REGIONAL INSTITUTE FOR POPULATION STUDIES

(UNIVERSITY OF GHANA)

CORRELATES OF ANTENATAL AND DELIVERY CARE IN GHANA

BY

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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE MA POPULATION STUDIES DEGREE

JULY 2013

DEDICATION

This work is dedicated To Mr (s) Pius Atindaana (my parents), My Wife and Boy (Princess Felicia and Akugreyine Atindaana) and all members of the family and my late grandmother Asampana

DECLARATION

I, **Nyaabiire Nsobilla Atindaana**, hereby declare that the work herein presented is the result of my own investigations, and that, except for other people's work, which have been duly acknowledged, this dissertation has never been presented to this university or elsewhere for any degree.

Supervisor: **Professor Stephen O. Kwankye**

Signature……..

Date…….

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Date…….

ACKNOWLEDGEMENT

This work could not have been completed without the support of many individuals.

Special mention must be made of Professor Stephen O. Kwankye (My Supervisor) for his sincere and meticulous supervision. He is a Professor of every dream student to say the least. My gratitude also goes to Dr. Delali Badasu and other senior members of the Institute for their initial comments that assisted in shaping the scope of this study.

Many thanks to Francis Bukari Malongza (Lecturer – UDS), Fordjour Yeboah (an H.SA – Achimota), Dede Kuala, Promise Ewe and other senior colleagues who have assisted in diverse ways.

Nevertheless my gratitude to my wife, for the several months of endurance of my absence and many others whose names have not been mentioned but contributed profoundly to this output. All praises, however, belongs to God Almighty.

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ABSTRACT

Provision and improvement in maternal health services is of critical concern for all governments all over the world particularly those in low to middle-income countries. This led the global community to adopt the United Nations Millennium Development Goal 5 target of reducing by three-quarters the maternal mortality ratio between 1990 and 2015 (United Nations, 2010) so as to improve the well being of women. Crucial to this is access to quality maternal health care including antenatal and skilled attendance at delivery. However, an assessment of the extent of progress towards the achievement of this goal particularly in Ghana still remains a challenge. High maternal mortality ratio is estimated to range from 214 to 800 per 100,000 live births. There are also growing social inequalities with rates of skilled attendance either stagnating or declining for poorer women (Witter et al., 2007). Overall, the proportions of deliveries at health facilities rose from 46 percent in 2003 to 57 percent in 2008 according to the 2008 Ghana Demographic and Health Survey (GDHS) which is far less than the expected universal coverage of skilled attendance at birth. The main objective of this study was to examine the correlates of antenatal and delivery care in Ghana. The 2008 GDHS was the main source of data. Binary logistic regression analysis was used to construct models that explored the socio-demographic correlates of antenatal and delivery care in Ghana. The results indicate among other things that age, household wealth, education, and insurance coverage are among the socio-demographic correlates of antenatal and delivery care in Ghana. It emerged from the study that women who had complete antenatal care services were also more likely to deliver in a health facility. The study, therefore, concludes that when more pregnant women are sensitized to patronize antenatal care services to the fullest, they are most likely to deliver in a health facility and hopefully by a professionally trained health worker, thereby reducing maternal mortality.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Governments all over the world in their attempt to better the socio-economic lives of the citizenry have pursued policies and/or strategies that sought to promote their well being. These policies and strategies tend to influence social, economic, educational, and above all, the health status of the people as individuals and groups. This is particularly so in many low and middle-income countries that tend to develop ambitious health policies and strategies to improve health delivery and attain the health-related Millennium Development Goals.

Critical to this is maternal health service consumption, indices of which are disparaging particularly regarding the extent of progress towards improving maternal health christened United Nations Millennium Development Goal 5 target of reducing by three-quarters the maternal mortality ratio between 1990 and 2015 (United Nations, 2010).

Globally, an estimated 287,000 women died during pregnancy and childbirth in 2010, a decline of 47 per cent from levels in 1990. Sub-Saharan Africa (with 56 per cent of these deaths) and Southern Asia (29 per cent) together accounted for 85 per cent of the global burden in 2010, with 245,000 maternal deaths between these regions. The number of maternal deaths per 100,000 live births that is the maternal mortality ratio (MMR) was also down, from 440 in 1990 to 240 in 2010, for the developing regions as a whole. But the MMR in developing regions was still 15 times higher than in the developed regions.

At the high end, sub-Saharan Africa had an MMR of 500. At the other end of the scale in developing regions, Eastern Asia had the lowest level, at 37 deaths per 100,000 live births. Most of the women died because they had no access to skilled routine and emergency care. Since 1990, some countries in Asia and Northern Africa have more than halved maternal mortality (WHO, 2013).

There has also been progress in sub-Saharan Africa. Unlike in the developed world where a woman's life time risk of dying during or following pregnancy is 1 in 3800, the risk of maternal death is very high at 1 in 39. In sub-Saharan Africa increasing numbers of women are now seeking care during childbirth in health facilities and therefore it is important to ensure that quality of care provided is optimal (WHO, 2013).

A significant proximate determinant of maternal mortality is access to and use of quality health care services (Fauveau et al., 1991; McCarthy and Maine, 1992; Bhatia, 1993: as quoted by Navaneetham et al., 2000).

Achieving good maternal health requires quality reproductive health services and a series of well-timed interventions to ensure women’s safe passage to motherhood. Failure to provide these results in hundreds of thousands of needless deaths each year a sad reminder of the low status accorded to women in many societies. Delivery complications may require immediate professional care. That is why high-quality, evidenced-based emergency obstetric and neonatal care is one of WHO’s highest priorities to reduce illness and death in mothers and their newborn babies (WHO, 2013). Measuring maternal mortality-death resulting from the complications of pregnancy or childbirth is challenging at best. Systematic underreporting and misreporting are common, and estimates lie within large ranges of uncertainty. Nevertheless, acceleration in the provision of maternal and reproductive health services to women in all regions, along with

positive trend data on maternal mortality and morbidity, suggest that the world is making some progress on MDG 5 (WHO, 2013).

New estimates of maternal mortality by the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA) and the World Bank show signs of progress, with some countries achieving significant declines in maternal mortality ratios. However, the rate of reduction is still well short of the 5.5 per cent annual decline needed to meet the MDG target. More rural women are receiving skilled assistance during delivery, reducing long-standing disparities between urban and rural areas. In Southern Asia, for example, urban women were three times more likely as their rural counterparts to receive professional care at childbirth in 1990. By 2008, they were only twice as likely to receive such care, indicating some improvement. Still, inequalities persist, especially in regions where attendance by skilled personnel is lowest and maternal mortality is highest notably in sub-Saharan Africa, Southern Asia and Oceania. Disparities in coverage are also found between the wealthiest and the poorest households. The widest gaps are in Southern Asia and sub-Saharan Africa, where the wealthiest women are five times more likely and three times more likely, respectively, as the poorest women to be attended by trained health-care workers at delivery. In the developing regions as a whole, women in the richest households are three times as likely as women in the poorest households to receive professional care during childbirth. In all regions, progress is being made in providing pregnant women with antenatal care. Remarkable gains were recorded in Northern Africa, where the share of women who saw a skilled health worker at least once during pregnancy increased by 70 per cent. Southern Asia and Western Asia reported increases of almost 50 percent (Navaneetham et al., 2000).

Disparities in the share of women receiving antenatal care by wealth are striking, particularly in Southern Asia, Northern Africa and sub-Saharan Africa. Even in South-Eastern Asia, where over 90 per cent of women receive skilled care during pregnancy, only 77 per cent of women in the poorest households are covered, versus almost 100 per cent of women in the wealthiest households

Large disparities also exist between women living in rural and urban areas, although the gap narrowed between 1990 and 2008. In sub-Saharan Africa, the proportion of urban women who received antenatal care at least once increased from 84 per cent in 1990 to 89 per cent in 2008. The corresponding proportions for rural women are 55 to 66 percent, indicating that coverage has improved at a faster pace among rural women.

Women should receive care from a trained health-care practitioner at least four times during the course of their pregnancies, according to WHO and UNICEF recommendations. However, less than half of pregnant women in developing regions and only a third of rural women receive the recommended four visits. Among rural women in Southern Asia, the share is only 25 per cent (Navaneetham et al., 2000).

Antenatal care is also among the interventions that can reduce maternal mortality and morbidity. The antenatal period is critically important for reaching women with interventions and information that promote health, wellbeing and survival of mothers as well as their babies. Coverage, at least one visit with a doctor, nurse or midwife, has progressively increased in developing regions from 63 per cent in 1990 to 71 per cent in 2000, and then to 80 per cent in

2010, the most remarkable improvements being experienced in Southern Asia, Northern Africa and Western Asia (WHO 2013). Despite these improvements, disparities still exist within and outside the individual countries, with the African Region presenting the largest intra-regional disparities in terms of coverage of basic maternal health interventions like antenatal care. In the relatively advanced Southern Africa, however, it is reported that there was an almost universal coverage in ante-natal care services in 2010, while in West Africa about one third of pregnant women did not receive antenatal care visits (WHO 2013).

The World Health Organization (WHO, 1990) recommends a minimum of four visits for antenatal care as noted above, including, at a minimum, screening and treatment for infections and identification of warning signs during pregnancy.

Across most developing regions, there has been steady progress in such coverage, with acceleration in Northern Africa and Southern Asia since 2000. Despite this progress, in 2010 almost half of pregnant women in the developing regions still did not have the recommended number of visits. And in sub-Saharan Africa, the proportion with enough visits has actually fallen since 1990. Data on number of visits do not reflect the critical factor of quality of care, which is difficult to measure (WHO 2013).

The situation in Ghana is not significantly different and shows a pattern of somewhat similarities. According to the Ghana Maternal Health Survey 2007, antenatal care usage from skilled health personnel currently stands at 95 percent, an increase from 82 percent in about two decades (GSS and GHS 2009). The report further shows a decline in the number of mothers who do not receive antenatal care services and those receiving antenatal care from traditional

midwives, a positive development from the past (GSS and GHS 2009). Though there are differences in the level of antenatal care service usage between and within regions and between urban and rural areas, the general picture looks quite good. Whereas 98 percent of mothers in urban areas receive antenatal care services from health professionals, 94 percent of their rural counterparts do so (GSS and GHS 2009). These differences may be due to better proximity to health care facilities and better incomes in urban areas, as distance and cost have been mentioned by women as reasons for not attending antenatal care services in similar studies on determinants of antenatal care use (Adamu and Salihu 2002; Overboch et.al 2004).

Over the past two decades, the proportion of mothers making at least four antenatal care visits which is the minimum requirement of the WHO increased by about 31 percent, while the proportion seeking antenatal care during the first trimester of their pregnancy rose considerably over the same period (GSS and GHS 2009).

Preventing problems for mothers and babies depends on an operational continuum of care with accessible, high quality care before and during pregnancy, childbirth, and the postnatal period. It also depends on the support available to help pregnant women reach services, particularly when complications occur. An important element in this continuum of care is effective ANC (USAID, Fistula Care, Engender Health, Intra Health, n.d). The goal of the ANC package is to prepare for birth and parenthood as well as prevent, detect, alleviate, or manage the three types of health problems during pregnancy that affect mothers and babies:

i. complications of pregnancy itself
ii. pre-existing conditions that worsen during pregnancy
iii. effects of unhealthy lifestyles (WHO, 2013)

ANC also provides women and their families with appropriate information and advice for a healthy pregnancy, safe childbirth, and postnatal recovery, including care of the newborn, promotion of early, exclusive breastfeeding, and assistance with deciding on future pregnancies in order to improve pregnancy outcomes. An effective ANC package depends on competent health care providers in a functioning health system with referral services and adequate supplies and laboratory support (Chalmers et al., 2001).

While research has demonstrated the benefits of ANC through improved health of mothers and babies, the exact components of ANC and what to do at what time have been matters of debate. In recent years, there has been a shift in thinking from the high risk approach to focused ANC. The high risk approach intended to classify pregnant women as "low risk" or "high risk" based on predetermined criteria and involved many ANC visits. This approach was hard to implement effectively since many women had at least one risk factor, and not all developed complications; at the same time, some low risk women did develop complications, particularly during childbirth. Focused or goal-oriented ANC services provide specific and evidence-based interventions for all women, carried out at certain critical times in the pregnancy. The essential elements of this package are outlined below as per WHO (2013) recommendations:

a. Identification and surveillance of the pregnant woman and her expected child
b. Recognition and management of pregnancy-related complications, particularly pre-eclampsia
c. Recognition and treatment of underlying or concurrent illness

d. Screening for conditions and diseases such as anaemia, sexually transmitted infections (particularly syphilis), HIV infection, mental health problems, and/or symptoms of stress or domestic violence

e. Preventive measures, including tetanus toxoid immunisation, de-worming, iron and folic acid, intermittent preventive treatment of malaria in pregnancy (IPTp), insecticide treated bednets (ITN)

f. Advice and support to the woman and her family for developing healthy home behaviours and a birth and emergency preparedness plan to:

Increase awareness of maternal and newborn health needs and self-care during pregnancy and the postnatal period, including the need for social support during and after pregnancy

Promote healthy behaviours in the home, including healthy lifestyles and diet, safety and injury prevention, and support and care in the home, such as advice and adherence support for preventive interventions like iron supplementation, condom use, and use of ITN

Support care seeking behaviour, including recognition of danger signs for the woman and the newborn as well as transport and funding plans in case of emergencies

Help the pregnant woman and her partner prepare emotionally and physically for birth and care of their baby, particularly preparing for early and exclusive breastfeeding and essential newborn care and considering the role of a supportive companion at birth

Promote postnatal family planning/birth spacing

Though the above literature would give direction to the assessment of the influence of skilled service provision of antenatal care, findings would not be complete until some personal

characteristics of the service beneficiaries have been correlated, and which this study seeks to achieve.

Ghana has persistently high maternal mortality ratios, estimated to range from 214 to 800 per 100,000 live births (Witter et al., 2007). Following the high institutional maternal mortality ratio recorded in 2009, there was a slight decline in maternal deaths in 2010 (from 169.9 for 2009 to 163.2 for 2010) (GHS 2011). This was, however, not sustained and IMMR increased to 173.8 in 2011. The reasons for these may well be varied but are very important particularly as there are many interventions ongoing towards achieving MDG5 including increasing access to skilled delivery and Emergency Obstetric Neonatal Care (EmONC) including safe blood. We need to ensure that women are not dying in our facilities. The seriousness of the situation compelled Mrs Naadu Mills, Ghana's former first Lady to lead the launch of the nationwide campaign for the Accelerated Reduction of Maternal Mortality in all the ten (10) regions of Ghana. The objective of the campaign was not only to serve as a component of the advocacy to prioritize maternal mortality reduction in Regional Action Plans, but also address the challenges preventing Ghana from achieving its MDG5 (GHS, 2011).

Ghana also has growing social inequalities for this indicator, with rates of skilled attendance either stagnant or declining for poorer women (Witter et al., 2007). While deliveries by health professionals rose from 85% to 90% from 1993 to 2003 for the richest quintile, according to Demographic and Health Survey data, deliveries by health professionals for the poorest quintile dropped from 25% to 19%.

Nationally, 45% of births were attended by a medical practitioner (79% in urban areas, 33% in rural); 31% by traditional birth attendants (TBAs) and 25% were unsupervised (GSS 2003).

There were also significant regional variations. The three northern regions have the highest levels of poverty and maternal mortality and the lowest levels of supervised deliveries (Witter, et al., 2007). It is in the light of this that there is the urgent need for a comprehensive study into the correlates of antenatal and delivery care in Ghana.

Similarly, efforts to provide quality maternal care services continue to be high priority in the Ghana Health Service (GHS). This focus is yielding positive results in the coverage of skilled attendance across the country towards achieving MDG5. One major step in this direction has been through the posting and training of midwives to health centres and Community Based Health Planning Services compounds, as a result of which there have been improvement in maternal health related cases; with the national coverage of 52.2% in skilled deliveries in 2011, this indicator has continued to improve from 45.6% in 2009 and 49.5% in 2010 (GHS, 2011). However, wide inter-regional variations persist: Upper East, Western and Brong-Ahafo Region have all shown a consistent increase in skilled delivery coverage from the year 2009. Greater Accra Region has also recovered from the drop it suffered in 2009 and increased coverage to 56% in 2011. Volta Region also recovered from its dip in 2010 to achieve 40.2% coverage in 2011; an achievement, which, for the most part may, be attributable to improved staffing particularly the midwife to Women in their Fertility Age (WIFA) population ratio during 2011. Northern Region has, however, continued to suffer a decline in its skilled delivery coverage, from approximately 36% (in both 2009 and 2010) to 31% in 2011 (GHS, 2011). A look at these creates the necessity for research into the correlates of antenatal and delivery care for policy assessment and review.

1.2 Statement of the Problem

The United Nations Millennium Development Goals have identified improving women's access to maternal health care as a crucial target in ameliorating maternal mortality in sub-Saharan Africa. Data available indicate that over half a million women from the developing world die each year of causes related to pregnancy and child birth. There are about 500 maternal deaths for every 100,000 live births, and around 10 per cent of the pregnancies are at high risk (UNFPA, 1995).

Similarly, wide discrepancies exist in access to maternal health care between the developed and the less developed world, between the rich and the poor, urban and rural residents, and by education level (UNFPA, 1995, and Navaneetham et al., 2000). Early and regular check-ups by health professionals are essential in assessing the physical status of women during pregnancy and ensuring appropriate interventions during delivery (UNFPA, 1995). However, delivery by a skilled attendant is generally low in less developed countries. Many women deliver at home although it is during delivery that care is most needed. In Africa, 63% of pregnant women make at least one antenatal care visit while 42% deliver with a skilled attendant (Navaneetham et al., 2000).

A number of studies (including those by World Bank, 1994b; UNFPA, 1995; and Navaneetham et al., 2000) have documented several barriers to the effective delivery of antenatal care in both urban and rural areas of sub-Saharan Africa. Lack of physical access to health care facilities presents a fundamental hurdle to receiving care, even in urban settings. Poor quality of services still ranks high as a major concern in most health systems, as high patient volume and limited resources combine to constrain service provision. Worse still, even when facilities are accessible

and quality services are available; many women only recognize pregnancy relatively late in gestation which leads to associated problems such as miscarriages and other complications during delivery. For this reason, the Safe Motherhood Initiative (SMI), a global health initiative, was launched in 1987. It is disheartening however, that maternal mortality and morbidity still remain significant health problems in most less developed countries.

The situation in Ghana is similar to the one experienced in other parts of the less developed world. Although antenatal visits have increased over the years reaching 98.4% in 2001 and 133.0% in 2002 (GHS, 2003), deliveries at health facilities have not increased substantially. Although there has been an increase in supervised deliveries at the national level from 50.4% in 2001 to 74.7% in 2002, it is not an enviable achievement as deliveries by trained traditional birth attendants (TBAs) are considered supervised (GHS 2003).

Women who consult health workers during their pregnancy often do not give birth in a health centre, particularly in rural areas. Hence, it is necessary to consider the socio-demographic barriers, the accessibility of ANC, and any other reasons for the limited use of obstetrical services by women.

Several studies (Williams et al., 1985, World Bank 1994b, Magadi et al., 2000, and Overbosch et al., 2004) in both rural and urban areas have addressed partly the economic and physical access barriers to the use of health services during pregnancy and childbirth but relatively few studies have dealt with the factors relating to socio-demographic factors that influence the use of health facilities and to the quality of services provided. The 2008 GDHS survey shows that over nine in ten mothers (95 percent) receive antenatal care from a health professional (doctor, nurse,

midwife, or community health officer). Almost no mothers receive antenatal care from a traditional midwife, and 4 percent of mothers do not receive any antenatal care (GSS 2008). Although only a small proportion of pregnant women do not receive ANC services, the consequences of non-use are worth stating.

It has been estimated that 25 percent of maternal deaths occur during pregnancy, with variability between countries depending on the prevalence of unsafe abortion, violence, and disease in the area (Lincetto, et al., (n.d)). Between a third and a half of maternal deaths are due to causes such as hypertension (pre-eclampsia and eclampsia) and antepartum haemorrhage, which are directly related to inadequate or lack of care during pregnancy. WHO (2013) estimates that a third of all pregnant women experienced illness during pregnancy, of which three percent required hospitalization.

In sub-Saharan Africa, an estimated 900,000 babies die as stillbirths during the last twelve weeks of pregnancy (Lincetto, et al., (n.d), and WHO (2013)). It is estimated that babies who die before the onset of labour, or antepartum stillbirths, account for two-thirds of all stillbirths in countries where the mortality rate is greater than 22 per 1,000 births – nearly all African countries (WHO 2013). Antepartum stillbirths have a number of causes, including maternal infections – notably syphilis – and pregnancy complications, but systematic global estimates for causes of antepartum stillbirths are not available. All these are aggravated by non-use of antenatal care services.

The problem of the quality of prenatal care and the socio-demographic influences on the use of antenatal and delivery care are, thus, of great current concern for different stakeholders in the health sector in developing countries and thus the basis of this current study.

1.3 Research Questions

The following research questions are to guide the direction of this study.

i. What are the socio-demographic correlates of antenatal and delivery care in Ghana?

ii. Do more than four antenatal visits result in health facility based delivery among Ghanaian women?

1.4 Objectives

The overall objective of the study is to determine the correlates of antenatal and delivery care in Ghana.

Specifically, the study seeks to:

i. Determine the socio-demographic factors that influence choice of delivery site

ii. Determine the level of antenatal service use in Ghana

iii. Determine the relationship between antenatal care and delivery care

iv. Assess antenatal attendance as a quality measure or index of delivery in a health facility.

1.5 Rationale of the Study

The study which focuses on the correlates of antenatal and delivery care is significant for a number of reasons. It will first of all contribute to the existing wealth of knowledge on antenatal and delivery care utilization in Ghana. It is particularly relevant when there are no or little studies in this subject area. It is unique as there is no known comprehensive study that examines the multifaceted factors affecting both antenatal and delivery care in Ghana. The study will

specifically contribute to the knowledge of the socio-demographic correlates influencing antenatal and delivery care in Ghana. The study will, therefore, enrich the scope of knowledge in the fundamental socio-demographic and other factors that influence the use of maternal services particularly antenatal and delivery care to assist in the policy direction of reducing maternal and child mortality to acceptable levels as required by international standards. Moreover, the outcome of the study would provide new dimensions and guide service providers on how to customise antenatal and delivery services for the desired policy outcomes by governments, Non Governmental Organisations, and other policy implementers. It would also serve as a base for future research in similar areas. Most importantly, it is to fulfill the requirements for the award of the Master of Arts degree in population studies.

1.6 Organisation of the Study

This research is organized into seven chapters.

Chapter one – titled introduction deals with the background to the study, statement of the problem, research questions of the study, objectives, rationale of the study, and organisation of the study.

Following this introduction is chapter two – review of literature, which examines works of other scholars related to the topic under study to place it in a historical perspective.

Chapter three is research methodology and critically reviews the actual processes involved in carrying out the research.

Chapter four- titled socio-demographic characteristics of respondents dealt with the univariate analysis of the survey respondents. Simple frequency tables and charts were used.

Chapter five is antenatal and delivery care utilization and deals with the bivariate analysis by critically looking at the association between the socio-demographic variables and antenatal and delivery care (dependent variables).

Chapter six – titled correlates of antenatal and delivery care examines the two binary logistic regression models used in this study.

The final chapter – seven is titled Summary, Conclusions and Recommendations gives an overview of the research process and its major findings including appropriate policy suggestions for action.

In sum, this chapter examined the overview of the background to the study by critically analyzing the state of maternal health in relation to antenatal and delivery care from the global perspectives through the sub-continent to Ghana, the focus of the study highlighting the gaps, approaches adopted so far and the current challenges and therefore the urgent need for this current study.

CHAPTER TWO

REVIEW OF LITERATURE

2.0 Socio-Demographic Characteristics Influencing Maternal Health Services Use

Several reasons abound to indicate that the decisions to seek antenatal care and qualified help at delivery or to give birth in a health facility are interrelated. First, various characteristics of women or their households such as schooling attainment or income can explain why women may opt for both types of care. For instance, Nikiema et al., (2009), argue that women wishing to give birth in a health centre are also those who make the most use of ANC services. In this case, unless we are able to include all the characteristics influencing the use of both of these services, there will be a simultaneity bias in the estimated effect of antenatal care on skilled birth attendance (Cramer, 1995, and Joyce, 1994). Analyzing the influence of antenatal care on birth weight, Joyce (1994), showed that women who receive adequate care are different from other women with regard to certain unobservable factors which, if not taken into account, cause the effects of antenatal care to be underestimated. As a consequence, women are likely to differ in terms of unobservable factors associated not only with the use of ANC care, but also with the quality of services received and their likelihood to use skilled personnel for delivery (Nikiema et al., 2009, and Rockers et al., 2009).

A number of socio-demographic characteristics of the individual affect the underlying tendency to seek health care (Addai, 2000). In this regard, good examples are maternal age and parity, which have been examined as determinants of health care use repeatedly (Adekunle et al., 1990, Celik and Hotchkiss, 2000, and Leslie and Gupta, 1989). According to the 2006 Multiple Cluster

Indicator Survey (MICS) report, Adolescents and women aged 40-44 are less likely to have antenatal care provided by trained health personnel compared with women aged 45-49 years. Parity of the woman tends to influence the use of antenatal and delivery care services. According to Ndyomugyenyi et al. (1998), parity significantly influenced care attendance. Accordingly, they observed that multigravidae attended antenatal services more than primigravidae while those more than 55% of the multigravidae had delivered their previous pregnancy at home. Conversely, the findings by Van Eijk et al. (2006), and Zhao et al. (2012), indicate an association of multiparity with low utilization of health services. Taon (2012), also observed in his study in Vietnam that multiparous women in the rural area initiated antenatal care later and had fewer antenatal visits than nulliparous women. The greater confidence and experience of the older and higher parity women, together with greater responsibilities within the household and for child care, have been suggested as explanatory factors for their tendency to use services less frequently (Kwast and Liff, 1988).

The safe motherhood indicators show fairly sustained ANC coverage over the three-year period being reviewed that is, 92.1 percent (2009); 93.3 percent (2010) and 94.4 percent (2011). This has been in spite of the proportion of clients achieving the 4+ visits, which has continued to decline-88 percent (2009) 82.4 percent (2010) and 74.9percent (2011). The national rate of skilled delivery has continued to improve from 45.6 percent (2009), 49.5 percent (2010) to 52.2 percent (2011) (GHS, 2011). Though attempts have been made to measure the level of maternal health service use by age and parity, a better conclusion could have been reached in the literature if there was a look at antenatal and facility based delivery vis-à-vis those who make partial use of

antenatal and delivery care in relation to the socio-demographic correlates which is the focus of the current study.

2.1 Marital Status and Antenatal and Delivery

Where health services are present, there are many factors - social, cultural, and economic - that cause women not to use the services, particularly when the health concern is related to sexual or reproductive matters. Information on such factors is particularly important in understanding and addressing the barriers women face in seeking care during pregnancy and at the time of delivery. One such social variable that tend to influence the use of health service is the marital status of the woman. In a number of studies (McCaw-Binns et al. 1995, Glei et al. 2003) the authors observed that married women were more likely to receive antenatal and delivery care and seek earlier care than single or unmarried women. Similarly, unmarried women in Kenya, who started childbearing before 20 years of age, had fewer antenatal visits than married women who started at a later age (Magadi et al. 2000). Mekonnen and Mekonnen (2003), in their study in Ethiopia indicated that married women were 40 percent more likely to receive antenatal care from a health professional than unmarried women. In rural north India (Pallikadavath et al. 2004) and in Nepal (Sharma, 2004) age at marriage was found to be positively associated with access or attendance to antenatal care. 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 (Obermeyer & Potter, 1991). Given the unclear nature of these findings, it important that marital status as social variable is linked with other socio-demographic variables to determine the true effect of it which is the focus of the current study.

2.2 Parental education

The level of education of the pregnant woman and her husband often shows a significant positive association with the use of antenatal care. Elo (1992), Raghupathy (1996) and Becker et al. (1993) report a positive effect of the education of both parents, while Addai (2000), McCaw-Binns et al. (1995), and Wong et al. (1987) report a positive effect of education of the mother on use of antenatal care.

A higher maternal education is mentioned in the literature to promote the use of antenatal care in several ways. Elo (1992), for instance, mentions that more education might lead to more decision-making power for the mother within her household. It might also increase her knowledge of modern health care and its effectiveness and of how to apply it.

In Ghana, for example, if all women attained secondary schooling, the probability that they receive the whole range of services would rise by 13%, in comparison to women with no schooling, holding all other factors constant (GSS 2009). The equivalent increase would be 11% in Uganda, and 10% in Tanzania, while in Kenya, women's schooling appears to have no effect (Magadi et al. 2000). Women living in wealthier households are more likely to report having received a higher content of ANC services in Ghana, Kenya and Tanzania. However, the overall effect of household economic status is relatively modest, with the largest observed effect occurring in Kenya, where women from the richest households are 9% more likely to enjoy good services compared to those from the poorest households.

Education might further lead to a higher living standard because of increased earnings for herself or because of a wealthier husband. The level of education of the mother might thus be correlated

with several other factors that can be assumed to influence the use of antenatal care. Indeed, both Elo (1992) and Raghupathy (1996) find that the bivariate correlation between antenatal care use and the mother's education level is considerably confounded by several factors, including indicators for household living standard and access to health care facilities. However, after controlling for such factors, they still find a significant positive association between the mother's level of education and the use of (modern) antenatal care.

Although, in general, women in higher socioeconomic groups tend to exhibit patterns of more frequent use of maternal health services than women in the lower socioeconomic groups, factors such as education appear to be important mediators (Addai, 2000, Addai, 1998, and Leslie and Gupta, 1989).

Expectant mothers who obtain sufficient antenatal care generally have better pregnancy outcomes than those who lack such care, both in terms of their own health condition and that of their babies. In turn, better maternal health has a favourable impact on household food security. Not only will a better maternal health increase babies' access to breastfeeding, it will also increase the access to nutritious food of household members in general, due to the predominant role of (expectant) mothers in the production, marketing and preparation of food. These immediate and indirect consequences of antenatal care for food security are particularly relevant in sub-Saharan Africa, where fertility rates are high and women often bare the sole responsibility of food security. For this reason, the current study investigates the determinants of the use of antenatal care in Ghana, where 40% of the expectant mothers still lack sufficient antenatal care. In particular, this study investigates how socio-demographic factors such as income, cost of

transport, and distance to providers affect the choice for antenatal care and restrict the number of visits below the recommended number of four.

2.3 Religion, Culture and Ethnicity

Religion, culture and ethnicity may influence the attitude of women towards pregnancy and modern health care, and thus have an effect on their use of antenatal care. Addai (2000), reports for Ghana a positive association between being Catholic and the use of antenatal care, and a negative relationship with professing a traditional religion, while ethnicity showed no significant effect. In Thailand, Raghupathy (1996) also reports a negative effect of being Muslim on antenatal care use. In a gender perspective, Adetunji (1991) related the perceptions of women to the efficacy of modern health services to the religious beliefs of women.

However, these findings do not include economic variables to explain the use of antenatal care, and religion might well be correlated with living standard, hence this current study picks up the effect of this excluded variable.

Another important factor in the utilization of maternity care services, especially in Africa, is the cultural background of the woman (Leslie and Gupta, 1989; Pelto, 1987). The cultural perspective on the use of maternal health services suggests that medical need is determined not only by the presence of physical disease but also by cultural perception of illness (de-Graft Aikins,2005, Addai, 2000). In most African rural communities, modern health services coexist with indigenous health care services; therefore, women must choose between the options (Addai, 2000). Several other personal features are included in the above-mentioned studies, some of which show a significant association with antenatal care use. Remarkably, Magadi et al., (2000), McCaw-Binns et al., (1995), and Raghupathy (1996) report a negative association of a pregnancy

being unwanted or mistimed with the use of antenatal care. Apparently, these women were less aware of their pregnancy or tried to ignore it for some time, or were actually in circumstances that were less favourable for a pregnancy and for attending antenatal care. While such options are available for women, the above literature has been silent on the possibility of demographic factors such as age and marital status to influence the ignorance, unpreparedness or the choice of maternal health care options.

2.4 Birth Order and Antenatal and Delivery Care

Pregnancy is a natural process and women with some experience might consider antenatal care less necessary (Arthur 2012). The number of living children of the mother may also affect her antenatal care use.

Parity of the expectant mother proxies a mother's experiences with antenatal care services use. Thus, the expectant mothers' use of antenatal may be influenced by her previous experience with antenatal services. This may be positive (an indication of a pleasant experience at the health facility) increasing the use of the service or negative (unpleasant experience at the experience at the health facility) thereby reducing her use of antenatal care (Arthur 2012). Accordingly, Elo (1992) and Raghupathy (1996) report that a higher number of previous pregnancies is associated with less use of antenatal care. Similarly, Magadi, et al. (2000) and McCaw-Binns et al. (1995) report a negative association between a higher number of previous pregnancies and early attendance to antenatal care. These findings for example have failed to provide adequate information on why women with high parity or birth order besides experience not seek for antenatal and delivery care. It is on this that the current study seeks to bridge this gap.

2.5 Wealth and Antenatal and Delivery Care

Wealth indicates the economic status of the individual and or family. Several documented studies have found wealth to influence the use of health services positively. Ortiz (2007) as cited by Arthur (2012) indicates that wealthier mothers have higher chances of attending a first antenatal care visit and additional visits than poorer mothers in Colombia. Abor and Abekah-Nkrumah (2009) also found that, as compared to those in the poorest households, 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 antenatal care 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 antenatal care because she may be able to afford the cost and other expenses that come with using this service. De Allegri et al (2010) in their study in rural Burkina Faso confirm the role of household wealth in shaping the utilization of maternal care services.

Similarly, the 2008 GDHS reports of a positive relationship between wealth quintile and professional antenatal care coverage, 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).

2.6 Insurance Coverage and Antenatal and Delivery Care

Financial access to antenatal and delivery care services has been noted to be a barrier to these services particularly at the point of need. The national health insurance scheme (Act 650) was,

therefore, passed in 2003 with the aim of making health care accessible to all by reducing the out-of-pocket expenses at points of service. Since the inception of the NHIS, women who have health insurance are more likely to attend formal antenatal care check-ups (Brugiavini and Pace, 2011) as cited by Owoo S.N et al (2013). Insured women are more likely to attend antenatal care than non-insured. Thus while 1.8 percent of those health insured did not attend antenatal 5.8 percent of non-insured did not attend (Arthur 2012). Those with health insurance were more likely to attend at least 4 visits (88 percent) as against 73 percent non-insured (Arthur 2012). Women who have access to health insurance also have a greater intensity of antenatal care utilization (Arthur, 2012; Brugiavini and Pace, 2011). Clearly, these studies have failed to indicate the social and economic influences mentioned in the literature as being responsible for the antenatal and delivery service seeking behaviours of Ghanaian women, what remains to be covered is the linkage between these and demographic factors, and their collective impact on overall maternal health.

2.7 Distance and Antenatal and Delivery Care Utilization

In rural areas, the distance to modern antenatal care providers can be considerable. More than one-third of the rural women in developing countries have to travel more than five kilometres to a modern health care provider that typically provides antenatal care, whereby nurses or medical assistants are most often available within five km and doctors are least available (World Bank 1994b). One out of nine women even has to travel more than 15 km to such a provider (Overbosch et al. 2004). In most rural areas in Africa, one in three women lives more than five kilometers from the nearest health facility. Time and travel costs for repeated antenatal care visits would thus be large for these women, which might restrain their demand for antenatal care

(World Bank, 1994b, and Overbosch et al. 2004). This is an indication that accessibility of health services is an important determinant of the utilization of health services in developing countries.

The scarcity of vehicles, especially in remote areas, and poor road conditions can make it extremely difficult for women to reach even relatively nearby facilities. Walking is the primary mode of transportation, even for women in labour (Williams et al., 1985; World Bank, 1994b). In rural Tanzania, for example, 84 percent of women who gave birth at home intended to deliver at a health facility but did not due to distance and lack of transportation (Bicego et al. 1997). Fees reduce women's use of maternal health services and keep millions of women from having hospital-based deliveries or from seeking care even when complications arise. Even when formal fees are low or nonexistent, there may be informal fees or other costs that pose significant barriers to women's use of services. These may include costs of transportation, drugs, food, or lodging for the woman or for family members who help care for her in the hospital (Gertler and van der Gaag, 1988; Gertler et al., 1988).

Acharya and Cleland (2000), Magadi et al. (2000), and Raghupathy (1996) report a negative effect of distance and/or travel time to antenatal care on its use, while Acharya and Cleland (2000), McCaw-Binns et al (1995) and Wong et al. (1987) report a positive association with quality of antenatal care. All these are reflections of social and economic factors influencing maternal health seeking behaviour, and the correlation of such factors to demographic characteristics of women as proposed in this study could give a better picture.

2.8 Media Exposure and Use of Antenatal and Delivery Care

The availability of health information and knowledge to women is important when considering efforts to raise awareness of health practices and positively influence maternal health behaviours (Asmah et al. 2013). According to Kistiana, S., (2009) as cited by Tey, and Lai (2013), lack of exposure to media also posed as a barrier to the utilization of maternal and child health services). Also the findings of Tey, and Lai (2013), suggest that the non-use of a health facility could probably be due to the lack of knowledge or information on the importance of giving birth in a health facility and the location of such facilities. The low media exposure among women in Sub-Saharan Africa and South Asia they identified is partly due to the low educational level and the lack of media facilities and reports. In the works of Asmah et al. (2013) after controlling for some individual characteristics in their model, the logit regressions revealed that, women who received health messages conveyed through television have a higher likelihood to use skilled delivery care and utilize antenatal services. Most of these studies as noted above have not considered the combined effect of exposure to some form of media with other correlates of antenatal and delivery care, the main focus of this investigation.

2.9 Perceived Benefits of Antenatal and Delivery Care

The antenatal period presents important opportunities for reaching pregnant women with a number of interventions that may be vital to their health and well-being and that of their unborn children (GSS 2006). Better understanding of foetal growth and development and its relationship with the mother's health has resulted in increased attention to the potential of antenatal care as an intervention to improve both maternal and new born health.

Other factors that hinder antenatal care attendance are perceived inadequate services offered to mothers at the formal health delivery system. In a qualitative study by Ndyomugyenyi, Neema and Magnussen (1998) in rural Uganda, it was clear that pregnant women would appreciate antenatal services if they could be given medicines, information on the status of their babies and have their babies foetal heart listened to. Similar studies in Somalia report dramatic changes in utilization rates at Maternal and Child Health services depending on availability of drugs (UNICEF Report 10). Stock-outs means that fewer patients come as they know there is reduced utility of the service. Overall, repeated experience of stock-outs impact trust of the facility offering care, reduce demand and increase delay in seeking care (UNICEF 2002, as cited in Report 10, UNICEF).

2.10 Conceptual Framework

The Conceptual Framework applied in this study in view of empirical data on the correlates of antenatal and delivery care is based on the health seeking behaviour model developed by Anderson and Newman (2005). This behavioural model proposes that the use of health care services that is antenatal and delivery care is a function of individual utilizer characteristics. Interest in the individual characteristics of people which help to determine the health care they receive is necessary for analysis to develop a model which relates these individual characteristics to utilization patterns in some logical fashion.

The framework in Figure 1.1 demonstrates the set of interacting variables required for the study of the correlates of antenatal and delivery care in Ghana. The underlying model, therefore, assumes that a sequence of conditions contribute to the type of volume of antenatal and delivery

care a person uses which depends on the predisposition of the individual to use services and one's ability to secure antenatal and delivery services.

CONCEPTUAL FRAMEWORK

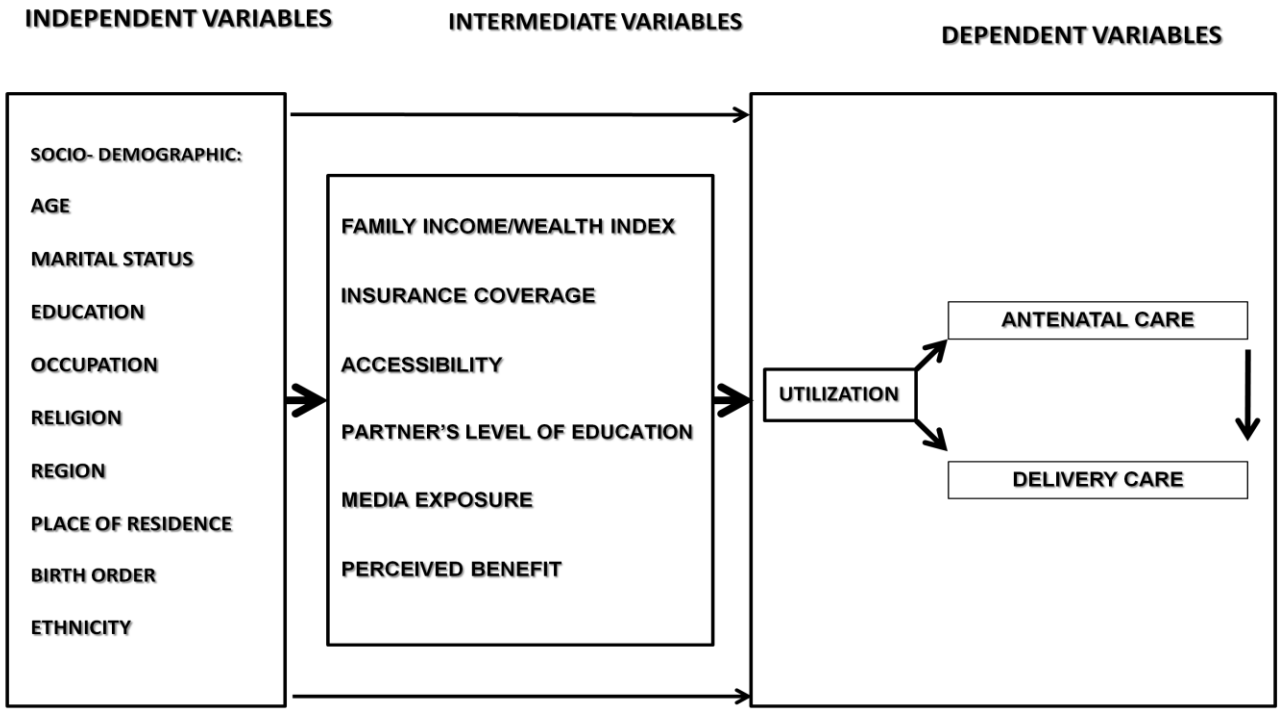


Figure 1.1 Andersen's Modified Health Seeking Behavioural model (2005)

This modified model is thus ideal for explaining the correlates of antenatal and delivery care as it has grouped these into predisposing factors comprising mainly socio-demographic factors (age of the pregnant woman, marital status, level of education of the woman, occupation, religion, region, place of residence, birth order and ethnicity) and enabling components (family wealth, insurance coverage, accessibility (measured in terms of distance and transport), partner's level of education, media exposure and perceived benefit).

Some individuals have a propensity to use services more than other individuals, where propensity toward use can be predicted by individual characteristics which exist prior to the

onset of specific episodes of illness (Anderson and Newman 2005). People with certain of these characteristics are more likely to use health services even though the characteristics are not directly responsible for health service use.

Socio-demographic factors have long been identified to influence health care use in many countries across the world. This is more so in developing countries. A combination of these factors such as age, education, occupation, and income influences the extent to which health services are utilized.

The model shows how age influences people's attitude to antenatal and delivery care and utilization of such services.

Marital status of the woman has also long been recognised as a factor influencing decisions as to the use of health services including antenatal and delivery care

There is equally enough empirical evidence to the effect that more education is connected to the tendency to seek and to use better antenatal and delivery care services. Education also has a relationship with income and occupation. The more education a person has the more he or she will have an occupation and will earn an income compared to having no education. Studies on the usage of antenatal services have also confirmed the same results, indicating that the educated woman stands a higher chance of utilizing antenatal care services than an uneducated woman. Education, income and occupation have all, therefore, been identified as predictors of antenatal and delivery care utilization.

Also, religion, region, place of residence, birth order and ethnicity have all been recognised as predisposing elements in antenatal and delivery care utilization.

Even though individuals may be predisposed to use health services, some means must be available for them to do so. A condition which permits a family to act on a value or satisfy a need regarding health service use is defined as enabling (Anderson and Newman 2005). Enabling conditions make health service resources available to the individual. The extent to which pregnancy is regarded as a health condition that requires professional medical care and the risk involved in not seeking for such help influences the utilization of antenatal and delivery care. Where pregnancy is recognised as a health condition, it is more likely that an individual would seek for antenatal services. Enabling conditions can be measured by family resources such as income or wealth, level of health insurance coverage, individual's access to the service, partner's level of education, media exposure, and whether or not the individual perceives any benefit to be more than the cost of accessing the service. These are the variables used as intermediaries.

Wealth of the family tends to influence use or non-use of health services. Available empirical data suggest that wealth or income is positively associated with the use of formal health services including antenatal and delivery care.

Similarly, the extend of health insurance coverage which addresses partly financial accessibility issues particularly out - of - pocket payments at the point of services determine formal health care utilization. Evidence abound to the effect that when women are health insured they are more likely to use antenatal and delivery care services than non insured women.

The distance to health facilities and means of transport have considerable effect on the use of such facilities in both rural and urban areas. Distance and transport availability have a combined

effect on physical accessibility. These have been noted in the literature to influence use of antenatal and delivery care services. Where women do not see access to health facilities they tend to use more antenatal and delivery care services than when they perceive access as a concern.

The level of education of a woman's partner has been identified from the literature is positively related to the woman's consumption of formal health services including antenatal and delivery care services. Thus, the higher the level of education of a partner the more likely the woman will use more antenatal and delivery care. This is so because education has relation with employment and the level of income of the partner.

Furthermore, the availability of health information and knowledge to women is important when considering efforts to raise awareness of health practices and positively influence the use of antenatal and delivery care. Exposure to media is noted to impact positively on individual's access to relevant health information and knowledge influence antenatal and delivery care consumption.

Better understanding of fetal growth and development and its relationship with the mother's health has resulted in increased attention to the potential of antenatal care as an intervention to improve both maternal and new born health. Thus where the woman perceives the benefit of antenatal and delivery care to be more than the cost of seeking for such services the more the use of ANC and delivery services.

2.11 Hypotheses

The following statements have been hypothesized for the study to guide in drawing conclusions.

i. Women with tertiary education are more likely to complete antenatal visits compared to women with no education

ii. Women with tertiary education are more likely to deliver in health facility than those with no education.

iii. Women who complete antenatal care are more likely to deliver in a health facility compared to women with incomplete antenatal care.

iv. Delivery at a health facility varies directly with the age of the woman.

In conclusion, this section of the study highlighted succinctly existing knowledge in the study area vis-à-vis gaps in approaches to earlier studies and how this current study intends to add on and bridge this inherent knowledge deficit with a clear conceptual framework that gave direction to the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Sources of Data

The data for this study are derived from the 2008 Ghana Demographic and Health Surveys (GDHS). This data was collected from all the ten regions of Ghana to ensure national representativeness. The data were also subjected to quality control test through pre-testing, training, and the actual field work. The processing of the GDHS results began shortly after the fieldwork commenced. Completed questionnaires were returned periodically from the field to the GSS office in Accra, where they were entered and edited by data processing personnel who were specially trained for this task. Data were entered using CSPro, a programme specially developed for use in DHS surveys. All data were entered twice (100 percent verification). The concurrent processing of the data was a distinct advantage for data quality, because GSS had the opportunity to advise field teams of problems detected during data entry. These rigorous processes added to the quality of the data and make it suitable for the current study.

3.2 Sample Size

The sample size for this study was 2,020 drawn from the women's file. The sample was conducted on data adjusted by sample weight to account for the stratified sampling design for representativeness. It was then filtered to get the sample for this study which excluded all missing values and women who did not use antenatal and delivery services. This was so because the main focus of this study was to examine the correlates that make women who initiate antenatal use and will not complete as against pregnant women who go through their pregnancy term with complete antenatal care and deliver in a health facility. Besides, Women who did not

attend antenatal were excluded because the number was too small (50) to make any statistical analysis.

3.3 Dependent Variables

The dependent variables in this study are two, which is antenatal care and delivery care measured in terms of utilization. Each of the dependent variables is dichotomous. Antenatal care has been dichotomized into complete and incomplete antenatal visits. Based on the WHO and the Ghana

Health Service recommended number of visits and the service content at each visit, considered four or more visits for antenatal services to mean optimal range of services and, therefore, complete care. Conversely, less than four visits imply incomplete care as it is not likely for the full range of antenatal services to be provided in accordance with the recommended standard. The number of antenatal visits was therefore grouped into 1-3 and 4+ and recoded as 1 and 2 corresponding to incomplete and complete respectively. Women who did not use antenatal care at all were, as noted above excluded. This was so because the main focus of this study was to examine the correlates that make women who initiate antenatal use and will not complete as against pregnant women who go through their pregnancy term with complete antenatal care and deliver in a health facility. Besides, the number was too small (50) to make any statistical analysis.

Delivery care was also dichotomized into home delivery and health facility based delivery. Similar assumptions are made here. The premise is that deliveries occurring in health facilities are most likely to be skilled attended to and that of home delivery unskilled. This was ascertained by responses to the question “where did you give birth?” Open as it was, all possible places of birth of the respondent were recorded and coded. For the purposes of this study these

responses were categorised into home delivery and health facility delivery. Because of the rigour with which the data was filtered for this study, there was no home delivery that was attended to by skilled health personnel although broader view is that some home based deliveries could be skilled attendant.

3.4 Independent Variables

The independent variables in this study which sought to explore the correlates of antenatal and delivery care included in the study are age of the expectant mother or respondent, marital status, occupation (regrouped as employed or not employed), religion, region of residence, place of residence, birth order/parity, and ethnicity. Family income/wealth index, partner's level of education, media exposure, and perceived benefit are considered as mediating variables influencing the use of antenatal and delivery care services.

The respondent's age was recorded by the questions "in what month and year were you born", and "how old were you at your last birth day". The later was used as the ages were recorded in completed years.

The completed ages were categorized into the conventional age categories as:

Respondents aged 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49 years old. The two questions completed each other and therefore the completed ages as used in the data were maintained as it conformed to the standard categorization.

Educational levels of the respondents which were considered relevant were, "educational attainment and literacy level". Educational attainment was measured by the level of school completed by the respondent and had the following response categories: "*no education",*

"incomplete primary", "complete primary", "incomplete secondary", "complete secondary", and "higher". These categories were regrouped and coded into the following five categories*: "no education", primary, "Middle/JHS", Secondary/SHS and "higher"*

The respondent's marital status was recorded by the question "what is your current marital status?" which were recorded as "*married or living together", "divorced/separated", "widowed" "never married and never lived together*. These were categorised into "married" and "not married". This was to enable an assessment of whether being in a union had an effect on the use of antenatal and delivery services.

Respondents were equally asked to determine their current occupational status by the question "What is your occupation? That is, what kind of work do you mainly do?" An open question as it was, a range of responses were given and these were later combined into the following categories: *"not working/did not work", "professional, technical, management", "clerical", "sales", "agriculture self-employed", "agriculture employee", "household & domestic", "services", "skilled manual", and "unskilled manual "and "don't know"*. For the purpose of the analyses in this study, these categories were again combined into employed and not employed.

Respondent's *"religion"* was also determined by asking the question, *"What is your religion?"* The responses for this question were: "*Catholic", "Anglican", "Methodist", "Presbyterian, "Pentecostal/Charismatic", "Other Christian", "Moslem", "Traditional/Spiritualist", No Religion"* and *Other"*. These responses were regrouped and coded as: "no religion", Christian", "Moslem", and traditional/Spiritualist for the purposes of this study. The *"other*" was combined with no religion for the purposes of convenience. Besides, the number was small.

Region of the respondent recorded at the very beginning of the household questionnaire was used to determine respondents' region of residence and not by a specific question, but through the note *"Identification"* in which region, district, and locality were listed and registered. For this study the coding was not altered. The regions were Western, Central, Greater Accra, Volta, Eastern, Ashanti, Brong Ahafo, Northern, Upper East, and Upper West regions

The respondent's *"type of place of residence"* indicating whether respondents lived in *"rural" or "urban"* places was used as the respondent's place of residence.

Respondents were asked whether they used antenatal services during their last birth or pregnancy five years prior to the survey. Responses were recorded according to the birth order of the child. The births range from one as the least to twenty as the highest birth order with three as the median birth order. For this study, the birth order was grouped into three that is 1-2, 3-4, and 5+ births.

Respondent's ethnicity was ascertained by the question "*to which ethnic group do you belong"* with response categories as "Akan", "Ga/Dangme", "Ewe", "Guan", "Mole-Dagnani", "Grussi", "Gruma", "Mande" and other. These responses were regrouped and coded as Akan, Ga/Dangme, Ewe, Guan, Mole-Dagnani, Grussi/Gruma/Mande and other for this study.

Information on the wealth index is based on data collected in the Household Questionnaire. This questionnaire includes questions concerning the household's ownership of a number of consumer items such as a television and car; dwelling characteristics such as flooring material; type of drinking water source; toilet facilities; and other characteristics that are related to wealth status. To construct the wealth index, Demographic and Health Survey applied a standard approach.

Each household asset for which information is collected is assigned a weight or factor score generated through principal components analysis. The resulting asset scores are standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one. These standardized scores are then used to create the break points that define wealth quintiles as: Lowest, Second, Middle, Fourth, and Highest. For this study, these wealth quintiles were coded as follows; *poorest, poorer, middle, richer and richest* as contained in the 2008 GDHS report.

To determine whether respondents were covered by any form of health insurance, respondents were asked *"do you have any health insurance or are you a member of a mutual health organization?"* The response categories to this question were *"yes"* and *"no"*. This was used for analysis in this study

To determine accessibility, the question on "what was the main reason why respondent did not deliver in a hospital or facility was used as a proxy with response of concern of distance and no transport as big problem and not a big problem as proxies. These concerns were regrouped and coded as No problem and Problem expressing those who considered distance and transport as concern for non-use of health facility for their last delivery prior to the data collection.

Partner's educational attainment was determined through the question *"what was the last level of education that your partner/husband graduated from?"* Response options were "*no education", "incomplete primary", "complete primary", "incomplete secondary", "complete secondary", and "higher"*. These options were grouped into four categories and coded as follows: *no education, primary, Secondary and higher.*

To determine the impact of media exposure on the use of antenatal and delivery care services, the questions on: *"Do you read a newspaper or magazine almost every day, at least once a week, less than once a week, or not at all?", "Do you listen to the radio almost every day, at least once*

a week, less than once a week or not at all?", and "Do you watch television almost every day, at least once a week, less than once a week or not at all?". For the purposes of this study, these questions were grouped into one unit as media exposure with *Yes* and *No. Yes* means that one has listened to, read or watched TV irrespective of the frequency and any of them. *No* on the other hand means that one has not at all listened to, read or watched TV. Therefore, *yes* connotes exposure to the media and *No* mean not exposed to any media through any of the categories listed above.

To determine the perceived benefit of antenatal and delivery care the question on "what was the main reason why respondent did not deliver in a hospital or facility was used as a proxy with combined responses of "no female provider at facility", "no drugs at the facility" and "long waiting time". These responses were coded into Problem and No problem to imply that those who were concerned about these three factors anticipated the potential benefits or satisfaction inherent in attending or delivering in a health facility. That is, in the contemplation of the respondent, if the anticipated benefit of seeking for antenatal and delivery care is higher than the cost then they will use more of the services. Where, the respondent expects to gain more in the use of antenatal and delivery care at the expense of cost viewed in terms of "no female provider" or the inconvenience of the long period of waiting and no drugs at the point of service then antenatal and delivery care will be complete.

3.5 Technique of Analysis

The statistical analyses were carried out using the IBM's Statistical Package for Social Science (SPSS) windows version 20.0. The analyses were purely quantitative and descriptive. At the univariate level, a detailed description of the socio-demographic characteristics of the

respondents was provided using quantitative tools. Frequency tables, and to a less degree pie chart was used to present the profile of the survey respondents.

At the bivariate level, Pearson Chi-Square test of independence was used to test for the correlation between the socio-demographic variables described at the univariate stage and the predicted variables - antenatal and delivery care. The test of significance was at 95 percent Confidence Interval.

At the multivariate analysis level, the binary logistic regression analysis model was used. Two models were constructed.

Model one was built to test the statistical relationships between the socio-demographic variables on antenatal care at 95 percent confidence level. Although at the bivariate level secondary and higher level of education were considered separately, at the binary logistic level, the two were combined. This was so because the number of women respondents with higher education was small (51) compared to the total and it therefore made statistical sense to add the number to secondary education and recorded as secondary/higher. No education was the reference category. Similar technique was used in the area of marital status of the respondents. Thus, this was recoded as never married as the reference category with married/living together and Widowed/divorced/separated as the others.

All the independent and intermediate variables were all entered in the model in respect of the survey sample and explored the correlation between the various predictor variables described at the univariate and bivariate stage and antenatal care.

The second model equally looked at and sought to test the statistical relationships between the socio-demographic variables on delivery care at 95 percent confidence level. All the predictor

variables as coded in model one were repeated for model two to explore the correlation between the various explanatory variables and the response variable that is delivery care that had been dichotomized into home delivery and health facility delivery. All the variables first cases in both models for the various predictor variables were made the Reference category (RC).

To conclude, the above discussions highlighted clearly, the actual processes involved in carrying out this study including the use of the Ghana Demographic and Health Survey 2008 as the main source of data for the study. The main sample size and how it was derived and the techniques of data analysis have been discussed carefully as preceded.

CHAPTER FOUR

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENDENTS

4.0 Introduction

The purpose of this chapter is to provide a description of the socio-demographic profile of the survey respondents as contained in the data. The basic information of the sample respondents is critical for the interpretation of the findings within the context of this study which seeks to investigate the correlates of antenatal and delivery care in Ghana. The main socio-demographic characteristics described in detail that are used in the subsequent chapters dealing with the bivariate and multiple regression analyses are: age at the time of the survey, marital status, education, occupation or employment status, religion, region, place of residence, birth order and ethnicity. This chapter also includes information on wealth quintile, insurance coverage, and accessibility to health facility, partner's level of education, exposure to media, and perceived benefit of the use of antenatal and delivery care services.

4.1 Current Age of Respondents

The current ages of respondents was analysed. The age distribution of the women shows that a little more than half (50.4 percent) are under the age of 30.The detailed results show that about 26 percent of the women are in the age group 25-29, 21 percent are in 30- 34 with 4 percent being the least in the age group 45-49 as in Table 4.1. The findings equally indicate that the proportion of respondents above 24 years decreases as age increases reflecting the comparatively young age structure of the Ghanaian population. These results are consistent with those of the Demographic and Health Survey 2008 and 2010 population and Housing Census.

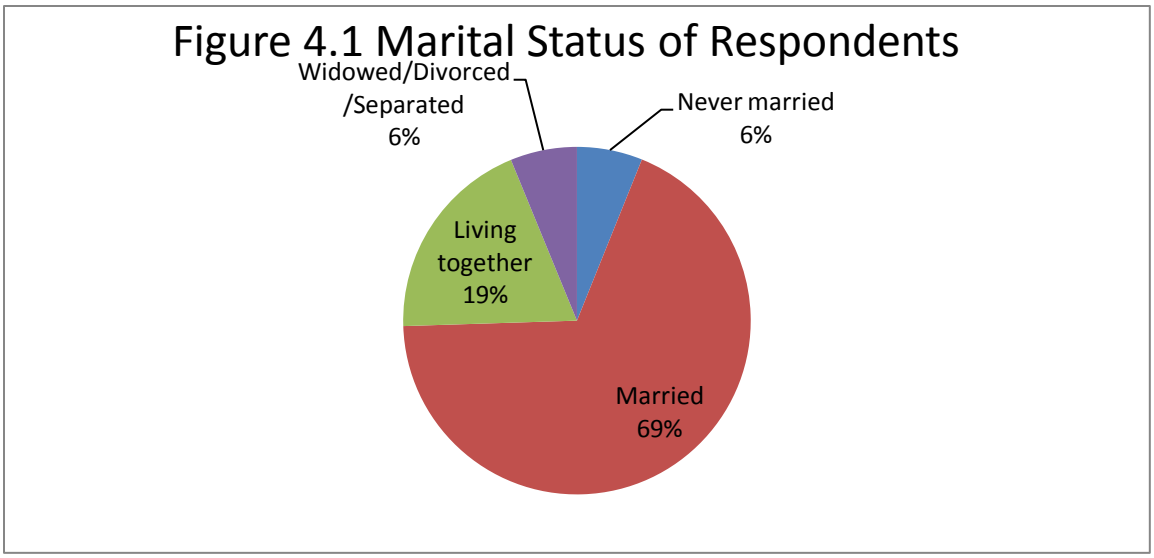
Table 4.1 Percentage Age distribution of Respondents

AGE	Number	Percent
15-19	99	4.9
20-24	386	19.1
25-29	534	26.4
30-34	414	20.5
35-39	352	17.4
40-44	162	8.0
45-49	74	3.7
Total	**2020**	**100.0**

Source: *Generated from the Ghana Demographic and Health Survey 2008*

4. 2 Marital Status of Respondents

On the issue of the marital status of the respondents, the results indicate that 88 percent of women are married or in union (living together) while only 6 percent had never married. The result is an indication that women marry early in Ghana which confirms the results of GDHS 2008 that women are more likely to marry earlier than men.



Source: *Generated from the Ghana Demographic and Health Survey 2008*

4. 3 Educational Level of Respondents

Education provides people with the knowledge and skills that can lead to a better quality of life (GDHS 2008). In relation to this, the current level of education of the survey respondents was investigated. About 38 percent of women age 15-49 had either completed or obtained Middle/JHS level of education, 30 percent had no education with the least (3 percent) attaining higher level of education. These results are consistent with the national findings of a higher proportion of women age 15-49 (41 percent) obtaining Middle/JHS level of education (GDHS 2008). The 30 percent women aged 15-49 with no education also reflects the national picture that illiteracy rate is high among women with diverse policy implications in terms of health and other socio-economic variables. Improved education of women for example is associated with increased use of modern prenatal care in a Cebu study in the Philippines (Wong et at. 1987). "Educated women are cautious of their diet and always heed to their doctors' advice when they get pregnant for which reason they scarcely encounter problems during delivery" (Ghanaian Times, July 26/07/13 pg. 16). This is a clear demonstration of the effect of improved education on the lives of women and their health needs. Figure 4.2 indicates the educational status of the respondents.

Table 4.2 Percentage Distribution of Respondents by Level of Educational

Education	**Number**	**Percent**
No education	612	30.3
Primary	485	24.0
Middle/J.H.S	760	37.6
Secondary/S.H.S	113	5.6
Higher	51	2.5
Total	**2020**	**100.0**

Source: *Generated from the Ghana Demographic and Health Survey 2008*

4. 4 Employment Status of Respondents

This variable assessed the occupational activities of the respondents and was classified as either unemployed meaning respondent was not engaged in any form of work or employed implying the respondent was engaged in one form of occupation or the other. The findings indicate that a great majority (87 percent) were employed compared to 13 percent unemployed. This is similar to the findings by GDHS 2008 that reports that overall, 75 percent of women age 15-49 are employed with the number employed having a positive association with age.

4. 5 Religion of Respondents

Religion is a significant determinant to the way people perceive and treat diseases. The survey, therefore, considered the religious affiliation of respondents at the time of the interview. Although the national survey categorized the responses into all the religious sects possible, this study regrouped the responses as depicted in Table 4.3 with majority (72 percent) being Christians and the least (4 percent) having no religious affiliation. This indicates that women ages 15-49 are predominantly Christians that is consistent with the results of the 2010 Population and Housing Census, GDHS 2008 and 2003.

Table 4.3 Percentage Distribution of Respondents by Religion

Religion	**Number**	**Percent**
No religion	80	4.0
Christian	1455	72.0
Moslem	371	18.3
Traditional/Spiritualist	114	5.7
Total	**2020**	**100.0**

Source: *Generated from the Ghana Demographic and Health Survey 2008*

4. 6 Region of Residence of Respondents

This variable considered which of the ten regions of the country the survey respondents resided in at the time of data collection. The sample survey revealed that the highest proportion (19 percent) resided in the Ashanti Region and the least in the Upper West Region as indicated in Table 4.4. The Regional distribution of the respondents reflects other national surveys and consistent with Ashanti Region as the most populous followed by the Greater Accra Region with Upper West Region as the least populated region in Ghana according to the 2010 Population and Housing Census of Ghana. The regional distribution of the respondents is very relevant as this affects health infrastructure availability that is equitably distributed based on population size which varies across all the regions with less populated regions less endowed than the more populated regions.

Table 4.4 Percentage Distribution of Respondents by Regions of Residence

REGION	Number	Percent
Western	181	9.0
Central	191	9.4
Greater Accra	255	12.6
Volta	165	8.2
Eastern	180	8.9
Ashanti	387	19.2
Brong Ahafo	211	10.5
Northern	281	13.9
Upper East	114	5.6
Upper West	56	2.8
Total	2020	100.0

Source: *Generated from the Ghana Demographic and Health Survey 2008*

4. 7 Place of Residence of Respondents

The study equally investigated the current place of residence of the survey respondents. That is, whether the respondent resided at a rural or urban place. The results show that a sizeable majority (59 percent) of women age 15-49 live in rural areas as against 41 percent of the women in urban areas. These findings are consistent with the GDHS 2008 where majority of women (51.5 Percent) are in the rural areas. This implies that in Ghana the proportion of women living in rural areas is still higher.

4.8 Birth Order

This indicator considered the number of births which approximates the living children the respondents had five years prior to the survey. The results show that more than half, 75 percent had 4 or less children. This conforms to the results of the GDHS 2008.

Table 4.5 Percentage Distribution of Children by Birth Order

Birth Order	Number	Percent
1 – 2	882	43.6
3 – 4	629	31.1
5+	510	25.2
Total	2020	100.0

Source: *Generated from the Ghana Demographic and Health Survey 2008*

4.9 Ethnicity of Respondents

The ethnic distribution of the survey respondents was analysed. The most predominant ethnic group was the Akan (47 percent) followed by the Mole Dagbani with the least being the other minor ethnic groups as shown in Table 4.5. These results confirm other findings that the Akan constitute the largest ethnic group in Ghana (GSS 2012; GSS, GHS and ICF Macro 2009).

Table 4.5 Percentage of Distribution of Respondents by Ethnicity

Ethnicity	Number	Percent
Akan	949	47.0
Ga/Dangme	102	5.1
Ewe	254	12.6
Guan	56	2.8
Mole Dagbani	409	20.2
Grussi/Gruma/Mande	174	8.6
Other	76	3.7
Total	2020	100.0

Source: *Generated from the Ghana Demographic and Health Survey 2008*

4. 10 Wealth Index

This study also considered respondent's household wealth as measured by varying variables. The findings indicate that close to a quarter of the respondents (22 percent) are in the poorest quintile followed by the poorer (22 percent) with the richest (16 percent) being the least as depicted in Table 4.6.

Table 4.6 Percentage Distribution of Respondents by Wealth Quintiles

Wealth Index	Number	Percent
Poorest	449	22.2
Poorer	437	21.6
Middle	388	19.2
Richer	429	21.2
Richest	318	15.7
Total	2020	100.0

Source: *Generated from the Ghana Demographic and Health Survey 2008*

The results indicate that almost half - 44 percent of women are in the lower half of the wealth quintile group. Similar findings are observed in GDHS 2008 and 2003.

4.11 Insurance Coverage of Respondents

This variable considered whether sample respondents were covered by any health insurance scheme during the last five years prior to the survey. This is in view of the fact that the National Health Insurance Scheme (Act 650) with the aim of making health care accessible to all particularly the vulnerable segment of the population was introduced in 2003. The findings reveal that a large proportion (59 percent) of the survey respondents had one form of health insurance coverage as against 41 percent who had no insurance coverage. This is similar to reports by the Ghana Health Service that more than half of its OPD attendance is covered by the National Health Insurance (GHS, 2011).

However, this is in sharp contrast to the GDHS 2008 report findings that a high proportion of women (60 percent) said they are not covered by any type of health insurance scheme.

4.12 Access to Health Facility

This variable considered the ease with which respondent could reach the nearest health facility to access antenatal and delivery care services in times of need. Several factors were considered in the national survey but this study examined difficulty associated with access in relation to distance and transport. The results of the survey reveal that only a sizeable proportion (23 percent) had difficulty in accessing antenatal and delivery care services attributable to distance and transport as against 77 percent who expressed no concern over distance and transport in accessing health services.

4.13 Partner's Level of Education

The level of education of a woman's partner as a variable was examined. The analysis indicates that a little more than half of respondents' partners had secondary level of education, 24 percent had no education with the least 9 percent had higher (see Table 4.7).

Table 4.7 Percentage Distribution of Partners by Level of Education

Partner's Level of Education	Number	Percent
No education	453	23.9
Primary	235	12.4
Secondary	1043	55.0
Higher	165	8.7
Total	1897	100.0

Source: *Generated from the Ghana Demographic and Health Survey 2008*

4.14 Media Exposure

This variable seeks to determine the extent to which respondents' exposure to media impacts on antenatal and delivery care use. This is in recognition of the fact that access to information is essential in increasing people's knowledge and awareness about what is happening around them. It also exposes individuals to: messages of appropriate health practices and behaviour. The survey results indicate that a sizeable majority (86 percent) had exposure to any form of media including Radio, Television and newspapers and the rest (14 percent) had no exposure at all. This is similar to the findings that exposure of women to print and broadcast mass media is very high at 76 percent (GSS 2009).

4.15 Perceived Benefit

This variable attempts to measure the extent to which respondents' perception of possible utility as against the cost of accessing antenatal and delivery care services influences one's decision to use such services. Although the survey data did not ask direct questions on this, a proxy that measured the level of concern of respondent in seeking for medical help including antenatal and delivery care in the areas of long waiting time, likelihood of no drugs available, concern of poor quality, and no female provider were combined and measured as perceived benefit. The results indicate that only 19 percent (381) expressed concern over these variables that could make them not to seek for facility based antenatal and delivery care services as against the majority 81 percent who expressed no concern. The results imply that few individuals have concern over expected utility in accessing health services.

4.16 Proportion of Respondents Using Antenatal and Delivery Care

The response variables of interest in this study are the level and adequacy of antenatal and delivery care services use. In this study, therefore, incomplete and complete antenatal care service use was defined as antenatal attendance up to three times and four or more visits respectively. This was on the assumption of the WHO and GHS standard required visits to enable a pregnant woman avail her to the full range of services required to the term of the pregnancy. In the light of this, a relatively greater proportion of women 83 percent completed antenatal care services before delivery as against 17 percent (see Table 4.8).

Table 4.8 Percentage Distribution of Utilization of Antenatal and Delivery Care Services by Respondents

Antenatal Care	**Percent**	**No.**	**Delivery Care**	**Percent**	**No.**
Incomplete	16.7	337	Home delivery	37.7	762
Complete	83.3	1683	Health facility delivery	62.3	1258
Total	**100.0**	**2020**	**Total**	**100.0**	2020

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Similarly, the survey results indicate that as much as 38 percent survey respondents delivered at home as against 62 percent health facility based delivery. This result is consistent with GDHS 2008 where 57 percent of births were delivered in health facilities. This implies that there is still a many pregnant women preference for home delivery and, therefore, more effort needs to be done if the desire to increase skilled attendance at birth in line with the Millennium Development Goals is to be achieved.

In summary, this unit examined the individual socio-demographic characteristics of the respondents and how these characteristics relate to similar studies and how it can potentially influence utilization of antenatal and delivery care services in Ghana.

CHAPTER FIVE

ANALYSIS OF ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CORRELATES OF ANTENATAL AND DELIVERY CARE

5.1 Age and Antenatal and Delivery Care

Age has long been established not as a cause for use of health services but as a factor predisposing individuals to the use of maternal health services. This study analyses the extent to which age influences the use of antenatal and delivery care services. The results clearly indicate that complete antenatal care is achieved at 88 percent for women age 40- 44 as against 75 percent for those under age 20, while 84 percent were above age 35. Clearly, age is statistically significant (see Table 5.1) in the decision to use complete antenatal service. Thus, at younger and advanced ages the tendency to have four or more antenatal attendance and therefore, achieve complete antenatal care prior to delivery is lower than those in the middle ages of the child bearing years. These findings partly confirm and contradict the MICS, 2006 report that adolescents and women aged 40-44 are less likely to have antenatal care provided by health professionals. The results indicate adolescents and women age 45-49 are less likely to use the full range of antenatal services. Kwast and Liff (1988) in line with this provides that the greater confidence and experience of the older women together with their responsibilities within the household and for child care could be the explanation for their tendency to use services less frequently. Similar observations have been made by Adenkule et al., (1990), and Celik and Hotchkiss, (2000) on the effect of maternal age on utilization of health services.

Table: 5.1 Percentage Distribution of Age by Antenatal and Delivery Care

Age	Antenatal Care (%)		Total		Delivery Care (%)		Total	
	Incomplete	Complete	No	%	Home Delivery	Health Facility Delivery	No.	%
15-19	25.3	74.7	386	100.0	44.9	55.1	99	100.0
20-24	22.8	77.2	533	100.0	38.6	61.4	386	100.0
25-29	13.5	86.5	414	100.0	36.1	63.9	534	100.0
30-34	14.3	85.7	352	100.0	33.8	66.2	414	100.0
35-39	15.9	84.1	162	100.0	38.4	61.6	352	100.0
40-44	12.3	87.7	75	100.0	35.2	64.8	162	100.0
45-49	24.0	76.0	99	100.0	59.5	40.5	74	100.0
Total	**16.7**	**83.3**	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2=26.418		P-value=0.000		N=2020	χ^2=20.917		P-value=0.002	

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Similarly, age from the bivariate analysis has a high statistical significance at 95 percent confidence level in the choice of delivery site although there appears to be similar trends to

antenatal care use. Thus, the proportion of those ages 30-34 delivering in health facility is higher (66 percent) than those under age 20 (55 percent) and above 45 (41 percent).

5.2 Marital Status and Antenatal and Delivery Care

The study also investigated the relationship between marital status and the use of antenatal and delivery care. The results reveal no significant variation in the use of antenatal service by marital status although those widowed/divorced/separated are more likely (86 percent) to use antenatal services than the other categories. There is no statistical significance between marital status and antenatal service utilization.

Table: 5.2 Percentage Distribution of Marital Status by Antenatal and Delivery Care

Marital Status	**Antenatal Care (%)**		**Total**		**Delivery Care (%)**		**Total**	
	Incomplete	**Complete**	**No**	**%**	**Home Delivery**	**Health Facility Delivery**	**No.**	**%**
Never married	17.7	82.3	124	100.0	29.8	70.2	124	100.0
Married	16.6	83.4	1382	100.0	39.9	60.1	1382	100.0
Living together	17.2	82.8	389	100.0	33.7	66.3	389	100.0
Widowed/Divorced /Separated	14.4	85.6	125	100.0	33.6	66.4	125	100.0
Total	**16.7**	**83.3**	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**

χ^2=0.653 P-value=0.884 N=2020 χ^2=9.723 P-value=0.021

Source: *Generated from the Ghana Demographic and Health Survey 2008*

There is, however, statistically significant correlation between marital status and place of delivery with even the proportion never married having facility based delivery higher than married women at 70 percent and 60 percent respectively. Table 5.2 shows the details.

This may be explained by the reasoning that unlike the married women who may need the consent of their partners before going to deliver in a health facility their unmarried counterparts may not need any consent from any one. This is, however, in sharp contrast to a study in Guatemala where married women were more likely to receive and seek early antenatal care than single and unmarried women (Glei et al 2003).

5.3 Education and Antenatal and Delivery Care

The level of education of the pregnant woman and her husband often shows a significant positive association with the use of antenatal and delivery care as clearly illustrated in table 5.3. The use of these services increases with the level of education from no education accounting for the least use at 76 percent to higher level of education at 100 percent. There is a very strong statistically significant correlation between level of education and antenatal service utilization. As education level of the woman improves the use of antenatal services increases.

Table: 5.3 Percentage Distribution of Education of Respondents by Antenatal and Delivery Care

Level of Education	Antenatal Care (%)		Total		Delivery Care (%)		Total	
	Incomplete	Complete	No.	%	Home Delivery	Health Facility Delivery	No.	%
No education	24.2	75.8	611	100.0	60.3	39.7	611	100.0
Primary	21.6	78.4	485	100.0	40.6	59.4	485	100.0
Middle/JHS	10.3	89.7	760	100.0	24.2	75.8	760	100.0
Secondary/SHS	6.2	93.8	113	100.0	8.8	91.2	113	100.0
Higher	0.0	100.0	51	100.0	3.9	96.1	51	100.0
Total	16.7	83.3	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2=74.912	P-value=0.000		N=2020		χ^2=258.468	P-value=0.000		

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Also, the level of education of the pregnant woman and the place of delivery is directly related and statistically significant at the 95 percent confidence level. A relatively significant proportion (96 percent) of pregnant women with higher education delivered in a health facility compared to about 40 percent of those with no education during the survey period. These findings are supported by the works of Elo (1992), Ragthupathy (1996), Becker et al. (1993), Addai (2000), and GDHS (2008) that higher levels of education leads to skilled attendance at delivery.

5.4 Employment Status and Antenatal and Delivery Care

The level of employment is often presumed to influence antenatal and delivery care utilization. While it may be common knowledge to expect an employed pregnant woman to seek antenatal

and delivery care than an unemployed pregnant woman, the findings of this study showed no statistical significance between employment status and use of antenatal care among the sample studied as an almost equally higher proportions (83 percent) of employed and unemployed pregnant women use antenatal care (see Table 5.4).

Table: 5.4 Percentage Distribution of Employment Status by Antenatal and Delivery Care

Employment status	Antenatal Care (%)		Total		Delivery Care (%)		Total	
	Incomplete	Complete	No.	%	Home Delivery	Health Facility Delivery)	No.	%
Unemployed	16.6	83.4	270	100.0	30.0	70.0	270	100.0
Employed	16.7	83.3	1750	100.0	38.9	61.1	1750	100.0
Total	16.7	83.3	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2=0.003	P-value=0.995		N=2020		χ^2=7.875	P-value=0.005		

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Surprisingly, however, a higher proportion of unemployed women (70 percent) delivered in a health facility as against 61 percent of employed women. It can only be speculated that the unemployed for fear of any complications and lack of confidence compared to their employed counterparts may opt to deliver in health facilities hence the negative significant association between employment status and delivery at a health facility.

This finding contradicts that of Gmatieyindu P.S. (2012) where both respondent and partner's occupation were statistically significant to antenatal care in the national sample at the 0.001significant level.

5.5 Religion and Antenatal and Delivery Care

Religion may influence the attitude of women towards pregnancy and modern health care and may have an effect on antenatal and delivery care use. The study revealed a statistically significant association between religion and antenatal and delivery care use with Christians (86 percent) likely to use and complete the full range of antenatal care services as against 63 percent of traditional/Spiritualist as shown in Table 5.5.

This finding is similar to that of Addai (2000), who reports of positive association between being catholic, and the use of antenatal care and negative association with those professing traditional/spiritualist.

Table: 5.5 Percentage Distribution of Religion by Antenatal and Delivery Care

Religion	Antenatal Care (%)		Total		Delivery Care (%)		Total	
	Incomplete	Complete	No.	%	Home Delivery	Health Facility Delivery	No.	%
No religion	29.6	70.4	80	100.0	50.0	50.0	80	100.0
Christian	13.8	*86.2*	1455	100.0	32.2	67.8	1455	100.0
Moslem	19.1	80.9	371	100.0	45.3	54.7	371	100.0
Traditional/ Spiritualist	36.8	63.2	114	100.0	74.8	25.2	114	100.0
Total	**16.7**	**83.3**	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2=53.212	P-value=0.000		N=2020		χ^2=100.541	P-value=0.000		

Source: *Generated from the Ghana Demographic and Health Survey 2008*

In the same vein, there is some association between being a Christian and delivery at a health facility. That is 68 percent of Christians delivered in a health facility compared to about 25

percent of traditional/spiritualist as portrayed in Table 5.5. This goes to reinforce the fact that in most African societies particularly rural communities, modern health services coexist with indigenous health care services that provide choice for women (de-Graft Aikins 2005; Addai, 2000).

5.6 Region of Residence and Antenatal and Delivery Care

Region of residence of the respondents appear to have a high statistically significant correlation with the use of antenatal care with the greatest majority (95 percent) of pregnant women in the greater Accra region more likely to have completed antenatal care services as against 72 percent of pregnant women in Northern region. Table 5.6 shows the regional variations in antenatal and delivery care use.

Table: 5.6 Percentage Distributions of Regions by Antenatal and Delivery Care

Region	Antenatal Care (%)		Total		Delivery Care (%)		Total	
	Incomplete	Complete	No.	%	Home Delivery	Health Facility Delivery	No.	%
Western	17.7	82.3	181	100.0	39.2	60.8	181	100.0
Central	19.9	80.1	191	100.0	44.5	55.5	191	100.0
Greater Accra	4.7	95.3	255	100.0	12.2	87.8	255	100.0
Volta	17.1	82.9	164	100.0	38.4	61.6	164	100.0
Eastern	23.3	76.7	180	100.0	33.3	66.7	180	100.0
Ashanti	13.4	86.6	387	100.0	27.1	72.9	387	100.0
Brong Ahafo	15.6	84.4	211	100.0	33.6	66.4	211	100.0
Northern	27.8	72.2	281	100.0	67.3	32.7	281	100.0
Upper East	13.2	86.8	114	100.0	51.8	48.2	114	100.0
Upper West	12.5	87.5	56	100.0	51.8	48.2	56	100.0
Total	**16.7**	**83.3**	**2020**	**100.0**	**37.8**	**62.2**	**2020**	**100.0**

χ^2=63.229 P=0.000 N=2020 χ^2=214.844 P=0.000

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Delivery care follow similar patterns with greater Accra region having the highest proportion (88 percent) of pregnant women delivering in health facilities compared to Northern region with 33 percent of pregnant women delivering in a health facility as the least. The plausible explanation holding all other factors constant could be the level of endowment of the regions in terms of availability of facilities as clearly the two regions differ markedly in relation to the number of health facilities and staff. The results also indicate some considerable improvements in skilled deliveries which are supported by the Ghana Health Service report of 52.2 percent national

coverage of skilled deliveries in 2011, the indicator has continued to improve from 45.6 percent in 2009 and 49.5 percent in 2010 with wide inter regional variations (GHS 2011).

5.7 Place of Residence and Antenatal and Delivery Care

The place of residence in terms of rural or urban was measured to analyze its relationship with antenatal and delivery care. The findings posit that there is statistical significance between place of residence and antenatal and delivery care. As shown in Table 5.7, respondents who live in urban areas had a 92 percent chance of completing the full range of antenatal care services compared to 77 percent of their rural counterparts.

Table: 5.7 Percentage Distribution of Place of Residence by Antenatal and Delivery Care

Place of Residence	Antenatal Care (%)		Total		Delivery Care (%)		Total	
	Incomplete	Complete	No.	%	Home Delivery	Health Facility Delivery	No.	%
Urban	8.2	91.8	829	100.0	15.6	84.4	829	100.0
Rural	22.7	77.3	1191	100.0	53.1	46.9	1191	100.0
Total	**16.7**	**83.3**	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2=73.288 P-value=0.000			N=2020		χ^2=292.231 P-value=0.000			

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Similar results are evident in delivery with a highly statistically significant relationship between place of residence and delivery. While 84 percent of the respondents in urban areas delivered in health facilities the corresponding proportion for their rural folk was about 47 percent. Varied reasons could account for the wide disparities in health facility based delivery by pregnant women in urban and rural areas including the dispersed nature of rural population settlements in

relation to sitting of health facilities that are usually limited in rural areas. This finding confirms that of Overbosch et al (2004), where in rural areas in Africa one in three women lives in more than five kilometers from the nearest health facility.

5.8 Birth Order and Antenatal and Delivery Care

The study also investigated the relation between birth order level and antenatal and delivery care. In respect of this, significant proportion of women (86 percent) of 1-2 birth order were more likely to complete the full range of antenatal care compared to 77 percent of those with 5 or more birth order. This confirms the proposition by Arthur (2012) that pregnancy is a natural process and women with some experience might consider antenatal care less necessary.

Table: 5.8 Percentage Distribution of Birth Order by Antenatal and Delivery Care

Birth Order	**Antenatal Care (%)**			**Total**	**Delivery Care (%)**		**Total**	
	Incomplete	**Complete**	**No.**	**(%)**	**Home Delivery**	**Health Facility Delivery**	**No.**	**%**
1 – 2	14.2	85.8	882	100.0	29.1	70.9	882	100.0
3 – 4	15.3	84.7	629	100.0	38.3	61.7	629	100.0
5+	22.7	77.3	509	100.0	51.9	48.1	509	100.0
Total	**16.7**	**83.3**	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2=18.404	P-value=0.000			N=2020	χ^2=71.614		P-value=0.000	

Source: *Generated from the Ghana Demographic and Health Survey 2008*

In relation to birth order and delivery, the results indicate that a high proportion (71 percent) of pregnant women in their 1 or 2 birth order delivered in health facilities as against 48 percent of women with 5 or more birth order (Table 5.8).

These results conform to similar findings by Magadi et al. (2000), and McCaw-Binns et al. (1995) who report of a negative association between a higher number of previous pregnancies and early attendance to antenatal care and health facility based delivery. There is therefore, statistically significant correlation between birth order and antenatal and delivery care.

5.9 Ethnicity and Antenatal and Delivery Care

In many instances like religion and culture, ethnicity may influence the attitude and behaviour of women towards pregnancy and modern health care and thus have an effect on the use of antenatal and delivery care services. The study examined the relationship between the various ethnic groups and their influence on antenatal and delivery care. The results indicate a highly significant statistical association between ethnicity and antenatal and delivery care utilization with the Akan having the highest proportion (86 percent) of pregnant women using complete antenatal care services during their pregnancy term and the Grussi/Gruma/Mande having the least of 72 percent as shown in Table 5.9.

In a similar pattern, the Akan ethnic group is the single largest group with the highest proportion of respondents (69 percent) delivering in a health facility as against 45 percent for the Grussi/Gruma/Mande.

Table: 5.9 Percentage Distribution of Ethnicity by Antenatal and Delivery Care

Ethnicity	Antenatal Care (%)		Total		Delivery Care (%)		Total	
	Incomplete	Complete	No	%	Home Delivery	Health Facility Delivery	No.	%
Akan	13.6	86.4	948	100.0	30.8	69.2	948	100.0
Ga/Dangme	22.3	77.7	103	100.0	36.9	63.1	103	100.0
Ewe	14.1	85.9	254	100.0	29.9	70.1	254	100.0
Guan	22.8	77.2	57	100.0	43.9	56.1	57	100.0
Mole Dagbani	17.8	82.2	408	100.0	52.5	47.5	408	100.0
Grussi/Gruma/ Mande	28.0	72.0	174	100.0	54.6	45.4	174	100.0
Other	21.1	78.9	76	100.0	28.9	71.1	76	100.0
Total	**16.8**	**83.2**	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**

χ^2=29.016 P=0.000 N=2020 χ^2=88.328 P=0.000

Source: *Generated from the Ghana Demographic and Health Survey 2008*

The pattern of antenatal and delivery care utilization appears to follow the proportions of the ethnic compositions of the respondents except for the other minority ethnic group that constituted 3 percent of the ethnic distribution and recorded the highest proportion of 71 percent health facility delivery. These results are similar to the findings of the GDHS 2008 and 2003 reports.

5.10 Wealth and Antenatal and Delivery Care

The wealth index is generally accepted as a predictor of health care use including antenatal and delivery care. In this study, the wealth index was used to measure its influence on antenatal and delivery care utilization. The results indicate that wealth is statistically significant in influencing antenatal use. The least (71 percent) of respondents who attended four or more visits at antenatal during pregnancy is among those in the poorest wealth quintile which increases to 97 percent among the richest wealth quintile as indicated in Table 5.10. Thus, the results clearly demonstrate that complete antenatal attendance increases with wealth quintile.

Table: 5.10 Wealth and Antenatal and Delivery Care

Wealth Index	**Antenatal Care (%)**				**Delivery care (%)**			
	Incomplete	**Complete**	**Total**		**Home delivery**	**Health facility delivery**	**Total**	
			No.	**%**			**No.**	**%**
Poorest	29.0	71.0	448	100.0	74.4	25.6	448	100.0
Poorer	21.7	78.3	438	100.0	45.4	54.6	438	100.0
Middle	18.8	81.2	387	100.0	33.1	66.9	387	100.0
Richer	7.0	93.0	429	100.0	18.6	81.4	429	100.0
Richest	3.1	96.9	318	100.0	6.6	93.4	318	100.0
Total	16.7	83.3	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2= 128.508	P-value=0.000				N=2020 χ^2=469.188	P-value=0.000		

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Similarly, the survey respondents among the poorest wealth quintile are less likely to deliver at a health facility than those in the poorer up to the richest wealth quintile.

These findings have been confirmed by Ortize (2007) where his study indicated that wealthier mothers have higher chances of attending a first antenatal care visit and additional visits than poorer mothers in Columbia. Similar findings were made by Abor and Abekah-Nkrumah (2009) in Ghana as those in the poorest household were less likely to use antenatal services compared to those in the poorer household.

5.11 Insurance Coverage and Antenatal and Delivery Care

With respect to health insurance, this study attempts to investigate how the use of complete antenatal and health facility delivery is influenced by having health insurance coverage. The results indicate a relatively high statistical correlation between having health insurance and having completed the full range of antenatal care and health facility delivery. That is 89.8 percent of those with health insurance coverage use complete antenatal care compared to 78.7 percent of non health insurance respondents. This is evident in table 5.11.

Table: 5.11 Percentage Distribution of Insurance Coverage by Antenatal and Delivery Care

Insurance overage	**Antenatal Care (%)**		**Total**		**Delivery care (%)**		**Total**	
	Incomplete	**Complete**	**No.**	**%**	**Home delivery**	**Health facility delivery**	**No.**	**%**
No	21.3	78.7	1189	100.0	46.8	53.2	1189	100.0
Yes	10.2	89.8	831	100.0	24.8	75.2	831	100.0
Total	16.7	83.3	**2020**	**100.0**	37.7	62.3	**2020**	**100.0**
χ^2=128.508		P-value=0.000		N=2020	χ^2=100.522		P-value=0.000	

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Similarly, a greater proportion (75 percent) of those with insurance coverage delivered in a health facility compared to 53 percent of those with no insurance coverage. While it is used to predict the relationship between health financing and health, antenatal and delivery care has not been explored much. However, it is normal to expect that even poor people who otherwise could not have afforded antenatal services would have access due to the health insurance now in place. This is so relevant when cost of medical services including transportation and laboratory tests has been identified as a barrier to women's access to antenatal and delivery care services. For example Overbosch et al (2000) found insurance coverage to be associated with high use of maternal health services.

5.12 Accessibility to Antenatal and Delivery Care

Generally, the extent to which individuals particularly women have geographical access to health service influences the degree of use. The study, therefore, investigated the combined effect of distance and transport as a concern expressed by the respondents for non use of antenatal and delivery care services. Of the respondents who saw accessibility as a barrier to accessing antenatal care about 78 percent completed the full range of antenatal care services as against 85 percent of those who had no concern over accessibility (Table5.12). The bivariate analysis indicates a strong statistical significance between access to antenatal and delivery care services and full utilization of such services. These findings confirm those of the World Bank (1994b), and Overbosch et al. (2004) who indicate that in most rural Africa, one in three women live five kilometres away from a modern health facility and therefore time and travel costs for repeated antenatal visits might be large for such women thereby restraining pregnant women from the use of these services.

Table: 5.12 Percentage Distribution of Accessibility to Antenatal and Delivery Care

Accessibility	Antenatal Care		Total		Delivery care (%)		Total	
	Incomplete (%)	Complete (%)	No.	%	Home delivery	Health facility delivery	No.	%
Problem	22.4	77.6	464	100.0	52.2	47.8	464	100.0
No Problem	15.0	85.0	1556	100.0	33.4	66.6	1556	100.0
Total	16.7	83.3	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**

χ^2= 13.800 P-value=0.000 N=2020 χ^2=53.408 P-value=0.000

Source: *Generated from the Ghana Demographic and Health Survey 2008*

In a similar vein, about 48 percent of respondents who expressed concern over accessibility delivered in a health facility as against 67 percent of those who had no concern over distance and transport (see Table 5.12). These results are supported by Bicego et al. (1997) who in similar studies in rural Tanzania revealed that 84 percent of women who delivered home intended to deliver in a health facility but for distance and transportation which are access measures, did not do so. Again, Acharya and Cleland (2000), Magadiet al. (2000), and Raghupathy (1996) report a negative effect of distance and/or travel time to antenatal care on its use.

5.13 Partner's Level of Education and Antenatal and Delivery Care

The level of maternal education has been established to influence maternal health service use. In this regard therefore, the study instead investigated the level of partners' education on the use of antenatal and delivery care by the respondents.

The study results indicate a highly significant statistical relationship between the level of education of a partner and high use of antenatal and delivery care services. The findings for

example reveal that 72 percent of pregnant women with no education are likely to have repeated antenatal visits up to or more than the recommended number of visits by WHO and GHS as compared to about 95 percent of those with higher education as indicated in Table 5.13. This is similar to the findings by Elo (1992), Raghupathy (1996), and Becker et al. (1993) who report a positive effect of the education of both parents on the use of antenatal and delivery services.

Table: 5.13 Percentage Distribution of Partner's level of Education by Antenatal and Delivery Care

Partner's Level of Education	**Antenatal Care (%)**		**Total**		**Delivery care (%)**		**Total**	
	Incomplete	**Complete**	**No.**	%	**Home delivery**	**Health facility delivery**	**No.**	**%**
No education	27.8	72.2	453	100.0	65.0	35.0	453	100.0
Primary	23.7	76.3	237	100.0	46.6	53.4	237	100.0
Secondary	12.1	87.9	1043	100.0	29.7	70.3	1043	100.0
Higher	4.8	95.2	167	100.0	6.6	93.4	167	100.0
Total	**16.6**	**83.4**	**2020**	**100.0**	38.2	61.8	**2020**	**100.0**
χ^2=81.647	P-value=0.000		N=2020		χ^2=246.850	P-value=0.000		

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Similar patterns of strong positive correlation between partner's level of education and choice of health facility delivery is observed in this study. Thus, while only 35 percent of partners of women with no education delivered in health facility those with higher level of were as high as about 93 percent indicating a significant statistical relation between partner's level of education and the woman delivering in a health facility (see Table 5.13).

5.14 Media Exposure and Antenatal and Delivery Care

The impact of media exposure on antenatal and delivery care cannot be ignored particularly in Ghana though not much has been done in this area. The study, therefore, explored on how exposure to mass media could influence the use of antenatal and delivery care services by the respondents. The results indicate a very strong statistical significance of media exposure and use of both antenatal and delivery care services as shown in Table 5.14. While as high as 85 percent of those who had media exposure completed antenatal care, about73 percent of their counterparts completed antenatal care. These findings are similar to the studies by Navaneetham and, Dharmalingam (2002) in India where they found that women with high media exposure use antenatal services.

Table: 5.14 Percentage Distribution of Media exposures by Antenatal and Delivery Care

Media Exposure	**Antenatal Care (%)**		**Total**		**Delivery care (%)**		**Total**	
	Incomplete	**Complete**	**No.**	**%**	**Home delivery**	**Health facility delivery**	**No.**	**%**
No	27.3	72.7	289	100.0	62.3	37.7	289	100.0
Yes	14.9	85.1	1731	100.0	33.6	66.4	1731	100.0
Total	**16.7**	**83.3**	**2020**	**100.0**	**37.7**	**62.3**	**2020**	**100.0**
χ^2=27.532	P-value=0.000		N=2020		χ^2=86.993	P-value=0.000		

Source: *Generated from the Ghana Demographic and Health Survey 2008*

Similar results were realized regarding delivery care. Thus, about 66 percent of survey respondents who had some form of media exposure delivered in a health facility as against 38 percent who had no exposure.

5.15 Perceived Benefit and Antenatal and Delivery Care

The tendency for individuals to use services due to the inherent benefit or likely satisfaction to be gained is enormous in determining it use or non-use. This goes for antenatal and delivery care services. The study in this direction investigated the likely influence of perceived benefit to the use of complete antenatal care.

The results show no statistical significance between the survey respondents' use of antenatal care and the likely gain that may be anticipated as almost equal proportions (84 percent and 83 percent) of the respondents of both sides used the complete range of antenatal services (see Table 5.15). This is in sharp contrast to the findings of Acharya and Cleland (2000), McCaw-Binns et al. (1995), and Wong et al. (1987) who report a positive association with quality of antenatal care and also, in a similar study where "assurance of quality is a deciding factor in the choice of any health facility" to attend and therefore the services thereof to use Atindaana (2003: p76).

Table: 5.15 Percentage Distribution of Perceived Benefit by Antenatal and Delivery Care

Perceived Benefit	Antenatal Care (%)			Total	Delivery care (%)		Total	
	Incomplete	Complete	No.	%	Home delivery	Health facility delivery	No.	%
Problem	16.5	83.5	380	100.0	45.3	54.7	380	100.0
No Problem	16.8	83.2	1640	100.0	35.9	64.1	1640	100.0
Total	16.7	83.3	**2020**	**100.0**	37.7	62.3	**2020**	**100.0**
χ^2=0.012		P-value=0.913	N=2020		χ^2=11. 264	P-value=0.001		

Source*: Generated from the Ghana Demographic and Health Survey 2008*

The relationship, however, between perceived benefit and choice of delivery site according to the survey results is statistically significant at 95 percent confidence interval level. Thus, of the respondents who expressed concern over the variables of measurement, about 55 percent delivered in a health facility compared to 64 percent of those who said no problem as shown in Table 5.15.

5.16 Antenatal and Delivery Care

The study in order to determine the relationship between antenatal use and skilled attendance at birth attempted to establish the statistical significance between the respondents who had complete range of antenatal care services and skilled attendance at delivery. The results clearly show an incontrovertible statistical significance between those who completed antenatal care and delivered in a health facility. Thus, of those who had incomplete antenatal care only 35 percent delivered in a health facility compared to about 68 percent of those who completed antenatal care

(see Table 5.16). This suggests that if significant gains are to be made in skilled attendance at birth, there should be intensive campaign not only at ensuring antenatal attendance but that the recommended number of visits is achieved during a pregnant woman's pregnancy term.

Table: 5.16 Percentage Distributions of Respondents by Antenatal and Delivery Care

Antenatal care	**Delivery care (%)**		**Total**	
	Home delivery	**Health facility delivery**	**No.**	%
Incomplete	65.0	35.0	337	100.0
Complete	32.3	67.7	1683	100.0
Total	37.7	62.3	**2020**	**100.0**
χ^2=127.965	P-value=0.000		N=2020	

Source: *Generated from the Ghana Demographic and Health Survey 2008*

As clearly demonstrated in this chapter which examined the statistical significance of the various socio-demographic characteristics of the respondents on antenatal and delivery care was purely to test associations of these basic background characteristics and antenatal and delivery care in Ghana.

CHAPTER SIX

CORRELATES OF ANTENATAL AND DELIVERY CARE

6.1 Binary Logistic Regression with Socio-Demographic Correlates of Antenatal Care

The first regression model explored all the socio-demographic predictor variables of the respondents described in the univariate and bivariate stage of this study. The model after the analysis, it was observed that 23.3 percent (**R^2 = 0.233)** explains the variations in the dependent variable (antenatal care). This implies that there are about 77 percent other variables outside which explain the dependent variable.

The results from Table 6.1 indicate that ten variables emerged to be statistically significantly associated to antenatal care. These include age of respondents, religion, region of residence, birth order, ethnicity, wealth, and insurance coverage. The rest are physical accessibility, partner's level of education and perceived benefit.

Age of the respondent was statistically significantly associated with the use of the full range of antenatal care services. Women aged 25-29 had odds of 2.714 indicating that they were about 1.7 times more likely to use the full range of antenatal care compared to women aged 15-19 (Reference category). Likewise, women aged 30-34 had odd ratios of 2.879 implying that they are 1.9 times more likely to use antenatal care compared to those in the reference category. Also, women aged 35-39 had odds of 3.408 revealing that they are 2.4 times more likely to use antenatal care compared to their counterparts in the reference category. Similarly, women aged 40-44 and 45-49 had odds of 5.250 and 3.923 respectively implying that they are 4.3 and 2.9 times more likely to use antenatal care compared to the reference category. These findings partly

contradict the 2006 MICS findings that adolescents and women aged 40-44 are less likely to use antenatal services.

Table 6.1 Binary Logistic Regression Model of Socio-demographic variables predicting on Antenatal Care (Incomplete and Complete)

Variable	Model 1				
	Antenatal Care (Incomplete and Complete)				
	Nagelkerke $R^2 = 0.233$				
	Co-efficient (β)	**Standard Error (S.E)**	**Wald**	**Significance (P-value)**	**Odds Ratio [Exp (B)]**
Intercept	1.334	0.696	3.668	0.055	3.794
Age					
15 -19 (RC)	0.000	-	-	-	1.000
20 – 24	.258	.348	.549	.459	1.294
25-29	.999	.368	7.350	.007	2.714
30-34	1.058	.399	7.009	.008	2.879
35-39	1.226	.415	8.721	.003	3.408
40-44	1.658	.466	12.653	.000	5.250
45-49	1.367	.498	7.531	.006	3.923
Marital Status					
Never married (RC)	0.000	-	-	-	1.000
Married/living together	-.204	.196	1.085	.298	.815
Widowed/divorced/separated	.123	.294	.174	.676	1.130
Educational level of Respondents					
No Education (RC)					
Primary	-.223	.190	1.388	.239	.800
Middle/J.H.S	.181	.224	.650	.420	1.198
Secondary and Higher	.210	.499	.178	.673	1.234
Employment Status					
Not employed (RC)	0.000	-	-	-	1.000
Employed	0.123	0.216	0.326	0.568	1.131
Religion					

Variable	Model 1				
	Antenatal Care (Incomplete and Complete)				
	Nagelkerke $R^2 = 0.233$				
	Co-efficient (β)	Standard Error (S.E)	Wald	Significance (P-value)	Odds Ratio [Exp (B)]
No religion (RC)	0.000	-	-	-	1.000
Christian	.723	.294	6.044	.014	2.061
Moslem	.668	.357	3.510	.061	1.951
Traditional/Spiritualist	.183	.370	.243	.622	1.200
Region					
Upper West (RC)	0.000	-	-	-	1.000
Western	-1.687	.540	9.744	.002	.185
Central	-1.347	.547	6.071	.014	.260
Greater Accra	-.596	.623	.915	.339	.551
Volta	-1.130	.562	4.043	.044	.323
Eastern	-1.581	.553	8.161	.004	.206
Ashanti	-1.251	.513	5.939	.015	.286
Brong Ahafo	-1.256	.514	5.973	.015	.285
Northern	-1.063	.479	4.929	.026	.345
Upper East	-.126	.557	.051	.821	.881
Place of Residence					
Rural (RC)	0.000	-	-	-	1.000
Urban	.252	.210	1.440	.230	1.287
Birth Order					
1-2 (RC)	0.000	-	-	-	1.000
3-4	-.338	.205	2.713	.100	.713
5+	-.845	.257	10.769	.001	.430
Ethnicity					
Akan (RC)	0.000	-	-	-	1.000
Ga/Dangme	-1.005	.359	7.853	.005	.366
Ewe	.196	.298	.430	.512	1.216
Guan	-.506	.411	1.514	.218	.603
Mole Dagbani	-.118	.296	.161	.689	.888
Grussi/Gruma/Mande	-.380	.300	1.602	.206	.684
Other	-.757	.395	3.681	.055	.469
Wealth Index					
Poorest (RC)	0.000	-	-	-	1.000
Poorer	.048	.201	.058	.810	1.049
Middle	.001	.240	.000	.997	1.001
Richer	1.051	.311	11.384	.001	2.859

Variable	Model 1				
	Antenatal Care (Incomplete and Complete)				
	Nagelkerke $R^2 = 0.233$				
	Co-efficient (β)	**Standard Error (S.E)**	**Wald**	**Significance (P-value)**	**Odds Ratio [Exp (B)]**
Richest	1.178	.455	6.687	.010	3.247
Insurance					
Yes (RC)	0.000	-	-	-	1.000
No	-.497	.161	9.576	.002	.609
Accessibility					
No problem (RC)	0.000	-	-	-	1.000
Problem	.364	.165	4.880	.027	1.439
Partner's level of education					
No education (RC)	0.000	-	-	-	1.000
Primary	.160	.222	.520	.471	1.173
Middle/JHS	.581	.214	7.359	.007	1.787
Secondary /Higher	.736	.449	2.692	.101	2.088
Media Exposure					
Yes (RC)	0.000	-	-	-	1.000
No	-.117	.186	.392	.531	.890
Perceived Benefit					
No problem (RC)	0.000	-	-	-	1.000
Problem	-.382	.186	4.194	.041	.683

R^2= 0.233 *RC= Reference Category* *P<0.050* *P<0.000*

Source: Generated from Ghana Demographic and Health Survey, 2008

Religion of the respondents particularly Christianity was statistically significantly associated with antenatal care utilization. Respondents who are Christians had odd ratios of 2.061 indicating that they are 2.0 times as likely to use antenatal care compared to those with no religion as the reference category.

In terms of region of residence of respondents, the results indicate a highly statistically significant association between region and antenatal care. Specifically, respondents in the Western Region had odds of 0.185 implying that they are 82 percent less likely to have incomplete antenatal care services compared to Upper West Region. Similarly, respondents in

Central Region had odd ratio of 0.260 indicating that they are 74 percent less likely to have incomplete antenatal care compared to the reference category. Also, respondents in the Volta, Eastern, Ashanti, Brong Ahafo, and Northern regions had odds of 0.323, 0.206, 0.286, 0.285, and 0.345 respectively implying that they are 68 percent, 79 percent, 71 percent, 72 percent, and 66 percent less likely to have incomplete antenatal care compared to the Upper West Region in that order.

Regarding birth order, the results indicate a statistically significant association between respondents with 5+ birth order and antenatal care. Respondents with 5 or high birth order had odds of 0.430 implying, that they are 57 percent less likely to have complete antenatal care than women with 1-2 births. These findings conform to those of Elo (1992) and Raghupathy (1996) that a higher number of previous pregnancies is associated with less use of antenatal care. Similar findings by Magadi et al. (2000), and McCaw-Binns et al. (1995) that a negative association between a higher number of previous pregnancies and early attendance to antenatal care is observed.

Ethnicity was also found to be statistically significant in predicting antenatal care particularly among the Ga/Dangme with odds of 0.366 indicating that they are 63 percent less likely to complete antenatal care compared to the Akan group.

The model also revealed a statistically significant positive association between wealth quintile and antenatal care. Respondents in the richer and richest wealth quintiles had odds of 2.859 and 3.247 implying that they were 1.9 and 2.3 times more likely to complete antenatal care compared to those in the poorest wealth quintile respectively. These results conform to other studies that indicate that wealth is positively associated with health care use including antenatal care (GDHS

2008 and 2003; Ortiz 2007; Arthur 2012). De Allegri et al (2010) in their study in rural Burkina Faso also confirm the role of household wealth in shaping the utilization of maternal care services.

Insurance coverage was also found to be statistically significant in predicting the dependent variable. Respondents who had no insurance coverage had odds of 0.609 meaning that they were 39 percent less likely to complete antenatal care compared to those who had health insurance. This finding supports GDHS 2008 and GHS 2011 that indicate more health insured clients access health services more than their non insured counterparts.

Accessibility from the model shows a statistically significant association predicting the use of antenatal care. The results from Table 6.1 indicate that respondents who had problem with access to health facilities had odd ratios of 1.439 implying that they were 56 percent more likely to complete antenatal care compared to those who had no problem with access. This finding contradicts other studies that access barriers hinder the use of health services including maternal health (World Bank, 1994b; Overbosch et al, 2004).

The level of education of a partner is observed to be statistically significant particularly at the Middle/JHS level. The results indicate that respondents whose partner's had Middle/JHS level of education had odds of 1.787 implying that they were 21 percent more likely to complete antenatal care compared to those with no education. The results from the model show no statistical significance between the level of education of the respondent and antenatal care. This is, however, inconsistent with other results that women who attained secondary schooling, the probability that they receive the whole range of services would rise by 13%, in comparison to women with no schooling, holding all other factors constant(GDHS 2008). The equivalent

increase would be 11% in Uganda, and 10% in Tanzania, while in Kenya, women's schooling appears to have no effect (Magadi et al. 2000) conforms to the results of this study.

Finally, the model indicates that perceived benefit is statistically significantly associated with antenatal care utilization. The findings indicate that respondents who had concerns over benefit issues had odds of 0.683 implying they were 32 percent less likely to utilize the full range of antenatal care services than their counterparts in who if perceived no benefit. Perceived inadequate services offered to mothers at the formal health delivery system, therefore, hinder complete antenatal care. This conforms to the findings by Ndyomugyenyi, Neema and Magnussen (n.d) in rural Uganda, in their qualitative study where it was clear that pregnant women would appreciate antenatal services if they could be given medicines, information on the status of their babies and have their babies foetal heart listened to.

6.2 Binary Logistic Regression with Socio-Demographic Correlates of Delivery Care

The second regression model explored all the socio-demographic predictor variables of the respondents described in the univariate and bivariate stage of this study. It was observed from the analysis that 40.5 percent of the variation in the dependent variable (delivery care) is explained by the independent variables included in the model. This implies that about 60 percent of the variation in delivery care is explained by variables not included in the model.

The results from Table 6.2 indicate that six variables emerged to be statistically significant in its association with delivery care. These include age of respondents, educational level, place of residence, household wealth, insurance coverage and partner's level of education.

Age of the respondent was statistically significant in its association with the use of health facility delivery. Women aged 35-39 and 40-44 had odds of 2.291 and 3.967 respectively, implying that

they are 1.3 and about 3 times more likely to deliver in a health facility compared to women aged 15-19. These findings are consistent with Adekunle et al. (1990), Celik and Hotchkiss, (2000), and Leslie and Gupta, (1989) who indicated that maternal age have been examined as determinants of health care use. It also contradicts the 2006 MICS findings that adolescents and women aged 40-44 are less likely to use skilled delivery at birth. The hypothesis that delivery at a health facility varies directly with the age of the woman is, therefore, accepted by the findings of this study.

Educational level of the respondents emerged at the model level to be statistically significantly associated with the use of health facility delivery. The results indicate that respondents with middle/JHS had odds of 1.725 implying that they were 1.7 times as likely to deliver in a health facility compared to those with no education. Women with secondary/higher had odd ratios of 2.362 also indicating that they are 1.4 times more likely to deliver in a health facility compared to those with no education. This finding conforms to the GDHS 2008 where 90.9 percent of women with secondary+ delivered in a health facility. The hypothesis that education is positively related to health facility delivery is therefore accepted by the results of this study.

In terms of place of residence of respondents, the results indicate a highly statistically significant association between place of residence and delivery care. The results show that women in urban areas have odds of 2.015 indicating that they are about 2 times as likely to deliver in a health facility compared to those in the rural areas. This is consistent with GDHS 2008 where women in urban areas are 2 times as likely to deliver in a health facility compared to those in the rural areas.

The model also revealed a statistically significant positive association between wealth quintile and delivery care. Respondents in the poorer, middle, richer and richest wealth quintiles had odds of 2.387, 2.653, 3.845 and 6.759 implying that they were 1.4, 1.7, 2.9 and 5.8 times more likely to deliver in a health facility compared to those in the poorest wealth quintile respectively. These results conform to other studies that indicate that wealth is positively associated with health facility delivery (GSS 2008, and GSS 2003; Ortiz 2007; Arthur 2012).

Insurance coverage was also found to be statistically significant in predicting delivery care. Respondents who had no insurance coverage had odds of 0.509 meaning that they were 49 percent less likely to deliver in a health facility compared to those who had health insurance.

The level of education of a partner is observed to be statistically significant particularly at the Middle/JHS and above level. The results indicate that respondents whose partners had Middle/JHS level of education and secondary/higher had odds of 1.460 and 3.966 implying that they were about 1 and 3 times more likely to deliver in a health facility respectively compared to those with no education.

Table 6.2 Binary Logistic Regression Model of Socio-demographic variables predicting on Delivery Care (Home delivery and Health Facility Delivery)

Variable	Model 2				
	Delivery Care				
	Nagelkerke $R^2 = 0.405$				
	Co-efficient (β)	**Standard Error (S.E)**	**Wald**	**Significance (P-value)**	**Odds Ratio [Exp (B)]**
Intercept	-1.134	.605	3.516	.061	.322
Age					
15 -19 (RC)	0.000	-	-	-	1.000
20 – 24	.193	.337	.327	.567	1.213
25-29	.370	.341	1.178	.278	1.448
30-34	.644	.367	3.090	.079	1.905
35-39	.829	.378	4.800	.028	2.291
40-44	1.378	.414	11.088	.001	3.967
45-49	.509	.469	1.179	.277	1.664
Marital Status					
Never married (RC)	0.000	-	-	-	1.000
Married/living together	.089	.161	.306	.580	1.093
Widowed/divorced/separated	.055	.236	.054	.817	1.056
Educational level of Respondents					
No Education (RC)					
Primary	.271	.164	2.730	.099	1.312
Middle/J.H.S	.545	.180	9.209	.002	1.725
Secondary and Higher	.859	.382	5.070	.024	2.362
Employment Status					
Not employed (RC)	0.000	-	-	-	1.000
Employed	-.224	.193	1.355	.244	.799
Religion					
No religion (RC)	0.000	-	-	-	1.000
Christian	-.108	.278	.152	.697	.897
Moslem	.003	.336	.000	.994	1.003
Traditional/Spiritualist	-.457	.381	1.441	.230	.633
Region					
Upper West (RC)	0.000	-	-	-	1.000
Western	-.247	.418	.349	.555	.781
Central	-.194	.422	.210	.646	.824
Greater Accra	.292	.460	.402	.526	1.339
Volta	-.131	.445	.087	.768	.877
Eastern	-.069	.427	.026	.871	.933

Variable	Model 2				
	Delivery Care				
	Nagelkerke $R^2 = 0.405$				
	Co-efficient (β)	**Standard Error (S.E)**	**Wald**	**Significance (P-value)**	**Odds Ratio [Exp (B)]**
Ashanti	.160	.389	.168	.682	1.173
Brong Ahafo	.134	.392	.117	.732	1.144
Northern	-.585	.363	2.602	.107	.557
Upper East	.287	.413	.483	.487	1.333
Place of Residence					
Rural (RC)	0.000	-	-	-	1.000
Urban	.700	.164	18.192	.000	2.015
Birth Order					
1-2 (RC)	0.000	-	-	-	1.000
3-4	-.313	.163	3.673	.055	.731
5+	-.651	.212	9.386	.002	.522
Ethnicity					
Akan (RC)	0.000	-	-	-	1.000
Ga/Dangme	-.481	.305	2.488	.115	.618
Ewe	.489	.249	3.869	.049	1.631
Guan	.471	.397	1.403	.236	1.601
Mole Dagbani	.306	.265	1.335	.248	1.358
Grussi/Gruma/Mande	.432	.288	2.259	.133	1.541
Other	.533	.397	1.803	.179	1.704
Wealth Index					
Poorest (RC)	0.000	-	-	-	1.000
Poorer	.870	.179	23.694	.000	2.387
Middle	.976	.206	22.398	.000	2.653
Richer	1.347	.233	33.305	.000	3.845
Richest	1.911	.340	31.561	.000	6.759
Insurance					
Yes (RC)	0.000	-	-	-	1.000
No	-.676	.129	27.308	.000	.509
Accessibility					
No problem (RC)	0.000	-	-	-	1.000
Problem	.164	.146	1.255	.263	1.178
Partner's level of education					
No education (RC)	0.000	-	-	-	1.000
Primary	.337	.200	2.846	.092	1.401
Middle/JHS	.379	.181	4.375	.036	1.460

Variable	Model 2				
	Delivery Care				
	Nagelkerke $R^2 = 0.405$				
	Co-efficient (β)	**Standard Error (S.E)**	**Wald**	**Significance (P-value)**	**Odds Ratio [Exp (B)]**
Secondary /Higher	1.378	.384	12.860	.000	3.966
Media Exposure					
Yes (RC)	0.000	-	-	-	1.000
No	-.279	.170	2.701	.100	.756
Perceived Benefit					
No problem (RC)	0.000	-	-	-	1.000
Problem	.121	.153	.628	.428	1.129

$R^2 = 0.405$ *RC= Reference Category* *P<0.050* *P<0.000*

Source: Generated from Ghana Demographic and Health Survey, 2008.

In sum, it is clear from the foregone analysis that age, household wealth, insurance coverage and birth order are statistically significant in their association with use of antenatal and delivery care Ghana as this section explored the socio-demographic variables and its overall association with the dependent variables.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary

Provision of maternal health services is a critical concern for all governments all over the world particularly in low and middle income-countries where the major indicators including maternal mortality ratios, antenatal care and skilled attendance at birth are very poor. It is in the light of improving maternal health that the global community adopted what is christened United Nations Millennium Development Goal 5 target of reducing by three quarters the maternal mortality ratio between 1990 and 2015 (United Nations, 2010). However, an assessment of the extent of progress towards the achievement of this goal particularly in Ghana still remains a challenge. Ghana has persistently high maternal mortality ratios, estimated to range from 214 to 800 per 100,000 live births. Ghana also has growing social inequalities for this indicator, with rates of skilled attendance either stagnant or declining for poorer women (Witter et al. 2007). While deliveries by health professionals rose from 85 percent to 90 percent from 1993 to 2003 for the richest quintile, according to Demographic and Health Survey data, deliveries by health professionals for the poorest quintile dropped from 25 percent to 19 percent. Nationally, 45 percent of births were attended by a medical practitioner (79 percent in urban areas, 33 percent in rural); 31 percent by traditional birth attendants (TBAs) and 25 percent were unsupervised (GSS 2004). Overall the proportions of deliveries at health facilities rose from 46 percent in 2003 to 57 percent in 2008 (GSS 2009) which is far less than the expected universal coverage of skilled attendance at birth. The main objective was to determine the correlates of antenatal and delivery care in Ghana. The Ghana Demographic and Health Survey (2008) was the main source of data.

The binary logistic regression analysis was used to construct models that explored the socio-demographic correlates of antenatal and delivery care in Ghana.

The main findings of the research may be summarized as follows.

At the univariate level, the results of the study indicate that majority of the respondents used antenatal and delivery care services in accordance with the WHO and Ghana Health Service recommended standards. That is, 83 percent of the respondents had the full range of antenatal care services and 62 percent of respondents delivered in a health facility.

Also, it emerged from the study that women who had the most use of antenatal care services were more likely to deliver in a health facility. Thus, 68 percent of women who had the full range of antenatal care services delivered in a health facility as against 35 percent of women who delivered in a health facility did not complete the full range of services.

Similarly, most of the respondents (59 percent) were health insured which impacted on their use of antenatal and delivery care services. About 90 percent of those who had health insurance had the full range of antenatal care services and 75 percent of them delivered in a health facility.

The study has also demonstrated that age is closely associated with the use of antenatal and delivery care. At older ages the use of antenatal and delivery care services improves. An analysis of the age pattern shows that women aged 40-44 had the greatest chance at 88 percent of using the full range of antenatal care services as against 75 percent for those in the age group 15-19

Furthermore, the study revealed that the level of education of the respondents' partner was found to be significant in influencing health facility delivery. Women whose partners had middle/JHS or higher level of education are more likely to deliver in health facilities than no education or lower. The education of the respondents was also found to be significant statistically (P-value=0.002; P-value=0.024) for Middle/JHS and secondary/Higher respectively at influencing delivery at health facility.

Overall, the study results indicate that the main socio-demographic correlates of both antenatal and delivery care were age of the respondents, place of residence, household wealth, insurance coverage, and the level of education of the respondents' partner.

Contrary to expectations, the study showed no statistical significance between the levels of education of the respondents and use of antenatal care services. However, in relation to health facility delivery, there was positive correlation between level of education and health facility based delivery.

Other socio-demographic correlates of antenatal care that emerged from the study are region of residence, accessibility concerns to the health facility, birth order and perceived benefit of using antenatal care as against cost of accessing the service.

7.2 Conclusions and Recommendations

Based on the results of the study which examined the correlates of antenatal and delivery care, it can be inferred that age is statistically significant in determining the use of antenatal care. Thus, older women above 20 years are more likely to use and complete antenatal care than younger women below 20 years. The likelihood to complete antenatal care service usage, therefore, increases with age. It is, therefore, important that all efforts that aimed at encouraging women to

delay pregnancy or marriage until 20 and above years be supported. The call by the Government statistician, Dr. Philomena Nyarko in the Wednesday, July 17, 2013 edition of "The Ghanaian Times" to raise marriage age from 18 to 23 years, to ensure that young women become physically, socially and psychologically prepared before childbearing though received public criticisms on physiological and legal grounds, is appropriate as this has the potential of affecting use and completion of antenatal care which has positive outcome on the lives of both the woman and the child. This is more critical if the desire to reduce by three-quarters the maternal mortality ratios between 1990 and 2015 target of the United Nations Millennium Development Goal 5 is to be achieved any time sooner.

The study further revealed that household wealth and insurance coverage are statistically significant in its association with complete antenatal care. The other predictor is the level of education of the partner. In this regard, it is important to create opportunities that seek to empower households economically through micro-financed enterprises and income yielding ventures. The current free maternal health services through the National Health Insurance scheme should be sustained. This will make the economically disadvantaged women and households to have access to free antenatal care services. Other minor services that are not covered under the National Health Insurance Scheme such as payment for blood processing services for transfusion could be excluded from the exclusion list. The National Health Insurance Authority in a similar fashion should intensify its registration coverage to all women as this increases the chance of the woman seeking for antenatal and delivery care services.

It is worth noting that antenatal attendance from the results of the study is positively related to health facility delivery. It emerged from the study that women who had complete antenatal care

services were also more likely to deliver in a health facility. The study, therefore, concludes that when more pregnant women are sensitized to patronize antenatal care services to the fullest, they are most likely to deliver in a health facility and hopefully attendant to by a professionally trained health worker, thereby reducing maternal mortality. It is in the light of this that there is the need for intensive education at antenatal clinics aimed at encouraging pregnant women to have the complete range of antenatal care services till time of delivery. The content of such education should be need based and tailored towards ensuring that all pregnant women deliver in a health facility.

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