DETERMINANTS OF URBAN-RURAL DIFFERENTIALS IN ANTENATAL CARE UTILIZATION IN NIGERIA

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CHAPTER 1

1. INTRODUCTION

1.1. Background:

Studies in sub-Saharan African countries have revealed urban rural differential in the pattern of antenatal care use. For instance, Urban-rural differential in the utilization of antenatal care was established in Bangladesh as urban women use antenatal care than rural women (Fosto et al 2008). It was also revealed that urban women in Nigeria use antenatal care than rural women (Dairo and Owoyokun 2010). A more interesting urban-rural differential in the use of antenatal care could be experienced when examining wealth status as a determinant of antenatal care use in Nigeria differently among the rural and urban women. The urban-poor may become worse off than their rural counterparts and urban non-poor in the use of antenatal care especially in a society with high medical facility (Fosto et al, 2008).

However, the increasing rural-urban migration of women of reproductive age could have a major influence on the pattern of antenatal care use in the urban area of Nigeria. Nigeria is currently experiencing a dynamic shift of people from the rural area to the urban area. A study revealed a 9% increase in the percentage of women of age 15-49 who are residing in the urban part of Nigeria between 1990 and 2003 (Bankole et al. 2009). We would expect that moving to the urban area should improve the health service utilization of pregnant women in the urban areas due to the better health services in the urban settlements than the rural settlement of Nigeria (Dairo and Owoyokun 2010). We would also expect this to improve the maternal and neonatal outcome in Nigeria (Bankole et al. 2009). But contrary to expectation, increased urban population could also pose a challenge on the urban maternal health facility which could create a

tendency for insufficient service provision for the urban population in Nigeria and there is a high tendency for the urban poor to suffer from this challenge of poor use of antenatal care in Nigeria. However, we cannot ascertain which wealth group is disadvantaged in the use of antenatal care in Nigeria from previous studies thus it would be investigated in this study. In addition, we only know that there has been an urban-rural differential in the use of antenatal care from studies done in Nigeria, but most studies have not examined the factors that determine the differential experienced in the utilization of antenatal care in Nigeria.

Furthermore, maternal mortality and child mortality which could have been reduced by appropriate use of antenatal care remain high in Nigeria as current ratio of maternal death is about 545 deaths for every 100,000 live births in Nigeria (NPC and ORC Macro, 2009). Globally, women of reproductive age who die from pregnancy and childbirth related complications each year are close to 500,000 (WHO, 2007). Approximately 99% of the deaths occur in developing countries and about 10% of them are attributed to Nigeria (Adamu et al., 2003). This issue of pregnancy induced maternal mortality has been a major public health challenge, especially in developing countries (WHO, 2007).

In addition, it was revealed that a greater proportion of maternal death in Nigeria was due to complications at pregnancy. Such complications include bacterial infection, anaemia, haemorrhage; pregnancy induced hypertension and its consequences (severe pre-eclampsia and eclampsia), induced abortion, still birth and obstructed labour (Aboyeji et al. 2007; Royston and Armstrong, 1989). However, such complications that led to maternal and child mortality occur mostly among women that did not receive antenatal care at pregnancy (Wall, 1998; Ujah, 2005).This is because antenatal care ensures that diseases are detected early during pregnancy and treatments are made on time. Also because preventive services such as tetanus

immunization, regular check of weight and blood pressure, preventive treatment of malaria and testing and counselling on HIV are given during antenatal visits (Babalola and Fatusi, 2009; Adams et al. 2005; NPC and ICF Macro, 2009; WHO and UNICEF, 2003). Poor use of antenatal care is mostly experienced in Africa and Asia's less developed countries (Zanconato et al., 2006). Nigeria being one of the African less developed countries also experiences very low use of antenatal care. The Nigeria Demographic and Health Survey (NDHS) of 2008 revealed that 36% of women did not receive antenatal care for their last delivery that took place five years prior to the 2008 survey

However, reducing maternal mortality has been a worldwide goal due to its high prevalence globally. The millennium development Goals' poverty alleviation objective targeted bringing down the worldwide ratio of maternal death by 75% by 2015 from what it was in 1990 (WHO 1996). In addition, the introduction of safe motherhood initiative in Kenya in 1987 that was targeted at reducing maternal mortality has made advances in medical and technical research on the biomedical causes of maternal mortality in childbirth. It has advanced ways of measuring maternal mortality and gathered sufficient evidence as regards the best health services needed to reduce maternal death (Khan et al 2006; Graham 2002 and Fortney 2005). Antenatal care use is also a major means of reducing maternal and child mortality in Nigeria as it provides opportunity for early detection of complications at pregnancy (Babalola and Fatusi 2009). Moreover, Nigeria has not made much significant achievement nationally and locally in reducing maternal mortality because of low political support for maternal health care services including safe motherhood initiative and inadequacy as well as unequal distribution of financial resources to safe motherhood initiative in Nigeria (Shiffman and Okonofua 2007). More so, access to and the use of antenatal health care services which could have improved maternal and neonatal health

outcomes remain low in Nigeria (Adams et al. 2005; Babalola and Fatusi, 2009). It was revealed that about 58% of women that attended at least one antenatal clinic during pregnancy in Nigeria (NPC and ICF Macro, 2009). This therefore revealed the pathetic state of Nigeria in mitigating the problem of high maternal and child mortality through antenatal care use and other possible methods.

1.2. Statement of Problem:

Studies revealed that a greater proportion of maternal death in Nigeria was due to complications at pregnancy. Such complications include bacterial infection, anaemia, haemorrhage; pregnancy induced hypertension and its consequences (severe pre-eclampsia and eclampsia), induced abortion, still birth and obstructed labour (Aboyeji et al. 2007; Royston and Armstrong, 1989). However, such complications that led to maternal mortality occur mostly among women that did not receive antenatal care at pregnancy (Wall, 1998; Ujah 2005). Thus, poor use of antenatal care among Nigerian women has been a great concern to public health because of its life threatening and other negative consequences to the health of mothers and the child (WHO 2007; McCarthy and Maine, 1992; Aboyeji et al. 2007).

In addition, a few studies done on antenatal care in Nigeria have helped to identify that there is a rural-urban difference in the use of antenatal care. These studies revealed that urban residents are more likely to use antenatal care compared to the rural residents but failed to examine the factors that are associated with this difference in the pattern of antenatal care between rural and urban areas have not been revealed in such studies (Babalola and Fatusi 2009). However, this study seek to give a representative finding to the determinants of urban-rural differentials of antenatal

care utilization in Nigeria and also give recommendation to ensure an improvement in antenatal care use in Nigeria.

Also, as Nigeria experience an increased urbanization the maternal health care facilities available in the urban area becomes more competitive and then creates a health need in the urban residence and there is a high tendency for the urban poor to suffer from this challenge of poor use of antenatal care in Nigeria. However, we cannot ascertain which wealth group is disadvantaged in the use of antenatal care in Nigeria from previous studies thus it would be investigated in this study (Monica et al 2003 and Fosto et al. 2008).

However, high maternal and child mortality as a result of poor antenatal care use has been a major public health concern in Nigeria (Adams et al 2005). Urban rural differential in the use of antenatal care remain skewed towards the rural residents in Nigeria (Dairo and Owoyokun 2010). Also, determinants of urban-rural differentials in the use of antenatal care in Nigeria and the wealth group more disadvantaged in the use of antenatal care have not been established in previous studies. Thus, the above issue have created sufficient problems to be tackled in this study and in subsequent studies. Hence, this study would utilize the Nigeria Demographic and Health Survey (NDHS) to examine the socio-economic, demographic and cultural factors that are associated with the urban-rural differences in antenatal care utilization in Nigeria.

1.3. Research Question

What are the determinants of urban-rural differentials in Antenatal Care Utilization in Nigeria?

1.4. Objectives

1.4.1 General Objective

To identify the determinants of urban-rural differentials of antenatal care use in Nigeria.

1.4.2. Specific Objectives

1.To describe the distribution of antenatal care utilization among the rural and urban women in Nigeria

2.To determine the factors associated with urban-rural differential in Antenatal Care (ANC) use

1.5. Justification/ Rationale

Very few nationally representative studies have been done on the determinants of maternal health services in Nigeria as many studies concentrated on small communities, usually small-sized urban communities and or rural communities (Okafor, 1991; Nwakoby 1994; Osubor et al. 2006). The use of small geographic sample in previous studies therefore limits the applicability of such findings in a large and socially changing society like Nigeria due to rapid movement from the rural to the urban areas, thereby causing an increasing health need in the urban areas (William and Diane 1997). This therefore creates a gap in knowledge for studies to be done on the determinants of antenatal care service utilization that will be nationally representative.

Also, examining the factors that determine the rural urban differences in the pattern of antenatal care utilization can assist public health decision makers to make informed decisions as regards the kind of intervention programs that will encourage women to seek antenatal care. For instance, embarking on intervention programs that make antenatal care services more accessible and affordable to women in the rural areas and their family may reduce the differences in the pattern of antenatal care use between urban and the rural women and also influence other factors

associated with the rural-urban differential in the use of antenatal care positively. (McCarthy and Maine 1992; Palaniappan 1995).

1.6. Definition of Concepts

- Antenatal care: is the medical care that women received during pregnancy. World Health Organization advocated an improved model for antenatal care use for women without complicated pregnancy in developing countries. This model recommends at least four antenatal care visits which would include compulsory blood pressure measurement, urine and blood tests and non-compulsory weight and height check at each visit (WHO and UNICEF, 2003; NPC and ICF Macro, 2009).

CHAPTER 2

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Literature Review

Studies have been done in developing countries that showed the differences in antenatal care utilization between rural and urban residents. Majority of the studies revealed more odds of antenatal care use among the urban women than the rural women.

A study was done in Sudan on the antenatal care use among women of reproductive age in Sudan (Ibnouf et al (2007). Information collected from the interview of a sample of 400 married women aged 15-49 years from both urban and rural localities in Khartoum State, Sudan was used to describe the current antenatal care condition in Sudan as it is concerned with routine antenatal care services use and tetanus toxoid (TT) injection use in rural and urban areas. It was found from the study that there was more utilization of routine antenatal health care services and application of TT- vaccination among the urban women compared to the women in the rural areas. Other factors such as higher quality of care, shorter walk-time to health facility and mother's education were significant determinants of routine antenatal care use (Ibnouf et al (2007).

Another study was done by Rahman et al. (2008) in Bangladesh. In his study, he looked at the rural-urban differentials of utilization of antenatal health-care services in Bangladesh. Data from Bangladesh Demographic and Health Survey (BDHS) 2004 was used to examine the factors that are significantly associated with antenatal car services in both urban and rural areas. The study revealed strong urban-rural differentials in receiving antenatal care. Urban women received antenatal care and had antenatal visits more than rural women. It was also revealed in the study that many of the urban women relative to few rural women who received antenatal care had their

blood pressure and weight checked. Mother's education, children ever born, wealth index, permission to go to hospitals or health centres from husband, source of drinking water, region and partner's education were significant determinants of receiving antenatal care.

Regassa N. (2011) investigated on the utilization of Antenatal and postnatal care service utilization using the southern Ethiopian Population for the study. A questionnaire was used to investigate the factors that are significantly associated with antenatal Care and Postnatal Care use. It was revealed in the study that women with high level of education and exposure to mass media as well as low parity have higher usage of antenatal and postnatal care. This reflects women of high socio-economic status in the rural community that is the rural rich. However, unlike previous findings that reveal low utilization of antenatal care in the rural area, this study showed high antenatal care use in the rural population of Ethiopia.

Navaneetham and Dharmalingam (2000) researched on the Utilization of Maternal Healthcare services. The study used data from the National Family Health Survey (1992-1993) to investigate on the levels of and factors that are significantly associated with using maternal health care services in Andhra Pradesh, Kamataka and Tamil Nadu. The study revealed that the level of maternal health care services was highest in Tamil Nadu, followed by Andhra Pradesh and Kamataka respectively. However, lower utilization of maternal health care services was experienced among the rural compared to the urban women. This was due to differential in the access to health care facilities such as delivery in the clinics and receiving attendance from medical personnel. Findings from the study thus suggest that health worker availability play a associated with providing for and encouraging the usage of antenatal care in the rural areas (Navaneetham and Dharmalingam, 2000).

Elizabeth Eggleston (2000) revealed that urban residence was not associated with receiving prenatal care. The 1994 Demographic and Maternal Health Survey data was used to examine the relationship between unintended pregnancy, both unwanted and mistimed and several dimensions of prenatal care use among Ecuador Women. Findings from the study show that urban residence has no association with receiving prenatal care, but those women in the urban settlement had a higher odd of starting antenatal visit in the first trimester and receive adequate number of visits than the rural women.

However, the differences in patterns of antenatal care use by residence and wealth status across countries in sub-Saharan Africa could be as a result of variation in the quality of health system across these different developing countries of the world. According to Monica et al. (2003) the urban poor may be more disadvantaged in allocation and utilization of antenatal services than rural residents, especially in a country that has good health system.

Contrary to what other findings showed, Elizabeth Eggleston (2000) also supported the finding that there was no association between urban residence and more use of antenatal care compared to rural residence revealing no difference in antenatal care utilization across residence. This could be because of good health system in Ecuador (Monica et al. 2003).

Also, studies have been done in sub-Saharan Africa countries that revealed differentials in the utilization patterns of antenatal care between rural and urban residents.

According to Fotso et al. (2008) in his study that investigated knowledge of and improvement on maternal health services provision and utilization among urban poor women in Kenya, revealed that the urban poor settlement were being denied public health services. The study also revealed high frequency of antenatal care in Nairobi did not favour the urban poor. It revealed that urban poor women who consistently attended the recommended number of antenatal visits or who

started visiting antenatal care centres earlier in pregnancy was relatively low when they are being compared to the whole of Nairobi urban residents and the rural residents. This reveals that the urban poor are disadvantaged in antenatal care utilization compared to the urban non-poor and their rural counterparts. The study also revealed that household wealth, education, parity, and place of residence were significantly associated with ANC consistency and timing.

A study conducted in Gambia revealed that women who received antenatal care in the rural clinics were more likely to identify dangerous signs of anaemia and hypertension compared to women attending urban antenatal clinics (Anya et al. 2008). A survey size of 457 pregnant women who were visiting six urban and six rural antenatal clinics in the largest health division of Gambia was used to gather information about antenatal care and education services in antenatal care clinics. Differences in information and education between rural and urban attendants were assessed (Anya et al. 2008).

Furthermore, previous studies done in Nigeria that addressed determinants of antenatal care utilization pattern could not infer conclusions to the general population. Most studies discussed elaborately on the determinants of utilization of antenatal care or the pattern of use of antenatal care in a specific state, region or locality. Only few studies considered the determinants of the pattern of antenatal care use at the national level (Okafor, 1991; Nwakoby 1994; Osubor et al. 2006). This limited the abilities of most studies to give a representative policy and programme recommendation for Nigeria.

Dairo and Owoyokun (2010) looked into the significant determinants of antenatal care service use in Nigeria, specifically focusing on Ibadan. Four hundred women in two randomly selected local government areas of Ibadan were surveyed to achieve the study objective of investigating the factors that are associated with antenatal care use in Ibadan. The study revealed a significant

difference in residence, religion and age in relationship with antenatal care use in Ibadan. The women in the urban residence utilize antenatal care more than women in the rural residence. Therefore, the study suggested that intervention programs should target promoting antenatal care services in the rural areas and among younger women and Christian women. Also, religious organizations should help promote the use of antenatal care in Nigeria.

A research was conducted in Sagamu, Nigeria to examine the patterns of maternal health services in Sagamu and also access the determinants of the pattern of maternal health services in Sagamu, Nigeria (Iyaniwura and Yusuf, 2009). The study was conducted on selected 392 women who had at least one successful delivery in Sagamu area of Nigeria. Findings from the study revealed that antenatal and delivery service use increased as educational status and higher level of income was attained. This showed a positive significant association between antenatal and delivery care with education and wealth status. Therefore, if the socio-economic status of men were increased in the community then there will be improvement in the utilization of maternity care services (Iyaniwura and Yusuf, 2009).

Babalola and Fatusi (2009) researched on the determinants of maternal service utilization in Nigeria. A multi-level analysis was done in this study which included individuals, household, community and state level analysis. Data from the 2005 National HIV/AIDS and Reproductive Health was used to examine individual, household and community determinants of maternal care services among 2148 women who had a baby at least five years prior to the survey. Findings showed that education, socio-economic level, urban residence and community media saturation are significant predictors of maternal health service utilization at all the level of analysis respectively except the state. However, woman's age at birth of last child, ethnicity, notion of ideal family size, approval of family planning, prevalence of the small family norm in the

community and ratio of primary health care to the population revealed variation in predicting maternal healthcare utilization at individual, household, community and state-level respectively (Babalola and Fatusi, 2009).

In addition, Kabir et al. (2005) studied the factors that are significantly associated with the usage of antenatal care services in rural northern Nigeria. The study was specifically done in a village setting of Kumbotso in Kano, Nigeria. The study used data from 200 women of childbearing age in this village community to assess factors that significantly determine antenatal care use in the village. The study found that women education and the education of the husband were positively associated with antenatal care use among rural women. The higher the educational status attained the higher the use of antenatal care among women.

Moreover, previous studies that have been examined revealed factors that are associated with antenatal care use and low usage of antenatal care was indicated among the rural residents compared to urban residents. This studies were limited in that they did not reveal the factors that are associated with the urban-rural differences in the use of antenatal care. Also, the above studies were limited in sample size and geographical scope as they concentrated on handful communities (Okafor, 1991; Nwakoby 1994; Osubor et al. 2006). This therefore limits their applicability or generalisabilty to a socially changing society like Nigeria.

The above limitations make it imperative for this study to be done so as to establish the determinants of the differentials in the pattern of utilization of antenatal care services within and between rural and urban residences that will be useful for representative health decisions on Nigerian population.

2.2. Theoretical Framework

The theoretical framework for this study is the Andersen's behavioural model (2005). This model was developed to explain factors that determine the use of health services in United States of America. It examined the influence of individual and health system factors on the pattern of health service use. The framework theorized the following variables that influence the health seeking decision:

i. Predispose factors: these are factors that prompt people towards health service utilization. They include age, sex, marital status, family size, social status, education and race.

ii. Enabling factors: these are conditions that make health service resources available to an individual. They include household or family income, urban-rural character, health insurance, and health service availability.

iii. Illness level: this is a perception of the necessity for a health service. This according to Andersen is the most powerful predictor of utilization. Because even though an individual was predisposed and he has the means to seek health facility, if he has no need for it, then he would not seek health care (Andersen and Newman 2005).

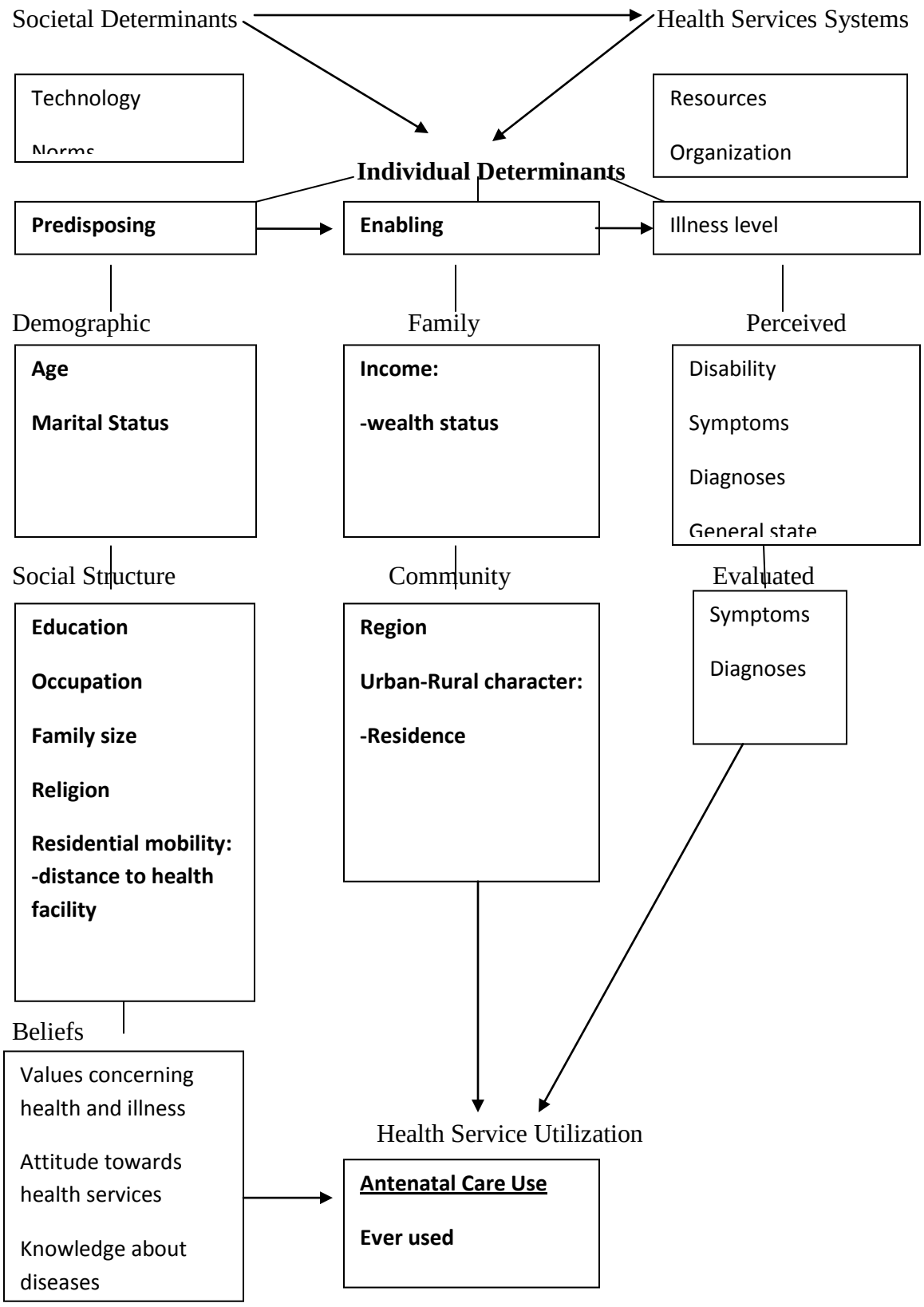

Figure 1 Andersen Theoretical Framework of Health Service Utilization (2005)

This study adapted its variables from the Andersen's theoretical framework of health service utilization. This study made use of only the predisposing and enabling individual determinants of health service utilization. The illness level factor was not considered in this study because questions to reveal the illness or need level of antenatal care by pregnant women were not asked in the 2008 Nigeria Demographic and Health Survey. Predisposing factors were further classified into demographic, social structure and beliefs factors while enabling determinants of health service utilization were classified into family and community factors. The health service considered in this study was antenatal care. Thus antenatal care utilization was the dependent variable for this study. The demographic factors used for this study include age and marital status. Social structure factors used in this study are: education, occupation, family size, religion and residential mobility which is represented by distance to health facility in this study. Belief factors were not considered in this study as questions on belief systems were not asked in the 2008 Nigeria Demographic and Health Survey. Enabling determinants of health service utilization used in this study include: income which was defined in this study as wealth status, region and urban-rural character. The only urban rural character used in this study was residence.

CHAPTER 3

3. METHODOLOGY

3.1. Data Source:

The 2008 Nigeria Demographic and Health Survey (NDHS) was used for the analysis of this study. The objective of the 2008 NDHS was to provide a reliable, precise and nationally representative estimate of important population characteristics such as fertility, contraceptive use, and certain indicators of health which include infant mortality and HIV/AIDS status for men and women (NPC 2009). The National Population Commission implemented the 2008 Demographic and Health Survey in Nigeria. This project was done between June and October 2008. The survey was technically assisted and funded by ICF Macro through the Measure DHS project. The Measure DHS received her funding from the United States Agency for International Development (USAID). The USAID provides support and technical assistance for implementing population and health surveys in countries worldwide.

3.2. Sampling Design and Data Processing:

The 2008 Nigeria Demographic and Health Survey (NDHS) data was used for this study. The survey sample was selected by stratifying in two-stage 888 clusters having 286 urban clusters and 602 rural clusters. After allocating the number of households to each state, the number of clusters (calculated averagely on a sample take of 41 completed respondents or about 41 selected household) was calculated by dividing the total sample size in each state by the sample take. Finally, all women of reproductive age (15-49 years) were interviewed in each cluster through the instrument of a questionnaire. This makes the study to be nationally useful for prediction and

policy purpose. Socio-economic and demographic information as well as pregnancy history were collected. Antenatal care information was also collected in the survey. The 2008 Nigeria Demographic and Health Survey measured antenatal care as proportion of women who received any antenatal care during pregnancy in the five year preceding the survey (NPC 2008).

Between June and October, 2008 the National Population Commission of Nigeria executed the Nigerian Demographic and Health Survey. ICF Macro funded the research through the Measure DHS. The Survey interviewed 36,800 women aged 15-49 years from all states of the country. However, this study population is 16,178 women of age 15-49 years with one or more birth within the five years preceding the survey (NPC 2008). The women dataset of the NDHS will be used for this study.

3.3. Study Population and Sample Size:

Women of reproductive age (15-49) were interviewed in the Nigeria Demographic and Health survey sample. However, a total of 34,596 women were selected as the NDHS sample and 33,385 women responded appropriately in the survey. This showed a response rate of 96.5%.

Out of the sample, the 16,178 women with one or more birth five years before the survey were eligible for this study.

3.4. Variable Description and Measurement:

3.4.1 Variable Definitions

The Dependent variable is Antenatal Care. One question from the NDHS would be used to examine the dependent variable, which was: did you receive antenatal care for this pregnancy? Yes (1) No (0). The response was binary: Yes or No.

The main independent variable is wealth status. Wealth status was defined as- Poor (0) non-poor (1). This was done because rich and the middle class in Nigeria showed collinearity, thus it was merged together as non-poor. Also, the study seeks to examine the level of antenatal care use among the poor and the non-poor in both rural and urban areas of Nigeria as previous studies done in Bangladesh revealed that the poor women are less disadvantaged in the use of antenatal care compared to the rich women, especially the urban non-poor (Rahman et al. 2008).

The demographic variables for this study and their definition are: Age of women- 15-24 (0), 25-34 (1), 35+ (3); Marital Status- Never married(0), Currently married (1), formerly married (2); The social structure factors and their definition are religion -Catholic (0), Other Christian (1), Islam (2), Others (3); Education (women's educational level)- No education (0), Primary (1) Secondary (2), Higher (3); Partner's education level- No education (0) Primary (1) Secondary (2) Higher (3); Employment status (respondent currently working?)- Yes (1), No (0); Number of living Children (How many children does the respondent have alive?)- None (0) 1-2 (1), 3-4 (2), 4+ (3); Getting medical help for self (Distance to health facility)- Big problem (1), Not a big problem (0). Demographic and social structure variables were classified under predisposing factors in Andersen behavioural framework of health service utilization (Andersen 2005).

Enabling factors of this study are wealth status, region, and residence. Wealth status is classified as family enabling factor while region and residence were classified as community enabling factors (Andersen 2005). The enabling factors and their definitions are residence- rural (1) Urban (0); Region- North central (0), North east (1), North west (2), South east (3), south west (4), South- South (5). Wealth status- Poor (0), non-poor (1)

The variables for this study were adopted from the Anderson framework of 2005. This model examined the influence of individual and health system factors on the pattern of health service use.. The predisposing and enabling factors of health service utilization were selected in this study leaving out the illness or need factor as there was no question on illness factor in the 2008 Nigeria Demographic and Health Survey. The predisposing factors were age, marital status which were classified under demographic variables and education, occupation, number of living children (family size), religion and distance to health facility (residential mobility) were classified under social structure variables. Enabling factors include income which was classified under family variable and region and residence were classified under community enabling factors (Andersen 2005). In addition, the demographic and socio-economic variables of this study were selectively chosen after critically reviewing previous studies to see the determinants of antenatal care utilization that were tested in those studies. For instance, a study by Rahman et al on the rural-urban differentials in antenatal care utilization of antenatal health care services in Bangladesh examined mother's education, husband's education, mother's occupation, husband's occupation, religion, region, wealth index, mother's age, children ever born in association to antenatal care utilization (Rahman et al. 2008). Bloom et al. also utilized surviving children and other socio-economic and demographic variables such as age of mothers, economic status, education, employment status and other variables to examine the dimension of women autonomy and the influence on maternal health care utilization in a north Indian city (Bloom et al. 2001).

Also, a correlation test was done to examine if there existed correlation between any of the independent variable. The correlation test revealed that there was no correlation between any of the independent variable. Thus, each of the independent variables selected for this study were independent of one another and suitable for to be included in the study.

3.5. Hypothesis

Ho: There is no difference in the determinant of antenatal care utilization between the rural and the urban women.

Hi: there is a difference in the determinants of antenatal care utilization between the rural women and the urban women.

3.6. Data Management

The data used for this study was downloaded from the Macro International website. Request to use the 2008 Nigerian Demographic and Health Survey was made to the macro international Incorporation and a written permission was granted through the macro international website. The Stata format of the data was downloaded because the analysis of the research would be done with the Stata package.

Having downloaded the dataset, the women sub data was used for the analysis of the study. Over 500 variables were found in the women's sub data of the NDHS. However, from the variables in the women sub data about 15 variables were chosen for the purpose of this study. The chosen variables were explained above in section 3.4.1.

For the purpose of proper analysis of this data, the Stata 11 statistical package was used to drop the women of reproductive age who had no birth in the five years before the period of the survey.

Thereafter, using the Stata package certain other variables were dropped and the variables needed for this study which include age, region, residence, women education, religion, wealth index, distance to health facility, current marital status, partner's education, women employment status, and number of living children was retained for the analysis of this study.

Those variables that were retained were renamed and recategorized. Variable named 'antenatal care use' was derived from the number of antenatal care visits and was recategorized into two categories. Women who received less than four antenatal care visit were categorized as 'No' and those who received four or more antenatal care visit were grouped as 'Yes'. This grouping was based on the World Health Organization recommendation of at least four antenatal care visits for women without complicated pregnancy in developing countries (WHO and UNICEF, 2003).

The main predictor variable of this study was "wealth status". This was chosen as the main predictor because of previous study that revealed an association between wealth status and the use of antenatal care. The wealth index was recategorized into poor and non-poor in which the poorer and poorest were grouped into "poor", the middle, richer and richest were grouped as "non-poor". A continuous data such as number of living children was recategorized into no child (0), one to two children (1), three children to four children (2) and >4 children (3). This was done in line with the flexible policy of four children in Nigeria (Federal Government of Nigeria 1988). Also, no child category was retained in the number of living children because some women who had a birth or more in the last five years before the survey may have lost their children as a result of death, thus they have no living child but had experienced live birth five years before the survey. For the age variable, 15-19 and 20-24 were merged together, 25-29 and 30-34 were merged together and 35-39, 40-44 and 45-49 were merged together as 35+. The religion variable recategorized as catholic (1), Other Christian (2), Islam (3) and traditionalist and others were merged together as others (4).

3.8. Data Analysis

For this study, univariate, bivariate and multivariate analysis was done to meet the objectives of the study. The association between the dependent variable (antenatal care utilization) and the socioeconomic and demographic variables was examined using the odds ratio at P-value of <0.05 and 95 percent confidence interval. For the analysis of this research, Stata version 11 was mainly used.

The univariate analysis showed the frequency distribution of the socioeconomic and demographic characteristics of women with one or more birth in five years before the survey.

However, to achieve the first objective, a bivariate analysis was done using chi-square test. Chi-square test was also used to examine the socioeconomic and demographic factors that are associated with antenatal care utilization pattern of women in rural and urban areas. However, socioeconomic and demographic factors that were significantly associated with antenatal care use in the rural and urban areas at the bivariate level were included in the multivariate analysis. A last model that combined the two models was also analyzed at the bivariate level, using chi-square to examine the socio-economic and demographic factors that are associated with antenatal care use in Nigeria.

For the multivariate analysis, the multivariate logistic regression was used to determine the significant factors associated with urban-rural differential in Antenatal Care (ANC) use to achieve the second objective. The multivariate logistic regression adopted in this study was:

$$Logit\ (Y_i) = \theta + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_i X_i$$

Where Y_i= dependent variable (antenatal care); θ= constant; β_i= Co-efficient; X_i= independent variables.

A multivariate logistic regression was used because the dependent variable was binary. For the multivariate analysis, three models were used. Model 1 revealed the socio-economic and demographic factors that are significantly associated with antenatal care use in the rural areas. Model 2 represented the socio-economic and demographic factors that are associated with antenatal care use among the urban area of Nigeria. Model 3 revealed the socio-economic and demographic factors that are associated with antenatal care use in the rural and urban models combined together.

3.9. Ethical Considerations:

This study used the 2008 Nigerian Demographic and Health Survey data. This data was used by permission of the ICF macro through a written permission from their website. However, before the 2008 NDHS was done, appropriate consent was gotten from the respondents by the ICF macro and other ethical issues were considered. Therefore, this study relied on the ethical consideration of the ICF macro for the 2008 NDHS. Thus, this study pose no ethical threat to the respondents as informed consent was taken at the time of the 2008 survey as well as privacy of the respondents were taken into consideration.

CHAPTER 4

ANALYSIS AND RESULTS: Profile of Respondents

4.0. INTRODUCTION

The profiles of respondents are presented in this chapter. This chapter revealed the percentage distribution of respondents by selected demographic and socio-economic characteristics in the rural and urban areas of Nigeria as well as in Nigeria as a whole. It further goes on to reveal the percentage distribution of antenatal care utilization for most recent births by mothers who had a live birth in the five years before the survey by selected demographic and socio-economic characteristics controlling for rural and urban residence. In this chapter, the urban-rural differential in antenatal care use was examined.

Table 4.0 Percentage distribution of respondents by Demographic and Socio-economic Variables Controlling for Rural-Urban residence, NDHS 2008

VARIABLES	Rural		Urban		All	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Age						
15-24	3,402	28.43	923	21.92	4,325	26.74
25-34	5,315	44.41	2,180	51.78	7,496	46.32
35+	3,251	27.16	1,107	26.29	4,358	26.96
Region						
North central	2,252	18.82	786	18.67	3,038	18.78
North east	2,986	24.95	841	19.98	3,827	23.66

North west	3,793	31.69	635	15.08	4,428	27.37
South east	698	5.83	459	10.90	1,157	7.15
South-South	1,333	11.14	426	10.12	1,759	10.87
South west	906	7.57	1,063	25.25	1,969	12.17
Residence						
Urban			4,210	100.00	4,210	26.02
Rural	11,968	100.00			11,968	73.98
Women Education						
No education	6,988	58.39	1,171	27.81	8,159	50.43
Primary	2,700	22.56	937	22.26	3,637	22.48
Secondary	2,019	16.87	1,570	37.29	3,589	22.18
Higher	261	2.18	532	12.64	793	4.90
Religion						
Catholic	936	7.82	415	9.86	1,351	8.35
Other Christian	3,680	30.75	1,660	39.43	5,340	33.01
Islam	7,073	59.10	2,084	49.50	9,157	56.60
Other	279	2.33	51	1.21	330	2.04
Wealth status						
Poor	7,849	65.58	495	11.76	8,344	51.58
Nonpoor	4,119	34.42	3,715	88.24	7,834	48.42
Distance to Health Facility						

Big problem	5,641	47.13	892	21.19	6,533	40.38
Not a big problem	6,327	52.87	3,318	78.81	9,645	59.62
Current Marital Status						
Never married	299	2.50	104	2.47	403	2.49
Married	11,316	94.55	3,975	94.42	15,291	94.52
Formerly married	353	2.95	131	3.11	484	2.99
Employment						
No	4,412	36.86	1,307	31.05	5,719	35.35
Yes	7,556	63.14	2,903	68.95	10,459	64.65
Living Children						
None	136	1.14	29	0.69	165	1.02
1-2	4,249	35.50	1,603	38.08	5,852	36.17
3-4	3,906	32.64	1,480	35.15	5,386	33.29
4+	3,677	30.72	1,098	26.08	4,775	29.52
Antenatal Care Use						
Yes	4359	36.42	3138	74.54	7,497	46.34
No	7,609	63.58	1,072	25.46	8,681	53.66
Total	11,968	100.00	4210	100.00	16,178	100.00

Partner's education						
No education	5,817	49.85	886	21.58	6,703	42.49
Primary	2,457	21.06	783	19.07	3,240	20.54
Secondary	2,580	22.11	1,525	37.14	4,105	26.02
Higher	815	6.98	912	22.21	1,727	10.95
Total	11,669	100.00	4,106	100.00	15,775	100.00

4.1. Profile of Respondents by selected Demographic and Socio-economic Variables controlling for urban-rural residence:

Table 4.0 reveals that women who had a live birth in the five years before the 2008 demographic and health survey were more in the age group 25-34 (46.32%) while women in age group 15-24 (26.74%) and 35+ (26.96%). The north-west region has the highest percentage of women with at least one live birth five year before the survey (27.37%) compared to south-east, which has the lowest (7.15%), followed by south-south (10.87%), south west (12.17%), north central (18.78%) and north east (23.66%). About 73.98% of the respondents lived in the rural areas compared to 26.02% of respondents in the urban area. More than half of the respondents had no education (50.43%), 22.48% of them had primary education, 22.18% had secondary education and 4.90% had higher education. This reveals the low level of education of women in Nigeria. More than half of the respondents (56.60%) were practicing Islam religion, 33.01% were other Christians, only 8.35% were Catholics and 2.04% were others which include the traditionalists.

In addition, respondents in the poor category had the highest percentage (51.58%) compared to those in the non-poor category (48.43%). Respondents who had problem with distance to health facility were (40.38%) compared to those who had no problem with the distance to health facility (59.62%). Most of the respondents were married (94.52%) while those who were never married were just (2.49%) and those who were formerly married were 2.99%. Most of the respondents were employed (64.65%) while the percent unemployed was 35.35%. Respondents who had 1-2 living children had the highest percentage (36.17%) followed by those who had 3-4 living children (33.29%), more than four living children (29.52%) and respondents who had no living children at the time of the survey were only 1.02%. The rural poor respondents had the highest percentage (48.52%) followed by the rural non-poor (25.46%), the urban non-poor (22.96%) and the urban poor (3.06%). Ever or currently married women whose partners had no education were 42.49% with the highest percentage, followed by secondary education (26.02%), primary education (20.54%) and higher education (10.95%). The percentage of men with no education (42.49%) was lower than their female counterparts (50.43%) and percentage of men with higher education (10.95%) were higher than their female counterpart (4.90%). This is reflective of the differential in educational attainment by sex as more educational priority may be given to male than females in most families in Nigeria. World Health Organization gave a standard pattern of antenatal care utilization for women who did not experience complicated pregnancy in sub-Saharan Africa. It was stated that they should receive at least four antenatal care visits which would include compulsory blood pressure measurement, urine and blood tests and non-compulsory weight and height check at each visit (WHO and UNICEF, 2003; NPC and ICF Macro, 2009).

(WHO and UNICEF, 2003; NPC and ICF Macro, 2009). However, the percentage of urban women who used antenatal care (74.54%) was higher than the percentage of rural women who used antenatal care (36.42%).

In the rural areas, women who had a live birth in the five years before the 2008 demographic and health survey were more in the age group 25-34 (44.41%) compared to women in age group 15-24 (28.43%) and 35+ (21.16%). The north-west region has the highest percentage of women with at least one live birth five year before the survey (31.69%) compared to south-east, which has the lowest (5.83%), followed by south-west (7.57%), south-south (11.14%), north central (18.82%) and north east (24.95%). More than half of the rural respondents had no education (58.39%), 22.56% of them had primary education, 16.87% had secondary education and 2.18% had higher education. More than half of the respondents (59.10%) were practicing Islam religion, 30.75% were other Christians, only 7.82% were Catholics and 2.33% were others which include the traditionalists. Respondents in the poor category had the highest percentage (65.58%) compared to those in non-poor category (34.42%). Respondents who had problem with distance to health facility were (47.13%) compared to those who had no problem with the distance to health facility (52.87%). Most of the respondents were married (94.55%) while those who were never married were just (2.50%) and those who were formerly married were 2.95%. Most of the respondents were employed (63.14%) while the percent unemployed was 36.86%. Respondents who had 1-2 living children had the highest percentage (35.50%) followed by those who had 3-4 living children (32.64%), more than four living children (30.72%) and respondents who had no living children at the time of the survey were only 1.14%. The rural poor respondents were 65.58% while the rural non-poor were 34.42%. Formerly or currently married women whose partners had no education were 49.85% with the highest percentage, followed by secondary education

(22.11%), primary education (21.06%) and higher education (6.98%). The percentage of rural women who used antenatal care was (36.42%) while 63.58% of the rural women do not use antenatal care.

In the urban areas, women who had a live birth in the five years before the 2008 demographic and health survey were more in the age group 25-34 (51.78%) compared to women in age group 15-24 (21.92%) and 35+ (26.29%). The south west region had the highest percentage of women with at least one live birth five year before the survey (25.25%) compared to south-south, which had the lowest (10.12%), followed by south-east (10.90%), north west (15.08%), north central (18.67%) and north east (19.98%). About 27.81% of the urban residents had no education 22.26% of them had primary education, 37.29% had secondary education and 12.64% had higher education. About 49.50% of them were practicing Islam religion, 39.43% were other Christians, only 9.86% were Catholics and 1.21% were others which include the traditionalists. Respondents in the rich category had the highest percentage (69.50%) compared to those in the poorcategory (30.5%). Respondents who had problem with distance to health facility were (21.19%) compared to those who had no problem with the distance to health facility (78.81%). Most of the respondents were married (94.42%) while those who were never married were just (2.47%) and those who were formerly married were 3.11%. Most of the respondents were employed (68.95%) while the percent unemployed was 31.05%. Respondents who had 1-2 living children had the highest percentage (38.08%) followed by those who had 3-4 living children (35.15%), more than four living children (26.08%) and respondents who had no living children at the time of the survey were only 0.69%. The urban poor respondents were (11.76%) and the urban non-poor were (88.24%). Formerly or currently married women whose partners had no education were 21.58%, those whose partners had primary education (19.07%), secondary education (37.14%)

and higher education (22.21%). The percentage of urban women who used antenatal care was 74.54% and 25.46% did not use antenatal care.

Table 4.2 Percentage distribution of antenatal care utilization for the most recent births by mothers with a live birth in the five years before the survey by selected demographic, and socio-economic characteristics.

Variables	Rural		Urban		All	
	Number	%	Number	%	Number	%
Age		*		*		*
15-24	1,065	31.31	607	65.76	1,672	38.66
25-34	2,101	39.53	1,728	79.27	3,829	51.09
35+	1,193	36.70	803	72.54	1,996	45.80
Region		*		*		*
North central	1,062	47.16	599	76.21	1,661	54.67
North east	784	26.26	490	58.26	1,274	33.29
North west	496	13.08	348	54.80	844	19.06
South east	490	70.20	365	79.52	855	73.90
South-South	769	57.69	336	78.87	1,105	62.82
South west	758	83.66	1,000	94.07	1,758	89.28
Women Education		*		*		*
No education	1,315	18.82	584	49.87	1,899	23.27
Primary	1,406	52.07	693	73.96	2,099	57.71

Secondary	1,405	69.59	1,357	86.43	2,762	76.96
Higher	233	89.27	504	94.74	737	92.94
Religion		*		*		*
Catholic	492	52.56	338	81.45	830	61.44
Other Christian	2,183	59.32	1,382	83.25	3,565	66.76
Islam	1,613	22.81	1,386	66.51	2,999	32.75
Others	71	25.45	32	62.75	103	31.21
Distance to Health Facility		*		*		*
Big problem	1,646	29.18	595	66.70	2,241	34.30
Not a big problem	2,713	42.88	2,543	76.64	5,256	54.49
Current Marital Status		*		*		*
Never married	153	51.17	65	62.50	218	54.09
married	4,040	35.70	2,986	75.12	7,026	45.95
Formerly married	166	47.03	87	66.41	253	52.27
Employment		*				

No	1,190	26.97	862	65.95	2,052	35.88
Yes	3,169	41.94	2,276	78.40	5,445	52.06
Living Children		*		*		*
None	41	30.15	16	55.17	57	34.55
1-2	1,644	38.69	1,255	78.29	2,899	49.54
3-4	1,431	36.64	1,150	77.70	2,581	47.92
4+	1,243	33.80	717	65.30	1,960	41.05
Partner's education		*		*		*
No education	967	16.62	413	46.61	1,380	20.59
Primary	1,148	46.72	577	73.69	1,725	53.24
Secondary	1,518	58.84	1,278	83.80	2,796	68.11
Higher	573	70.31	805	88.27	1,378	79.79
Residence						***
Urban			3,138	74.54	3,138	74.54
Rural	4,359	36.42			4,359	36.42
Wealth Status		*		*		*
Poor	1,772	22.58	221	44.65	1,993	23.89
Nonpoor	2,587	62.81	2,917	78.52	5,504	70.26

*= $p<0.05$

4.2. Distribution of Antenatal Care Use by Selected Demographic and Socio-economic variables controlling for Urban- Rural residence:

Table 4.2 revealed the socio-economic and demographic factors that are associated with urban-rural differential of antenatal care use in Nigeria. In the rural area age, region, women education, religion, distance to health facility, current marital status, employment, number of living children, partner's education, residential status by wealth and wealth status was significantly associated with antenatal care use. In the urban area age, region, women education, religion, distance to health facility, current marital status, employment, number of living children, partner's education, residential status by wealth and wealth status were significantly associated with antenatal care.

The percentage distribution of the socio-economic and demographic determinants of antenatal care in the rural and urban areas respectively were revealed in table 4.2 In the rural areas, women in the age group 25-34 had the highest percentage of antenatal care use (39.53%) and then women at age 35+ (36.70) and women of age 15-24 (31.31%). South-west women had the highest percentage of antenatal care use (83.66%) followed by women in the south-east region (70.20%), women in the south-south region (57.69%), women in the north central region (47.16%), women in the north east region (26.26%) and women in the north-west region had the lowest usage of antenatal care (13.08%). Women's level of education revealed a positive association with the pattern of antenatal care utilization. The more women's level of education increases the higher their use of antenatal care. Rural women with primary education recorded antenatal care usage of 52.07%, the antenatal care usage increased among women with secondary education (69.59%) and even higher percentage was recorded among women who acquired higher level of education (89.29%). Almost all the women with higher level of

education used antenatal care. Illiterate women reported the lowest use of antenatal care (18.82%).

Other Christians apart from the catholic displayed the highest level of antenatal care use (59.32%) followed by the Catholic Christians (52.56%), then other religion which include traditionalists and others (25.45%) and Islam women (22.81%). Distance to health facility was also a major factor determining the use of antenatal care in rural Nigeria. Women who reported that distance to health facility was not a big problem reported higher usage of antenatal care (42.88%) compared to those who reported distance to health facility as a problem (29.18%). Highest percentage of antenatal care use was reported among the never married women (51.17%), followed by formerly married women (47.03%) and then currently married women (35.70%). The differences experienced in the use of antenatal care by marital status may be due to the limiting influence of partners as married women may need to seek permission to go out for such treatment from their husbands which the unmarried or not currently married women don't need to do. Women employment status also revealed a consistently positive relationship with antenatal care use. It was revealed that employed women use antenatal care (41.94%) more than unemployed women (26.97%). Women who had 1 to 2 living children had the highest use of antenatal care (38.69%), followed by women with 3 to 4 living children (36.64%), next is women with 4 or more children (33.80%) and the least was women with no living child (30.15%). Partner's education level also revealed a positively significant association with antenatal care use in the rural areas of Nigeria. Women whose partners had higher level of education had the highest use of antenatal care (70.31%), followed by women whose partners had secondary education (58.84%), women whose partners had primary education (46.72%) and women whose partners were illiterate was the least (16.62%). This agrees with Caldwell's

opinion that men who had higher level of education have significant contribution to the decision about child care than men without any education (Caldwell 1990). About 36.42% of rural women received antenatal care. Rural poor women who received antenatal care were 22.58% while rural non-poor women who received antenatal care were 62.81%.

In the urban model, women in the age group 25-34 had the highest percentage of antenatal care use (79.27%) and then women at age 35+ (72.54%) and women of age 15-24 (65.76%). South-west women had the highest percentage of antenatal care use (94.07%) followed by women in the south-east region (79.52%), women in the south-south region (78.87%), women in the north central region (76.21%), women in the north east region (58.26%) and women in the north-west region had the lowest usage of antenatal care (54.80%). Women's level of education revealed a positive association with the pattern of antenatal care utilization. The more women's level of education increases the higher their use of antenatal care. Urban women with primary education recorded antenatal care usage of 73.96%, the antenatal care usage increased among women with secondary education (86.43%) and even higher percentage was recorded among women who acquired higher level of education (94.74%). Illiterate women reported the lowest use of antenatal care (49.87%).

Other Christians apart from the catholic displayed the highest level of antenatal care use (83.25%) followed by the Catholic Christians (81.45%), then Islam women (66.51%) and others which include traditionalists and others (62.75%). Distance to health facility was also a major factor determining the use of antenatal care in urban Nigeria. Women who reported that distance to health facility was not a big problem reported higher usage of antenatal care (76.64%) compared to those who reported distance to health facility as a problem (66.70%). Highest percentage of antenatal care use was reported among the currently married women (75.12%),

followed by formerly married women (66.41%) and then never married urban women (62.50%). This was different from the pattern among the rural women. The differences experienced in the use of antenatal care by marital status may be due to little or no limiting influence of partners as married women may not need to seek permission to go out for such treatment from their husbands in the urban areas (Rahman et al. 2008). Women employment status also revealed a consistently positive relationship with antenatal care use. It was revealed that employed women's percentage of antenatal care use was 78.40% and unemployed women (65.95%). Women who had 1 to 2 living children had the highest use of antenatal care (78.29%), followed by women with 3 to 4 living children (77.70%), women with 4 or more children (65.30%) and the least was women with no living child (55.17%). Partner's education level also revealed a positively significant association with antenatal care use in the rural areas of Nigeria. Urban women whose partners had higher level of education had the highest use of antenatal care (88.27%), followed by women whose partners had secondary education (83.80%), women whose partners had primary education (73.69%) and women whose partners were illiterate was the least (46.61%). This agrees with Caldwell's opinion that men who had higher level of education have significant contribution to the decision about child care than men without any education (Caldwell 1990). About 74.54% of urban women used antenatal care. Urban poor women who received antenatal care were 44.65% while urban non-poor women who received antenatal care were 78.52%.

In the total model, women in the age group 25-34 had the highest percentage of antenatal care use (51.09%) then women at age 35+ (45.80%) and women of age 15-24 (38.66%). South-west women had the highest percentage of antenatal care use (89.28%) followed by women in the south-east region (73.90%), women in the south-south region (62.82%), women in the north central region (54.67%), women in the north east region (33.29%) and women in the north-west

region had the lowest usage of antenatal care (19.06%). Women's level of education revealed a positive association with the pattern of antenatal care utilization. The more women's level of education increases the higher their use of antenatal care. Women with primary education recorded antenatal care usage of 57.71%, the antenatal care usage increased among women with secondary education (76.96%) and even higher percentage was recorded among women who acquired higher level of education (92.94%). Illiterate women reported the lowest use of antenatal care (23.27%). Other Christians apart from the catholic displayed the highest level of antenatal care use (66.76%) followed by the Catholic Christians (61.44%), then Islam women (32.75%) and others which include traditionalists and others (31.21%). Distance to health facility was also a major factor determining the use of antenatal care in Nigeria. Women who reported that distance to health facility was not a big problem reported higher usage of antenatal care (54.49%) compared to those who reported distance to health facility as a problem (34.30%). Highest percentage of antenatal care use was reported among the never married women (54.09%), followed by formerly married women (52.27%) and then currently married women (45.95%). Women employment status also revealed a consistently positive relationship with antenatal care use. It was revealed that employed women's percentage of antenatal care use was 52.06% andpercentage of antenatal care use among the unemployed women (35.88%). Women who had 1 to 2 living children had the highest use of antenatal care (49.54%), followed by women with 3 to 4 living children (47.92%), women with 4 or more children (41.05%) and the least was women with no living child (34.55%). Partner's education level also revealed a positively significant association with antenatal care use in the rural areas of Nigeria. Women whose partners had higher level of education had the highest use of antenatal care (79.79%), followed by women whose partners had secondary education (68.11%), women whose partners

had primary education (53.24%) and women whose partners were illiterate was the least (20.59%). This agrees with Caldwell's opinion that men who had higher level of education have significant contribution to the decision about child care than men without any education (Caldwell 1990).Urban women use antenatal care than rural women in Nigeria. About 74.54% of urban women used antenatal care while 36.42% of rural women use antenatal care. Non-poor women use antenatal care than poor women in Nigeria. About 70.26% of non-poor women use antenatal care while 23.89% of poor women use antenatal care.

CHAPTER 5

DETERMINANTS OF URBAN-RURAL DIFFERENTIAL IN ANTENATAL CARE

5.0. INTRODUCTION

This chapter revealed the factors that are associated with the urban-rural differentials in antenatal care use. Significant factors at 95% level of significance from the bivariate analysis were included in this model. It revealed the result of logistic regression for receiving antenatal care in the rural and urban areas and Nigeria as a whole.

Table 5.1.**Result of logistic regression for receiving Antenatal Care**

Variables	Rural Odds Ratio (95% C.I)	Urban Odds Ratio (95% C.I)	All Odds Ratio (95% C.I)
Age			
15-24	1.00	1.00	1.00
25-34	1.34* (1.17-1.53)	1.62* (1.29-2.04)	1.37* (1.22-1.54)
35+	1.41* (1.19-1.68)	1.50* (1.12-2.01)	1.40* (1.21-1.62)
Region			
South west	1.00	1.00	1.00
North east	0.17* (0.14-0.21)	0.25* (0.17-0.35)	0.20* (0.16-0.24)

North west	0.07*	0.16*	0.09*
	(0.05-0.08)	(0.11-0.23)	(0.07-0.10)
South east	0.39*	0.39*	0.40*
	(0.30-0.52)	(0.26-0.59)	(0.32-0.50)
South -South	0.16*	0.28*	0.19*
	(0.13-0.20)	(0.19-0.41)	(0.16-0.24)
North central	0.23*	0.31*	0.26*
	(0.19-0.29)	(0.22-0.43)	(0.22-0.31)
Women Education			
No education	1.00	1.00	1.00
Primary	1.87*	1.59*	1.81*
	(1.65-2.13)	(1.27-2.01)	(1.61-2.02)
Secondary	2.63*	2.68*	2.62*
	(2.23-3.11)	(2.06-3.50)	(2.28-3.01)
Higher	6.29*	5.14*	5.34*
	(3.96-10.01)	(3.19-8.28)	(3.86-7.40)
Religion			
Catholic	1.00	1.00	1.00
Other Christian	1.32*	0.92	1.21*
	(1.11-1.58)	(0.66-1.29)	(1.04-1.42)
Islam	1.28*	1.20	1.24*
	(1.05-1.56)	(0.82-1.75)	(1.04-1.48)
Others	0.94	1.02	0.96

	(0.67-1.34)	(0.51-2.03)	(0.71-1.31)
Distance to Health Facility			
Big problem	1.00	1.00	1.00
Not a big problem	1.60*	1.36*	1.55*
	(1.45-1.76)	(1.12-1.65)	(1.42-1.69)
Current Marital Status			
Never married	1.00	1.00	1.00
married	0.93	1.22	0.97
	(0.72-1.20)	(0.80-1.86)	(0.78-1.21)
Formerly married	-	-	-
Partner's education			
No education	1.00	1.00	1.00
Primary	1.91*	1.58*	1.84*
	(1.67-2.18)	(1.23-2.03)	(1.64-2.07)
Secondary	1.99*	2.01*	2.03*
	(1.72-2.30)	(1.58-2.57)	(1.79-2.29)
Higher	2.71*	2.51*	2.75*
	(2.20-3.34)	(1.86-3.37)	(2.32-3.26)
Employment			
No	1.00	1.00	1.00

Yes	1.22* (1.10-1.36)	1.18 (0.99-1.41)	1.21* (1.11-1.32)
Living Children			
None 1-2 3-4 4+	1.00 1.32 (0.81-2.17) 1.09 (0.66-1.80) 1.06 (0.64-1.75)	1.00 2.97* (1.19-7.40) 2.76* (1.11-6.89) 2.17 (0.86-5.47)	1.00 1.61* (1.03-2.52) 1.39 (0.89-2.17) 1.30 (0.82-2.04)
Wealth Status			
Poor Nonpoor	1.00 2.34* (2.10-2.60)	1.00 1.75* (1.40-2.19)	1.00 2.28* (2.07-2,50)
Residence			
Urban Rural	1.00	1.00	1.00 0.53* (0.48-0.59)

*= $p<0.05$

Table 5.1 showed the factors that are significantly associated with the urban-rural differentials in use of antenatal care in Nigeria at 5% level of significance. Binary logistic regression was used to examine the factors that determine rural-urban differentials in women's pattern of antenatal care. Binary logistic regression was used because antenatal care which was the dependent

variable of this study was dichotomous and binary logistic is the best model for dichotomous variables.

Antenatal care was defined in this study as the treatment received for pregnancy by women with one or more live birth five year before the 2008 Nigerian Demographic and Health Survey. Women who received at least four treatments during pregnancy were categorized as "yes" while women who received less than four antenatal treatments were categorized as "No".

Table 5.1 revealed that age, region, women education, religion, distance to health facility, partner's education, employment status and wealth status are significantly associated with antenatal care use in the rural areas of Nigeria. For urban women, age, region, women education, distance to health facility, partner's education, living children and wealth status were significantly associated with antenatal care use.In the total model, age, region, women education, religion, distance to health facility, partner's education, occupation, number of living children, wealth and residence were significantly associated with antenatal care use.

In the rural model, women in age group 25-34 and 35+ were 1.34 and 1.41 times respectively more likely to use antenatal care than women in age group 15-24. Women in the north east, North West, south east, south-south and south west regions of Nigeria were 0.17, 0.07, 0.39, 0.16 and 0.23 times respectively less likely to use antenatal care than women in the north central region. Mothers with primary, secondary and higher educational attainment were 1.87, 2.63 and 6.29 times respectively more likely to use antenatal care than illiterate mothers. Other Christian women and Islam women were 1.32 and 1.28 times respectively more likely to use antenatal care than catholic women, while women practicing traditional religion and other unclassified religion were 0.94 times less likely to use antenatal care than Catholic women. Women who did not have

problem with distance to health facility were more likely to use antenatal care than women who had a big problem with distance to health facility (O.R= 1.60, C.I= 1.45-1.76). Women whose partners had primary, secondary and higher education were 1.91, 1.99 and 2.71 times respectively more likely to use antenatal care than women whose partners were illiterate. Employed women were more likely to use antenatal care than unemployed women (O.R=1.22, C.I=1.10-1.36). Rural non-poor women were more likely to use antenatal care than rural poor women (O.R= 2.34, C.I= 2.10-2.60).

In the urban areas, women in age group 25-34 and 35+ were 1.62 and 1.50 times respectively more likely to use antenatal care than women in age group 15-24. Women in the north east, North West, south east, south-south and north central were 0.25, 0.16, 0.39, 0.28 and 0.31 times respectively less likely to use antenatal care than women in the south west region. Women who had primary, secondary and tertiary education were 1.59, 2.68 and 5.14 times respectively more likely to use antenatal care than illiterate women. Women who did not have a big problem with seeking medical help for self due to distance to health facility were more likely to use antenatal care than women who had a big problem with seeking medical help for self due to distance to health facility (O.R=1.36. C.I= 1.12-1.65). Women whose partner had primary, secondary and higher education were 1.58, 2.01 and 2.51 times more likely to use antenatal care than women whose partners were illiterate. Urban women who had 1-2 and 3-4 living children were 2.97 and 2.76 times respectively more likely to use antenatal care than women who had no living child. Urban non-poor women were more likely to use antenatal care than urban poor women (O.R= 1.75, C.I=1.40-2.19).

In the total model that combines both rural and urban areas of Nigeria, women in age group 25-34 and 35+ were 1.37 and 1.40 times respectively more likely to use antenatal care than women

in age group 15-24. Women in the north east, North West, south east, south-south and north central were 0.20, 0.09, 0.40, 0.19 and 0.26 times respectively less likely to use antenatal care than women in the south west region. Women who had primary, secondary and tertiary education were 1.81, 2.62 and 5.34 times respectively more likely to use antenatal care than illiterate women. Other Christian women and Islam women were 1.21 and 1.24 times respectively more likely to use antenatal care than catholic women than Catholic women. Women who did not have a big problem with seeking medical help for self due to distance to health facility were more likely to use antenatal care than women who had a big problem with seeking medical help for self due to distance to health facility (O.R=1.55. C.I= 1.42-1.69). Women whose partner had primary, secondary and higher education were 1.84, 2.03 and 2.75 times more likely to use antenatal care than women whose partners were illiterate.Employed women were more likely to use antenatal care than unemployed women (O.R=1.21, C.I=1.11-1.32). Women who had 1-2 living children were 1.61times more likely to use antenatal care than women who had no living child. Non-poor women were more likely to use antenatal care than poor women (O.R= 2.28, C.I=2.07-2.50). It was revealed that rural women were less likely to use antenatal care than urban women (O.R= 0.53, C.I= 0.48-0.59).

However, this study revealed differences in the determinants of antenatal care utilization between the rural and urban women at a significance level of less than 5%. Religion and occupation were significantly associated with antenatal care use in the rural area at $p<0.05$ but not significantly associated with antenatal care use at $p<0.005$ in the urban area. Whereas, number of living children was significantly associated with antenatal care use in the urban area at $p<0.05$ but revealed no association in the rural area. Therefore religion, occupation and number

of living children revealed the difference in the determinant of antenatal care use between the rural and urban women at 5% level of significance

5.1 HYPOTHESIS TESTING:

Ho: There is no difference in the determinants of antenatal care utilization between the rural and the urban women.

Hi: there is a difference in the determinant of antenatal care utilization between the rural women and the urban women.

The assumption of the above hypothesis states that if the level of significance is less than 5% we reject the null hypothesis but fail to reject the alternative hypothesis. Thus, the findings revealed differences in the determinants of antenatal care utilization between the rural and urban women at a significance level of less than 5%. Religion and occupation were significantly associated with antenatal care use in the rural area at $p<0.05$ but not significantly associated with antenatal care use at $p<0.005$ in the urban area. Similarly, number of living children was significantly associated with antenatal care use in the urban area at $p<0.05$ but revealed no association in the rural area. Therefore religion, occupation and number of living children revealed the difference in the determinant of antenatal care use between the rural and urban women at 5% level of significance. Thus, we fail to reject the alternative hypothesis and concluded that there is a difference in the determinant of antenatal care utilization between the rural women and the urban women in Nigeria.

CHAPTER 6

DISCUSSION, CONCLUSION AND RECOMMENDATION

6.1. DISCUSSION

The study objective was to identify the determinants of urban-rural differentials of antenatal care use in Nigeria. It specifically described the distribution of antenatal care utilization among the rural and urban women in Nigeria and also determined the factors that are associated with urban-rural differential in Antenatal Care (ANC) use in Nigeria.

This study classified antenatal care use as women who had at least four antenatal care visits for pregnancy. This classification was based on the World Health Organization's recommendation of a new model of antenatal care for women without complicated pregnancy in developing countries, which include at least four antenatal care visits with compulsory measurement of blood pressure, testing of urine and blood tests as well as optional weight and height measurement at each visit (WHO and UNICEF, 2003; NPC and ICF Macro, 2009).

The study revealed a difference in the pattern of antenatal care use between the rural and the urban women in which urban women were more favoured by antenatal care use and the rural women were disadvantaged. There was a higher percentage of antenatal care use among the urban women than rural women. More than 74% of antenatal care use occurred in the urban area of Nigeria while only about 36% was experienced in the rural area.

The study showed that the rural women were less likely to use antenatal care than the urban women. This agrees with the finding that urban women use antenatal care than rural women in Nigeria (Dairo and Owoyokun, 2010). It thus disagrees with the finding that urban residents had no association with the use of antenatal care (Elizabeth 2000).

Several factors were identified as the determinants of this urban- rural difference in the pattern of antenatal care use in Nigeria. In rural area, antenatal care use was determined by the following factors: age, region, women education, religion, distance to health facility, partner's education, employment status and wealth status. This contradicts the finding that only women education and partner's education were significantly associated with antenatal care use in the rural area of Nigeria (Kabir et al. 2005). However, antenatal care use in the urban area was significantly determined by age, region, women education, distance to health facility, partner's education, living children and wealth status. The determinants of antenatal care that revealed rural-urban differentials are religion, occupation and number of living children. Religion and occupation determined antenatal care use in the rural area but showed no association with antenatal care use in the urban area. Number of living children was significantly associated with antenatal care use in the urban area but revealed no association with antenatal care use in the rural area of Nigeria.

It was revealed in the study that urban and the rural non-poor women were more likely to use antenatal care than the urban and rural poor women. Consequently, the urban poor women were more disadvantaged compared to the urban non-poor women in the use of antenatal care as they did not benefit from being in the urban area of the country. This is similar to the previous findings that urban poor tend to be worse off than rural residents and the urban non-poor in the utilization of maternal health care services (Monica et al 2003, Fosto et al. 2007). It also agrees with the findings that women in the middle and rich class were more likely to use antenatal care than poor women (Iyaniwura and Yusuf, 2010).

Furthermore, partner's and women's education was positively associated with the use of antenatal care in both rural and urban areas of Nigeria. These variables reflect the most significant association with antenatal care use in both rural and urban areas of Nigeria. It

revealed that women use of antenatal care increased as their educational attainment and that of their partners increased from primary to secondary and higher levels. Similarly, Rahman et al. 2008 found a positive association between women and partner's education and antenatal care use. Results revealed that the higher the educational attainment of women and husbands, the more women tend to use antenatal care.

Distance to health facility was also significantly associated with antenatal care use in both rural and urban areas of Nigeria. Women who had problem with reaching health facility were less likely to use antenatal care than women who did not have problem with distance to health facility. This conforms to the findings that shorter walk time to health facility was associated with antenatal care use in Sudan (Ibnouf et al. 2007). In addition, rural and urban women in the North east, North West, south east, south-south and south-west region were less likely to use antenatal care than women in the north-central region. This is similar to the finding that revealed that region is associated with antenatal care use in Bangladesh (Rahman et al. 2008).

However, religion was significantly associated with antenatal care use in the rural areas but showed no association in the urban areas of Nigeria. Other Christians and Islam women were more likely to use antenatal care in the rural areas than Catholic women. This is similar to the finding that revealed association between religion and antenatal care in Nigeria (Dairo and Owoyekun, 2010). Women employment status was also associated with antenatal care use in the rural areas but not associated in the urban areas. Employed women were more likely to use antenatal care than unemployed women. Rahman et al. 2008 also revealed an association between employment status and antenatal care use in Bangladesh. In the urban areas number of living children was associated with antenatal care use but showed no association in the rural

areas at 5% level of significance. This is similar to the finding that birth order was significantly associated with antenatal care use in Uttarkhand (Digambar et al. 2011)

6.2. CONCLUSION:

Differences in patterns of antenatal care utilization had been identified in this study. Urban women were revealed to use antenatal care more than the rural women. Also, rural poor and urban poor women also had a low percentage of antenatal care use compared to urban non-poor and rural-nonpoor women. Thus poverty and residence have been identified as major determinants of differential in antenatal care use in Nigeria.

In addition, the factors that were significantly associated with the low use of antenatal care in the rural areas were: age, region, women education, religion, distance to health facility, partner's education, employment status, wealth status and residential status by wealth. While age, region, women education, distance to health facility, partner's education, living children, wealth status and residential status were the significant determinants of use in the urban areas. Religion and women's employment status were associated with antenatal care use in rural areas only while numbers of living children were associated with antenatal care use in the urban area only. Other variables are associated with antenatal care use in both rural and urban areas of Nigeria.

However, women and partner's education were the most significant determinants of the urban-rural differential in antenatal care use in Nigeria.

This study revealed that the urban poor women were more disadvantaged in the use of antenatal care as well as the rural poor. Thus, public health intervention programs should be targeted towards improving the pattern of antenatal care use among the urban and the rural poor women in Nigeria.

Furthermore, this study revealed that women and partner's education were significantly associated with antenatal care use in rural and urban residence. Therefore, in order to improve the antenatal care use among the urban-poor women, it is advisable for Nigerian government to encourage education among the urban poor men and women to higher levels. This would help improve the use of antenatal care among the urban poor women. Consequently, it would reduce maternal and child mortality that is caused by complication during pregnancy which results from low use of antenatal care in Nigeria.

However, the result observed from the study revealed more use of antenatal care in the urban area compared to the rural areas. Consequently, factors such as women's education, partner's education, employment, distance to health facility, religion, region and age that showed significant association with antenatal care use in the rural area should be addressed by public health workers in order to bridge the gap between the rural and the urban use of antenatal care in Nigeria.

Furthermore, it was revealed in the study that religion and women employment was associated with antenatal care use in the rural areas but not associated with antenatal care use in the urban area. Thus, to achieve improved use of antenatal care in the rural area, programs that would make women to be gainfully employed should be implemented by the government. That is job opportunities should be increased in the rural areas to ensure increased use of antenatal care in the rural areas of Nigeria. Also, Christian and Islam religious organizations should continue to encourage their members that are still not using antenatal care to use as these religious organizations should be a major means of promoting antenatal care use in Nigeria. Number of living children was associated with antenatal care use in the urban areas but not associated in the rural area. It was revealed that women who had 1-2 children were 1.61 times more likely to use

antenatal care than women who had no living children. Thus, public health programs that promote child survival should be encouraged in the urban areas to improve the use of antenatal care in the urban areas of Nigeria.

6.3 RECOMMENDATIONS:

However, this study recommends that public health intervention programs and government efforts should be targeted at addressing the differences in the determinants of antenatal care use in the rural and urban areas of Nigeria in order to increase antenatal care use in Nigeria and consequently reduce maternal, neonatal and child mortality in Nigeria. These different determinants include religion, women employment and number of living children. Religion and women employment were significantly associated with antenatal care use in the rural area while number of living children were significantly associated with antenatal care use in the urban area. Thus, job creation programs for women in the rural area as well as intervention programs that would involve the religious organizations in the rural areas would help increase antenatal care use in the rural areas and the health outcomes of the rural people would improve. Also, in the urban area, public health programs should be targeted at improving the survival of children as it would encourage women to use antenatal care in the urban areas. Such programs such as safe motherhood initiative should be encouraged in urban Nigeria and after birth services for children such as immunization should be promoted in the urban areas so as to encourage women in the urban area to use antenatal care for their subsequent pregnancies.

Furthermore, the determinants of antenatal care use in the rural and urban areas respectively should be targeted by policy makers, public health workers and government agencies to promote antenatal care use in Nigeria.The study revealed that wealth status is associated with antenatal

care use in both rural and urban areas of Nigeria. It was revealed that urban and rural non-poor are more likely to use antenatal care than the urban and rural poor. Consequently, the issue of poverty should be addressed both in the rural and urban areas of Nigeria in order to increase antenatal care use in Nigeria. This can be achieved in the rural areas through job creation. Job creation was recommended as a solution because women employment status also revealed an association with antenatal care use in Nigeria. The government of Nigeria can encourage foreign investors to establish their firms and factories in the rural areas of Nigeria to ensure the employment of the rural residents. Gainful employment of rural women would enable women to afford transport cost to health facility as distance to health facility poses a major challenge to women in seeking antenatal care.

However, to achieve the aim of gainfully employing women in the rural areas women education to higher level must be done. Government must set a goal of educating adult women and female to higher level and this should be facilitated through provision of education scholarships for adult women and females in the rural areas of Nigeria.Women education to the higher level should be encouraged by the government in the rural area because it revealed a positive significant association with antenatal care in the rural area. Husband's education to higher level should also be promoted in the rural areas as the more educated partners become, the more their wives use antenatal care for pregnancy. This revealed that highly educated men in the rural areas are more likely to encourage their wives to use antenatal care. This suggests to the public health workers that men should also be involved in decision that has to do with promoting the health service utilization of women in the rural areas. Thus, public health programs that are targeted at educating women about antenatal care should also involve men in the rural areas.Rural women in

the north east, north-west, south east, south-south and north central region should be educated on the need to use antenatal care effectively for pregnancy.

However, in the urban areas of Nigeria the approach that government agencies, policy makers and public health interventionists would use to improve antenatal care use is different from that of the rural areas based on the significant determinants of antenatal care use in the urban areas of Nigeria. Wealth status was also associated with antenatal care use in the urban areas. It also revealed that the urban non-poor are more likely to use antenatal care compared to the urban poor. Thus, public health programs that would promote the use of antenatal care in the urban areas should be targeted at the urban poor women.

Also, women education to the tertiary level should be promoted by the government in the urban areas. Women education to the higher level should be encouraged by the government in the rural area because women education revealed a positive significant association with antenatal care in the urban area. Husband's education to higher level should also be promoted in the urban areas as the more educated partners become, the more their wives use antenatal care for pregnancy. This revealed that highly educated men in the urban areas are more likely to encourage their wives to use antenatal care. This suggests to the public health workers that men should also be involved in decision that has to do with promoting the health service utilization of women in the urban areas. Thus, public health programs that are targeted at educating women about antenatal care should also involve men in the rural areas. In addition, educating partners to higher level would probably increase the level of income of the family and encourage women to use the expensive health care services in the urban area. This would also enlighten partners as regards the importance of antenatal care services for their pregnant wives, thus making them encourage their wives to use antenatal care during pregnancy.

Also, the rural urban disparity in antenatal care in Nigeria can also be solved by addressing the factors that are responsible for the low use of antenatal care in the rural areas of Nigeria as it was revealed in the total model that urban women used antenatal care than the rural women. Thus, public health intervention that would increase antenatal care use should be targeted at the rural residents than the urban residents. The intervention program should address improving the level of education of women and that of their partners to higher level in Nigeria. This is because women and partner's education revealed a positive relationship with women's use of antenatal care in Nigeria. This could increase their chance of becoming gainfully employed thus improving their income and then giving them the financial means to transport themselves to the far health facilities. Women and partner's education, employment, income and distance to health facility were related above because the study revealed a significant association of each of these factors with antenatal care use in Nigeria. However, these relationships may not exist in the real sense and further studies can be done to examine if there is a relationship between women education, partner's education, employment, income and distance to health facility and the use of antenatal care in Nigeria. In addition, education would also enlighten both men and women about the importance of antenatal care and would make other intervention programs by health personnel to be easily accepted by the rural residents.

Furthermore, multilevel studies should be done to address the community and state influences on antenatal care use in Nigeria. Findings from such study would help provide insights into the community and state level factors that contribute to the urban-rural differences in the utilization of antenatal care in Nigeria. In addition, qualitative studies such as focus group discussions can be used to examine the cultural factors such as beliefs systems and husband's autocratic behaviours as a result of the Nigeria's patriarchal marital system that are associated with the

urban-rural differences in antenatal care utilization in Nigeria. Such studies would explore other aspect of the Andersen framework of health utilization such as community determinants, beliefs systems and illness level determinants that was not addressed in this study. A trend analysis can also be done to compare the determinants of urban-rural differentials in antenatal care use in Nigeria overtime. For instance, the determinants of the urban-rural differentials of antenatal care use in Nigeria in 1999 can be compared with the determinants of the differentials of antenatal care use in 2003 and 2008 respectively. This would revealed if there had been any changes overtime in the factors that are associated with the differentials in the use of antenatal care in the rural and urban areas of Nigeria.

In conclusion, age, region, women education, religion, distance to health facility, partner's education, occupation, number of living children, wealth and residence should be addressed by any public health intervention that seeks to promote antenatal care use in Nigeria. This is because this study revealed a significant association between antenatal care and age, region, women education, religion, distance to health facility, partner's education, occupation, number of living children, wealth and residence. However, if the recommendations given in this study were implemented there should be an improvement in the level of antenatal care use in the rural and urban areas of Nigeria as well as in Nigeria as a whole. Specifically, the urban poor and the rural poor would increase their level of antenatal care use and thus reduce the high incidence of maternal and neonatal death in Nigeria that results from poor use of antenatal care. This is because the possible solutions to the problem of low use of antenatal care in the rural compared to the urban area of Nigeria as well as among the poor in both the rural and urban Nigeria has been provided by the recommendations from this study.

6.4 LIMITATIONS OF THE STUDY:

This study is limited in its inability to predict the causal determinants of the differential in the pattern of antenatal care utilization among urban compared to the rural women in Nigeria. We cannot conclude that the independent variables (determinants of urban-rural differentials) are the cause of the dependent variable (antenatal care use) in a cross-sectional study. Also, the temporal relationship (that is the timing of occurrence of either the dependent or independent variables) cannot be determined using a cross- sectional study. Other studies such as cohort or case control study for example, can be conducted to investigate the causal- effect relationship as well as the temporality between the socio-demographic and health factors that may be associated with the differentials in the pattern of antenatal care utilization between urban poor and rural women in Nigeria (Tran 2011).

Also, certain qualitative questions that should explore salient factors associated with rural-urban differentials in antenatal care utilization pattern would not be captured in this study. This is because the cross-sectional data used for analysis in this study did not ask such qualitative questions during survey. For instance, questions such as the cultural practices that disallow women form usage of these antenatal services were not asked in the Nigerian Demographic and health survey used for this study. In addition, changes in health outcomes cannot be captured by a cross-sectional data but a panel study. This therefore creates potential for endogeneity (due to the omission of possible associated determinants from the analysis) in the study, thereby causing a limitation in the study (Rob and Amy, 2002). Therefore, panel studies should be conducted for further research.

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