FACTORS AFFECTING THE ACCESSIBILITY AND UTILIZATION OF ANTENATAL CARE IN NIGERIA

PRESENTED BY

BOLAJI ESTHER IFEOLUWA

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SUPERVISOR: PROFESSOR O. AYENI

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CERTIFICATION

I certify that this research work was carried out by Bolaji Esther Ifeoluwa of the Department of Epidemiology and Medical Statistics, Faculty of Public Health, College of Medicine, University of Ibadan.

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Supervisor

Prof. Olusola Ayeni

DEDICATION

This project is dedicated to Almighty God, the creator and possessor of the heaven and earth . I bless the lord for his shield, love, that has brought me this far. This work is also dedicated to my parents Engr and Mrs M.O. Bolaji for all their supports, to my darling husband AikulolaAbiodun, for your time and understanding , and also to my siblings for their love and encouragement.

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Drops of water make a mighty ocean, just as one cannot go through life alone as an island but with the support and guidance of loved ones and God-fearing people. Above all I give praise to the Almighty God, the author and finisher of my faith.

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ABSTRACT

Antenatal care coverage is indicator of access and use of health care during pregnancy. In developing country especially in Nigeria, there is still a low proportion on the accessibility and utilization of the system.

The study seeks to investigate the level of antenatal care utilization and the level of home delivery among pregnant women in Nigeria and the associated factors using the 2013 Nigerian Demographic and Health Survey data. The 2013 Nigeria Demographic Health Survey (NDHS) consists of a nationally representative sample of 38,948 women age 15-49 years that were individually interviewed. From the secondary data, two dependent variables of interest were selected: Number of antenatal visit which will represent the level of antenatal care and Place of Delivery. The independent variables were socio demographic variables. Bivariate analysis was carried out to investigate association between each of the independent variables and the dependent variables. Multiple logistic regression analysis was used to examine the influence of the independent variables on level of ANC and on place of delivery.

From a total number of 38,948 respondents, the mean age of women aged 15 – 49 years was 28.80±9.60 years. Antenatal utilization was 65%. Older women, urban residents, literate mothers, richest category of mothers, mothers who practiced Islamic &Christian religion, had the highest ANC utilization compared to the younger women, non-educated mothers, rural resident, and those who practiced other religion. Mothers from the South West &South East had the highest ANC utilization compared to other regions.

Overall there was high prevalence of home delivery 75.3%, higher among the teenage and young mothers, rural residents illiterate mothers, poorest category of mothers, married mothers, mothers who practiced Islamic religion, and mother from the North West. This was greatly influenced by the six major reasons(no time as a result of sudden delivery ,(time of onset of labour), was not necessary to deliver at the maternity clinic, health facility was too far or no means of transportation. health facility did not open. cost of care too much, not customary, for those married husband not allowing women to deliver in the maternity clinic).

The level of home delivery is very high, so also the level of utilization of antenatal care is low. Government and Non-Governmental agencies to proffer strategies and create a programme and to attach incentives to the programs that will attach mothers to deliver at antenatal clinic

Improvement in the educational opportunity for women in the rural areas, Government and Non-Governmental agencies should attached incentives to the programs that will attach mothers to deliver at antenatal clinic and creation of awareness and sensitization among younger women

Key words: *Antenatal Care, utilization, maternity clinic, NDHS*

Word count: 498

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Women in general and most especially in developing countries are faced with serious pregnancy related health risks, a situation which is a major concern to many governments in developing countries as well as international organizations. In Africa, pregnancy related health risks caused about a quarter of the burden of diseases in 1990 for women in the age group of 15 to 44 years (Overbosch, *et al* 2003). It is a fact that adult health condition is mostly the result of good care from infancy. It is a process that should start from the early stages of life because healthy children become healthy adults. To ensure good health for mother and baby there is the need for good care during pregnancy. This can be achieved through antenatal care.

Antenatal care can be defined as the systemic medical supervision of women during pregnancy (Haldipur, 2006). Its main aim is to preserve the physiological aspect of pregnancy and labour and to prevent or detect, as early as possible, all that is pathological. Antenatal care coverage is an indicator of access and use of health care during pregnancy. It is defined as percentage of women who used antenatal care provided by skilled health personnel for reasons related to pregnancy at least once during pregnancy, as a percentage of live births in a given time period (World Health Organization, WHO, 2008).

Women in developing countries are frequently confronted with a myriad of socio-cultural factors which negatively impinge upon physical well-being and accessibility to appropriate health care services. Institutional, economic and educational barriers affect and lower their standard of living when compared to their male counterparts.

Maternal health-care use is also reported to vary within developing countries, with most findings showing differences between affluent and poor women, and between women living in urban and rural areas. However, since the methodological quality of these studies has not been assessed systematically, it is difficult to draw conclusions on which to base policy recommendations.

1.2 Antenatal care utilization

Utilization of antenatal care was defined as having made at least one antenatal visit before delivery. Timely utilization of antenatal care was defined as making the initial prenatal care visit within the first trimester of pregnancy (i.e., during the optimal first 12 weeks of pregnancy). Adequate utilization of antenatal care was defined as having made five or more antenatal care visits during pregnancy. Majorly antenatal care utilization is based on the no of visits a pregnant woman makes to the antenatal clinic for antenatal care, this helps to measure how much antenatal services was put to use by the pregnant women. Improving utilization of antenatal care is a critical strategy for achieving China's Millennium Development Goal of decreasing the maternal mortality ratio (MMR)

1.3 Statement of the Problem

Antenatal care is commonly understood to have beneficial impact on pregnancy and birth outcomes through early diagnosis and treatment of complications as well as promoting the health of the pregnant woman through nutrition. Antenatal care services also create the opportunity for service providers to establish contact with the woman to identify and manage current and potential risks and problems during pregnancy. It also creates the opportunity for the woman and her care providers to establish a delivery plan based on her needs, resources and circumstances. In Africa, about 25 percent of maternal deaths occur during pregnancy (WHO 2005). Though this could be as a result of prevalence of unsafe abortion, violence and disease in the area (i.e., specific country), between a third and half of maternal deaths are due to causes such as hypertension and antepartum hemorrhage, which are directly related to inadequate care during pregnancy (Ornella et al). Other essential interventions in antenatal care include identification and management of obstetric complications such as pre-eclampsia, tetanus identification and management of infections such as HIV, syphilis and other sexually transmitted infections (STIs), and now included intermittent preventive treatment for malaria during pregnancy (IPTp). Antenatal care also gives the opportunity to promote the use of skilled attendance at birth and healthy behaviour such as breastfeeding, early postnatal care, and planning for optimal pregnancy spacing.

Inspite of the policies and strategies put in place to improve antenatal care coverage and also relative improvement in facilities and health professionals at these facilities, a large number of pregnant mothers still give birth at home.

Home delivery is still a major blot on the proper use of antenatal care in Nigeria. Historically much attention has not been paid to its effect on both the pregnancy and the mother's health. It is a major factor contributing to high risk of complications during delivery and allows exposure to neonatal and maternal mortality. With the fact that child and maternal health is an indicator to a country's development, then home delivery should not be underemphasized and close attention should be given to it in order to reduce the risk of complications of delivery and in turn reduce both infant and maternal mortality. The prevalence of home deliver is still unacceptably high in Nigeria rating above 30% in each of the NDHS surveys of 2003, 2008 and 2013. The need to pay more attention to the determinants of the phenomenon is thus apparent.

1.4 Justification of the Study

The global coverage of antenatal care in 2007 was 71 percent (Ornella et al 2013,). For women in industrialized countries, coverage was more than 95 percent whilst in Sub-Saharan Africa 69 percent of pregnant women had at least one antenatal care visit (Ornella et al 2013). In Ghana, , the national antenatal coverage fell from about 97 percent in 2000 to 89 percent in 2004 whilst that of supervised delivery increased from 50 percent in 2000 to 53 percent in 2004 (Ghana Health Service report 2005)

Healthy adulthood is a process starting from childhood and therefore, there is the need to achieve safe motherhood to ensure good health of mother and baby. Some women may consider pregnancy as a natural process and women with some experience might consider antenatal care less necessary. Empirical evidence shows that a higher number of previous pregnancies are associated with less use of antenatal care (Overbosch et al, 2003). But antenatal care is thought to have an impact on the reduction of maternal and perinatal mortality, if women have access to services and the quality of these services are sufficient to control the identified risks (Costa, et al 2005).

If antenatal care is thought to have a positive impact on perinatal mortality and therefore saves lives of mother and child then antenatal coverage should have been seen to be rising and not falling, what

then could influence a pregnant woman to attend or not to attend antenatal visit? This is what this study aims at investigating.

Low prevalence of antenatal care coverage of 42.3% in 2008, has aroused the need to pay more attention to the phenomenon of high level of home delivery. Since there has not been a substantial change in the proportion of women receiving no antenatal care between the 2003 NDHS (37 percent) and the 2008 NDHS (36 percent), 2013 (34 percent). indicating little improvement in institutionalize delivery .

Women who utilize antennal care has not improved much over a decade , so close attention should be paid in other to allow a better antcnnal care utilization ,and in turn a reduction in the rate of home delivery , and exposure to high risk of birth complication .

Nigeria contributes 14% of global maternal deaths with a maternal mortality ratio of 630 per 100, 000 live births. Although maternal mortality declined by 41% between 1990 and 2010, Nigeria still ranks high in the list of countries with high maternal mortality rates. The high maternity rate has been attributed to inadequate use of maternal health care services, which encourages home delivery and increase rate of mortality .the provision of more skilled birth attendance may reduce the rate of maternal mortality.

The skilled birth attendances becomes a necessary factor has it is said that there is a direct relationship between the birth attendance and the number of live birth per pregnant women at delivery. with higher and available birth attendances .there is lesser birth complications among pregnant women and increases the number of live birth.

1.5 General Objectives

The study seeks to investigate the level of antenatal care utilization and the prevalence of home delivery and the associated factors among pregnant women in Nigeria using the 2013 Nigerian Demographic and Health Survey data.

1.5.1 Specific Objectives

The specific objectives are to:

1. To measure the level of antenatal care utilization among pregnant women.
2. To measure the proportion of home delivery among pregnant women.
3. To identify factors associated with the level of antenatal clinic utilization.
4. To compare and contrast the characteristics of women delivering at home and those delivering at maternity clinics.
5. To identify factors related to the proportion of home delivery.

1.5.2 Research Questions

1. What are the socio-demographic characteristics of mother's delivering in Antenatal clinic
2. What is the proportion of mother's delivering at Antenatal clinic
3. What are the factors affecting mothers delivering at the antenatal clinic
4. What are the reasons why mothers are not delivering at ANC Clinics
5. What are the characteristics of mothers who deliver at home
6. What are the factors affecting the attendance to antenatal clinic by pregnant women

1.5.3 Research Hypothesis

1. Among the older age group of women, antenatal care utilization is likely to be higher than among the younger age group of women.
2. Among the educated women, utilization of antennal care is likely to be higher than among the uneducated women.
3. Women in urban areas are more likely to utilize antennal care than the rural dwellers.
4. Richer women are likely to utilize antennal care then the poorer women.
5. Women who delivered at home are more likely not to attend antenatal clinic when pregnant than women who delivered in maternity clinic.

CHAPTER TWO

LITERATURE REVIEW

Maternal care has been a world issue especially in developing countries in which the coverage and utilization has raised a global alarm to reduce maternal and child mortality. Efforts are made to maintain maternal physical and mental wellbeing, prevent preterm delivery, to anticipate difficulties and complications at delivery ensure the birth of a live health infant, and to assist the couple in preparation for parenting. However, few published efforts at reviewing and assessing antenatal care has been few in many of the countries especially in Nigeria.

Onah et al (2006) studied on the Factors associated with the use of maternity services in Enugu, southeastern Nigeria. The study was carried out to identify the factors which influenced choice of place of delivery by pregnant women in Enugu, southeastern Nigeria, and to recommend ways to improve women's access to skilled attendants at delivery. A pre-tested questionnaire was administered by interviewers to women who had delivered within 3 months prior to date of data collection. The response rate was 75.5% (n=1098). Of the respondents, 52.9% delivered outside health institutions and 47.1% in health institutions. The major factors influencing choice of place of delivery included promptness of care, competence of midwife/doctor, affordability, health education, 24 h presence of doctors, team work among doctors and presence of specialist obstetricians. There were statistically significant associations between choice of institutional or non-institutional deliveries and socio-demographic/economic factors such as place of residence (urban/rural), religion, educational status, tribe, marital status, occupational level, husband's occupational and educational levels, age and parity ($p<0.05$). The authors concluded that factors which will positively influence women to deliver in health institutions in Enugu, Nigeria include a variety of interacting social, economic and health system factors, which operate at various levels—the household, community, the health institutions and the larger social and political environment. Attention to these factors will not only improve maternity utilization but, hopefully, also will reduce the high maternal mortality and improve other maternal health indicators in the study area but not Nigeria as a whole which this present studies will identify.

Iyaniwura and Yussuf (2009) studied on Utilization of Antenatal care and Delivery services in Sagamu, South Western Nigeria. It was a survey of 392 women who had carried at least one pregnancy to term in Sagamu, South-Western Nigeria was conducted to determine the pattern of use of maternity services and assess factors that may influence the observed pattern. Majority of the women received antenatal care (84.6%) during their last pregnancy. Four-fifth of those who received ANC first attended the clinic during the second trimester (79.6%). The places of delivery were government facilities (54.8%), private hospital (24.5%), traditional birth attendants (13.5%) and spiritual healing homes (5.6%). Higher educational status and higher level of income positively affected the pattern of use of these services ($p<0.05$). Perceived quality of service was the most important factor which influenced the choice of facility for obstetric care. A considerable proportion of those who used traditional birth attendants (36.1%) used it to please their husbands. Our findings suggest that improving the socioeconomic status of men and women in the community is a key factor to improving utilization of maternity care services

Onoh et al (2012) published on the Pattern and determinants of antenatal booking at Abakaliki Southeast Nigeria. The objective of the study was to determine the antenatal booking pattern of pregnant women and its determinants. A cross-sectional survey of pregnant women attending the antenatal booking clinic at Federal Medical Centre Abakaliki, Ebonyi State between April 6, 2011 to August 5, 2011 was undertaken. The mean age of the respondents was 27.46 (5.81) years and the mean gestational age at booking was 24.33 (5.52) weeks. A total of 83.1% (286/344) of the pregnant women booked after the first trimester while the remaining 16.9% (56/344) booked early. Socio-biological variables and past obstetrics history did not contribute significantly to the gestational age at booking while sickness in index pregnancy, personal wishes, and financial constraint were statistically significant reasons given for seeking antenatal care. Majority of the pregnant women 37.2% (128/344) suggested that the second trimester was the ideal gestational age for booking while 18.3% (63/344) did not know the ideal gestational age for booking. Most pregnant women 81.1% (279/344) knew the benefits of early antenatal care even though they booked late 83.1% (286/344). Most pregnant women access antenatal care late at Abakaliki because of misconception and poverty. Health education and subsidization of cost of medical services will help in reversing the trend of late antenatal booking. The study however did not

describe the timing of visit which this present study will identify more and to know the factors affecting it.

Ononokpono and Odimegwu (2014) published on the Determinants of Maternal Health Care Utilization in Nigeria using a multilevel approach. The authors used the NDHS 2008 which their samples consisted of 17,542 women aged 15-49 years who had their last 5 years birth before the survey. The study used multi-leveling approach to identify community factors related to the use of delivery care. In addition to several individual factors, region of residence was significantly associated with facility delivery. Women who lived in Northern Nigeria were less likely to deliver in a health facility than those who resided in the Southern part of the country. Residence in communities with high proportion of women who had secondary and higher education significantly increased the odds of facility delivery whereas ethnic diversity was negatively associated with the health facility delivery. Interventions aimed at promoting the use of health facility for childbirth should not only be implemented at the individual level but also tailored to the community level as interventions conceived without consideration for community context are likely to have limited impact. Increasing women's education in disadvantaged communities and region-specific interventions that increase access to health facilities are likely to have far-reaching impacts in reducing maternal mortality. Furthermore, this present study will go further to investigate the reasons why people prefer to deliver at home and the characteristics of those who deliver at home.

Itimitang and Anietie (2014) studied on the Determinants of use of Maternal Health Care Services in a Rural Nigerian Community. The study was conducted to assess utilization pattern of maternal healthcare services and to identify factors affecting the use of these services in Jesse kingdom of Ethiope West Local Government area in Delta State, South-South, Nigeria. Data used in the study were collected from 263 women randomly selected from 20 villages in the Kingdom and structured questionnaire was used to collect information from the respondents.

Recent Studies on the Antenatal Coverage in Nigeria

The 2013 Nigeria Demography and Health Survey (NDHS) indicate that a relatively high percentage of pregnant women received their antenatal care from trained and qualified health professionals. That is doctors, nurses, midwifes community extension workers and auxiliary midwifes. The report showed that the pregnant mothers received antenatal care from doctors compared to nurses and midwifes. Only about less than 1 percent of the pregnant mothers received their antenatal care from traditional birth attendants. However, some of the women did not receive antenatal care. This is an indication that pregnant mothers have access to professional care givers.

In addition, antenatal care attendance by trained health professionals indicated that older women and women with birth order six and above are less likely to receive antenatal care from trained health professionals. It was also revealed that 87 percent of pregnant mothers in urban areas received antenatal care from trained health professionals whilst 41.2 percent of their rural counterpart received care from trained health professionals. Similarly, the 2013 NDHS report showed that 44.4 percent of the pregnant women in the urban areas received antenatal care from doctors but only 14.7 percent of their rural counterparts received antenatal care from a doctor. This also means that women in urban areas are more likely to attend antenatal care than women in the rural areas. The level of education of the mother and the availability of health care facilities as well as health professionals in the urban areas could be possible explanation to this behavior. This is because; most of the women living in the urban areas of Ghana are more educated than those in the rural areas. Women in the urban areas may show more understanding of the benefits of antenatal care and will be willing to visit antenatal care facilities during pregnancy than their rural counterparts. In addition, most of the pregnant mothers in the urban areas might also come from wealthy or relatively high income households and therefore can afford the cost of better antenatal care from health professionals. This may sharply contrast with the situation in the rural areas where mothers are likely to come from relatively poor households and may not be able to afford better antenatal care, especially from qualified health professionals. Notwithstanding this, rural areas lack better health care facilities as well as trained health professionals. This may not motivate pregnant mothers to attend antenatal care.

Regional variations in the use of antenatal care from health professionals were also revealed. For example, while about 32 percent of pregnant mothers in North Central, 60.8 percent in South Western Region, 35.5 percent in the South South Region and 39.7 percent at the South East region received antenatal care from doctors, only about 10 percent in the North East and North Western Region respectively received antenatal care from doctors. This implies that less than 10 percent of the pregnant mothers in the two Northern Regions received antenatal care from a doctor. However, antenatal care received from a nurse/midwife is relatively higher in these three regions (i.e. 32.9 percent for North East Region and 30.2 percent for North West) as compared with 26.5 percent in the South Western Region and 33.5 percent in the North Central Region.

The NDHS (2013) has also reported a positive association between women's level of education and the choice of health professional. As the level of education increases, the likelihood of receiving antenatal care from a health professional increases. For example, while43.8 percent and 71.4 percent of pregnant mothers with secondary education and More than secondary school respectively received antenatal care from a doctor only 8.1 percent of women with no education seek antenatal care from a doctor. However, 25.5 percent of women with no education seek antenatal care from a nurse/midwife as compared with 25 percent of women with secondary or higher education. This suggests that the more educated a woman is the more likely she will seek antenatal care from a qualified health professional. This finding was confirmed by Overbosch et al (2003) in their study of determinants of antenatal care use in Ghana. This study found that the level of education of the mother is positively associated with demand for antenatal care use in Ghana. This implies that the higher the level of education of the mother, the more the shifts of demand for antenatal care use from a nurse to a doctor and midwife.

In addition to educational attainment of the mother, a positive association was also found between income/cost and the choice of health care professional. The NDHS data does not capture the income of the mother and therefore the wealth index has been used as proxy to household income. The respondents were categorized into five wealth categories, which are poorest, poorer, middle, richer and richest (or lowest, second, middle, higher and highest wealth quintile). The cost of antenatal care has also been measured as distance covered to the nearest health care facility.

Distance is also used to determine accessibility to health care. The closer the health care facility to the woman, the more accessible is health care. It was also revealed that the richer the household from which a pregnant mother comes, the more likely she will attend antenatal care. A study by Overbosch et al (2003) revealed that in some rural areas, especially in the three northern regions pregnant mothers have to travel a distance of about five kilometers before getting to the nearest health care facility. In some cases pregnant mothers find it difficult to get transport to the health care facilities. This situation imposes cost on the mother in terms of time spent to travel to the facilities and waiting to be served. The benefit and quality of care received should outweigh this cost to attract pregnant mothers to attend antenatal care.

According to the NDHS (2013), 61.5 percent of women in the highest wealth quintile and 36 percent of those in the fourth quintile seek antenatal care from a doctor as compared with 4.4 percent of those in the lowest quintile and 10.9 percent of those in the second quintile. On the other hand, 18.1 percent of the women in lowest quintile and 30.1percent in the second quintile seek antenatal care from a nurse/midwife as compared with 31.1 percent of those in the highest wealth quintile.

Poverty alleviation programmes and provision of more health facilities especially in the rural areas can result in increased demand for antenatal care services for rural mothers in particular. This is because of the view that rural areas lack adequate health facilities and professionals. Also, rural mothers are more likely to come from poor households.

It was also revealed that the number of household members and the number of children a woman already has have a decreasing effect on the attendance to antenatal care. This implies that the more the household members the less likely a pregnant mother will attend antenatal care. Ching (1992) indicated that the effect of family size on the use of health services is unpredictable. Though a large family may have more potential patients and therefore has a higher frequency of illness, a large family may have enough people at home to care for a sick member. This may substitute for additional days of hospital care. However, this cannot be said of antenatal care since no member of a family may be capable of giving the needed care to the pregnant mother and her unborn baby. The presence of the pregnant mother at the health facility ensures

appropriate and better health care. Ching (1992) acknowledged that a large family may have less income per capita than a small family of the same income level. This may reduce a large family's actual use of health services because of lower purchasing power.

Apart from the number of children, the age of the mother also has a positive and significant impact on antenatal care attendance. The higher the age of the mother the greater the probabilities of seeking care during pregnancy. Demographic studies suggest that a woman's age at pregnancy is significant in determining pregnancy risks. It is therefore, asserted that the higher the age of the mother at pregnancy the higher the associated pregnancy risk. This assertion has been confirmed by Reproductive and Child Health department as it recognizes that the age of a mother during pregnancy is important risk factor which influences pregnancy and birth outcomes

Antenatal care will be more beneficial if initiated early in the pregnancy. Timing of the first visit within the first trimester is recommended by obstetricians. The antenatal care policy in Nigeria follows the WHO approach to promoting safe pregnancies, recommending at least four ANC visits for women without complications. This approach, called focused antenatal care, emphasizes quality of care during each visit instead of focusing on the number of visits. The recommended schedule of visits is as follows: the first visit should occur by the end of 16weeks of pregnancy, the second visit should be between 24 and 28 weeks of pregnancy, the third visit should occur at 32 weeks, and the fourth visit should occur at 36 weeks. However, women with complications, special needs, or conditions beyond the scope of basic care may require additional visits. Early detection of problems during pregnancy leads to more timely treatment and referrals in the case of complications. This is particularly important in Nigeria, a large country where physical barriers are a challenge to accessing care within the health system.(NDHS Report, 2013).

The NDHS 2013 also reported that women age 15-49 who had a live birth in the five years preceding the survey by number of antenatal care visits and timing of the first visit for the most recent live birth. Fifty-one percent of women who had a live birth in the five years preceding the survey reported visiting antenatal clinics at least four times during their pregnancy, an improvement over the figure in the 2008 NDHS (45 percent). Ten percent reported two or three antenatal visits during their last pregnancy. Thirty-four percent of women did not receive any antenatal care. The results show that only 18percent of women had their first antenatal visit in

the first trimester of pregnancy, which is not incompliance with the recommendation. Women in urban areas were more likely than those in rural areas to have their first ANC visit in the first trimester of pregnancy (23 percent versus 15 percent). The median duration of pregnancy at the first ANC visit is five months, the same figure observed in the 2008 NDHS. Antenatal care can be defined as the systemic medical supervision of women during pregnancy (Haldipur Sheila. 2006). Its main aim is to preserve the physiological aspect of pregnancy and labour and to prevent or detect, as early as possible, all that is pathological. Antenatal care coverage is an indicator of access and use of health care during pregnancy. It is defined as percentage of women who used antenatal care provided by skilled health personnel for reasons related to pregnancy at least once during pregnancy, as a percentage of live births in a given time period (World Health Organization, WHO, 2008).

History of Modern Medical Service

Western medicine was not formally introduced into Nigeria until the 1860s, when the Sacred Heart Hospital was established by Roman Catholic missionaries in Abeokuta. Throughout the ensuing colonial period, the religious missions played a major role in the supply of modern health care facilities in Nigeria. The Roman Catholic missions predominated, accounting for about 40 percent of the total number of mission-based hospital beds by 1960. By that time, mission hospitals somewhat exceeded government hospitals in number: 118 mission hospitals, compared with 101 government hospitals.

By 1954 almost all the hospitals in the mid-western part of the country were operated by Roman Catholic missions. The next largest sponsors of mission hospitals were, respectively, the Sudan United Mission, which concentrated on middle belt areas, and the Sudan Interior Mission, which worked in the Islamic north. Together they operated twenty-five hospitals or other facilities in the northern half of the country. Many of the mission hospitals remained important components of the health care network in the north in 1990.

The British colonial government began providing formal medical services with the construction of several clinics and hospitals in Lagos, Calabar, and other coastal trading centers in the 1870s.

Government hospitals and clinics expanded to other areas of the country as European activity increased there. The hospital in Jos, for example, was founded in 1912 after the initiation there of tin mining.

World War I had a strong detrimental effect on medical services in Nigeria because of the large number of medical personnel, both European and African, who were pulled out to serve in Europe. After the war, medical facilities were expanded substantially, and a number of government-sponsored schools for the training of Nigerian medical assistants were established.

After World War II, partly in response to nationalist agitation, the colonial government tried to extend modern health and education facilities to much of the Nigerian population. A ten-year health development plan was announced in 1946. The University of Ibadan was founded in 1948; it included the country's first full faculty of medicine and university hospital, still known as University College Hospital. A number of nursing schools were established, as were two schools of pharmacy; by 1960 there were sixty-five government nursing or midwifery training schools. The 1946 health plan established the Ministry of Health to coordinate health services throughout the country, including those provided by the government, by private companies, and by the missions. By 1979 there were 562 general hospitals, supplemented by 16 maternity and/or pediatric hospitals, 11 armed forces hospitals, 6 teaching hospitals, and 3 prison hospitals. Altogether they accounted for about 44,600 hospital beds. In addition, general health centers were estimated to total slightly less than 600; general clinics 2,740; maternity homes 930; and maternal health centers 1,240.

Ownership of health establishments was divided among federal, state, and local governments, and there were privately owned facilities. Whereas the great majority of health establishments were government owned, there was a growing number of private institutions through the 1980s. By 1985 there were 84 health establishments owned by the federal government (accounting for 13 percent of hospital beds); 3,023 owned by state governments (47 percent of hospital beds); 6,331 owned by local governments (11 percent of hospital beds); and 1,436 privately owned establishments (providing 14 percent of hospital beds)

Hospitals were divided into general wards, which provided both outpatient and inpatient care for a small fee, and amenity wards, which charged higher fees but provided better conditions. The general wards were usually very crowded, and there were long waits for registration as well as for treatment. Government health policies increasingly had become an issue of policy debate and public contention in the late 1980s. The issue emerged during the Constituent Assembly held in 1989 to draft a proposed constitution.

HealthCare System in Nigeria

Health care provision in Nigeria is a concurrent responsibility of the three tiers of government in the country. Private providers of health care have a visible role to play in health care delivery. The Federal Government's role is mostly limited to coordinating the affairs of the university teaching hospitals, Federal Medical Centers (tertiary health care) while the State Government manages the various general hospitals (secondary health care) and the local government focus on dispensaries (primary health care), which are regulated by the federal government through the NPHCDA.

Reforms in the Health Sector

Health sector reform can be described as sustained purposeful change to improve the performance of the health sector. It is an inherently political process, initiated by public or political action, motivated by dissatisfaction caused by the failure to deliver outcomes deemed important by society and implemented on a sector wide level (Krasovec, K. & Shaw, P. K., 2000).

Among the most common reasons for undertaking health sector reform are to address the problems of:

- Poor quality of health care;
- Inequities and limited access to health service;
- Insufficient funding for health ;
- Inefficiencies in delivery of services;
- Lack of accountability; and
- Insufficient responsiveness to client needs.

Theory of primary health care

The concept of PHC was formulated by the134 countries that met at the Alma Ata conference in Russia on 12th September 1978,organized under the auspices of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).According to W.H.O. Primary Health Care means essential health care based on practical, scientifically, sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost which the country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. Primary Health Care form an integral part of the Nigerian social and economic development. It is the first level contact of the individual and community in the national health system, thus bringing health care as close as possible to where people live and work and contributes the first element of a continuing health care process (Akinsola,1993: 100).

In the same vein, W.H.O. 1987 specified the aims and objectives of Primary Health Care as follows:

1. To make health services accessible and available to everyone wherever they live or work.

2. To tackle the health problems causing the highest mortality and morbidity at a cost that the community can afford.

3. To ensure that whatever technology is used must be within the ability of the community to use effectively and maintained.

4. To ensure that in implementing health programme. The community must be fully involved in planning the delivery and evaluation of the services in the spirit of self-reliance.

In sum PHC is essentially aimed

(i) To promote health

(ii) To prevent disease

(iii) To cure disease

(iv) To rehabilitate i.e. help people live full normal lives after an illness or disability

It is worthwhile to note that mental and dental health care is not presently available in Nigeria due to shortage of personnel. It is also pertinent to mention here that the principle upon which the Primary Health Care is founded is that health is a fundamental human right to be enjoyed by the people, in all walks of life, in all communities. The fact is that health is more than just the delivery of medical services.

Primary Health Care system attempts to address peoples, "health needs" through an integrated approach utilizing other sectors such as agriculture, education, housing, social and medical services. The integrated approach supposed to encourage active horizontal relationships between people and their local services as opposed to the traditional vertical relationships. In addition, fundamental to the Primary Health Care System is the realization that the major killer diseases in rural communities in the Third World are preventable, and that the majority of victims of these diseases are children under the age of five.

Some Challenges Facing Nigerian Health Care System

The Nigerian health care system is faced with numerous challenges. Among these are:

- Inadequate health financing and management;
- Lack of planning and management skills of staff at district/ sub-district levels, high attrition/brain drain;
- Insufficient capacity for scaling up priority interventions;
- Strengthening surveillance and laboratory capacity;
- Insufficient access to referral maternity services, inadequately staffed and equipped referral centres and inability to pay referral services;
- Poor distribution, high cost, poor quality and irrational use of medicines by health care providers and consumers;
- Lack of adequate regulation and quality control of traditional medicine practitioners

Demand for Antenatal Care in Nigeria

Safe Motherhood

Safe motherhood is defined as "creating the circumstances within which a woman is enabled to choose whether to become pregnant, and if she does, ensuring that she receives care for prevention and treatment of pregnancy complications, has access to trained birth attendants, has access to emergency obstetric care if she needs it and care after birth, so that she can avoid death or disability from complications of pregnancy and childbirth" (Reproductive and Child Health (RCH) Unit/National Health Service (NHS), 2006).

The main goal of the safe motherhood programme is to improve upon women's health in general and especially to reduce maternal morbidity and mortality and to contribute to reducing infant morbidity and mortality. The Nigerian Health Service has spelt out clearly, some specific objectives to be achieved under the safe motherhood programme. These include:

- To make child bearing safe for all mothers and to contribute to the improvement in infant health,
- To promote and maintain the physical, mental and social health of mother and baby by providing education on nutrition, family planning, sexually transmitted infections (STIs) prevention, including HIV/AIDS, the danger signs of pregnancy, rest/sleep and personal hygiene.
- To help pregnant mothers to develop birth preparedness and complication, readiness plans
- To detect and treat all complications arising from pregnancy, whether surgical, medical or obstetric.
- To ensure delivery of full term healthy baby with minimal stress or injury to mother and baby.
- To help prepare the mother to breastfeed successfully, experience normal puerperium and take good care of her child physically, psychologically and socially.
- To prevent mother-to-child transmission of HIV/AIDS,
- Prevent and manage unsafe abortion and provide post abortion care services

Safe Motherhood and Maternal Health

Addressing maternal health means ensuring that all women receive the care they need to be safe and healthy throughout pregnancy and childbirth. Safe motherhood encompasses social and cultural factors. as well as addresses health systems and health policy. Indicators used to measure maternal health include skilled attendance at birth, contraceptive prevalence rates and maternal mortality and morbidity. Improving maternal health is one of the eight Millennium Development Goals, and great efforts have been put forth to achieve that goal. However, much work has yet to be done to assure maternal health for women worldwide.

Over a decade of research and experience in addressing maternal health has made it clear that safe motherhood initiatives are cost-effective, ensuring high social and economic returns at low cost. Interventions to improve maternal health are also feasible, even in poor settings.

The potential benefits are substantial:

- Investments in safe motherhood not only improve women's health and the health of her family, but also increase the labor supply, productive capacity and economic well-being of communities, ultimately having a positive impact on the economy.
- Unwanted or unplanned pregnancies can interfere with women's social and economic activities and cause emotional and economic hardship not only to women but also to their families.
- Children whose mothers die or are disabled in childbearing have drastically diminished prospects of leading a productive life.
- The burden on women associated with frequent pregnancies, poor maternal health, pregnancy complications, and caring for sick children drains their productive energy, jeopardizes their income-earning capacity, and contributes to their poverty.

Safe Motherhood Initiative

In 1987 the World Bank, in collaboration with WHO and UNFPA, sponsored the Safe Motherhood Conference in Nairobi. The launch of the Safe Motherhood Initiative (SMI) was seen as a major milestone in the race to reduce the burden of maternal mortality throughout the world, particularly in developing countries. It issued a call to action to reduce maternal mortality and morbidity by one half by the year 2000. It also gave birth to the Inter-Agency Group (IAG) for Safe Motherhood, under whose auspices this meeting has been organized. All events that make pregnancy unsafe, irrespective of the gestation or outcome, are part and parcel of safe motherhood. Subsequent work on Safe Motherhood by the Inter-Agency Group and others have outlined clear strategies and specified interventions for the reduction of maternal morbidity and mortality, often referred to as the Pillars of Safe Motherhood.

Focused Antenatal Care

Under the focused antenatal care, all pregnant women are considered to be at risk and therefore are encouraged to seek early detection and treatment of all complications arising during pregnancy. It also underscores the need for birth preparedness and complication readiness and prevention of malaria in pregnancy and mother- to- child transmission of HIV/AIDS.

OTHER ATTEMPTS TO DESCRIBE ANTENATAL CARE IN AFRICA AND OTHER DEVELOPING COUNTRIES

Mamady Cham et al (2005) investigated the maternal mortality in the rural Gambia, a qualitative study on access to emergency obstetric care. The aim of the study was to describe the socio-cultural and health service factors associated with maternal deaths in rural Gambia. The authors reviewed the cases of 42 maternal deaths of women who actually tried to reach or have reached health care services. A verbal autopsy technique was applied for 32 of the cases. Key people who had witnessed any stage during the process leading to death were interviewed. Health care staff who participated in the provision of care to the deceased was also interviewed. All interviews were tape recorded and analyzed by using a grounded theory approach. The standard WHO definition of maternal deaths was used. The result shows that the length of time in delay within

each phase of the model was estimated from the moment the woman, her family or health care providers realized that there was a complication until the decision to seeking or implementing care was made. The following items evolved as important: underestimation of the severity of the complication. bad experience with the health care system, delay in reaching an appropriate medical facility, lack of transportation, prolonged transportation, seeking care at more than one medical facility and delay in receiving prompt and appropriate care after reaching the hospital. The authors however concluded that Women do seek access to care for obstetric emergencies, but because of a variety of problems encountered, appropriate care is often delayed. Disorganized health care with lack of prompt response to emergencies is a major factor contributing to a continued high mortality rate.

Chandhiok *et al*(2006) publish on the Determinants of antenatal care utilization in rural areas of India. It was a cross-sectional study of 7005 pregnant women sampled from 28 districts in rural India. The objective was to analyze the possible factors contributing to women obtaining antenatal care services and to determine whether these services influence their decision regarding the place of delivery. Since early reporting of pregnancy in rural areas is rare, a detailed analysis was carried out on 5344 pregnant women with a gestation of more than 4 months. Of these, 73.9% had at least one antenatal contact with a auxiliary nurse midwife (ANM) or had visited a Government Health Facility for antenatal services or problems. There was a statistically significant reduction in the proportion of women obtaining antenatal care services with increasing age, parity, and number of living children. No association was observed with outcome of previous pregnancy and presence of health facility in the village. Awareness of care during pregnancy and knowledge of pregnancy related complications were associated with increased utilization of antenatal care services. However, knowledge of serious complications was found to be lacking even in women who availed of the care. In both the groups – those who availed of antenatal care services and those who did not – about 14% had not decided about the place of delivery. 51.7% of the women with antenatal care preferred institutional delivery as compared to 27.6% of those who had not availed antenatal care services. Furthermore, the study did not highlight the factors affecting the choice of delivery at the health centres and there was no indication of accessing the reason of not delivering at the health centres.

Saeed et al (2007) surveyed on the Socio-economic Inequalities and Healthcare Utilization in Ghana. The aim of the paper was to investigate the socio-economic inequality in the use of healthcare services in Ghana. The data employed in the study were drawn from Global Ageing and Adult Health survey conducted in Ghana by SAGE and was based on the design for the World Health Survey (WHS, 2003). The survey was conducted in 2007 and collected data on socio-economic characteristics and other variables of the individuals interviewed. Using generalized logit model. the study found that health status is a very strong determinant of the type of healthcare services Ghanaians look for. In Ghana. there are still important socio-economic gradients in the use of some healthcare services. These differences may be due to socio-economic inequities but could also indicate that the existing health facilities are not always used in an optimal way. Patient factors may be more important than supply factors in explaining the differential use of health services.

. Anyit et al (2012) studied on the Predictors for health facility delivery in Busia district of Uganda. It was a cross sectional study which aimed in identifying the independent predictors of health facility delivery in Busia a rural district in Uganda with a view of suggesting measures for remedial action. 500 women who had a delivery in the past two years (from November 16 2005 to November 15 2007) were interviewed regarding place of delivery, demographic characteristics, reproductive history, attendance for antenatal care, accessibility of health services, preferred delivery positions, preference for disposal of placenta and mother's autonomy in decision making. In addition the household socio economic status was assessed. The independent predictors of health facility delivery were identified by comparing women who delivered in health facilities to those who did not, using bivariate and binary logistic regression analysis. Eight independent predictors that favoured delivery in a health facility include: being of high socio-economic status (adjusted odds ratio [AOR] 2.8 95% Confidence interval [95% CI]1.2–6.3), previous difficult delivery (AOR 4.2, 95% CI 3.0–8.0), parity less than four (AOR 2.9, 95% CI 1.6–5.6), preference of supine position for second stage of labour (AOR 5.9, 95% CI 3.5–11.1) preferring health workers to dispose the placenta (AOR 12.1, 95% CI 4.3–34.1), not having difficulty with transport (AOR 2.0, 95% CI 1.2–3.5), being autonomous in decision to attend antenatal care (AOR 1.9, 95% CI 1.1–3.4) and depending on other people (e.g. spouse) in making a decision of where to deliver from (AOR 2.4, 95% CI 1.4–4.6). A model with these 8

variables had an overall correct classification of 81.4% (chi square□=□230.3, P□<□0.001). The findings suggest that in order to increase health facility deliveries there is need for reaching women of low social economic status and of higher parity with suitable interventions aimed at reducing barriers that make women less likely to deliver in health units such as ensuring availability of transport and involving spouses in the birth plan.

Eric Arthur (2012) published on the Wealth and antenatal care use: implications for maternal health care utilization in Ghana. The study investigates the effect of wealth on maternal health care utilization in Ghana via its effect on Antenatal care use. Antenatal care serves as the initial point of contact of expectant mothers to maternal health care providers before delivery. The study is pivoted on the introduction of the free maternal health care policy in April 2005 in Ghana with the aim of reducing the financial barrier to the use of maternal health care services, to help reduce the high rate of maternal deaths. Prior to the introduction of the policy, studies found wealth to have a positive and significant influence on the use of Antenatal care. It is thus expected that with the policy, wealth should not influence the use of maternal health care significantly. Using secondary data from the 2008 Ghana Demographic and Health survey, the results have revealed that wealth still has a significant influence on adequate use of Antenatal care. Education, age, number of living children, transportation and health insurance are other factors that were found to influence the use of Antenatal care in Ghana. There also exist considerable variations in the use of Antenatal care in the geographical regions and between the rural and urban dwellers. It is recommended that to improve the use of Antenatal care and hence maternal health care utilization, some means of support is provided especially to women within the lowest wealth quintiles, like the provision and availability of recommended medication at the health center; secondly, women should be encouraged to pursue education to at least the secondary level since this improves their use of maternal health services. Policy should also target mothers who have had the experience of child birth on the need to use adequate Antenatal care for each pregnancy, since these mothers tend to use less antenatal care for subsequent pregnancies. The regional disparities found may be due to inaccessibility and unavailability of health facilities and services in the rural areas and in some of the regions. The government and other service providers (NGOs, religious institutions and private providers) may endeavor to

improve on the distribution of health facilities, human resources, good roads and necessary infrastructure

Conceptual and Theoretical Framework

Many works have been done using different frameworks. However, depending on the variables and econometric method used different approaches have been adopted. Some of these works have been reviewed. Though there is a wide range of empirical work on demand for health care, particularly demand for health insurance, there is scanty but restricted literature on demand for antenatal care. Much of the empirical literature in this study is based on demand for health care in general.

Figure 1: Relationship between Socio demographic characteristics, Place of Delivery and ANC Utilization

Two important factors – price and quality of care are likely to affect demand for health care services. These factors are correlated and have many effects on utilization as well as health outcomes. High quality care is more effective and improves health directly since practitioners with the right tools are enabled to apply their skills. However, this quality can be eroded by higher price tag (Manley, 2007).

Manley (2007) used Indonesian Family Life Study (IFLS), a panel data set for thirteen provinces in his study of the demand for quality and utilization of pre-natal care. A two-stage estimation procedure was used. The first stage described quality of care as a function of number of local full clinics, number of local sub-clinics, inpatient facilities, local development, and region/time and rural. The second stage described pre-natal care as a function of maternal age, education, parity, care quality, costs of visit, wealth, rural, region/time and local development. Cost of visit was a measure of clinic accessibility which includes estimated travel time to the nearest public clinic, the number of clinics in the sub-district of residence and the actual monetary cost of care at the clinic. Local development was used as proxy for transportation infrastructure or other measures of convenience (i.e. proximity of the clinic to other potential destinations). Region and time period of observation were used to control for factors common to a larger area, all regions, all

rural areas in a given period. Clinic staffing, especially number of doctors per public clinic was used as proxy for quality of care.

The result of the study showed a positive relationship between having doctors in clinics and pre-natal care utilization suggesting that the more the number of doctors in a clinic the more the increase in pre-natal care utilization. With coefficient of 0.14, it implies that increasing the ratio of doctors per clinic by one will result in a 14 percent increase in women coming in for pre-natal care. However, higher pregnancy parity has a decreasing effect on care seeking. The implication of this is that women who have had enough pregnancy experience assumed to be familiar with the process enough so much that they do not need care from a physician or midwife.

In addition, education, high level of consumption expenditure and larger number of facilities in the vicinity were found to be significant in determining pre-natal care utilization. Similarly, women living in urban areas are more likely to utilize pre-natal care than those in rural areas. It was concluded that the presence of doctors at facilities which is a measure of quality is robustly associated with increased pre-natal care utilization, though it is questionable as whether this translates into improved birth outcome.

Sahn, D. E., Younger, S.D. & Genicot, G. (2002) adopted the model of Gertler, Locay and Sanderson (1987). Their model was based on selection of a health care provider, given that a person was sick. It was concluded that quality is an important determinant of health demand in rural Tanzania. In particular, quality of doctors/nurses, drug and the hospital/clinic environment induced demand for health care. In other words, they consented that demand for health care would increase if people had the option to see a qualified doctor/nurse, got access to pharmaceutical facilities and attended a clinic or dispensary which has a cleaner environment. It was also found that health care consumers in Tanzania were highly responsive to the price of health care, especially among the lower income bracket.

Additionally, factors related to place of residence and socioeconomic status may account for variations in use of maternal health care. These factors include women's age, ethnicity, education, religion, culture, clinical need for care and decision-making power. The

cost, location and quality of health services are also important. These factors interact in different ways to determine use of health care. For example, rural women in northern India and those in KwaZulu Natal, South Africa, do not use antenatal care adequately, but for different reasons. In India, affluent rural women are unwilling to invite health workers into their homes; in KwaZulu Natal, women have little time left after attending to essential household tasks. When methodologically robust research shows variations in maternal health-care use according to women's place of residence or socioeconomic status, an understanding of context is essential to design delivery mechanisms to redress such inequalities (Sablah 2011)

Preventing problems for mothers and babies depend on an operational continuum of care with accessible, high quality care before and during pregnancy, childbirth and postnatal period. Of course, the support in terms of facilities at the reach of pregnant women, particularly when complications occur is also important. However, an important element in this continuum of care is effective antenatal care (Sablah 2011). The goal of antenatal care package is to prepare for birth and parenthood as well as prevent, detect, alleviate or manage problems that affect mothers and babies during pregnancy.

According to World Health Organization (WHO 2006) essential interventions can be provided over four visits at specified intervals for women with no underlying medical problems. This had led to defining a new model of antenatal care based on four goal-oriented visits, what is now called Focused Antenatal Care (FANC). The first visit should be made immediately signs of pregnancy are detected or between 8-12 weeks of pregnancy. On this visit, the pregnancy will be confirmed and the woman is classified for basic antenatal care (i.e., four visits or more) depending on whether the pregnancy is classified as complicated or not. In addition, the woman is screened, treated and given preventive measures. Advice and counseling are also given and birth and emergency plan developed for her. The second visit is scheduled between 24-26 weeks. At this visit, maternal and foetal well-being is assessed and the birth and emergency plan reviewed or modified. The third and the fourth visits come in 32 weeks and between 36-38 weeks respectively, where maternal and foetal well-being is assessed and birth and emergency plan reviewed.

The Nigerian Health Service however, has recommended a number of antenatal visits for a pregnant woman (NPHCDA 2012). That is, monthly visit up to the 28th week of pregnancy followed by bi-weekly visits up to the 36th week of pregnancy. Then after, weekly visits follow until delivery. For

women to enjoy the full benefit of the package of services delivered under antenatal care, it is essential that services are initiated early in pregnancy and adequate number of visits made.

Studies have shown positive relationship between antenatal care and pregnancy outcome (Bhardwaj 1988; Marcela, 2007; Yousif, 2006). For example, in Ghana, the mortality rate for unbooked women (i.e. those women not registered for antenatal care) was found to be 24 per 1000 live-births whilst it was only 1 per 1000 live-births for booked women. In a study conducted by World Health Organization in South –East Asia (Burma, Indonesia, Thailand and India) it was found that with no antenatal care, perinatal and neonatal mortality rate was 97 per 1000 live-births whereas it was only 5 per 1000 live-birth after full antenatal care (Ekwempu, 1988). Bhardwaj et al, (1994) also found that perinatal mortality rate was zero per 1000 live-births for women with high maternal care receptivity as compared to 90.9 per 1000 live-births for women with poor maternal care receptivity. Yousif et al (2006) concluded that adequacy of antenatal care is strongly and consistently associated with birth outcome. However, its effect differs by mother's risk category. Stillbirths increase as antenatal care, education and income decline.

Literature has shown that a number of variables influence the demand for antenatal care. Grossman (1972) identified education, age and income as factors that influence demand for health care. Other factors which were considered to have influence on demand for health care, and for that matter antenatal care are cost of antenatal care, occupation, number of children the woman already has, number of household members and assess to information, that is, frequency of listening to radio and watching television.

To this end, this study will study the characteristics of mother's accessing antenatal health-care centers in Nigeria and also access the factors affecting their accessibility and choice of health care system. Also, this study will also compare the characteristics of those that give birth at home compared to those that do give birth in the hospital.

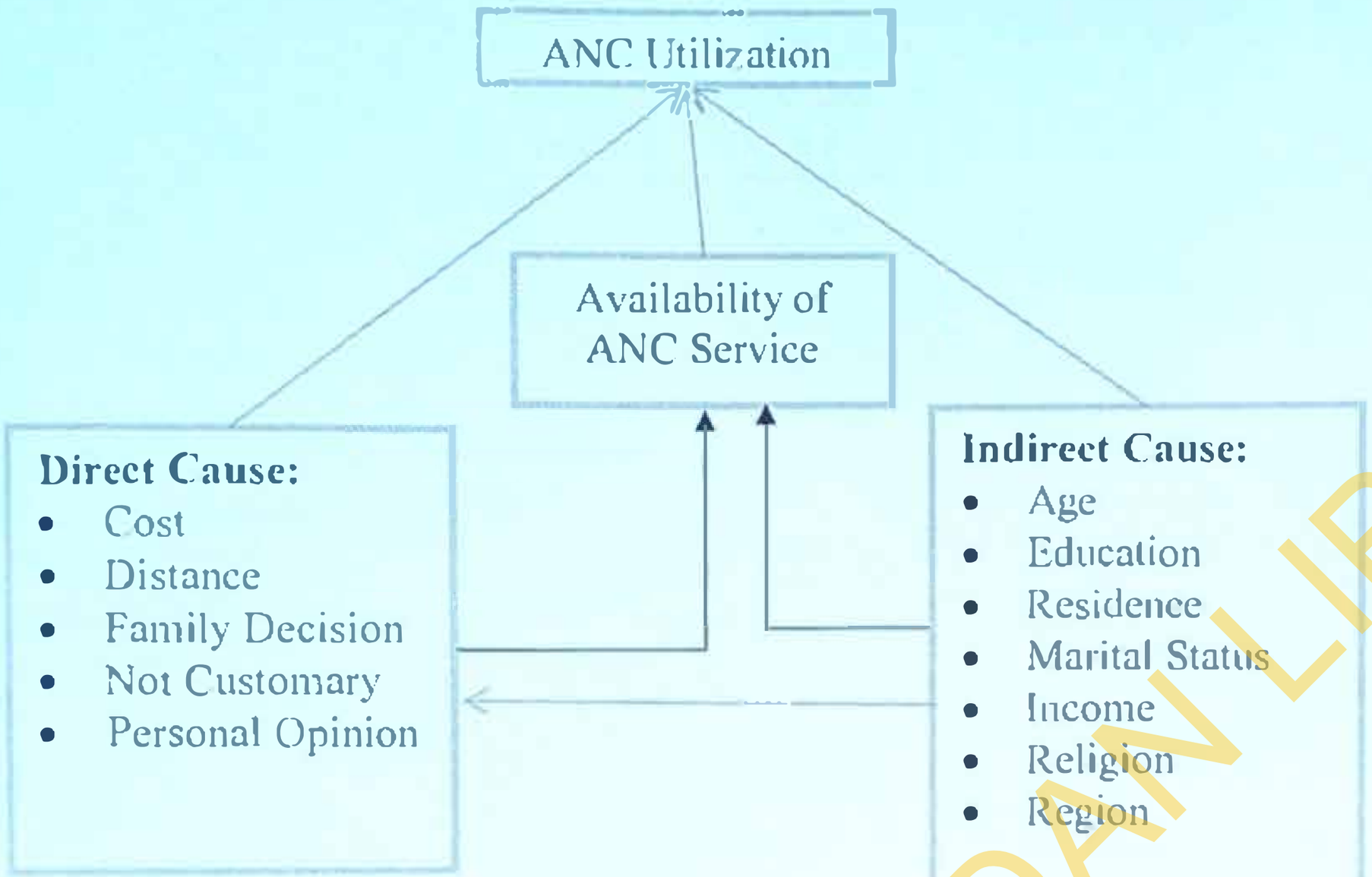

Figure 1: Relationship between socio demographic characteristics and Antenatal Utilization

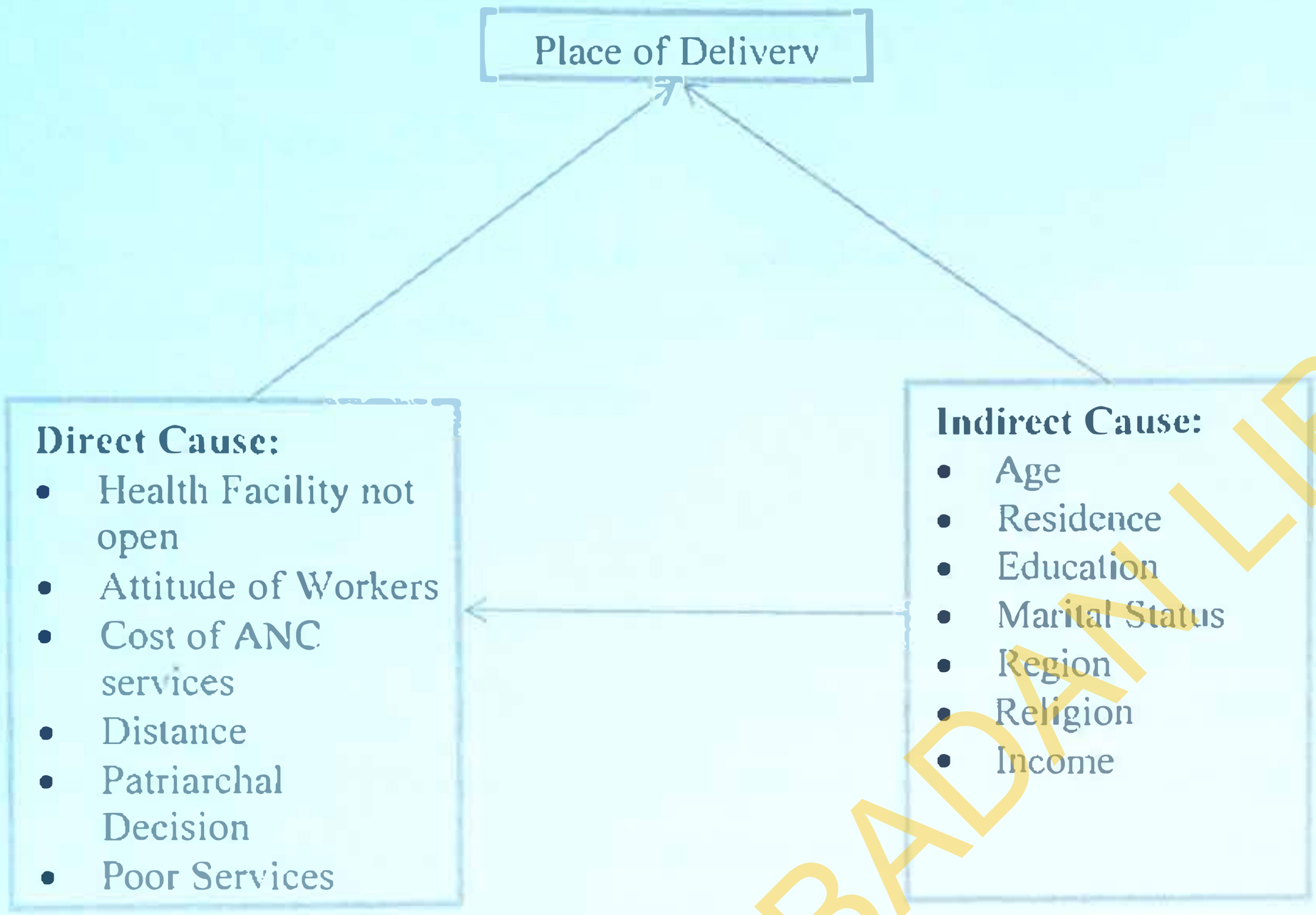

Figure 2: **Relationship between socio demographic characteristics and Place of Delivery.**

CHAPTER THREE

METHODOLOGY

3.0 Research Design

The study used a secondary data set. The data was obtained from the 2013 Nigeria Demographic and Health Survey (NDHS), which was the most recent survey carried out in Nigeria. The study design employed in these surveys was cross-sectional and descriptive in nature.

3.1 Study Population

The 2013 Nigeria Demographic Health Survey (NDHS) consists of a nationally representative sample of 38,948 women age 15-49 years that were individually interviewed. All women age 15-49 who were usual members of the selected households or who spent the night before the survey in the selected households was eligible for individual interviews. Full report of the survey is contained in the final report of the national Population Commission (NPopC and ICF Macro, 2013).

3.2 Sample Design

The 2013 Nigeria Demographic and Health Survey (NDHS) is the fifth DHS in Nigeria, following those implemented in 1990, 1999, 2003, and 2008. A nationally representative sample of 40,320 households from 904 primary sampling units (PSUs) was selected. A fixed sample take of 45 households were selected per cluster. All women age 15-49 who were either permanent residents of the households in the 2013 NDHS sample or visitors present in the households on the night before the survey were eligible to be interviewed. In a subsample of half of the households, all men age 15-49 that were either permanent residents of the households in the sample or visitors present in the households on the night before the survey were eligible to be interviewed.

Administratively, Nigeria is divided into states. In turn, each state is subdivided into local government areas (LGAs) and each LGA into smaller (secondary and tertiary) localities. Nigeria has 36 states and a Federal Capital Territory (FCT). These states are subdivided into 774 LGAs.

Furthermore, the states are regrouped by geographical location to form six zones. In addition to these administrative units and geographical zones, during the last population census in 2006, each locality was subdivided into convenient areas called census enumeration areas (EAs). The average number of households per EA in the corresponding locality frame was assigned to each EA. The EAs in Nigeria are small in size, with an average of 211 inhabitants (equivalent to 48 households). Since these EAs were too small to be DHS clusters, the 2013 NDHS included several EAs per DHS cluster (with preferred minimum cluster size of 80 households).

3.3 Data Management

The individual dataset (NGIR6ASV.sav) – SPSS file format which was obtained from measuredhs.com was used in this study. The Woman's questionnaire was fully read and variables needed for the analysis of this study were properly identified. Also a recoding manual was used to guide the variable that was used for the analysis in this study.

3.3.1 Variable Definition and Identification

The variables were computed using SPSS version 20. The variables of interest that were used for the study are shown in Table 3.1 below.

Table 3.1: Variable of interest for analysis extracted from the household dataset

Variable Name	Variable Label
V005	Women's individual sample weight
V101	Region
V102	Type of place of residence
V106	Highest Educational Level
V130	Religion
V501	Current Marital Status
V201	Total Number of Children Ever Born
V190	Wealth Index
M14	Number of Antenatal Visit
M15	Place of Delivery
M65A-X	Reasons didn't deliver at Health Facility
M2A-N	Person Seen for Antenatal Care

M3A-N	Verification of Person Seen for Antenatal
M57A-X	Place Antenatal was received
M13	First Time Antenatal was received
M14	Number of Visit to Maternity clinic during pregnancy

Explanatory Variables

The explanatory variables used in this study are age, place of residence, region (zone), level of education, religion, ethnicity, wealth index and current marital status of mothers.

Variable Recoding

The Place of delivery was recoded into dichotomous variable as Home/Others and Maternity Clinic. Each Reason for not delivering at Health Facility was recoded as Yes or No which will be used as outcome.

3.4 Sample Weighting

The dataset was first weighted before analysis to make sample data a representative of the entire population. There are different weights for different sample selections/units of analysis. For the individual dataset, the sample weight variable was V005. This computed and divided by 1,000,000 and then weighted. The description for weighting was properly discussed in the Guide to DHS Statistics.

3.5 Statistical Analysis

There are 2 dependent variables which were analyzed one at a time.

i. Level of antenatal care, that is, number of antenatal visits

ii. Place of delivery

The independent variables are: age, place of residence, region (zone), level of education, religion, ethnicity, wealth index and current marital status of mothers.

Bivariate analysis

Each of the dependent variables was cross tabulated against each independent variable using chi square test to investigate association between the independent and dependent variables

Logistic regression analysis

In the logistic regression model we postulate that the probability p_x , of attendance to antenatal clinic for an individual woman depends on a set x of n socio-demographic variable

x_1, x_2.----------.x_n in the following way.

$$P_x = p\,(f=1|x)$$

$$= 1/1+\exp\{-(\beta_0 + \beta_1 X_1 + \ldots\ldots\ldots + \beta_n X_n)\}$$

Where f is a dichotomous variable denoting attendance (f=1 if at least one attendance, or f= 0 if no attendance). The bs are parameters that represent the effects of the x_i on the probability of attendance at antenatal clinic .

The odds ratio for attendance p_x/q_x , where $q_x = 1 - p_x$, is

$$P_x / q_x = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots\ldots + \beta_n X_n) \text{ and}$$

$$\log_e (P_x / q_x) = \beta_0 + \beta_1 X_1 + \ldots\ldots\ldots + \beta_n X_n$$

This is the more familiar form of the logistic model for the odds ratio and is easier to model. This is the form we have modeled in this analysis.

The second dependent variable, that is, place of delivery, was dichotomized as:

Place of delivery =0 if delivery took place at home, or =1 if delivery was at the maternity clinic or hospital

Multiple logistics Regression analysis

Bivariate analysis for the outcome variable for each of the selected independent variables was done. This was carried out in order to observe the effect of each of the independent variables (age, place of residence, region (zone), level of education, religion, ethnicity, wealth index and current marital status of mothers) on the dependent variable (Place of delivery and Level of antenatal care). The variables that are statistically significant at 20% level were considered for inclusion in the multiple logistic regression analysis. (Norusis, 2004)

CHAPTER FOUR

RESULTS

4.1 Socio demographical characteristics of respondents

A total of 38948 women of reproductive age were interviewed at the survey. Table 4.1 shows the distribution by selected socio-demographic characteristics. The youngest age group 15-19 is the most populous with 20.1% while the older age group 45-49 is the least populous with 8.8%. The Table shows that 30.5% of the respondents were from the North West and this consist the largest population across the zones while 11.5% of the respondents were from the South East region. About 58% of the women are from rural areas.

As regards education 37.8% of the respondents had no education, 17.3% had primary education while 9.1% of the respondents had higher educational level. The current marital status of the respondents shows that 69.4% of the respondents were married, 23.9% was never in a union and 1.0% of the respondents was no longer living together or separated. With regards to wealth index 19.1% of the respondents were in the poorest category while 22.9% belong to the richest category. Most (52.0%) of the respondents are Muslims while 47 % are Christians. The mean children ever born per woman ranged from 4.1 for the youngest to 11.3 for the oldest women aged group 45-49.

Table 4.1: Socio-demographic characteristics of respondents

Characteristics	Frequency	Percentage
Age group (in years)		
15-19	7820	20.1
20-24	6757	17.3
25-29	7145	18.3
30-34	5467	14.0
35-39	4718	12.1
40-44	3620	9.3
45-49	3422	8.8
Zone		
North Central	5572	14.3
North East	5766	14.8
North West	11877	30.5
South East	4476	11.5
South South	4942	12.7
South West	6314	16.2
Type of Place of Residence		
Urban	16414	42.1
Rural	22534	57.9
Highest educational level attained		
No education, preschool	14729	37.8
Primary	6734	17.3
Secondary	13927	35.8
Higher	3558	9.1
Current marital status		
Never in union	9326	23.9
Married	27043	69.4
Living with partner	787	2.0
Widowed	967	2.5
Divorced	424	1.1
No longer living together/separated	402	1.0
Wealth Index		
Poorest	7132	18.3
Poorer	7428	19.1
Middle	7486	19.2
Richer	7992	20.5
Richest	8910	22.9

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35-39	4718	12.1
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Wealth Index		
Poorest	7132	18.3
Poorer	7428	19.1
Middle	7486	19.2
Richer	7992	20.5
Richest	8910	22.9

Religion		
Catholic	4316	11.1
Other Christian	13922	35.9
Islam	20149	52.0
Traditionalist	359	.9
Other	10	.0
Total Number of Children ever Born	**No.**	**Mean**
15-19	7819	4.1
20-24	6758	5.8
25-29	7144	5.4
30-34	5466	7.1
35-39	4719	8.2
40-44	3621	10.8
45-49	3422	11.3

4.2 Details of antenatal care for the last pregnancy

Table 4.2 shows some details about the ANC visits of mothers who attended maternity clinic at least once for antenatal care during the last pregnancy. Out of the total respondents, 11.2% saw Doctors during their antenatal care visit, while 28.6% saw Nurses/Midwives and 19.1% saw traditional birth attendants (TBA). Antenatal care was most frequently received at Government hospital by 41.7 percent, 29.3% visited Government health centers and 21.4% sourced care from private clinics.. The table also showed that, 10.8% of the mothers received their first antenatal care in their third trimester while 26.9% received antenatal care in their first trimester and 61.9% in their second trimester.

Table 4.2: Distribution of Respondents by Antenatal care visits

Characteristics	Frequency	Percentage
Person Seen for ANC*		
Doctors	1820	11.2
Nurse/midwife	4658	28.6
Auxiliary nurse	676	4.1
CHEW	529	3.2
TBA	3110	19.1
Village Health Worker	14	0.1
Others	3654	22.4
No one	1845	11.3
Where Antenatal Care Received*		
Respondents home	81	0.6
Other home	398	2.9
Government hospital	5765	41.7
Government Health Centre	4044	29.3
Government Health Post	464	3.4
Other public sector	4	0.0
Private hospital clinic	2961	21.4
Private medical other	79	0.6
Other	14	0.1
Time First ANC was received		
1st trimester	3610	26.9
2nd trimester	8298	61.9
3rd trimester	1448	10.8

**Multiple responses*

4.3 Level of utilization of antenatal care

Table 4.3 below shows the frequency of ANC visits of mothers (excluding don't knows) during the last pregnancy. About 35% of the mothers made no visit at all, while 12.4% made 1-3 visits and 52.5% made above 4 visits.

Table 4.3: Frequency of ANC visits during the last pregnancy

Number of Visit to ANC during Pregnancy	No of Women	Percentage
0 (No Visit)	6990	35.1
1 – 3	2474	12.4
4&above	10457	52.5
TOTAL	19921	100.0

4.4 Socio demographic factors associated with ANC use.

Table 4.4 shows the association of ANC use and some socio demographic characteristics of the mothers. The proportion of ANC users was highest in the age groups 25-29, 30-34 and 35-39 years ranging between 66.4% and 68.2%. It was lower at both extremes of the reproductive age range. Percentage of ANC users was higher among urban residents, 88.6%, than for rural residents (52.1%).

Women with no education were the least likely to use ANC (41.2%) while those with primary education had the highest proportion (78.4%) of use Mothers with secondary and higher education had user rates of 73.1% each.

As regards wealth index the richest had the highest proportion using ANC services (96.5%), this was followed by the richer quintile (88.9%) and the least use was by those that were in the poorest quintile (29.6%)

The table also shows that, with respect to the marital status of mothers, 83.6% of those that were never in a union used ANC while the lowest rate of 63.8% was among those that were married.

Christian mothers have the highest level of using ANC (85.1%), compared with 53.15% among Muslim mothers.

Among the regions, those that are in the South West have the highest ANC usage with 94.0% and the least was North West with 43.8%

4.4 Socio demographic factors associated with ANC use.

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Women with no education were the least likely to use ANC (41.2%) while those with primary education had the highest proportion (78.4%) of use Mothers with secondary and higher education had user rates of 73.1% each.

As regards wealth index the richest had the highest proportion using ANC services (96.5%), this was followed by the richer quintile (88.9%) and the least use was by those that were in the poorest quintile (29.6%)

The table also shows that, with respect to the marital status of mothers, 83.6% of those that were never in a union used ANC while the lowest rate of 63.8% was among those that were married.

Christian mothers have the highest level of using ANC (85.1%), compared with 53.15% among Muslim mothers.

Among the regions, those that are in the South West have the highest ANC usage with 94.0% and the least was North West with 43.8%

Table 4.4: Bivariate analysis of ANC use cross tabulated against selected socio demographic characteristics

	ANC Use		Total	X^2	P_{value}
	Non Users (%)	ANC Users (%)			
Age in 5-year groups					
15-19	616 (47.4)	684 (52.6)	1300 (100.0)	156.539	0.000
20-24	1469 (37.4)	2460 (62.6)	3929 (100.0)		
25-29	1764 (33.6)	3479 (66.4)	5243 (100.0)		
30-34	1290 (31.4)	2824 (68.6)	4114 (100.0)		
35-39	973 (31.8)	2083 (68.2)	3056(100.0)		
40-44	599 (37.0)	1019 (63.0)	1618(100.0)		
45-49	278 (42.1)	382 (57.9)	660(100.0)		
Type of place of residence					
Urban	794 (11.4)	6193 (88.6)	6987 (100.0)	2658.434	0.000
Rural	6195 (26.9)	6739 (52.1)	12934 (100.0)		
Highest educational level					
No education	5676 (58.8)	3985 (41.2)	9661 (100.0)	4844.575	0.000
Primary	821 (21.6)	2974 (78.4)	3795 (100.0)		
Secondary	474 (26.9)	4767 (73.1)	5241 (100.0)		
Higher	18 (26.9)	1205 (73.1)	1223 (100.0)		
Wealth index					
Poorest	3270 (70.4)	1377 (29.6)	4647 (100.0)	5445.865	0.000
Poorer	2209 (49.0)	2301 (51.0)	4510 (100.0)		
Middle	1001 (26.2)	2817 (73.8)	3818 (100.0)		
Richer	391 (11.1)	3137 (88.9)	3528 (100.0)		
Richest	119 (3.5)	3300 (96.5)	3419 (100.0)		
Marital Status					
Never in union	72 (16.4)	366 (83.6)	438 (100.0)	153.217	0.000
Married	6658 (36.2)	11729 (63.8)	18387 (100.0)		
Living with partner	97 (19.2)	409 (80.8)	506 (100.0)		
Widowed	59 (24.7)	180 (75.3)	239 (100.0)		
Divorced	66 (34.2)	127 (65.8)	193 (100.0)		
No longer living Together/separated	38 (24.1)	120 (75.9)	158 (100.0)		
Religion					
Christian	1097 (14.9)	6272 (85.1)	7369 (100.0)	2104.581	0.000
Islam	5736 (46.9)	6504 (53.1)	12240 (100.0)		
Others	15 (14.2)	91 (92.6)	204 (100.0)		

Region					
North Central	760 (26.9)	2068 (73.1)	2828 (100.0)	3444.228	0.000
North East	1411 (42.0)	1948 (58.0)	3359 (100.0)		
North West	4143 (56.2)	3226 (43.8)	7369 (100.0)		
South East	84 (26.9)	1565 (73.1)	1649 (100.0)		
South South	419 (22.9)	1414 (77.1)	1833 (100.0)		
South West	172 (6.0)	2710 (94.0)	2882 (100.0)		

4.5 Multiple Logistic Regression of Factors associated with ANC use

Table 4.5 shows the output of the multiple logistic regression analysis with the socio demographic variables fitted into the model. All the variables were significant in the bivariate analysis.

The results show some variation in the rate of ANC use according to the education of mothers. It is highest, 66% -68%, in the age range 25-39 years and lowest in the years at the start and at the end of reproduction 53% -58%. The variation however was not statistically significant (P >0.20).

With respect to place of residence, urban mothers were about 1.5 times as likely to use ANC as rural mothers (P =0.000). ANC use also increased significantly (P= 0.000) with the level of mothers education. Mothers with primary education ,mother with secondary education and mothers with higher than secondary education were respectively 2.6, 4.1 and 12 times as likely to use ANC services as mothers with no education (P= 0.000 in each case).

There was also a significant (P=0.000) variation of ANC use as regards wealth index, the odds of use increasing steadily as wealth increased. The richest women are 11.3 times as likely to use ANC compared to the poorest category.

Use of ANC did not vary significantly with mother's current marital status, (P= 0.25). Mothers who practice Islamic and Christian religions were equally likely to use ANC but those of other religions were only half as likely (P=0.000). However Mothers who were from South East and South West were 2 times and 3 times respectively as likely to use ANC as those in the North Central region of the country.

Table 4.5: Multiple Regression of ANC use on selected socio demographic and economic Factors

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Age (15 – 19) ref			836.0	6	.213			
20-24	-.003-	.078	.002	1	.966	.997	.856	1.160
25-29	.035	.076	.214	1	.643	1.036	.892	1.203
30-34	.082	.079	1.053	1	.305	1.085	.929	1.268
35-39	.155	.083	3.505	1	.061	1.168	.993	1.374
40-44	.106	.093	1.290	1	.256	1.111	.926	1.333
45-49	.121	.115	1.090	1	.297	1.128	.900	1.415
Region Ref: North Central			551.6	5	0.000			
North East	.140	.068	4.183	1	.041	1.150	1.006	1.315
North West	-.512-	.063	66.917	1	.000	.599	.530	.677
South East	1.088	.136	64.171	1	.000	2.969	2.275	3.875
South South	-.844-	.089	90.515	1	.000	.430	.361	.512
South West	.739	.100	54.368	1	.000	2.094	1.721	2.549
Type of residence Ref: urban								
Rural	-.374-	.058	42.253	1	.000	.688	.615	.770
Level of Education Ref: No Education			42.03	1	0.000			
Primary	.944	.055	297.883	1	.000	2.570	2.308	2.860
Secondary	1.408	.072	383.777	1	.000	4.087	3.550	4.705
Higher	2.497	.249	100.478	1	.000	12.143	7.452	19.784
Religion Ref: Christians			28.918	2	0.000			
Islam	-.023-	.067	.117	1	.733	.977	.858	1.114
Others	-.724-	.174	17.280	1	.000	.485	.344	.682

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Poorer	.677	.048	202.838	1	.000	1.968	1.793	2.160
Middle	1.307	.057	519.661	1	.000	3.695	3.302	4.134
Richer	1.900	.078	587.105	1	.000	6.687	5.734	7.798
Richest	2.421	.122	391.452	1	.000	11.255	8.855	14.306
Current Marital Status								
Ref: Never in Union			6.61	5	0.252			
Married	.060	.151	.157	1	.692	1.062	.789	1.428
Living with partner	-.255-	.192	1.767	1	.184	.775	.532	1.129
Widowed	-.012-	.228	.003	1	.958	.988	.632	1.546
Divorced	.060	.233	.067	1	.795	1.062	.673	1.677
No longer living together/separated	-.208-	.259	.648	1	.421	.812	.489	1.348
Constant	-.519-	.184	7.941	1	.005	.595		

4.6 Factors associated with the number of attendance at antenatal Clinic

Table 4.6 shows the association between proportions making more than 4 antenatal visits and some selected socio demographic variables.

The proportion was high (between 70-85%) for all age groups but highest for those aged between 30 and 45 years. The proportion was higher for urban residents (88%) than for rural residents (74%). It also varied directly with the women's level of education ranging from 68% for those with no education to 95% for those with post- secondary education.

The proportion was lowest, at 61.3%, for the richest. It did not seem to vary much with the current marital status, ranging from 81% for the married to 85% for the widowed/ divorced or separated group. The rate was highest (88%) for Christians and lowest, at 74%, for Muslim women. Among zones, it was highest in the South West (95.5%) and the South East (91.1%) and lowest in the North East (68.5%).

Table 4.6: Factors associated with the number of ANC visits

Factors	Number of Visit 1 - 4 visit (%)	Greater than 4 visit (%)	Total	X^2	P_{value}
Age in 5-year groups					
15-19	205 (30.0)	479 (70.0)	684 (100.0)	124.733	0.000
20-24	564 (22.9)	1896 (77.1)	2460 (100.0)		
25-29	676 (19.4)	2803 (80.6)	3479 (100.0)		
30-34	766 (15.3)	2059 (84.7)	2825 (100.0)		
35-39	583 (16.2)	1500 (83.8)	2083 (100.0)		
40-44	288 (16.3)	731 (83.7)	1019 (100.0)		
45-49	140 (24.3)	242 (75.7)	382 (100.0)		
Type of place of residence					
Urban	773 (12.5)	5420 (87.5)	6193 (100.0)	340.285	0.000
Rural	2743 (25.3)	5037 (74.4)	6739 (100.0)		
Highest educational level					
No education	1287 (32.2)	2699 (67.7)	3986 (100.0)	793.329	0.000
Primary	593 (19.9)	2381 (80.1)	2974 (100.0)		
Secondary	532 (11.2)	4235 (88.8)	4767 (100.0)		
Higher	63 (5.2)	1142 (94.8)	1205 (100.0)		
Wealth index					
Poorest	532 (38.7)	844 (61.3)	1376 (100.0)	911.872	0.000
Poorer	701 (30.5)	1601 (69.5)	2303 (100.0)		
Middle	569 (20.2)	2248 (79.8)	2817 (100.0)		
Richer	457 (14.6)	2680(85.4)	3137 (100.0)		
Richest	216 (6.5)	3084 (92.5)	330 (100.0)		
Marital Status					
Never in union	63 (17.2)	304 (82.8)	367 (100.0)	28.696	0.000
Married	2348 (1.9)	9789 (80.7)	12137(100.0)		
Widowed/Divorced/ Seperated	63 (14.8)	364 (85.2)	427 (100.0)		
Religion					
Christian	753 (12.0)	5519 (88.0)	6272 (100.0)	403.378	0.000
Islam	1690 (26.0)	4815 (74.0)	6505 (100.0)		
Others	20 (22.0)	71 (78.0)	91 (100.0)		
Region					
North Central	465 (22.5)	1603 (77.5)	2068 (100.0)	979.597	0.000
North East	614 (31.5)	1334 (68.5)	1948 (100.0)		
North West	966 (29.9)	2260 (70.1)	3226 (100.0)		
South East	140 (8.9)	1425 (91.1)	1566 (100.0)		
South South	168 (11.9)	1246 (88.1)	1084 (100.0)		
South West	122 (4.5)	2588 (95.5)	2710 (100.0)		

4.7 Place of delivery

Table 4.7 shows the distribution of pregnant women according to their place of delivery of the last pregnancy. Of the total number of respondents, 24.7% delivered at a Maternity clinic compared to 75.3% who delivered at home

Table 4:7 Place of delivery

Place of delivery	Frequency	Percent
Home	29327	75.3
Maternity Clinic	9621	24.7
Total	38948	100.0

4.8 Socio demographic characteristics of women who deliver at home compared with those delivering at maternity clinics

Table 4.8 show the comparison between women delivering at home and those who delivered at the maternity clinics with respect to the socio demographic characteristics of the mothers. With respect to age, those delivering at home were slightly younger with a mean age of 28.5 years compared with 29.6 years for those delivering at the clinics. The age disparity was most evident in the fact that about 25% of those delivering at home were aged 15-19 years compared with only 6% in the same age group among those delivering at the clinic.

A higher percentage (58.7%) of those delivering at home were rural women, but among those delivering at the clinic only 55.2% come from the rural areas.

Those delivering at home were also less educated (38.8% with no education) than those delivering at the clinic where only 34.8% were illiterates.

Those delivering at home are also poorer in wealth compared to those delivering at the clinics. About 40% of the former group belong to the two poorest wealth index categories compared to only 31% among those delivering at the clinics.

A much bigger percentage (91.3%) of those delivering at the maternity clinics are married compared to 62.3% married among those delivering at home. Conversely 30.9% of those that deliver at home were never in a marital union as compared with only 2.7% among those who delivered at maternity clinics.

A bigger percentage (56.1%) of those delivering at the clinics are Muslims compared to 50.6% Muslims delivering at home. Conversely 48.3% of those that deliver at home are Christians compared to 43.3% Christians among those delivering at maternity clinics.

Among the regions (zones) 14% of those delivering at home are from the North East as compared to 17.4% of those delivering at the clinic. About 13 % of those delivering at home are from the South East compared with 8.5% of those giving birth at maternity centres.

Table 4:8: Some Socio demographic characteristics of those delivering at home compared with those delivering at the maternity clinics

Characteristic	No. and Proportion of those that deliver at Home (%)	Maternity Clinic (%)	Total	X^2	P_{value}
Age in 5-year groups					
15-19	7273 (24.8)	546 (5.7)	7819 (20.1)	2914.367	0.000
20-24	4862 (16.6)	1895 (19.7)	6757 (17.3)		
25-29	4624 (15.8)	2521 (26.2)	7145 (18.3)		
30-34	3413 (11.6)	2054 (21.3)	5467 (14.0)		
35-39	3182 (10.9)	1536 (16.0)	4718 (12.1)		
40-44	2857 (9.7)	763 (7.9)	3620 (9.3)		
45-49	3115 (10.6)	307 (3.2)	3422 (8.8)		
Total	29326(100.0)	9622 (100.0)	38948 (100.0)		
Mean ± SD	28.515±10.25	29.56±7.22			
Type of place of residence					
Urban	12100 (41.3)	4314 (44.8)	16414 (42.1)	38.059	0.000
Rural	17226 (58.7)	5307 (55.2)	22533 (57.9)		
Total	29326(100.0)	9621 (100.0)	38947 (100.0)		
Highest educational level					
No education	11380(38.8)	3349 (34.8)	14729 (37.8)	217.253	0.000
Primary	4602 (15.7)	2132 (22.2)	6734 (17.3)		
Secondary	10601 (36.1)	3326 (34.6)	13927 (35.8)		
Higher	2744 (9.4)	814 (8.5)	3558 (9.1)		
Total	29327 (100.0)	9621 (100.0)	38948 (100.0)		
Wealth index					
Poorest	6040 (20.6)	1092 (11.4)	7132 (18.3)	575.023	0.000
Poorer	5565 (19.0)	1863 (19.4)	7428 (19.1)		
Middle	5316 (18.1)	2171 (22.6)	7487 (19.2)		
Richer	5548 (18.9)	2444 (25.4)	7992 (20.5)		
Richest	6859 (23.4)	2051 (21.3)	8910 (22.9)		
Total	29328 (100.0)	9621 (100.0)	38949 (100.0)		

Marital Status					
Never in union	9062 (30.9)	264 (2.7)	9326 (23.9)	3364.639	0.000
Married	18261 (62.3)	8782 (91.3)	27043 (69.4)		
Living with partner	533 (1.8)	254 (2.6)	787 (2.0)		
Widowed	831 (2.8)	136 (1.4)	967 (2.5)		
Divorced	319 (1.1)	105 (1.1)	424(1.1)		
No longer living together/separated	321 (1.1)	80 (0.8)	401 (1.0)		
Total	29327 (100.0)	9621 (100.0)	38948 (100.0)		
Religion					
Catholic	3506 (12.0)	810 (8.5)	4316 (11.1)	141.046	0.000
Other Christian	10584 (36.3)	3337 (34.8)	13921 (35.9)		
Islam	14774 (50.6)	5375 (56.1)	20149 (52.0)		
Traditionalist	299 (1.0)	60 (0.6)	359 (0.9)		
Other	8 (0.0)	1 (0.0)	9 (0.0)		
Total	29171 (100.0)	9583 (100.0)	38754 (100.0)		
Region					
North Central	4102 (14.0)	1470 (15.3)	5572 (14.3)	171.170	0.000
North East	4097 (14.0)	1670 (17.4)	5767 (14.8)		
North West	8890 (30.3)	2987 (31.0)	11877 (30.5)		
South East	3660 (12.5)	817 (8.5)	4477 (11.5)		
South South	3769 (12.9)	1173 (12.2)	4942 (12.7)		
South West	4810 (16.4)	1505 (15.6)	6315 (16.2)		

4.9 Association between Socio demographic characteristics of women and place of delivery

Table 4.9 shows the association between place of delivery and the socio demographic characteristics of mothers. The proportion of those who deliver at the maternity clinic was highest in ages 30 – 34 years with 37.6%, whereas it was only 7% among the younger women (15 – 19 years) and 9.0% among older women aged 45-49 years. For the place of residence, the proportion was higher in urban centers than in rural areas (26.3% versus 23.6%).

Women with no education were the least likely to deliver at Maternity Clinic (22.7%) while those with primary education had the highest proportion (31.7%) delivering at the clinic.

With regard to the wealth index, those that were richer had the highest proportion delivering in maternity Clinic (30.6%), this was followed by the middle quintile (29.0%) and the least were those in the Poorest quintile (15.3%).

The table also showed that, married women and women living with a partner had the highest proportions of clinic deliveries, 32.5% and 32.3% respectively while the lowest was 2.8% among those that were never in a union.

Mothers who practiced Christian religion have the highest rate of delivery in maternity clinics (29.4%), followed by those who practiced Islamic religion (26.7%), while the least was for mothers with other religion with 11%.

Furthermore, among the regions, those that are in the North East have the highest level of delivery at ANC clinics (29.0%) and the least was South East with 18.2%.

Table 4:9: Factors associated with place of delivery

Factors	Place of delivery Home (%)	Maternity Clinic (%)	Total	X^2	P_{value}
Age in 5-year groups					
15-19	7273 (93.0)	546 (7.0)	7819 (100.0)	2914.367	0.000
20-24	4862 (72.0)	1895 (28.0)	6757 (100.0)		
25-29	4624 (64.7)	2521 (35.5)	7145 (100.0)		
30-34	3413 (62.4)	2054 (37.6)	5467 (100.0)		
35-39	3182 (67.4)	1536 (32.6)	4718 (100.0)		
40-44	2857 (78.9)	763 (21.1)	3620 (100.0)		
45-49	3115 (91.0)	307 (9.0)	3422 (100.0)		
Type of place of residence					
Urban	12100 (73.7)	4314 (26.3)	16414 (100.0)	38.059	0.000
Rural	17226 (76.4)	5307 (23.6)	22533 (100.0)		
Highest educational level					
No education	11380(77.3)	3349 (22.7)	14729 (100.0)	217.253	0.000
Primary	4602 (68.3)	2132 (31.7)	6734 (100.0)		
Secondary	10601 (76.1)	3326 (23.9)	13927 (100.0)		
Higher	2744 (77.1)	814 (22.9)	3558 (100.0)		
Wealth index					
Poorest	6040 (84.7)	1092 (15.3)	7132 (100.0)	575.023	0.000
Poorer	5565 (74.9)	1863 (25.1)	7428 (100.0)		
Middle	5316 (71.0)	2171 (29.0)	7487 (100.0)		
Richer	5548 (69.4)	2444 (30.6)	7992 (100.0)		
Richest	6859 (77.0)	2051 (23.0)	8910 (100.0)		
Marital Status					
Never in union	9062 (97.2)	264 (2.8)	9326 (100.0)	3364.639	0.000
Married	18261 (67.5)	8782 (32.5)	27043 (100.0)		
Living with partner	533 (67.7)	254 (32.3)	787 (100.0)		
Widowed	831 (85.9)	136 (14.1)	967 (100.0)		
Divorced	319 (75.2)	105 (24.8)	424(100.0)		
No longer living together/separated	321 (80.0)	80 (20.0)	401 (100.0)		
Religion					
Christianity	14090 (71.6)	4147 (29.4)	18237 (100.0)	92.281	0.000
Islam	14774 (74.3)	5375 (26.7)	20149 (100.0)		
Others	307 (89.2)	62 (11.8)	369 (100.0)		
Region					
North Central	4102 (73.6)	1470 (26.4)	5572 (100.0)	171.170	0.000
North East	4097 (71.0)	1670 (29.0)	5767 (100.0)		
North West	8890 (74.9)	2987 (25.1)	11877 (100.0)		
South East	3660 (81.8)	817 (18.2)	4477 (100.0)		
South South	3769 (76.3)	1173 (23.7)	4942 (100.0)		
South West	4810 (76.2)	1505 (23.8)	6315 (100.0)		

4.10 Relationship between ANC practices and delivery at the clinic

Table 4.10 shows the relationship between the details of ANC received and place of delivery. A high proportion, ranging between 56% and 62%, of mothers who were attended by skilled personnel such as doctors, nurse/midwives and CHEW during their antenatal care visits returned to the clinics for delivery. A much lower proportion of mothers, about 30% - 40%, who saw less skilled staff such as TBAs, had their delivery at the clinics.

With respect to the location where antenatal care was received, all women who took antenatal care from Government Hospital and Government Health Centers delivered at maternity clinic while those who took antenatal care from other public sector never delivered at maternity clinic.

Similarly, there was strong significant relationship between the number of ANC visits and delivery in maternity clinic. The rate of delivery in maternity clinic was zero for those who had no ANC visit and highest (78.9%) for those with 1-3 visits. Furthermore, the proportion delivering at maternity clinics increased with the timing of first antenatal clinic from the first trimesters to the third trimester respectively (64.3%, 73.9%, 78.2%).

Table 4:10: Relationship between ANC practices and place of delivery

	Place of delivery		Total	X^2	P_{value}
	Home (%)	Maternity Clinic (%)			
Person Seen for Antenatal Care					
Doctor	724 (39.8)	1096 (60.2)	1820 (100.0)		0.000
Nurse/Midwife	1604 (34.4)	3054 (65.6)	4658 (100.0)		
Auxiliary Nurse	299 (44.2)	377 (55.8)	676 (100.0)		
CHEW	202 938.2)	327 (61.8)	529 (100.0)		
Traditional Birth Attendant	2075 (66.7)	1035 (33.3)	3110 (100.0)		
Other persons	9 (59.7)	6 (40.3)	14 (100.0)		
Relative/Friends	2129 (58.3)	1525 (41.7)	3654 (100.0)		
No one	1167 (63.2)	679 (36.8)	1845 (100.0)		
Location ANC Received					
Respondent's Home	75 (92.7)	6 (7.3)	81 (100.0)		
Other Home	343 (86.1)	55 (13.9)	398 (100.0)		
Government Hospital	0 (0.0)	5765 (100.0)	5765 (100.0)		
Government Health Centre	0 (0.0)	4044 (100.0)	4044 (100.0)		
Government Health Post	448 (96.6)	16 (3.4)	464 (100.0)		
Other Public Sector	4 (100.0)	0 (0.0)	4 (100.0)		
Private Hospital Clinic	2692 (90.9)	269 (9.1)	2961 (100.0)		
Other Private Medical	74 (93.0)	6 (7.0)	79 (100.0)		
Others	11 982.6)	2 (17.4)	14 (100.0)		
Timing of 1st Antenatal Check					
1st Trimester	1290 (35.7)	2320 (64.3)	3610 (100.0)	156.458	0.000
2nd Trimester	2162 (26.1)	6136 (73.9)	8298 (100.0)		
3rd Trimester	315 (21.8)	1133 (78.2)	1448 (100.0)		

4.11 Multiple Logistic regressions of place of delivery on selected socio demographic characteristics of mothers

Table 4.11 shows the output of the multiple logistic regression analysis with the socio demographic variables fitted into the model. All the variables were significant in the bivariate analysis.

The results showed that the level of place of delivery at Maternity Clinic significantly varies with age of mother (P<0.005). Region (P<0.005), Type of place of residence (P<0.005). Wealth Index (P<0.005), Mother's level of education (P<0.005). Religion (P<0.005) and Current marital status (P<0.005).

The result showed that mothers aged 20-24, 25-29 and 30 – 34 years were approximately three times (O.R= 2.5, 95% C.I = 2.23,2.81), (O.R = 2.7, 95% C.I – 2.37, 2.97) and (O.R= 2.7, 95% C.I = 2.36, 2.98) respectively as likely to deliver in maternity clinic as those mothers of age 15 – 19 years while older women of ages 45 – 49 years are about forty percent (O.R = 0.4, 95% C.I = 0.36, 0.49) as likely as mothers of aged 15 – 19 years.

Also, mothers that are from rural area of residence are about 80 percent as likely to deliver in maternity clinic as mothers from urban centres.

Delivery at Maternity Clinic also increased with Mother's highest level of Education. Mothers with Primary education (OR= 1.79, 95%, C.I = 1.65, 1.94), Secondary education (OR= 2.06, 95%, C.I = 1.88, 2.25), and Post secondary education (OR=1.75, 95%, C.I=1.54, 1.99) were approximately two times as likely to deliver at maternity clinic compared to Mothers with no Education.

As regards wealth Index, mothers with more wealth were more likely to deliver at maternity clinic than mothers that were poorer. Delivery at Maternity Clinic also varied with Mother's Current marital status. Married (OR= 20.9, P<0.005), Living with Partner (OR= 13.2, P<0.005), Divorced (OR = 11.6, P<0.005) were more likely to deliver at maternity clinic compared to the Mothers Never in Union. Mothers who practice Islamic and Christian religion respectively are likely to deliver in maternity clinic as those that are catholic.

However Mothers who are from North East and North West are respectively more likely to register the birth of their child than mothers in the North Central region of the country.

Table 4:11: Multiple Logistic regression of place of delivery on selected socio demographic characteristics of mothers

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age								
(15 – 19) ref			1305.174	6	.000			
20-24	.918	.058	249.301	1	.000	2.504	2.234	2.806
25-29	.976	.058	286.601	1	.000	2.654	2.370	2.971
30-34	.976	.060	266.715	1	.000	2.653	2.360	2.983
35-39	.684	.062	123.565	1	.000	1.982	1.757	2.236
40-44	.093	.067	1.889	1	.169	1.097	.961	1.252
45-49	-.879	.081	119.161	1	.000	.415	.355	.486
Type of residence								
Ref: urban								
Rural	-.209	.036	34.358	1	.000	.811	.756	.870
Level of Education			290.699	3	.000			
Ref: No Education								
Primary	.582	.041	197.352	1	.000	1.790	1.650	1.941
Secondary	.720	.045	251.562	1	.000	2.055	1.880	2.246
Higher	.561	.065	75.427	1	.000	1.752	1.544	1.989
Wealth Index			715.151	4	.000			
Ref: Poorest								
Poorer	.718	.045	251.832	1	.000	2.051	1.877	2.241
Middle	1.122	.049	514.713	1	.000	3.071	2.787	3.384
Richer	1.185	.056	450.108	1	.000	3.270	2.931	3.648
Richest	.686	.065	111.520	1	.000	1.986	1.749	2.256
Current Marital Status			1977.541	5	.000			
Ref: Never in Union								
Married	3.041	.070	1888.114	1	.000	20.917	18.236	23.991
Living with partner	2.583	.104	618.688	1	.000	13.233	10.796	16.219
Widowed	2.254	.120	354.016	1	.000	9.527	7.533	12.049
Divorced	2.451	.137	319.683	1	.000	11.601	8.868	15.177

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for Lower	Upper
Religion								
Ref: Catholic			44.314	4	.000			
Other Christian	.255	.052	24.480	1	.000	1.290	1.166	1.428
Islam	.366	.058	40.266	1	.000	1.442	1.288	1.614
Traditionalist	.020	.159	.016	1	.899	1.020	.748	1.393
Other	-.578	.963	.359	1	.549	.561	.085	3.708
Region								
Ref: North Central			227.506	5	.000			
North East	.417	.051	67.245	1	.000	1.518	1.374	1.677
North West	.158	.046	11.879	1	.001	1.171	1.071	1.281
South East	-.328	.060	29.993	1	.000	.720	.640	.810
South South	-.012	.056	.049	1	.826	.988	.886	1.102
South West	-.337	.051	43.931	1	.000	.714	.646	.789
Constant	-5.685	.110	2662.039	1	.000	.003		

4.12 Reason mother didn't deliver at health facility:

The table 4.12 shows the frequencies of the reason why mothers didn't deliver at a health facility. The most frequent reason was 'No time because sudden delivery' which presumably had to do with the sudden onset of labour, with a relative frequency of 32.5%.

The next two most frequent reasons are 'Not necssary' (28.6%) and 'Too far/ no transport (12.9%). other fairly frequent reasons are 'Cost too much' (7.8%), 'Not customary' (7.7%) and 'Husband /family didn't allow' (6.7%).

Each of these six reasons were analyzed further to identify the socio demographic characteristics of the women offering them.

Table 4.12: Reason didn't deliver at health facility:

	Frequency	Percent
No time because suddenly delivery	4878	32.5
Not necessary	4292	28.6
Too far/no transport	1933	12.9
Cost too much	1165	7.8
Not customary	1159	7.7
Husband/family didn't allow	1002	6.7
Facility not open	288	1.9
Don't trust facility/poor service	180	1.2
No female provider	68	0.4
Attitude of health personnel	28	0.2
Other	27	0.2
Total	*15018	100.0

*Multiple Responses

4.13 Associations between the Reasons for not delivering in Clinic and Socio Demographic Characteristics

Table 4.13 shows the association between the reason ("cost too much") for not delivering at Maternity clinic and socio demographic characteristics of mothers. Among the ages of mothers, the proportion for not delivering at the maternity clinic because the cost was too much was highest among mothers aged 30 – 34 years (4.3%) and mothers 25-29 years old (3.9%) while the least are younger women ages 15 – 19 years (1.1%). Mothers from South- South have highest proportion of reason (cost too much) for not delivering at maternity clinic (5.8%) followed by North East (4.9%) while the least is South East with 1.4%. In the highest level of education of mothers, the reason for not delivering at maternity clinic as a result of cost was very low among higher level of education with 0.1% while it is highest among primary level of education (4.5%). There is a significant difference in the proportion of mothers that did not deliver at maternity clinic in Rural and urban ($P<0.05$) for reasons of cost. Also, for the mothers marital status, those that were living with partners have the highest proportion of not delivering at maternity Clinic (8.9%) while the least are those that were never in union (0.6%). Furthermore, those who practice other religion have highest level (22.2%) not delivering in maternity clinic as a result of cost while the least were those that are catholic (2.4%).

Table 4.13: Cross tabulation of socio-demographic characteristics for a reason cost too much

Characteristics	Reasons: Cost too much		Total	X^2	P_{value}
	No	Yes			
Age in 5-year groups					
15-19	7735 (98.9)	85 (1.1)	7820 (100.0)	214.051	0.000
20-24	6524 (96.9)	233 (3.4)	6757 (100.0)		
25-29	6863 (96.1)	282 (3.9)	7145 (100.0)		
30-34	5234 (95.7)	233 (4.3)	5467 (100.0)		
35-39	4525 (95.9)	193 (4.1)	4718 (100.0)		
40-44	3522 (97.3)	98 (2.7)	3620 (100.0)		
45- 49	3380 (98.8)	41 (1.2)	3421 (100.0)		
Region					
North Central	5390 (96.7)	182 (3.3)	5572 (100.0)	320.411	0.000
North East	5484 (95.1)	282 (4.9)	5766 (100.0)		
North West	11613 (97.8)	264 (2.2)	11877 (100.0)		
South East	4415 (98.6)	61 (1.4)	4476 (100.0)		
South South	4657 (94.2)	285 (5.8)	4942 (100.0)		
South West	6223 (98.5)	92 (1.5)	6315 (100.0)		
Highest Level of Education					
No education	14109 (95.8)	620 (4.2)	14729 (100.0)	306.736	0.000
Primary	6432 (95.5)	302 (4.5)	6734 (100.0)		
Secondary	13686 (98.3)	241 (1.7)	13927 (100.0)		
Higher	3555 (99.9)	3 (0.1)	3558 (100.0)		
Type of Place of Residence					
Urban	16179 (98.6)	235 (1.4)	16414 (100.0)	237.771	0.000
Rural	21604 (95.9)	930 (4.1)	22534 (100.0)		
Wealth Index					
Poorest	6764 (94.8)	368 (5.2)	7132 (100.0)	353.365	0.000
Poorer	7098 (95.6)	330 (4.4)	7428 (100.0)		
Middle	7241 (96.7)	245 (3.3)	7486 (100.0)		
Richer	7838 (98.1)	154 (1.9)	7992 (100.0)		
Richest	8841 (99.2)	69 (0.8)	8910 (100.0)		
Current marital status					
Never in union	9271 (99.4)	54 (0.6)	9325 (100.0)	329.632	0.000
Married	26047 (96.3)	996 (3.7)	27043 (100.0)		
Living with partner	716 (91.1)	70 (8.9)	786 (100.0)		
Widowed	945 (97.7)	22 (2.3)	967 (100.0)		
Divorced	415 (97.9)	9 (2.1)	424 (100.0)		
No longer living together/separated	387 (96.3)	15 (3.7)	402 (100.0)		

Religion					
Catholic	4214 (97.6)	102 (2.4)	4316 (100.0)	33.567	0.000
Other Christian	13463 (96.7)	458 (3.3)	13921 (100.0)		
Islam	19578 (97.2)	571 (2.8)	20149 (100.0)		
Traditionalist	338 (94.2)	21 (5.8)	359 (100.0)		
Other	7 (77.8)	2 (22.2)	9 (100.0)		

Table 4.14 below shows the association between the reason (too far/no transport) for not delivering at Maternity clinic and socio demographic characteristics of mothers. For the age of mothers, the proportion for not delivering at the maternity clinic because of distance or no transport was highest among mothers aged 30 – 34 year (7.1%), 25-29 years (6.3%) while the least are among older women aged 45 – 49 years (1.5%). Among the regions, mothers from North East have highest proportion of reason (too far/no transport) for not delivering at maternity clinic (10.3%), 6.1% in North West while the least is South East with 1.6%.

With regards to highest level of education of mothers, the reason for not delivering at maternity clinic as a result transport of distance significantly decreases as the level of education increases. Also as the wealth index increases the proportion of women not delivering at the clinic for reasons of distance and lack of transport reduces drastically ($P<0.05$). Similarly, a higher proportion of rural than urban residents did not deliver at the clinic for this reason, there is a significant difference in the proportion of mothers that did not deliver at maternity clinic in Rural and urban ($P<0.05$).

Considering mothers marital status, those that were married have the highest proportion of not delivering at maternity Clinic (6.8%) while the least are those that were never in union (0.3%). Furthermore, those who practice other religion have highest level (20.0%) not delivering in maternity clinic as a result of distance or no transport while the least were those that are catholic (2.0%).

Table 4:14: Cross tabulation of socio-demographic characteristics for a reason too far/ no transport

Characteristics	too far/ no transport		Total	X^2	P value
	No	Yes			
Age in 5-year groups					
15-19	7628 (97.5)	192 (2.5)	7820 (100.0)	290.740	0.000
20-24	6360 (94.1)	397 (5.9)	6757 (100.0)		
25-29	6695 (93.7)	450 (6.3)	7145 (100.0)		
30-34	5079 (92.9)	388 (7.1)	5467 (100.0)		
35-39	4440 (94.1)	278 (5.9)	4718 (100.0)		
40-44	3445 (95.1)	176 (4.9)	3621 (100.0)		
45- 49	3370 (98.5)	52 (1.5)	3422 (100.0)		
Region					
North Central	5332 (95.7)	241 (4.3)	5573 (100.0)	614.514	0.000
North East	5172 (89.7)	594 (10.3)	5766 (100.0)		
North West	11157 (93.9)	720 (6.1)	11877 (100.0)		
South East	4405 (98.4)	71 (1.6)	4476 (100.0)		
South South	4791 (96.9)	151 (3.1)	4942 (100.0)		
South West	6159 (97.5)	155 (2.5)	6314 (100.0)		
Highest Level of Education					
No education	13282 (90.2)	1446 (9.8)	14728 (100.0)	1296.289	0.000
Primary	6443 (95.7)	291 (4.3)	6734 (100.0)		
Secondary	13740 (98.7)	187 (1.3)	13927 (100.0)		
Higher	3550 (99.7)	9 (0.3)	3559 (100.0)		
Type of Residence					
Urban	16201 (98.7)	213 (1.3)	16414 (100.0)	808.079	0.000
Rural	20814 (92.4)	1720 (7.6)	22534 (100.0)		
Wealth Index					
Poorest	6129 (85.9)	1002 (14.1)	7131 (100.0)		0.000
Poorer	6917 (93.1)	511 (6.9)	7428 (100.0)		
Middle	7233 (96.6)	253 (3.4)	7486 (100.0)		
Richer	7881 (98.6)	111 (1.4)	7992 (100.0)		
Richest	8855 (99.4)	55 (0.6)	8910 (100.0)		
Currently marital Status					
Never in union	9295 (99.7)	31 (0.3)	9326 (100.0)	648.528	0.000
Married	25213 (93.2)	1829 (6.8)	27042 (100.0)		
Living with partner	747 (94.9)	40 (5.1)	787 (100.0)		
Widowed	955 (98.8)	12 (1.2)	967 (100.0)		
Divorced	413 (97.4)	11 (2.6)	424 (100.0)		
No longer living together/ separated	392 (97.5)	10 (2.5)	402 (100.0)		

Religion					
Catholic	4230 (98.0)	86 (2.0)	4316 (100.0)	419.377	0.003
Other Christian	13533 (97.2)	389 (2.8)	13922 (100.0)		
Islam	18742 (93.0)	1408 (7.0)	20150 (100.0)		
Traditionalist	324 (90.0)	36 (10.0)	360 (100.0)		
Other	8 (80.0)	2 (20.0)	10 (100.0)		

Table 4.15 shows the association between the reason (husband family didn't allow) for not delivering at Maternity clinic and socio demographic characteristics of mothers. Among the ages of mothers, the proportion for not delivering at the maternity clinic because the husband family didn't allow was highest among mother's ages 25-29 year (3.9%). According to the region, mothers from North West have highest proportion of reason (husband family didn't allow) for not delivering at maternity clinic (5.4%), followed by 3.1% of the North East have reason for not delivering at maternity clinic while the least is South with 0.3%. In the highest level of education of mothers and the wealth index , the reason for not delivering at maternity clinic as a result of husband's family not allowing decreases as the level of education and wealth index increases ($P<0.05$). There is no significant difference in the proportion of mothers that did not deliver at maternity clinic in Rural and urban ($P>0.05$). Also, among the mothers marital status, those that were married have the highest proportion of not delivering at maternity Clinic (3.6%) while the least are those that were never in union (0.1%). Furthermore, those who practice Islamic religion have highest level (4.4%) not delivering in maternity clinic as a result of husband family not allowing while the least were those practicing other religion (0%).

Table 4:15: Cross tabulation of socio-demographic characteristics- reason Husband family didn't allow

Characteristics	Husband family didn't allow		Total	X^2	P_{value}
	No	Yes			
Age in 5-year groups					
15-19	7734 (98.9)	86 (1.1)	7820 (100.0)	198.500	0.000
20-24	6504 (96.3)	253 (3.7)	6757 (100.0)		
25-29	6867 (96.1)	277 (3.9)	7144 (100.0)		
30-34	5300 (96.9)	167 (3.1)	5467 (100.0)		
35-39	4600 (97.5)	118 (2.5)	4718 (100.0)		
40-44	3553 (98.1)	67 (1.9)	3620 (100.0)		
45-49	3387 (99.0)	35 (1.0)	3422 (100.0)		
Region					
North Central	5531 (99.3)	41 (0.7)	5572 (100.0)	655.666	0.004
North East	5588 (96.9)	178 (3.1)	5766 (100.0)		
North West	11238 (94.6)	639 (5.4)	11877 (100.0)		
South East	4460 (99.6)	17 (0.4)	4477 (100.0)		
South South	4926 (99.7)	16 (0.3)	4942 (100.0)		
South West	6203 (98.2)	112 (1.8)	6315 (100.0)		
Highest Level of Education					
No education	13923 (94.5)	805 (5.5)	14728 (100.0)	821.682	0.000
Primary	6620 (98.3)	114 (1.7)	6734 (100.0)		
Secondary	13849 (99.4)	78 (0.6)	13927 (100.0)		
Higher	3554 (99.9)	5 (0.1)	3559 (100.0)		
Type of Residence					
Urban	16263 (99.1)	151 (0.9)	16414 (100.0)	309.167	0.365
Rural	21683 (96.2)	851 (3.8)	22534 (100.0)		
Wealth Index					
Poorest	6704 (94.0)	428 (6.0)	7132 (100.0)	678.889	0.000
Poorer	7110 (95.7)	318 (4.3)	7428 (100.0)		
Middle	7348 (98.2)	138 (1.8)	7486 (100.0)		
Richer	7913 (99.0)	79 (1.0)	7992 (100.0)		
Richest	8871 (99.6)	39 (0.4)	8910 (100.0)		
Currently marital Status					
Never in union	9319 (99.9)	6 (0.1)	9325 (100.0)	376.277	0.000
Married	26071 (96.4)	972 (3.6)	27043 (100.0)		
Living with partner	778 (98.9)	9 (1.1)	787 (100.0)		
Widowed	962 (99.5)	5 (0.5)	967 (100.0)		
Divorced	415 (97.9)	9 (2.1)	424 (100.0)		
No longer living together/separated	400 (99.5)	2 (0.5)	402 (100.0)		

Religion					
Catholic	4299 (99.6)	17 (0.4)	4316 (100.0)	580.361	0.000
Other Christian	13844 (99.4)	78 (0.6)	13922 (100.0)		
Islam	19261 (95.6)	889 (4.4)	20150 (100.0)		
Traditionalist	347 (96.7)	12 (3.3)	359 (100.0)		
Other	10 (100.0)	0 (0.0)	10 (100.0)		

Table 4.16 shows the association between the reason (not necessary) for not delivering at Maternity clinic and socio demographic characteristics of mothers. Among the ages of mothers, the proportion for not delivering at the maternity clinic because it was not necessary was highest among mother`s ages 25 - 29 year (15.7%). This is followed by ages 30-34 years (14.5%) and the least were older women ages 45 – 49 years (6.1%). Among the region, mothers from North West have highest proportion of reason (not necessary) for not delivering at maternity clinic (23.6%), this is followed by North East (9.7%) while the least is South East with 1.3%. among the highest level of education of mothers and the Wealth Index, the reason for not delivering at maternity clinic for a reason not necessary increases as the education and the wealth index increases ($P<0.05$). There is a significant difference in the proportion of mothers that did not deliver at maternity clinic in Rural and urban ($P<0.05$). Also, among the mothers marital status, those that were married have the highest proportion of not delivering at maternity Clinic (15.1%) while the least are those that were never in union (0.5%). Furthermore, those who practice other religion have highest level (20.0%) not delivering in maternity clinic as a result of not necessary while the least were those that are catholic (3.7%).

Table 4:16: Cross tabulation of socio-demographic characteristics for a reason Not Necessary

Characteristics	Not Necessary		Total	X^2	P_{value}
	No	Yes			
Age in 5-year groups					
15-19	7500 (95.9)	319 (4.1)	7819 (100.0)	745.716	0.000
20-24	5918 (87.6)	839 (12.4)	6757 (100.0)		
25-29	6021 (84.3)	1123 (15.7)	7144 (100.0)		
30-34	4675 (85.5)	792 14.5)	5467 (100.0)		
35-39	4076 (86.4)	642 (13.6)	4718 (100.0)		
40-44	3252 (89.8)	368 (10.2)	3620 (100.0)		
45-49	3214 (93.9)	208 (6.1)	3422 (100.0)		
Region					
North Central	5089 (91.3)	483 (8.7)	5572 (100.0)	3068.883	0.000
North East	5205 (90.3)	561 (9.7)	5766 (100.0)		
North West	9072 (76.4)	2804 (23.6)	11876 (100.0)		
South East	4418 (98.7)	58 (1.3)	4476 (100.0)		
South South	4711 (95.3)	232 (4.7)	4943 (100.0)		
South West	6161 (97.6)	154 (2.4)	6315 (100.0)		
Highest Level of Education					
No education	11614 (78.9)	3115 (21.1)	14729 (100.0)	2740.642	0.000
Primary	6070 (90.1)	664 (9.9)	6734 (100.0)		
Secondary	13436 (96.5)	491 (3.5)	13927 (100.0)		
Higher	3536 (99.4)	22 (0.6)	3558 (100.0)		
Type of Place of Residence					
Urban	15651 (95.4)	763 (4.6)	16414 (100.0)	1173.902	0.000
Rural	19005 (84.3)	3528 (15.7)	22533 (100.0)		
Wealth Index					
Poorest	5590 (78.4)	1542 (21.6)	7132 (100.0)	2172.801	0.000
Poorer	6075 (81.8)	1353 (18.2)	7428 (100.0)		
Middle	6744 (90.1)	742 (9.9)	7486 (100.0)		
Richer	7510 (94.0)	482 (6.0)	7992 (100.0)		
Richest	8737 (98.1)	172 (1.9)	8909 (100.0)		
Current Marital Status					
Never in union	9279 (99.5)	46 (0.5)	9325 (100.0)	1600.771	0.000
Married	22955 (84.9)	4088 (15.1)	27043 (100.0)		
Living with partner	736 (93.5)	51 (6.5)	787 (100.0)		
Widowed	926 (95.8)	41 (4.2)	967 (100.0)		
Divorced	374 (88.2)	50 (11.8)	424 (100.0)		
No longer living together/separated	386 (96.3)	15 (3.7)	401 (100.0)		

Religion					
Catholic	4155 (96.3)	161 (3.7)	4316 (100.0)	1795.462	0.000
Other Christian	13375 (96.1)	547 (3.9)	13922 (100.0)		
Islam	16637 (82.6)	3512 (17.4)	20149 (100.0)		
Traditionalist	316 (88.0)	43 (12.0)	359 (100.0)		
Other	8 (80.0)	2 (20.0)	10 (100.0)		

Table 4.17 shows the association between the reason (not customary) for not delivering at Maternity clinic and socio demographic characteristics of mothers. Among the ages of mothers, the proportion for not delivering at the maternity clinic because it was not customary was highest among mother's ages 30-34 year (4.3%). This is followed by ages 25-29 years (4.2%) and the least were younger women ages 15-19 years (1.2%). Among the region, mothers from North West have the highest proportion for not delivering at maternity clinic for this reason (7.6%), this is followed by North East (2.2%) while the least is South East with 0.2%. For the highest level of education of mothers and the Wealth Index, the proportion not delivering at maternity clinic for this reason decreases as the education and the wealth index increases ($P<0.05$). There is a significant difference in the proportion of mothers that did not deliver at maternity clinic in Rural and urban ($P<0.05$). Also, among the mothers marital status, those that were married have the highest proportion of not delivering at maternity Clinic (4.1%) while the least are those that were never in union (0.1%). Furthermore, those who practice Islamic religion have highest level (5.3%) not delivering in maternity clinic as a result of not customary while the least were those that are other religion (0%).

Table 4:17: Cross tabulation of socio-demographic characteristics for a reason Not Customary

Characteristics	Not Customary		Total	X^2	P_{value}
	No	Yes			
Age in 5-year groups					
15-19	7724 (98.8)	96 (1.2)	7820 (100.0)	195.105	0.000
20-24	6534 (96.7)	223 (3.3)	6757 (100.0)		
25-29	6846 (95.8)	299 (4.2)	7145 (100.0)		
30-34	5233 (95.7)	234 (4.3)	5467 (100.0)		
35-39	4548 (96.4)	170 (3.6)	4718 (100.0)		
40-44	3529 (97.5)	92 (2.5)	3621 (100.0)		
45- 49	3376 (98.7)	45 (1.3)	3421 (100.0)		
Region					
North Central	5541 (99.4)	32 (0.6)	5573 (100.0)	1305.256	0.000
North East	5637 (97.8)	129 (2.2)	5766 (100.0)		
North West	10975 (92.4)	901 (7.6)	11876 (100.0)		
South East	4466 (99.8)	10 (0.2)	4476 (100.0)		
South South	4916 (99.5)	26 (0.5)	4942 (100.0)		
South West	6254 (99.0)	61 (1.0)	6315 (100.0)		
Highest Level of Education					
No education	13755 (93.4)	973 (6.6)	14728 (100.0)	1105.285	0.000
Primary	6626 (98.4)	108 (1.6)	6734 (100.0)		
Secondary	13854 (99.5)	73 (0.5)	13927 (100.0)		
Higher	3553 (99.9)	5 (0.1)	3558 (100.0)		
Type of Place of Residence					
Urban	16242 (99.0)	172 (1.0)	16414 (100.0)	365.209	0.000
Rural	21547 (95.6)	987 (4.4)	22534 (100.0)		
Wealth Index					
Poorest	6603 (92.6)	529 (7.4)	7132 (100.0)	909.808	0.000
Poorer	7063 (95.1)	365 (4.9)	7428 (100.0)		
Middle	7347 (98.1)	139 (1.9)	7486 (100.0)		
Richer	7916 (99.0)	76 (1.0)	7992 (100.0)		
Richest	8860 (99.4)	50 (0.6)	8910 (100.0)		
Current Marital Status					
Never in union	9319 (99.9)	7 (0.1)	9326 (100.0)	437.386	0.000
Married	25922 (95.9)	1121 (4.1)	27043 (100.0)		
Living with partner	776 (98.6)	11 (1.4)	787 (100.0)		
Widowed	962 (99.5)	5 (0.5)	967 (100.0)		
Divorced	409 (96.5)	15 (3.5)	424 (100.0)		
No longer living together/separated	401 (99.8)	1 (0.2)	402 (100.0)		

Religion					
Catholic	4305 (99.8)	10 (0.2)	4315 (100.0)	796.038	0.000
Other Christian	13858 (99.5)	63 (0.5)	13921 (100.0)		
Islam	19082 (94.7)	1067 (5.3)	20149 (100.0)		
Traditionalist	347 (96.4)	13 (3.6)	360 (100.0)		
Other	10 (100.0)	0 (0.0)	10 (100.0)		

Table 4.18: shows the association between the reason (sudden delivery) for not delivering at Maternity clinic and socio demographic characteristics of mothers. For the ages of mothers, the proportion not delivering at the maternity clinic because of sudden delivery was highest among mother's ages 25 - 29 year (17.9%). This is followed by ages 30-34 years (17.5%) and the least were younger women ages 15 – 19 years (5.0%). Among the regions, mothers from North East have highest proportion of reason (sudden delivery) for not delivering at maternity clinic (25.6%), this is followed by North West (17.3%) while the least is South East with 3.3%. For the highest level of education of mothers and the Wealth Index, proportion not delivering at maternity clinic for this reason increases as the education and the wealth index increases ($P<0.05$). There is also a significant difference in the proportion of mothers that did not deliver at maternity clinic in Rural and urban ($P<0.05$). Among the mothers marital status, those that were married have the highest proportion of not delivering at maternity Clinic (17.0%) while the least are those that were never in union (0.7%). Furthermore, those who practice Islamic religion have highest level (18.7%) not delivering in maternity clinic as a result of sudden delivery while the least were those that are catholic and other Christians (3.7%) respectively.

Table 4:18: Cross tabulation of socio-demographic characteristics No time because sudden delivery

Characteristics	No time because sudden delivery		Total	X^2	P_{value}
	No	Yes			
Age in 5-year groups					
15-19	7427 (95.0)	392 (5.0)	7819 (100.0)	979.049	0.000
20-24	5719 (84.6)	1038 (15.4)	6757 (100.0)		
25-29	5864 (82.1)	1281 (17.9)	7145 (100.0)		
30-34	4508 (82.5)	959 (17.5)	5467 (100.0)		
35-39	4043 (85.7)	676 (14.3)	4719 (100.0)		
40-44	3261 (90.1)	359 (9.9)	3620 (100.0)		
45- 49	3249 (94.9)	173 (5.1)	3422 (100.0)		
Region					
North Central	4863 (87.3)	709 (12.7)	5572 (100.0)	2180.654	0.000
North East	4292 (74.4)	1474 (25.6)	5766 (100.0)		
North West	9820 (82.7)	2057 (17.3)	11877 (100.0)		
South East	4330 (96.7)	146 (3.3)	4476 (100.0)		
South South	4698 (95.0)	245 (5.0)	4943 (100.0)		
South West	6067 (96.1)	247 (3.9)	6314 (100.0)		
Highest Level of Education					
No education	11611 (78.8)	3118 (21.2)	14729 (100.0)	1984.722	0.000
Primary	5827 (86.5)	907 (13.5)	6734 (100.0)		
Secondary	13134 (94.3)	793 (5.7)	13927 (100.0)		
Higher	3498 (98.3)	60 (1.7)	3558 (100.0)		
Type of Place of Residence					
Urban	15159 (92.4)	1255 (7.6)	16414 (100.0)	616.292	0.000
Rural	18911 (83.9)	3623 (16.1)	22534 (100.0)		
Wealth Index					
Poorest	5716 (80.1)	1416 (19.9)	7132 (100.0)	1465.873	0.000
Poorer	6010 (80.9)	1418 (19.1)	7428 (100.0)		
Middle	6422 (85.8)	1064 (14.2)	7486 (100.0)		
Richer	7307 (91.4)	685 (8.6)	7992 (100.0)		
Richest	8615 (96.7)	295 (3.3)	8910 (100.0)		
Current Marital Status					
Never in union	9261 (99.3)	65 (0.7)	9326 (100.0)	1755.126	0.000
Married	22446 (83.0)	4597 (17.0)	27043 (100.0)		
Living with partner	711 (90.3)	76 (9.7)	787 (100.0)		
Widowed	919 (95.0)	48 (5.0)	967 (100.0)		
Divorced	360 (84.9)	64 (15.1)	424 (100.0)		
No longer living together/separated	373 (93.0)	28 (7.0)	401 (100.0)		

Religion					
Catholic	4068 (94.3)	248 (5.7)	4316 (100.0)	1488.569	0.000
Other Christian	13133 (94.3)	788 (5.7)	13921 (100.0)		
Islam	16373 (81.3)	3776 (18.7)	20149 (100.0)		
Traditionalist	311 (86.4)	49 (13.6)	360 (100.0)		
Other	9 (90.0)	1 (10.0)	10 (100.0)		

CHAPTER FIVE

DISCUSSION RECOMMENDATION AND CONCLUSION

This chapter summaries the study and discusses the findings and conclusions. It also discusses the policy implications of the study and made recommendations. Finally, the weaknesses in this study were discussed and suggestions for areas of further research were made.

The main objective of this study is to describe the level of antenatal care utilization and the prevalence of home delivery among pregnant women in Nigeria and the associated factors.

Level of Antenatal Care Utilization

The level of utilization of antenatal care was average among mothers in the study. About 35% had no visit, which means that only 65% utilized the Antenatal Clinic. The antenatal care policy in Nigeria follows the newest WHO approach to promote safe pregnancies, recommending at least four ANC visits for women without complications. This is to enhance early detection of problems during pregnancy and allow more timely treatment and referrals in the case of complications.

Considering the factors that influence ANC utilization ,such as the socio demography characteristics, the findings illustrate that older mothers (25 – 39 years) ut*-ilize antenatal care much more than the teenage mothers (15 -19) and the prevalence of home delivery was higher among younger women with 93.0%, compared with around 65% on average among older women.

Mothers with higher education, rich mothers, mothers who practiced Islamic region made more ANC visits, compared to illiterate mothers, poor mothers, who made lesser ANC visits. For region, mothers from the South East and South West made the highest ANC visits compared to other region.

There is evidence that most mothers who make more ANC visits deliver more at the maternity clinic while mothers with lesser ANC visits deliver more at home

Prevalence of Home Delivery

The prevalence of home delivery was higher among non-educated mothers (77.3%), among the poorest category of mothers (84.7%), compared to highly educated mothers (22.9%), richest category of mothers (77.0%) Also, among those that deliver at maternity clinic, most of them were the richer women .Married mothers had the highest prevalence rate of delivering at both home and maternity clinic with (67.5% and 32.5%) respectively than other categories of mothers. The Prevalence of both home delivery and maternity clinic delivery was highest in North West while the least for both is from South East respectively.

The findings showed that among those that delivered at home, a high proportion were younger women while among those that delivered at maternity clinic, most of them were aged 25-29 years. The mean age of those that delivered at home was 28.5 years compared to those that delivered at maternity clinic of 29.6years.

The findings was similar to Chandhiok et al (2006) who studied on the Determinants of antenatal care utilization in rural areas of India : A cross-sectional study from 28 districts. The authors identified that all the socio demographic has a positively influenced home delivery.

The above finding was also similar to Ononokpono and Odimegwu (2014) who also used NDHS 2008 to investigate the determinants Maternal Health Care Utilization in Nigeria.

In general, the overall prevalence of home delivery is quite high with about 75 percent in Nigeria as at the last survey. This finding is similar to that which was Chandiok et al (2006) which was carried out among pregnant women in a developing country (India), stating that women decided to deliver at home than in maternity clinic. Also, in Uganda, according to Anyat et al (2012), the proportion of those that delivered in maternity clinic in the main district of Uganda was 58%.

Proportion Of Mother's Delivering At Maternity Clinic

The study findings identified that the level of delivery in maternity clinic in Nigeria as still low (about 25%) at the time of the survey compared to those that deliver at the home or other places. This is an implication that higher number of mothers delivered at home due to different reasons which were stated.

The proportion of delivery at the maternity clinic varies with different socio demographic characteristics. The findings shows that Age, Type of place of residence, region, and level of education, wealth index, current marital status and religion of mothers have a relationship with delivering at maternity clinic. The findings is similar to Onah et al (2006) who studied on the Factors associated with the use of maternity services in Enugu, southeastern Nigeria. The authors identified that all the socio demographic has a positively influence to deliver at maternity clinic

The study findings show that there were six major reasons why mother deliver at home (such as no time to reach the clinic so results of sudden delivery , (time of onset of labour, some mothers felt it was not necessary to deliver at the maternity clinic, health facility was too far or no means of transportation, got to the clinic and the health facility was not open, cost of care too much, not customary to deliver in the maternity clinic .and for married mothers, husband did not allow delivering in the maternity clinic).

The findings shows that women with no education, rural resident, poorest women, are much more affected by the above stated reasons, and women tend to prefer to deliver at home compared to women with higher education, urban resident, richer category of women.

Factors affecting the attendance of Antenatal clinic

The antennal care policy in Nigeria follows the newest WHO approach to promote safe pregnancies, recommending at least four ANC visits for women without complications. In general, all the mothers' socio demographic characteristics (Age, place of residence, region, level of education, wealth index, marital status and Religion) have an influence on the usage of Antenatal care .Older Mothers who are more experience tends to reduce their visits either considering 1 to 4 visits or greater than 4 visits while younger women tend to visit ANC clinic more , however teenage mother reduce their ANC visits. Mothers in the rural areas visits 1-4 visit to the maternity clinics more than they do after the first 4 visits while there this have an inverse association with the reduction of visits of mothers in the urban centers in the first 4 visits who usually have access to greater than 4 antenatal visits. Mothers who are poorest visits less compared to other category of mothers.

LIMITATION OF THE STUDY

One of the limitations of the study was that data source being secondary; there was no opportunity to ask additional questions to clarify some issues. For example there was no further probing questions as relating to the mothers that declared that delivering at health facility was not necessary.

RECOMMENDATIONS AND CONCLUSION

Government and Non-Governmental agencies should attached incentives to the programs that will attach mothers to deliver at antenatal clinic. There is also a need for Ministry of Health to create a program that will integrate delivering at homes and health facilities for effective service in order to reduce maternal mortality and infant mortality.

Education was found to have an important influence in the utilization of antenatal care; improvement in the educational opportunity for women in the rural areas will be necessary. This is however, a long term investment just as there is need to focus on attracting women with little

or no education to be taking part in early antenatal care and visits in order to detect early complications and other early pregnancy risk.

Strategies to raise utilization in Nigeria as a developing country requires more money for Antenatal care and reforms to management, regulatory, and political mechanisms such that Providers give strong incentives to mothers in order to encourage attendance to antenatal clinic.

However there is a need for enhancing community awareness about the importance of registering early for antenatal care, which will enhance educating women about early detection of complications during pregnancy and promptly seeking care, and the importance of giving birth in a maternity clinic which will in the long run reduce both neonatal and maternal morbidity and mortality. This is a need of agency to create awareness and sensitization among younger women. That a very low proportion of younger mothers delivered at antenatal clinic, which is of great risk to their health and they stand the risk of maternal mortality.

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