	641	22.0
Moderate	549	18.9
Rich	975	33.5
Total	**2909**	**100**

Table 4.4. Distribution of respondents by wealth quintile.

Source: GDHS, 2008.

4.3.3. Distribution of respondents by their highest education attained.

Table 4.5 shows the distribution of respondents by level of education. About a third of the women had no education (32.8%). The majority had at least primary education, while over forty percent had secondary education and over**.**

Educational level	Frequency	Percentage
No education	954	32.8
Primary	722	24.8
Secondary and above	1,232	42.4
Total	**2,909**	**100.0**

Table 4.5. Distribution of respondents by level of education.

Source: GDHS, 2008.

4.3.4. Distribution of respondents by region.

Table 4.6 shows the regional distribution of respondents. The highest proportion of the women was from the Ashanti Region (18.7 percent). Twenty seven (27) percent of the women came from Greater Accra and Northern Region, and less than a tenth of them were from Upper East and Upper West put together.

Region	Frequency	Percentage
Western	**271**	**9.3**
Central	**292**	**10.1**
Greater Accra	**346**	**11.9**
Volta	**244**	**8.4**
Eastern	**254**	**8.7**
Ashanti	**545**	**18.7**
Brong Ahafo	**272**	**9.3**
Northern Region	**456**	**15.7**
Upper East	**148**	**5.1**
Upper West	**82**	**2.8**
Total	**2909**	**100.0**

Table 4.6 Regional distribution of respondents.
Source: GDHS, 2008.

4.3.5 Distribution of respondents by ethnicity.

Table 4.7 shows the distribution of the respondents by ethnicity. The table shows that almost half of the respondents were Akan (46.5%). Close to A third (30.2%) of them were from the Northern Tribes (Mole Dagbani, Gruma, Grussi, Mande) and little over one tenth were Ewes.

Ethnic group	Frequency	percentage
Akan	1,327	45.6
Ga/Dangme	143	4.9
Ewe	360	12.4
Northern Tribes	877	30.2
Others	201	6.9
Total	**2,909**	**100.0**

Table 4.7 Distribution of respondents by ethnicity.
Source: GDHS, 2008.

4.3.6 Distribution of respondents by number of ANC attendance.

Table 4.8 shows the distribution of respondents by number of ANC visits.

It is shown from Table 4.8 that a vast majority, 2,499 (86 percent) of the respondents had four or more ANC visits. Only 410 (14 percent) had less than four visits.

Category	Frequency	percentage
<4	410	14.1
4+	2499	85.9
Total	**2909**	**100.0**

Table 4.8. Distribution of respondents by number of ANC visits.

Source: GDHS, 2008.

4.3.7 Distribution of respondents according to physical access to the health facility.

The pie chart in Figure 4.2 shows that the majority of the women (2,047) representing 70 percent of the women said physical access to the health facility was not a big problem. However, the rest 30 percent (862) indicated that there was a big problem accessing the facility.

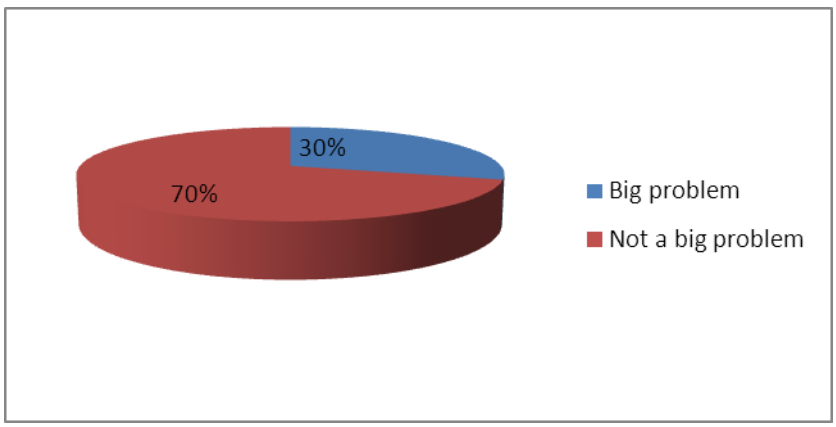


Fig. 4.2. Pie chart showing respondents' status on access to health facility.

Source: GDHS, 2008.

4.3.8 Distribution of respondents by Health insurance ownership.

The pie chart in Figure 4.3 describes the distribution of respondents according to health insurance ownership status. Majority 1,781 (61%) of the women were not covered under health insurance at the time of the survey. The rest 1,128 (39%), were under health insurance cover.

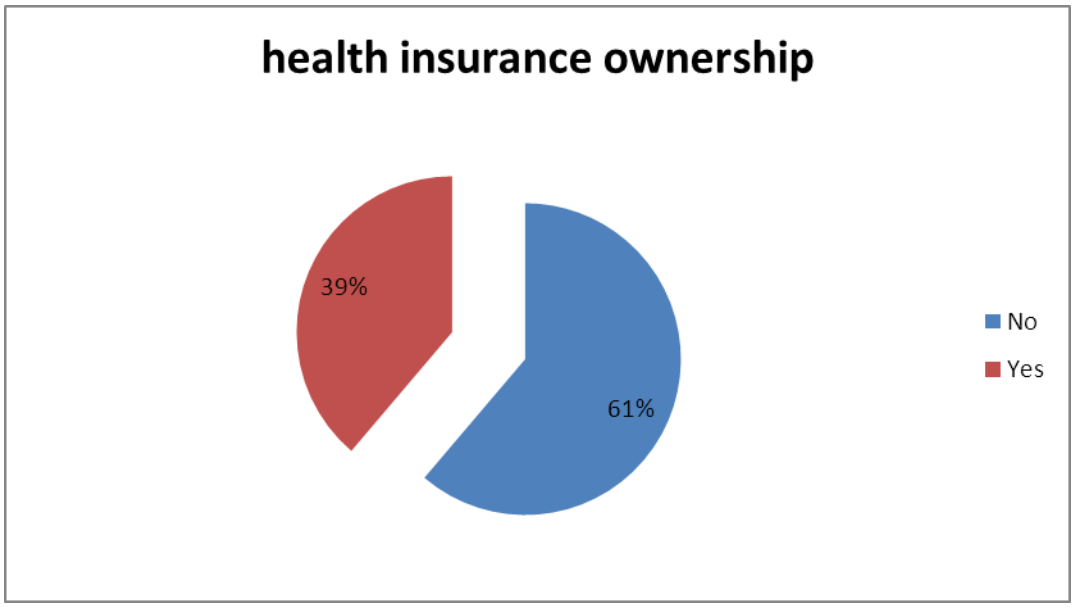


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Fig. 4.3 A Pie Chart showing distribution of respondents by Health Insurance ownership

Source: GDHS, 2008.

4.2.4 Distribution of respondents by place of residence.

Table 4.9 shows distribution of the women by place of residence. Place of residence is categorized into urban and rural residence. Almost two-thirds of the women were rural residence and little over a third of them women were urban residents.

Category	Frequency	percentage
Urban	1104	37.9
Rural	1805	62.1
Total	**2909**	**100.0**

Table 4.9 Distribution of respondents by place of residence.

Source: GDHS, 2008.

CHAPTER FIVE

BIVARIATE ANALYSES - ETABLISHING ASSOCIATIONS.

5.1 Introduction.

This chapter shows the statistical relationships among the various variables. It used the asymptotic value of the chi-square (at .0.05 significance level) to determine which variables are statistically associated. The probability values less than 0.05 depicts that the variable in question is significant in determining the result of the outcome variable.

ASSOCIATION BETWEEN THE INDEPENDENT AND THE DEPENDENT VARIABLES.

5.2 Age of respondents and ANC attendance.

Age of respondents and utilization of ANC are shown in Table 5.1.

Among those in the 15-24 years group, almost a fifth (19.4 percent) of those aged 15-24 years attended ANC for less than four times. Among the higher age groups (35-49), 85.9 percent of the respondents had more than four visits while 14.1 percent attended ANC for less than 4 times. There is a strong statistical association between age and ANC usage shown by the value of the asymptotic p-value of 0.000, derived from the chi- square test. This corroborates the findings of Elo (1992), who also found a statistically significant association between maternal age and ANC utilization. Meanwhile, Lin-Li Dai (2014) had found an inverse relationship between maternal age and ANC utilization.

	number of ANC visits		
Maternal age	**<4 (%)**	**4+ (%)**	**Total**
15-24	19.4	80.6	684
25-34	11.5	88.5	1,404
35-49	14.1	85.9	821
Total	**510**	**2,399**	**2,909**

Table 5.1 Percentage distribution of respondents by Age and number of ANC visits.

Source: GDHS, 2008. **Chi-square: 24.174.** **P-value: 0.000.**

5.3 Parity and number of ANC.

Table 5.2 shows the distribution of respondents by their parity level and use of ANC.

Those with parity one had 10 percent of the respondents visiting the ANC center for less than 4 times, and a large majority (90 percent) of them had more than four ANC visits. For those falling between parities two and three, 87 percent of them had adequate visits to the ANC center, while 13 percent had fewer than four visits. There is a statistically strong association between parity and ANC use. The proportion of respondents who had incomplete ANC became larger as the parity level increases. For those with parity seven, 22 percent had incomplete ANC utilization while 78 percent had completed ANC. This result is in line with that of COIMBRA et al. (2003), who also found significant association between parity and ANC use. Similarly, Bai et al (2002) also found that multiparous women seek fewer ANC.

	Number of ANC visits		
Parity	**<4 (%)**	**4+ (%)**	**Total**
parity 1	10.0	90.0	688
parity 2-3	12.8	87.2	1,107
parity 4-6	16.6	83.4	839
7+	21.8	78.2	275
Total	**410**	**2,499**	**2,909**

Table 5.2. Percentage distribution of respondents by parity and number of ANC attendance.

Chi-square =28.646, p-value = 0.000. Source: GDHS, 2008.

5.4. Marital status and ANC.

Table 5.3 shows distribution of respondents by marital status and the use of ANC. For those who were not currently married about 82 percent attended ANC four times or more. However, those who are currently married had a greater proportion (86 percent) doing so. At the bivariate stage, marital status did not show any significant association with ANC use. (Chi-square, 3.206, p-value= 0.201). This does not corroborate the findings of a number of earlier researches. For instance, Anita et al. (2013) had found that a higher proportion of single teenage parents were using ANC than older married women. Also McCaw Bins et al. (1995) saw statistically significant association between marital status and ANC use, and postulated that unmarried teenagers in Kenya had fewer ANC compared to the married older women.

Marital status	Number of ANC visits <4 (%)	4+ (%)	Total
never married	18.2	81.8	143
currently married	13.8	86.2	2,682
formally married	17.9	82.1	84
Total	**410**	**2,499**	**2,909**

Table 5.3. Percentage distribution of respondents by marital status and ANC attendance.

Chi- square =3.206, p =0.201 Source: GDHS, 2008.

5.5 Type of place of residence and ANC Attendance.

Fig 5.1 shows the relationship between place of residence and ANC utilization.

About nine out of ten (93 percent) of those in the urban area had at least four ANC visits, while eight out of ten (82 percent) of respondents residing in the rural areas had complete ANC attendance. It shows that a higher proportion of urban dwellers attended ANC, compared to their rural counterparts; giving the Pearson's chi-square value of 68.677, and asymptotic p-value as 0.000. This has corroborated the finding of Abor and Abeka Nkrumah (2009), which indicates that urban dwellers have greater propensity to have complete ANC, compared to rural dwellers.

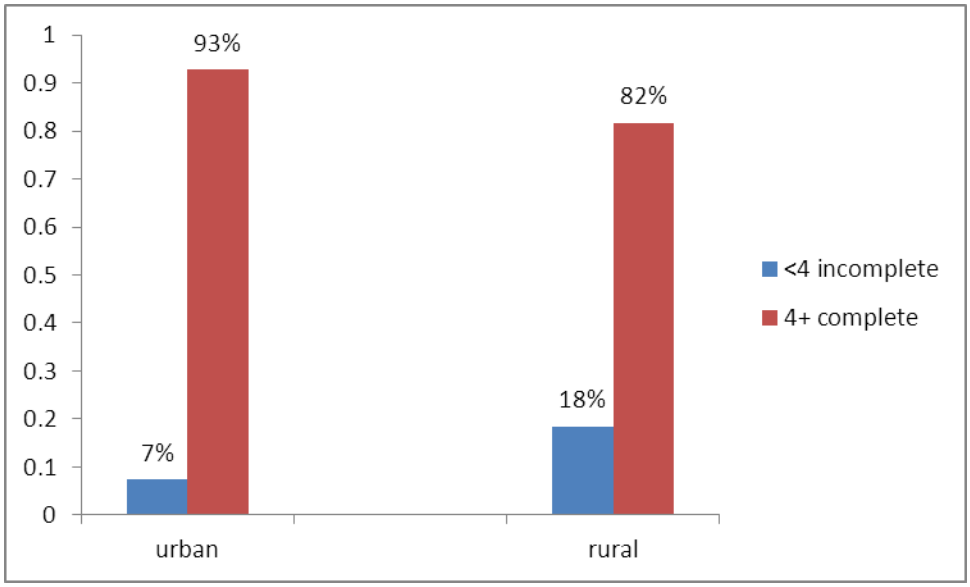

Fig.5.1 Bar Chart showing Place of residence and ANC Attendance.

Chi- square=68.677, p-value =0.000. Source: GDHS 2008.

5.6. Highest level of Education and ANC Attendance.

Table 5.4 below shows the association between the highest level of education and ANC use**.**

It can be seen that educational level is positively associated with ANC.

For the respondents with no education, the proportion which had incomplete ANC visits was about 19 percent and the remaining 81 percent had complete ANC visits with minimum of four visits. Respondents with secondary education and above recorded about 92 percent completed ANC attendance, while those who had secondary education and above, and could not have completed ANC utilization accounted for 8%. This association is in line with that of the GDHS 2008 report which found out that the higher the educational level of a woman the more likely she is to receive the recommended number of ANC visits. Bloom et al. (1999) also found a significant association between the two variables, and Pandey et al. (2014) also confirm that relationship having found that no or low educational status was often associated with irregular ANC attendance.

Education	Number of ANC visits		Total
	<4 (%)	4+ (%)	
No education	18.9	81.1	954
Primary	17.9	82.1	722
Secondary and above	8.2	91.8	1233
Total	**410**	**2,499**	**2,909**

Table 5.4 Percentage distribution of respondents by level of education and ANC Attendance.

Asymptotic p-value =0.000. Chi- square: 62.739. Source: GDHS, 2008.

5.7 Region of residence and ANC.

Table 5.5 summarizes the respondents by region of residence and ANC Attendance.

Table 5.5 shows that Greater Accra region had the greatest proportion, per the distribution in that region which have complete ANC; ninety-five percent (95%), followed by Upper West ninety percent (90%). Ashanti and Brong Ahafo had proportions 89 percent and 86 percent respectively having complete ANC utilization. Meanwhile, Volta (18.4 percent) and Eastern (18.5 percent) regions had the largest proportion of their regional shares having incomplete use of ANC. The two regions had about 18 percent of the respondents not attaining the recommended visits. These statistics can be attributed to the fact that Greater Accra has more health facilities, which are more accessible and well utilized, compared to the Volta and Eastern, and other less endowed regions. A study by Kuumuori et al. (2015) identified disparities in the access and utilization of ANC attendance among minority ethnic groups across regions. Abor & Abeka Nkrumah (2009) also corroborated this association, when he

indicated that regions with well-endowed health facilities connected by good roads tend to have high patronage for ANC utilization

Region	Number of ANC visits		Total
	<4 (%)	4+ (%)	
Ashanti	11.2	88.8	545
Central	15.7	84.3	293
Greater Accra	5.2	94.8	346
Volta	18.4	81.6	245
Eastern	18.5	81.5	254
western	14.8	85.2	270
Brong Ahafo	14.3	85.7	272
Northern	19.1	80.9	455
Upper Easter	12.9	87.1	147
Upper Western	9.8	90.2	82
Total	**410**	**2,499**	**2,909**

Table 5.5 Percentage distribution of respondents by Region and ANC Attendance.

Chi-square=45.847, p-value=0.000. Source: GDHS, 2008

5.8 Religion and ANC Utilization.

Table 5.6 shows religious affiliation and ANC attendance. For those belonging to the Orthodox churches (Catholic, Evangelical Presbyterian etc.), about 12 percent could not make the recommended minimum of four ANC visits. The rest (88 percent) were able to make the recommended four visits and above. The proportion of respondents receiving complete ANC decreased from the Protestants (87.8%), Muslims (86%), to 'Other' religions accounting for 73 percent. The significant association was also found by Pander et al. (2014) in India where they found that believers in majority ethnic groups (Brahmin, Chetri and Dalit) were more likely to seek adequate ANC.

Fisher (2014) also found a statistically significant association between ANC and religion. He found out that Christians were more likely to have completed ANC attendance compared to other religious groups.

	Number of ANC visits		
Religion	**<4(%)**	**4+ (%)**	**Total**
orthodox	11.9	88.1	704
protestants	12.2	87.8	1332
muslem	13.9	86.1	554
others	27.0	73.0	319
Total	**410**	**2,499**	**2,909**

Table 5.6 Percentage distribution of respondents by Religion and ANC attendance

Chi-square= 50.425, p-value=0.000. Soure: GDHS 2008.

5.9 Ethnicity and ANC Attendance.

Table 5.7 shows the main ethnic groups put in to five main categories, and ANC attendance.

The Akan had 88.4 percent of respondents having complete ANC utilization, while 11.6 percent had less than four visits. About 86 percent of respondents from the Volta region had complete ANC, compared with 14 percent of those who could not make the minimum of four visits. The Ga/dangme and Northern Tribes had about 83 percent complete uses of ANC. Pandey et al. (2014), and Kuumuori (2015) also found statistical association between ethnicity and ANC use. They again went further to establish that those women from the majority ethnic groups were more likely to seek complete ANC. The reasons given are that

those from majority ethnic groups have some of their dialects (Twi, Fante Ewe, Ga) spoken at most health centers, when the English could not apply.

Ethnicity	Number of ANC visits		Total
	<4(%)	4+ (%)	
Akan	11.6	88.4	1,327
Ga/dangme	17.5	82.5	143
Ewe	14.4	85.6	360
Northern Tribes	16.4	83.6	877
Other	17.4	82.6	202
Total	**410**	**2,499**	**2,909**

Table 5.7. Percentage distribution of respondents by ethnicity and ANC attendance.

Chi-square =13.927, p-value =0.008. Source: GDHS, 2008.

5.10. Wealth Quintile and ANC use.

Table 5.8 shows wealth quintile and ANC Attendance. There is a strong relationship between wealth quintile and ANC as indicated by the chi- square (107.700), and the p-value (0.000).

The poorest people have a proportion of 79 percent having completed ANC usage. The poor reported proportion of 82 percent completing ANC visits.

The Rich as well had 95 percent complete ANC attendance. This was ascertained by Ortiz (2007), who also found out that wealth is positively related to adequate ANC Attendance. Celik and Hotchkiss (2000) also confirmed the same association between the two variables.

Wealth quintile	Number of ANC visits		Total
	<4(%)	4+ (%)	
poorest	21.1	78.9	743
poor	18.4	81.6	641
middle	15.5	84.5	548
rich	5.0	95.0	976
Total	**409**	**2,499**	**2,908**

Table 5.8. Percentage distribution of respondents by wealth and ANC Attendance

Chi- square =107.700, p-value= .000 Source: GDHS, 2008.

5.11. Timing of 1st ANC Attendance and ANC Utilization.

Table 5.9 shows timing of first ANC visit, and completeness or incompleteness of ANC utilization.

For those who initiated ANC in the first trimester (<4 months), 94 percent of them had complete ANC utilization while 6 percent had incomplete visit of less than four times.

Those who initiated theirs beyond 7 months had a lower proportion of 87.6 percent complete usage, while the rest 12.4 percent could not make the recommended number of visits. Timing of first ANC was identified by (WHO) to be a vital precondition to completeness in ANC utilization. (WHO, 2012).

	Number of ANC visits		
Timing	**<4 (%)**	**4+ (%)**	**Total**
<4	6.4	93.6	1,155
4-6	27.1	72.9	809
7+	12.4	87.6	945
Total	**410**	**2,499**	**2,909**

Table 5.9. Percentage distribution of respondents by Timing of first ANC and ANC attendance.

Chi-square = 171.085, p-value =0.000. Source: GDHS, 2008.

5.12 Health Insurance Ownership and ANC Attendance.

Table 5.10 shows distribution of respondents by health insurance status and ANC use.

More than eight (8) out of every (10) of the women who have no health insurance attained complete ANC utilization. For those who were covered by health insurance, 91.4 percent had recommended visits of four and above. Nketia et al. (2013) found robust statistical evidence that rural residents with health insurance were over 22 percent points more likely to have increased ANC utilization compared to rural women with no health insurance in Ghana. Studies by Jewell (2009) also found ownership of health insurance as an important determinant of the intensity of prenatal care use in South America.

Health Insurance	Number of ANC visits		Total
	<4(%)	4+ (%)	
No	17.6	82.4	1,780
Yes	8.6	91.4	1,129
Total	**410**	**2,499**	**2,909**

Table 5.10. Percentage distribution of respondents by health insurance ownership and ANC attendance.

Chi-square =46.140. source: GDHS, 2008. P-value=0.000.

CHAPTER SIX

DETERMINANTS OF ANTENATAL CARE UTILIZATION AMONG WOMEN IN GHANA.

6.1 Introduction

The previous chapter used bivariate analysis to examine the relationship existing between each of the independent variables and the antenatal care utilization. It was found out in the bivariate analysis that there exist a significant association between most of the independent variables and antenatal care utilization in Ghana. However, when two variables are associated it does not establish a significant causal relationship between them. They could be coincidentally related; because in real life, more than one independent variable interacts to influence a dependent variable (Mathole et al. 2004).

There is therefore a need to perform a statistical analysis which would incorporate more than one independent variable at a time. The most appropriate analytical technique is the multivariate analysis which allowed examination of the effect of different independent variables on the dependent variable (Mathole et al. 2004). This study employed the use of binary logistic regression model to determine the factors affecting the utilization of ANC among the women. The binary logistic regression was used because the dependent variable is dichotomous. This chapter discusses the results obtained after running a binary logistic model. Marital status was not significant at the bivariate stage, therefore was not included in the model at the multivariate stage.

6.2. Determinants of Antenatal Care Utilization among the women in Ghana.

Table 6.1 displays the results of the binary logistic regression model that was used to determine the association, and the nature of that association between the independent variables and the ANC utilization. The main dependent variable, ANC, was a dichotomous

variable with one (1) representing incomplete utilization and two (2) representing complete utilization.

Table 6.1 suggests that five variables were statistically significant in determining ANC use among women. These statistically significant variables are: age, type of place of residence, timing of 1st ANC, parity level of woman and health insurance ownership. Wealth quintile has the 'rich' category being significantly associated with ANC use. Ga/Dangme and other ethnic groups (Gruma, Grussi, Mande, and Mole Dagbani etc) have also been identified as having association with ANC use. The model produced a Nagelkerke R- square of 0.226; implying that about 23 percent of the variations in the determinants of ANC use is explained by the variables entered in the model.

Independent Variable	**B**	**Std. Error**	**Sig.**	**Exp (B)**
Constant	**2.315**			
Age of respondents				
15-24 (Ref)	0.000			1.000
25-34	0.80	0.171	0.000	2.234***
35-49	1.082	0.224	0.000	2.950***
Highest educational level				
No education (Ref)	0.000			1.000
Primary	-0.096	0.162	0.553	0.908
Secondary	0.358	0.186	0.054	1.431*
Type of place of residence				
Urban (Ref)	0.000			1.000
Rural	-0.382	0.185	0.039	0.682**
Religion				
Orthodox (Ref)	.000			1.000
Protestants	-0.120	0.160	0.452	0.887
Muslims	-0.056	0.220	0.800	0.946
Others	-0.689	0.204	0.001	0.502***
Ethnicity				
Akan (Ref)	.000			1.000
Ga/Dangme	-.746	0.317	0.019	0.474**
Ewe	-.026	0.246	0.916	0.975
Northern Tribes	-.370	0.216	0.087	0.691*
Other	-.587	0.261	0.025	0.556 **
Wealth quintile				
Poorest (Ref)	0.000			1.000
Poor	-0.024	0.171	0.889	0.976
Moderate	-0.061	0.205	0.766	0.941

Rich	0.706	0.256	0.006	2.029***
Parity				
1 (Ref)	0.000			1.000
2-3	-0.661	0.192	0.001	0.516***
4-6	-1.010	0.232	0.000	0.364***
7+	-1.294	0.291	0.000	0.274***
Timing of 1st ANC				
<4 months (Ref)	0.000			1.000
4-6	-0.1.615	0.154	0.000	0.199***
7+	-0.432	0.166	0.009	0.649***
Distance to health facility				
Big problem (Ref)	0.000			1.000
Not a big problem	0.099	0.129	0.439	1.105
Health insurance ownership				
No	0.000			1.000
Yes	0.486	0.144	0.001	1.626***
Region				
Akan (Ref)	0.000			1.000
Central	-0.122	0.237	0.608	0.885
Greater Accra	0.481	0.349	0.168	1.617
Volta	-0.324	0.289	0.263	0.724
Eastern	-0.432	0.257	0.092	0.649*
Western	-0.373	0.241	0.123	0.689
Brong Ahafo	-0.133	0.248	0.592	0.876
Northern	0.319	0.252	0.204	1.376
Upper East	0.582	0.354	0.100	1.790
Upper West	0.666	0.442	0.132	1.1947

Nagelkerke R square 0.232 *p< 0.10 **p<0.05 ***p<0.01 Ref (Reference category)

Table 6.1. Result of Binary Logistic Regression of Determinants of ANC Utilization among Women in Ghana.

6.2.1 Maternal age.

Maternal age was identified at the bivariate level to have a statistical significant association with ANC use, at p=0.000. The multivariate analysis also confirmed the association where maternal age was still significant at p=0.000. The result from Table 6.1 suggests that ANC utilization is positively associated with maternal age. This implies that the higher the age of the woman, the more likely she is to have complete ANC utilization. From the result, women in the age groups of 25-34 and 35-49 were more likely to have complete ANC than those in the 15-24 years category (reference group). Women aged twenty-five to thirty-four have an

Odds Ratio (OR) of 2.234, which means that these women are 2.234 times more likely to achieve complete ANC attendance compared to women aged 15-24 years. Again, those in the 34-49 age groups were 2.950 times more likely to seek complete ANC than their 15-24 years counterparts. This finding is in line with what Elo (1992) had found when he controlled for background information and education. He found a negative association between maternal age and ANC utilization. The present study has also corroborated the findings of Pandey et al. (2014). He found age at first pregnancy as positively associated with increased ANC use. To them, as the age of first pregnancy increases, the chances of receiving and completing ANC also increase. However, this finding did not support that of Lin-Li Dai (2014), Nkechi et al. (2013); and Anita and Albert (2013). These people were of the view that maternal ANC use decreases with increased maternal age, and the primiparous are more likely to seek complete ANC than the pluriparous.

From the ongoing discussions, it is believed that the younger adolescent, who may be in school or learning trade may try to shy away from using ANC. Afraid of being rebuked and being tagged with promiscuity, may not disclose their pregnancy for a number of months. This influences the timing and the completeness of ANC received (Nkechi et al. 2013).

6.2.2. Type of place of residence.

The type of place of residence-urban or rural- is also a statistically significant determinant of ANC utilization. This independent variable was statistically significant at both the bivariate and the multivariate level (p=0.039). Table 6.1 showed that rural women were 0.682 as likely to have completed ANC utilization compared to those in the urban areas. This finding is in line with what earlier researchers like Abor &Abeka Nkrumah (2009), Overbosch (2004) and others have found.

According to Abor & Abekah-Nkrumah (2009), urban dwellers may be relatively closer to healthcare facilities than rural dwellers in most developing countries such as Ghana. Overbosch et. al. (2004), reports that currently, more than a third of the rural women have to travel more than 5km to the modern provider of ANC in Ghana. Thus, accessibility to health care services may be much easier for the urban dwellers than the rural dwellers, thereby increasing the probability of an expectant mother in the urban center using ANC compared to her rural counterpart. Moreover most of the skilled attendants and facilities are also concentrated in the urban areas. Celik and Hotchkiss (2000) also indicated in the findings of their study that there is rural- urban differential in the utilization of ANC with the rural residents mostly at a disadvantage.

6.2.3. Parity.

Parity is a very significant predictor of maternal ANC utilization. With the beta values of parities 2-3, 4-6 and 7+, all having negative co-efficient suggest that higher parity is a disincentive to complete ANC utilization. Pluriparous women of birth order two or three were 0.516 as likely to seek completed ANC than the primiparous or the primagravidae (parity one or first pregnancy).The multiparous having seven children and above tend to be 35.1 percent less likely to seek adequate ANC compared to women giving birth for the first time.

These findings corroborate that of COIMBRA et al. (2003). To them**,** multiparous women, having had experiences from earlier births, become more confident during pregnancy and consider prenatal care less important and thus relegate its relevance. These women are less likely to have complete ANC attendance. Another probable reason for less patronage for multiparous women is that expectant mothers of higher parity may seek fewer services due to knowledge and experience gained from past births and lack of child support for younger children (Gage & Calixte 2006). It is significant to know that young teenagers becoming

pregnant for the first time may tend to seek adequate ANC for fear of developing complications and also as a guarantee for uneventful delivery. (Nkechi et al. 2013).

6.2.4 Timing of first ANC visit.

There is also a very strong significant association between timing of first ANC visit and having complete ANC of four or more visits. It is revealed that those who initiated ANC later than the first trimester are less likely to receive the recommended number of visits.

As can be seen from Table 6.1, those who initiated ANC attendance between the fourth and the sixth month, are 80.1 percent less (Odds Ratio 0.199) likely to attain the minimum of four ANC (recommended for uncomplicated pregnancies) than those in the reference category. Again, those who started their first ANC above seven months are 35.1 percent less (Odds Ratio 0.649) likely to have completed ANC compared to those in the reference category, who started within the first trimester.

This finding is in line with that of The World Health Organization (WHO, 2010) and Villar et al. (2001), which stipulated that four visits are sufficient for uncomplicated pregnancies and that for ANC to achieve its intended purpose, it must be initiated within the first trimester. This was also explicitly stated by the ICF Macro, (2013) that the first visit for ANC should not exceed the 16^{th} week.

6.2.5. Health insurance ownership.

Health insurance ownership offered a significant statistical association with complete utilization of ANC use. The variable was significant at both bivariate and multivariate stages. With the Odds Ratio of 1.626, and being significant at even 0.01 significance level suggested that those covered with Health Insurance were about 63% more likely to seek complete ANC usage than those not under health insurance cover. This finding has been confirmed by a number of findings. For instance, Nketia et al. (2013) found robust evidence that rural residents with health insurance were over 22 percent points more likely to have increased

ANC utilization compared to rural women with no health insurance in Ghana. Ranji et al. (2009); quoted in Nketia et al. (2013) also reported that access to health insurance is significantly associated with access to prescription medicines among adult women through lowering of out-of-pocket cost, which underscores the important role that health insurance plays in influencing demand for ANC. This result also corroborates the finding by Jewell (2009) who found ownership of health insurance as an important determinant of the intensity of prenatal care use in South America.

6.2.6 Religion, ethnicity and wealth quintile.

From the multiple logistic regression analysis, Religion, Wealth quintile and Ethnicity were not entirely significant but some of their categories were having statistical association with the ANC use. Religion was significant at the bivariate level but the multivariate level only had the 'Others' category significant. This included 'Other Christians, No religion, Spiritualists and Others'. This category of people were 50.2 percent as likely, compared to the Orthodox churches, to have completed ANC. Pandey et al (2014) found out that Christians were more likely than the Bhudists and the Hindus to seek ANC, when he conducted a research in part of India. Also, according to Fischer (2002), certain religious denominations resort to some beliefs and practices which mitigate the overall number of ANC received thereby contributing to incomplete ANC utilization. Spiritual churches tend to focus their ANC periods around prayer and fasting, while traditionalist tend to focus theirs around herbs, charms, beliefs and other practices. (Fischer, 2002).

Ethnicity was also not completely a significant determinant at the multivariate level, although it was significant at the bivariate level. However, the 'Ga/Dangme'group and those in the 'Others' category, (Gruma, Grussi, Mande and the Mole Dagbani) were found to have a statistically significant relationship with ANC utilization.

This finding was again corroborated by Pandey et al.(2014), when he found out that within ethnic groups, disadvantaged groups such as the Janajatis (Magar, Rai, Tamang, Danuwar) were less likely than the Brahmin and the Chetri to receive adequate ANC in India. In Ghana, Kuumuori (2015) also found out that minority ethnic groups reported lower utilization levels for most of the components of skilled maternity care in Ghana. He found that fewer births were delivered at home among women from major ethnic groups, like Akan (21%) compared with births to women from minority groups like the Ewes (58%), Guan (42.7%), Grusi (53.4%) Mole Dagbani (74.7%) and Gruma (58.8%). He considered ANC utilization as a precondition for delivering in a health facility with a skilled birth attendant.

The 'rich' under wealth quintile category was also significant in determining ANC use. The whole variable showed statistical association at the bivariate level but only the 'rich', which comprises the 'richer' and the 'richest' categories, was significant in the model itself. This implies that wealth quintile is also a determinant of complete ANC use among women in Ghana. The variable indicated that the 'rich' (richer and richest) women were 103 percent more likely (OR= 2.029), than the 'poorest', to receive complete ANC use. This finding was in line with a number of studies. Ortiz (2007) found that wealthier mothers have more chance of attending a first visit and additional visits than poorer mothers in Colombia. In addition, Gage (2007) has also found household poverty and personal problems to be negatively related to the use of maternal health care. Again, Abor & Abekah-Nkrumah (2009) have identified empirically that, as compared to those in the poorest quintile, those in the poorer households in Ghana are more likely to deliver in a health facility, with those in the middle wealth quintile being more likely to use antenatal services and deliver at a health facility. The findings of the present study do not corroborate what Abor & Abekah- Nkrumah (2009) have found. This could emanate from differences in the research design, and recoding of variables. Moreover, the focus of this research was not on the use of delivery services.

6.3 Testing of hypotheses:

6.3.1 Hypothesis 1.

The higher the age of a woman, the less likely she is to seek Complete ANC.

The bivariate level showed a significant association between maternal age and utilization of ANC services, at p=0.000. The multivariate level also showed a statistical positive relationship between maternal age and complete ANC use. Conversely, the result from the binary logistic regression has shown that, younger women were more likely to have incomplete, ANC services.

The finding from the study has contradicted the hypothesis above and therefore has been rejected for the alternative hypothesis. The finding is in line with that of Elo (1994) and Pandey et al. (2014), who found positive relationship between increased maternal age and complete ANC utilization. However, it did not support Lin-li Dae (2014).

Hypothesis 2.

Primiparous women are more likely, than women of higher parities to seek complete ANC.

This proposition was confirmed at the multivariate level, where parity showed a negative relationship with complete ANC use. This signified that the primiparous and the primagravidae were more likely to initiate ANC in time, and fulfill four or more attendance compared with women at higher parities. This hypothesis was confirmed and accepted.

This finding has confirmed that of COIMBRA et al. (2003) and also that of Bai et al. (2002)

Hypothesis 3.

Women covered by health insurance are more likely to seek complete ANC compared with those who are not.

This hypothesis was also confirmed. The bivariate stage showed significant association between the two variables at p=0.000, and the multivariate analysis also showed that those who were under health insurance coverage were 63 percent more likely to achieve completed ANC utilization compared to those who were not. This finding also corroborated that of Seneadza and Nketia et al. (2014) from the University of Ghana using the GDHS 2008.

CHAPTER SEVEN
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary.

This chapter contains the summary, conclusion and policy recommendations of the study. The general objective was to examine the factors that account for ANC utilization among women in Ghana. The study utilized data from the GDHS 2008, whereby mothers who had given their recent births in the five years preceding the survey were studied. This consisted of 2,909 mothers. For ANC the mothers were restricted to those who were seeking ANC at the time.

Out of these women, most of the women were in the 25-34 years age group and a vast majority was currently married. The majority of the women were rural residents.

A variety of methods such as percentages, frequencies and cross tabulations were used to describe the data and explore the relationships between the dependent and the independent variables. Binary logistics regression analysis was applied to ascertain the influence of the independent variables on the number of ANC visits.

The following findings emanated from the studies. Maternal age has emerged as a significant factor in determining complete ANC attendance among women aged 15-49 years in Ghana. It showed a positive relationship with the number of ANC visits. The higher the age of a woman the more likely she is to seek complete ANC. Other factors found to determine complete ANC utilization are, type of place of residence, parity, timing of 1st ANC attendance, and health insurance ownership. Parity level is inversely related to complete ANC. Late timing of ANC also appears to be a disincentive to complete ANC attendance.

Other determinants like wealth quintile, ethnicity and religion also show statistical relationship with complete ANC utilization. Wealth quintile showed that the 'rich' were 103 percent more likely (OR=2.029) to attain complete ANC utilization, compared with the 'pooerst'. Thus, wealth quintile is a determinant of complete ANC utilization.

Ethnicity also appears to be statistically associated with complete ANC use. The Ga/Dangme, the Northern Ethnic groups (Mole Dagbani, Gruma, Grussi, Mande) are statistically significant determinants of ANC. Finally, other minor religions in Ghana have a statistically significant relationship with number of ANC attendance, which renders religion also to be a significant determinant. These people are the other Christians, traditionalists among others. They are 44 percent less likely (OR=.56) to seek ANC compared to the Orthodox Christians.

Three hypotheses were formulated. One was rejected and the other two were confirmed and accepted. The first one: 'the higher the age of a woman the less likely she is to seek complete ANC' was not confirmed and was rejected. The second one: 'women of higher parity are less likely, than the primiparous to seek complete ANC' was confirmed and accepted. The third hypothesis: 'women covered by Health Insurance are more likely to seek ANC compared to those who are not' was also confirmed and accepted.

7.2 CONCLUSION.

It is worth noting that although ANC utilization was high among the women in Ghana, most of the women started accessing the care late in pregnancy. Others simply initiate ANC and never return for subsequent attendance. The fact that ANC coverage is high in Ghana is not a guarantee to better pregnancy outcomes. For ANC to translate into better pregnancy out comes; in helping to reduce stillbirths and maternal mortality, identifying and treating conditions that may lead to complications in child birth, it must be initiated early. It must be started in the first trimester and pursued throughout the gestational period.

Malaria treatment during pregnancy, tetanus vaccination and prevention of mother to child transmission of HIV are vital interventions during pregnancy. However, these interventions are made at specific times during the continuum of ANC services. Therefore, gravidic women should make consistent, timely and complete attendance to benefit from these interventions to ensure optimum health and healthier life during and after pregnancy.

7.3 RECOMMENDATIONS.

Based on the findings of the study the researcher has come out with these recommendations. Increasing awareness of mothers on the danger signs of pregnancy and the relevance of correct timing, and having completed ANC utilization, should be a major priority. This would help ensure that women seek ANC in time, and have recommended visits. Expectant mothers should endeavor to initiate ANC utilization within the first trimester, since early initiation appeared in the study as a precondition for complete utilization of ANC services.

It is also important for the Government of Ghana to embark on massive rural accessibility projects to link hinterlands with neighboring towns and cities which are more endowed with modern health facilities. NGO's and religious health care providers should make an effort to set up health centers in the rural areas to assist in elimination of the biases inherent in the allocation, and to help improve utilization. This may help to also eliminate the problem of transportation if these facilities are set up in close range for the use of the rural communities. In effect, the issue of the indirect costs that might hinder women, the opportunity cost in terms of time, and the overall risks in trying to gain access, would be minimized. This will encourage and facilitate access in order to achieve complete ANC utilization.

Moreover, as health insurance cover has shown a positive significant impact on the completion rate of ANC, measures should be put in place to repackage the policy and make it more friendly to the poorest women in the country. By this, renewal periods and premium

exemptions could be put in place and disbursement done on regular basis at venues convenient to the poor.

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