EFFECTS OF ANTENATAL AND POSTNATAL CARE SERVICE UTILIZATION ON MATERNAL PRACTICES IN NIGERIA

BY

JINADU ARISEKOLA ADEMOLA (M.B, B.S)

MATRICULATION NO: 98968

A PROJECT SUBMITTED TO THE DEPARTMENT OF EPIDEMIOLOGY AND MEDICAL STATISTICS, FACULTY OF PUBLIC HEALTH, COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS OF SCIENCE DEGREE IN EPIDEMIOLOGY AND MEDICAL STATISTICS

APRIL, 2014

CERTIFICATION

I certify that this work was carried out by Jinadu Arisekola Ademola in the Department of Epidemiology, Medical Statistics and Environmental Health, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.

Supervisor

Dr. Olufunmilayo I. Fawole

(MBBS, M.Sc. Epid. & Med. Stat. (Ib), F.M.C.P.H, F.W.A.C.P, Cert, Clinical Epid)

Co-Supervisor

Dr. B.O. Adedokun

MBBS, M.Sc. Epid. & Med. Stat. (Ib)

DEDICATION

This work is dedicated to the Almighty God, my mother AND my lovely brother who always stands by me at all times.

ACKNOWLEDGEMENTS

My unquantifiable gratitude goes to my supervisors Dr. I.O Fawole and Dr. B.O. Adedokun who painstakingly taught and guided me through every stage of writing this thesis. I am indeed very grateful.

I am also grateful to all my lecturers in the Department of Epidemiology, Medical Statistics and Environmental Health, College of Medicine, University of Ibadan, for being helpful especially in the impartation of knowledge in one way or the other.

I also want to appreciate my colleagues especially Moji Fadairo, for their cooperation that was of great assistance in carrying out my responsibility as the class governor (2012/2013 session).

ABSTRACT

Background: Despite the international emphasis in the last few years on the need to address the unmet health needs of pregnant women and children, ANC and PNC services are still being under-utilized in sub-Saharan Africa, Nigeria inclusive. This has resultant negative effects on maternal modern family planning and childhood immunization services utilization. The large majority of women still do not make use of these services which in turn affects their use of modern family planning methods and childhood immunization services, hence the need identify the pattern and effects of ANC and PNC services utilization as well as other demographic factors on maternal family planning and childhood immunization utilization.

Method: The study was a secondary data analysis of use of modern family planning and childhood immunization services among women who had given birth in the previous five years and utilized ANC and PNC services using 2008 NDHS data, a cross sectional survey women of reproductive age in six geo-political zones in Nigeria. The study included 18,028 women of reproductive age groups. Data was analyzed using SPSS version 15.0. Univariate analysis was employed to calculate frequencies and distributions of each variable. Chi-square test was used for bivariate analyses to test the significance of the association between categorical variables. Logistic regression analysis was performed to identify the factors associated with the outcome variable. A p-value < 0.05 was considered to indicate statistical significance.

Results: The mean age of the women was 30.7 $\pm$ 6.7 years and ranged between 15-49 years. The prevalence of ANC services utilization as at last pregnancy was 60% while that of PNC services utilization was 8.1%. After adjusting for other variables, respondents who received ANC services were about twice more likely to utilize modern family planning methods compared to those who did not [OR 1.59 (95% CI: 1.39-1.83)]. Also, respondents who received PNC services were about twice more likely to utilize modern family planning methods compared to those who did not utilize these services [OR 2.30 (95% CI: 1.65-3.27)].

As regards childhood immunization, respondents who received ANC services were three times more likely to immunize their children compared to those who did not utilize these services [OR 3.38(95% CI: 2.96-3.86). Similarly, those respondents who received PNC services were two and a half times more likely to immunize their children compared to those who did not utilize these services [OR 2.59 (95% CI: 1.84-3.65)].

Conclusion: The study shows that adequate utilization of ANC and PNC services is key to utilizing maternal modern family planning and childhood immunization services. All these services are very important in promoting maternal and child health which can lead to realization of MDG 4 and 5. Therefore, awareness and public health education campaigns on these services should be reinforced.

Keywords: Antenatal care utilization, Postnatal care utilization, Modern family planning utilization, Childhood immunization

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES

ABBREVIATIONS

ANC	Antenatal Care
DHS	Demographic and Health Survey
GPNC	Group Prenatal Care
LBW	Low Birth Weight
NDHS	Nigeria Demographic and Health Survey
NPC	National Population Commission
PNC	Postnatal Care
UNICEF	United Nations Children's Fund
WHO	World Health Organization

CHAPTER ONE
INTRODUCTION

1.1 Background

Inadequate antenatal and postnatal care services Utilization remains a major problem especially in developing countries including Nigeria. This influences utilization of maternal health care services and ultimately results in high maternal and child mortality. These maternal practices include the utilization of family planning services, immunization services, exclusive breastfeeding practices and utilization of skilled birth attendants at delivery. Globally, every minute, at least one woman dies from complications related to pregnancy or childbirth. This means 287 000 women are affected a year. In addition, for every woman who dies in childbirth, around 20 more suffer injury, infection or disease. This approximates to 10 million women each year (WHO, 2013).

Also, about fifty-two percent of Nigerians live in rural areas. Most of these areas lack access to modern medical facilities predisposing pregnant women to preventable adverse outcomes. Most of these adverse outcomes result from delay in seeking care, getting to health centers when care is sought, receiving care on getting to the health center, and referring patients to more advanced centers when necessary (Mojekwu and Ibekwe, 2012).

Antenatal care is the entry point to the formal health care system and provides a solid base to monitor and improve the mother-baby health by identifying, preventing and controlling antenatal complications at the earliest stage. The antenatal health care package includes recording medical history, assessment of individual needs, advice and guidance on pregnancy and delivery,

screening tests, education on self-care during pregnancy, identification of conditions detrimental to health during pregnancy, first line management and referral if necessary (WHO, 2010).

The new World Health Organization (WHO) model of antenatal care separates pregnant women into two groups: those likely to need only routine antenatal care (75% of the total population of pregnant women), and those with specific health conditions or risk factors that necessitate special care (25% of pregnant women). For the first group, a standard programme of four antenatal visits is recommended although additional visits should be recommended should conditions emerge which require special care. This guideline is also specific on the timing and content of antenatal care visits based on mothers' gestational age. The guidelines stipulate that "only examinations and tests that serve an immediate purpose and that have been proven to be beneficial should be performed. These examinations include measurement of blood pressure, testing of urine for bacteriuria and proteinuria, and blood tests to detect syphilis and severe anemia. Routine weight and height measurement at each visit is considered optional (WHO, 2001).

Post- natal care is the care given to the mother and the newborn just after delivery and through the first six weeks of life. It is especially critical for newborns and mothers. For both newborns and mothers, the highest risk of death occurs at delivery, followed by the first hours and days after childbirth (*Erin et 'al, 2007).*

Basic care for all newborns should include promoting and supporting early and exclusive breastfeeding. keeping the baby warm, increasing hand washing and providing hygienic umbilical cord and skin care, identifying conditions requiring additional care and counselling on when to take a newborn to a health facility. Newborns and their mothers should be examined for danger signs at home visits (WHO, 2013). Since most of newborn deaths occur among low birth

weight (LBW) babies, PNC should also include extra care of LBW newborns for breastfeeding, warmth, and early identification of danger signs(Lawn et'al,2005).

For mothers, recommended care include monitoring and referral for complications such as excessive bleeding, pain, and infection; counseling on breast care and breastfeeding; and advice on nutrition during breastfeeding, newborn care practices, and family planning. PNC services can be delivered at a health facility, through home visits by health workers, or through a combination of care in the facilities and at home (Warren et al, 2006) so that identification, referral, and treatment of complications can occur as early as possible.

More so, studies have also shown that the majority of maternal deaths and disabilities can be prevented through early and timely access to and utilization of quality MHCS (Mekonnen & Mekonnen, 2002; Mpembeni, 2007).

1.2. Problem statement

In developed countries, 97% of women make at least one antenatal visit; 99% deliver with a skilled attendant; and 90% make at least one postnatal visit (Mwifadhi et'al, 2009). However, in developing countries coverage of at least one ANC visit is relatively low at 69% in Sub-Saharan Africa compared to the developed country (Mwifadhi et'al, 2009). According to Demographic and Health Survey (DHS) data from 23 African countries, two-thirds of women in Sub-Saharan Africa give birth at home, but only 13% of all women receive a postnatal visit. Although attendance at ANC is encouraging, worrying gaps exist in provision, and coverage statistics are usually based on women who have only one ANC visit, whereas four visits are recommended, and ANC quality varies. Much less is also known about the utilization of PNC (Mwifadhi et'al, 2009).

Despite the international emphasis in the last few years on the need to address the unmet health needs of pregnant women and children, progress in reducing maternal mortality has been slow. It is particularly worrying in sub-Saharan Africa where over 162,000 women still die each year during pregnancy and childbirth. Most of these deaths have been attributed to poor utilization of maternal and child health services resulting from lack of access to skilled delivery attendance and emergency care. This has resultant effect on maternal immunization and family planning practices in (Yalem et'al, 2013).

Nigeria has one of the worst records of maternal deaths in the world where only 58% of women have attended at least one antenatal clinic during pregnancy, 39% of births are attended to by a skilled professional, 35% of deliveries take place in a health facility and 43.7% receive postnatal care (NDHS, 2008). The problem of poor organization and utilization of maternal health services has always been a major challenge. The Nigerian health system as a whole has been plagued by problems of service quality, including unfriendly staff attitudes to patients, inadequate skills, decaying infrastructures, and chronic shortages of essential drugs. Electricity and water supply are irregular and the health sector as a whole is in a dismal state. All these factors contribute to poor utilization maternal and child health care services (Joseph and Uche, 2012).

In the same vein, the current prevalence rate for contraceptive use in Nigeria is approximately 11%–13%. This rate is very low in spite of the high rate of sexual activity and widespread awareness of the various contraceptive methods among Nigerian adolescence and youths. As a result there are many unintended pregnancies and illegal abortions contributing to a high maternal mortality ratio, which seems to indicate a large unmet need for contraceptive use (Emmanuel et'al, 2010).

Also, the deaths of newborn babies in Nigeria represent a quarter of the total number of deaths of children under-five. The majority of these occur within the first week of life, mainly due to complications during pregnancy and delivery which can be attributed to poor utilisation of

maternal and child health services (UNICEF, 2007). According to FBA system analyst report in 2005, under-five mortality rate in Nigeria is one of the highest in the world, and vaccine preventable diseases are said to be responsible for at least 20% of these deaths. This has also been attributed to poor maternal utilization of childhood immunization services.

1.3 Justification

Assessing progress towards achieving the millennium development goals (MDG) would not be possible without examining the utilization of antenatal and postnatal services which are one of the indicators. MDGs goal 4 and 5 aim at reducing by two thirds and three-quarters between 1990 and 2015, the under-five mortality rate and the maternal mortality ratio respectively. These targets will be a mirage if research are not conducted to guide policy formulation. Hence, the results of this study will guide stakeholders in maternal and child health care to address gaps identified and hereby improve maternal and child health practices.

Available evidence has also shown that only a small proportion of Nigerian women access postnatal care and practice exclusive breastfeeding. Both interventions are critical to the survival of the mother and her newborn. Poor ANC utilization has been identified as one of the militating factors against the good practice of these interventions (Joseph et'al, 2013).

Also, several studies have been conducted on the factors influencing ANC and PNC utilization while others have assessed the quality of these services. This study however assessed the association between utilization of these services and maternal and child health outcomes. The result will guide policy makers and programmers to make informed decisions and interventions in the area of MCH services. It will also improve pregnant women's appreciation of the benefits of antenatal care services utilization. Ultimately, this will reinforce good health-seeking behavior and therefore could reduce the present high rate of maternal mortality in the country.

1.4 RESEARCH QUESTIONS

1. What is the proportion of pregnant women utilizing ANC and PNC in Nigeria?
2. Does utilization of ante-natal and post-natal services influence modern family planning use?
3. Does utilization of ante-natal and post-natal services influence childhood immunization?
4. What are the socio-demographical factors associated with utilization of ANC and PNC services?
5. What are the predictors of family planning utilization among women in Nigeria?
6. What are the predictors of childhood immunization among women in Nigeria?

1.6 RESEARCH HYPOTHESIS

NULL HYPOTHESIS

1. There is no association between ante-natal and post-natal services utilization, and modern family planning use in Nigeria
2. There is no association between ante-natal and post-natal services utilization, and childhood immunization in Nigeria
3. There is no association between the socio-demographical factors and utilization of ANC and PNC services

ALTERNATIVE HYPOTHESIS

1. There is an association between ante-natal and post-natal services utilization, and modern family planning use in Nigeria

2. There is an association between ante-natal and post-natal services utilization, and childhood immunization in Nigeria
3. There is an association between the socio-demographical factors and utilization of ANC and PNC services

1.5 Broad Objective

- To determine the association between the utilization of both ANC and PNC services on maternal family planning and childhood immunization practices

1.51 Specific Objectives

1. To determine the proportion of women who utilized both antenatal and postnatal clinic services in Nigeria
2. To determine the influence of utilization of both antenatal and postnatal clinic services among women on modern family planning use in Nigeria
3. To determine the influence of utilization of both antenatal and postnatal clinic services among women on childhood immunization in Nigeria
4. To identify the predictors of family planning utilization women in Nigeria
5. To identify the predictors of childhood immunization among women in Nigeria

CHAPTER 2

LITERATURE REVIEW

2.1 ANC and PNC services status in Nigeria

Utilization of Obstetric Services in Nigeria is very low. Only a third of the deliveries being conducted under supervision of trained health personnel. Consequently maternal and infant mortality rates are unacceptably high at 1000/100,000 and 100/1000 live births per year respectively (Bawa et'al, 2004).

Using the Nigeria Demographic and Health Survey data of 1999 and 2003, the results of the antenatal care attendance among women of reproductive age in Nigeria show that the percentage of women who consulted doctors during pregnancy fell from 24.9% in 1999 to 21.8% in 2003(Sulaiman and Kareem,2009). Although the number of women who visited traditional birth attendants decreased by 1.7%, an increase of 2.5% was recorded among those who never attended any antenatal care. With maternal mortality rate of 1,100 per 100,000 live births, Nigeria is one of the countries with the highest maternal mortality. This, however, may have been occasioned by the low antenatal care attendance (Sulaiman and Kareem,2009).

In line with MDG goal 5 which aims at 75% reduction in the maternal mortality ratio (MMR) from 1990 to 2015, In 2005, the Nigerian government with the support of the World Health Organization adopted a road map to attain the maternal and child health MDGs (WHO, 2005). Unfortunately, the decline in the number of new maternal mortality estimates confirm that the number of women dying in pregnancy and childbirth has declined dramatically in developed

countries. This is not the case in developing countries including Nigeria where the decline rate has been very slow since the launch of "the Nigerian Road Map" in 2005.

2.2 Pattern of utilization of ANC and PNC

Improving maternal and newborn health requires good utilization of antenatal and postnatal services through strengthening of existing evidence-based interventions. These packages include tetanus immunization, syphilis screening and treatment, malaria prophylaxis in ANC and PNC. Specifically, this includes packages in maternal and child immunization, syphilis screening and treatment, malaria prophylaxis (Mwifadhi et'al, 2009).

In a systematic review of twenty eight papers of the factors affecting the utilization of antenatal care in developing countries, the commonly identified factors include maternal education, husband's education, marital status, availability, cost, household income, women's employment, media exposure and history of obstetric complications, cultural beliefs and ideas about pregnancy also had an influence on antenatal care use. Parity had a statistically significant negative effect on adequate attendance. Whilst women of higher parity tend to use antenatal care less, there was interaction with women's age and religion (Bibha et al, 2008).

A community based survey conducted in rural western Kenya on the use of antenatal services and delivery care among women found that most women (64%) first visited the ANC in the third trimester. A perceived lack of quality in the ANC was associated with a late first ANC visit. Women who did not visit an ANC were more likely to have less than 8 years of education (Anna et'al 2006).

countries. This is not the case in developing countries including Nigeria where the decline rate has been very slow since the launch of "the Nigerian Road Map" in 2005.

2.2 Pattern of utilization of ANC and PNC

Improving maternal and newborn health requires good utilization of antenatal and postnatal services through strengthening of existing evidence-based interventions. These packages include tetanus immunization, syphilis screening and treatment, malaria prophylaxis in ANC and PNC. Specifically, this includes packages in maternal and child immunization, syphilis screening and treatment, malaria prophylaxis (Mwifadhi et'al, 2009).

In a systematic review of twenty eight papers of the factors affecting the utilization of antenatal care in developing countries, the commonly identified factors include maternal education, husband's education, marital status, availability, cost, household income, women's employment, media exposure and history of obstetric complications, cultural beliefs and ideas about pregnancy also had an influence on antenatal care use. Parity had a statistically significant negative effect on adequate attendance. Whilst women of higher parity tend to use antenatal care less, there was interaction with women's age and religion (Bibha et al, 2008).

A community based survey conducted in rural western Kenya on the use of antenatal services and delivery care among women found that most women (64%) first visited the ANC in the third trimester. A perceived lack of quality in the ANC was associated with a late first ANC visit. Women who did not visit an ANC were more likely to have less than 8 years of education (Anna et'al 2006).

In another community based cross-sectional study conducted among 360 pregnant women in Jimma town south west Ethiopia, it was revealed that about 76.7% of the women have attended antenatal care and 23.3% have not attended at all. Literacy status, income, gravidity, religion and occupation showed statistically significant association with utilization of antenatal care. The study also showed that about 42.8% of the attendants have made their first antenatal visit in the third trimester of pregnancy. Out of the total only 6.5% the studied women had the recommended four visits. Women in the age group 15-24 years are more likely to attend ANC 2.75 times larger than that of women in the age group (Fekede and Mariam,2006).

Also, a community based survey conducted in rural western Kenya on the use of antenatal services and delivery care among women showed that 90% (635) of the participants visited the a ANC clinic at least once during their last pregnancy (Anna et'al, 2006).

In a study conducted in Kumbotso Village, Northern Nigeria on the determinants of utilization of antenatal services, of the 200 women studied, 59%(118) utilized antenatal care services during pregnancy. A majority (86%) of those who attained secondary school education, all of those with post-secondary education and 83% of those whose husbands had post-secondary education utilized antenatal care services (Kabir et al. 2005).

Also, a study done on the determinants of antenatal care service utilization in Nigeria using data from Demographic and Health Surveys for 2003 and 2008.The results show that women education beyond primary education level increases significantly the likelihood that a pregnant woman would complete at least four antenatal visits before delivery. The results also show that household wealth status has significant positive effect on the number of visits before delivery. There are significant differences in the number of antenatal visits determined by geopolitical zones and the place of antenatal also determines significantly the number of visits. These

findings suggest that there is room for policy to control the attitude of women to care utilisation during pregnancy by influencing their education level and income. *(Emmanuel et'al, 2012).*

In a study conducted by trained midwives among 107 pregnant women on barriers to the use of ANC and obstetric care services in rural community in Kano State, Northern Nigeria, findings indicate that the majority of women (88%) did not have four antenatal care visits and 96·3% had delivered or plan to deliver at home without a skilled attendant. Major barriers identified were economic, cultural and those related to the women's perception of their condition. Then, it was recommended that poverty reduction and economic empowerment of rural women are prerequisites for any tangible improvement in the utilisation of antenatal care and obstetric delivery services (Adamu and Salihu 2002)

In another study on the determinants of use of maternal health services in Nigeria using Data from the 2005 National HIV/AIDS and Reproductive Health Survey, it was found that approximately three-fifths (60.3%) of the mothers used antenatal services at least once during their most recent pregnancy, while 43.5% had skilled attendants at delivery and 41.2% received postnatal care(Babalola and Fatusi, 2009).

There are commonalities and differences in the predictors of the three indicators of maternal health service utilization. Education is the only individual-level variable that is consistently a significant predictor of service utilization, while socio-economic level is a consistent significant predictor at the household level. At the community level, urban residence and community media saturation are consistently strong predictors (Babalola and Fatusi, 2009).

In contrast, some factors are significant in predicting one or more of the indicators of use but not for all. These inconsistent predictors include some individual level variables (the woman's age at

the birth of the last child, ethnicity, the notion of ideal family size, and approval of family planning), a community-level variable (prevalence of the small family norm in the community), and a state-level variable (ratio of PHC to the population) - (Babalola and Fatusi, 2009).

A study conducted in Osun State among pregnant women or women who already had a child before showed that most of the respondents (94.8%) delivered in health care facilities with the supervision of trained health personnel. In addition, the study also showed a strong influence of mother's education and economic status of the family respectively on the use of maternal health care services (Egbewale and Bamidele,2009).

Another study done on maternal health-seeking behavior and associated factors in Ologbo community, South-south zone of Nigeria among 81 women that delivered within a 1-year period showed that only 9.9% received antenatal care, 6.2% received two doses of tetanus toxoid, while 4.9% attended in 2006 postnatal clinic (Osubor et al 2006).

A study conducted in University College Hospital and Adeoyo Maternity Hospital, both in Ibadan, on the utilization of malaria preventive measures found that most (95.6%) mothers used one or more malaria control measures. The most commonly used vector control measures were window net (84.0%), insecticide spray (71.5%) and insecticide treated bed nets (20.1%), while chemo-prophylactic agents were pyrimethamine (23.5%), Intermittent Preventive Treatments with Sulphadoxine-Pyrimethamine (IPTsp) (18.5%) and intermittent chloroquine (9.5%) and 21.7% used herbal medications (Tongo et al, 2011).

A community- based study carried out among northern Nigeria women, it was found that only 26% of the women surveyed had received any antenatal care and only 13% delivered in a facility with a skilled birth attendant for their most recent pregnancy. However, those who had had at

least one antenatal consultation were 7.6 times more likely to deliver with a skilled birth attendant. Most pregnant women had little or no contact with the health care system for reasons of custom, lack of perceived need, distance, lack of transport, lack of permission, cost and/or unwillingness to see a male doctor (Doctor, 2012).

Another study done in rural Kano on the barriers to the use of Antenatal and obstetric care found that the majority of the women (88%) did not attend four antenatal care, and 96.3% had delivered or plan to deliver at home without a skilled attendant. Major barriers identified were economic, cultural and those related to the women's perception of their condition (Adamu and Salihu, 2002).

In a study conducted to determine the level of maternal care in Northern Nigeria among two hundred and ten mothers of infants aged 0–11 months showed that 50% of the women attended antenatal clinics during their last pregnancy, with a range of ANC coverage by LGA of 14.0–81.0%. The proportion of women who booked in the first, second and third trimesters was 22.8, 63.0 and 14.2%, respectively. The antenatal services offered ranged from 95.7% for abdominal examination to 41.2% for urine examination. Sixty percent of the women received no tetanus toxoid in their last pregnancy, 11% had one dose and 29% had at least two doses. Home delivery was the norm throughout the zone with 85.3% of women delivering at home. Up to 80.5% of the deliveries were supervised by personnel with no verifiable training in sanitary birthing techniques. Only 11.4% (233) of those who received ANC had postnatal check-up (Galadanci et"al, 2007)

2.3 Association between utilization of both antenatal and postnatal clinic services, and immunization and modern family planning use.

Utilization of antenatal and postnatal care has been found to influence maternal practices

The provision of maternal and child health services is also known to be motivating factor for couples to adopt family planning, hence contraceptive prevalence is usually higher among ANC users compares to ANC non-users(Pathak et'al,2001).

Evidence has shown that practice group prenatal care (GPNC) influences postpartum family-planning utilization In study done in South Carolina to evaluate the impact of group prenatal care (GPNC) on postpartum family-planning utilization showed that utilization of postpartum family-planning services was higher among women participating in GPNC than among women receiving individual prenatal services at 4 points in time (Ilale et'al, 2014).

Also, a study conducted to assess the knowledge and practice of family planning among antenatal care attendees at Nnewi, South- East Nigeria showed that three hundred and forty (95.5%) respondents knew about family planning. Out of which 260 (76.5%) had ever used a modern method. The male condom (256; 75.3%) and the Billings method (150; 44.1%) were the commonly known methods. Also, the commonest used methods were the male condom (144; 55.4%) and Billings method (96; 36.9%). Birth spacing (248; 72.9%) and limiting births (138, 40.6%) were mainly identified as the benefits of family planning and only 6 (1.7%) respondents identified family planning as being important in the reduction of maternal mortality. The major sources of information on family planning were health workers (224; 65.9%) and the radio (126; 37.1%). (Igwegbe et al, 2010).

In a similar study to determine the knowledge, attitude and practice of family planning methods among women attending antenatal clinic in Jos, North-central Nigeria, most of the women

(60.0%) received their family planning information in the hospital. Knowledge (88.1%) and acceptability (75.4%) of family planning methods were high, while modern family planning methods use was 44.0%. More women (39.3%) were aware of oral contraceptive pills. Common methods used were male condom (59.5%), oral contraceptive pills (47.0%) and injectables (27.1%) among others. Seventy five percent of the women agreed that both husband and wife should jointly decide for a family planning method. Sixty eight percent of women would like to use contraceptive methods after delivery of the index pregnancy. The desire for more children accounted for 36.5% among those that refused use of contraceptive method after delivery.(Utoo et'al, 2010.)

2.4 Association between utilization of both antenatal and postnatal clinic services, and childhood immunization.

In another study that examined the predictors of Bacille Calmette-Guérin (BCG) immunization status among infants in northern Nigeria using a behavioral-ecological mode, the findings showed that only 37.3 percent of the children had received BCG vaccine. The study also found that BCG immunization status in northern Nigeria was influenced by multiple layers of factors, including child's characteristics, parental or household factors, community characteristics, vaccine supply and the policy environment. The parental and household predictors of BCG immunization status include maternal use of antenatal care, maternal knowledge about immunization, maternal exposure to child health information, social influence and paternal approval of immunization. At the child's level, place of birth and ownership of an immunization card were the two most significant predictors. Both the regularity of vaccine supply to the health facility and the state of residence were associated independently with BCG immunization status.

These findings stressed the need for interventions at multiple levels in order to increase BCG immunization status (Babalola, 2009).

2.5 Influence of the number of ANC visits on modern family planning use.

Antenatal and postnatal visits period provides an opportunity for couples to have the most frequent contact with the health care system and this enables delivery of family planning counseling and services, and other postnatal services to both mother and the child. Therefore, integrating Postpartum Family Planning Services into ANC, labor and delivery, PNC and well-child health visits allows women to make use of these services adequately(WHO,2009).

The WHO recommends four antenatal care visits for women whose pregnancies are progressing normally, with the first visit in the first trimester (ideally before 12 weeks but no later than 16 weeks), and at 24–28 weeks, 32 weeks and 36 weeks (Villar and Bergsjo, 2003).

Evidence has shown that infants whose mothers received the WHO recommended minimum of four antenatal visits were significantly more likely to be associated with improved immunization uptake than those with less than four visits (Bondy et'al, 2009).

A hospital-based cross-sectional survey carried out among 236 HIV-positive and 162 HIV-negative postpartum women interviewed within 12 months of their expected delivery date to determine Pregnancy desires, and contraceptive knowledge and use among prevention of mother-to-child transmission clients in Rwanda showed that women who reported making two or less antenatal care visits were 77% less likely to use modern family planning (Elul et'al,2009)

CHAPTER THREE

METHODOLOGY

3.1 STUDY AREA

Nigeria is situated in the West Africa region. Nigeria is made up of 36 states and a Federal Capital Territory (FCT), grouped into six geopolitical zones: north central, north east, north west, south east, south-south, and southwest. There are 774 local government areas (LGAs) in the country. Nigeria's 2013 projected population using 2006 national census is 170,157,060 based on an annual growth rate of 3.2%. The population density is estimated at 180 people per square kilometer. This makes Nigeria the most populous country in Africa. The country has about 374 identifiable ethnic groups. The major ethnic groups are the Hausa/Fulani, Yoruba and Igbo which account for 68% of the population while, Edo, Ijaw, Kanuri, Ibibio, Ebira, Nupe and Tiv comprise 27%. The remaining minorities account for the 5% of the population.

3.2 STUDY DESIGN

Study is a secondary data analysis of the 2008 Nigeria Demographic and Health Survey (NDHS) which utilized a cross-sectional population based study design. The 2008 NDHS was a cross sectional survey of the country.

3.3 STUDY POPULATION

The population covered by the 2008 NDHS were women aged 15-49 years and men aged 15-59 years in Nigeria. For the purpose of this study, women within the reproductive age of 15-49 years would be the target population. The study population for the study would be obtained as sub-samples from the samples of women interviewed.

ELIGIBILITY CRITERIA; For this study, women with live births in the five years preceding the survey were selected from the 2008 NDHS data.

3.4 SAMPLE SIZE ESTIMATION

For the 2008 NDHS, the sample size was determined using the following formula:

$$P1i = (a / A)$$

Where,

a: is the number of clusters to be selected in the given state

A: is the total number of clusters in the given state.

In each selected cluster, a complete household listing operation was carried out and households were selected to achieve a fixed sample taken per cluster. However, since the 2008 NDHS sample was unbalanced among residence area and state, a final weighing adjustment procedure to provide estimates at every other domain of study was required.

In a given state, if c is the fixed number of households selected out of the total households (Li)— found in the 2008 listing process—for the *ith* cluster, then the household probability in the selected *ith* cluster can be expressed as:

$$P2i = (c / Li)$$

The final households overall probability in the *ith* cluster could be calculated as:

$$fi = P1i * P2i$$

And the sampling design weight for the *ith* cluster is given as:

$$1/fi = 1/(P1i * P2i)$$

For this study all the eligible women were studied.

3.5 SAMPLING FRAME

The NDHS 2008 was used as a national representative sample. The sample frame for these surveys was the list of enumeration areas (EAs) developed for the 1991 Population Census. The 36 states and FCT in Nigeria were subdivided into local government areas (LGAs), and each LGA is divided into localities. Also, for implementation of the 1991 Population Census, each locality was subdivided into enumeration areas (EAs).

The sampling frame for this survey was the list of enumeration areas (EAs) developed for the 1991 Population Census. A list of approximately 212,080 EAs, with household and population information (from the 1991census) for each EA, was evaluated as a potential sampling frame for the 2003 and 2008 NDHS. The EAs were grouped by states, LGAs, and by localities. The EAs was also stratified separately by urban and rural areas. In the NDHS 2008, at the time of survey implementation, the list of EAs of 2006 population census used did not have census information for households and the population because the census frame was under segmentation. Therefore, no household or population information was available at the EA level. The need for sampling planning and selection of such information on urban/rural was important; therefore, each EA was classified as urban or rural. Any locality with less than 20,000 populations in the LGA constitutes a rural area while a population greater than 20,000 will constitute an urban area.

3.6 SAMPLING TECHNIQUE

The sampling technique used for 2008 NDHS was a stratified two-stage cluster design.. There were a total of 888 clusters, 286 in the urban and 602 in the rural areas selected in 2008 survey. A minimum requirement of 80 households (400 populations) for the cluster size had been imposed in the design for 2008 survey. If the selected EA is small during the listing process, then a supplemental household listing were conducted in the neighboring EA. The number of clusters in each state was not allocated proportional to their total population (or households) due to the need to obtain estimates for each of the 36 states and the FCT.

3.7 DATA COLLECTION PROCEDURES

The primary data were collected by face to face method using three questionnaires namely household, women and men questionnaires. Information was obtained on demographic characteristics, socioeconomic characteristics, ANC utilization, PNC utilization, modern family planning utilization, immunization of their children and ANC visits. For this a study, secondary data was collected using information from the household and women questionnaires of the NDHS 2008 dataset administered to the selected household and pregnant women of age group15-49 years respectively was utilized.

3.8 VARIABLES USED

Independent Variables used in this study included:

- ANC services Utilization(Yes/ No)
- PNC Services Utilization(Yes/ No)
- Mother's age
- Woman's residence (rural/urban)

- Woman's highest level of education(No education, primary , secondary and higher)
- Religion (Catholic, Other Christian, Islam, Traditionalist, others)
- Region (North/South)
- No of ANC Visits (<6, 4-6, >6))
- Service provider during ANC/PNC

Dependent variables used:

- Immunization Use (Yes/ No)
- Modern family planning use (Yes/ No)

3.9 DATA MANAGEMENT

Data was analyzed using SPSS version 15.0. Descriptive statistics was used to describe the data.

Univariate analysis was employed to calculate frequencies and distributions of each variable.

Chi-square test was used for bivariate analyses to test the significance of the association between ANC and PNC utilization and maternal practices.

Logistic regression analysis was performed for the various factors to identify the factors influencing maternal practices of family planning and childhood immunization. A p-value < 0.05 was considered to indicate statistical significance.

3.10 LIMITATIONS

As with most secondary data analysis, there were some inherent limitations. Self-reporting bias and retrieval of records from cards because the study was based on self-reporting and records from cards may also result in inaccurate measurement. This fact cannot be easily ignored because in many parts of sub-Saharan Africa, it is not acceptable for women to talk about their reproductive life freely irrespective of the circumstances that surround the need to divulge such

information. However, most relevant data thought to be relevant to the study was sought and collected.

3.11 ETHICAL CONSIDERATION

The ethical approval was collected from a Ethical Review Committee (ERC). Confidentiality of the data of the women released was maintained. Participation was voluntary. Dissemination of the findings in the study to the appropriate authority for proper policies amendment was properly planned.

For this study, permission to use the NDHS data was sought and granted from Measure DHS

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of women

Table 1 below shows the distribution of selected socio demographic characteristics of the women. The mean age of the women was 30.7 ± 6.7 years and ranged between 15-49 years. About one third of the women were from the North west (27.1%), followed by those from the north east (22.0%), north central (18.6%), south west (12.6%), south south (11.7%) and south east (8.1%). Majority of respondents were rural dwellers (73.2%) and were married (92.8%). Less than half had no formal education (49.2%) along with their partners (41.0%). Literacy level of the respondents was low with more than half of the respondents not being able to read at all (62.0%). Islam was the most practiced religion (55.5%), followed by other Christian denominations (33.8%) and Catholics (8.7%). There was a decrease in number of women with increase of wealth index, 4760 (26.4%) belonged to the poorest index while 13.8% belonged to the richest index.

Also, majority of the respondents desired more children (73.1%), 11.1% were undecided, 14.3% do not want more children, while 0.2% and 1.2% were sterilized and infecund respectively.

Table 4.1: Socio demographic characteristics of women

Variable	Frequency N(18028)	Percentage
Age (years)		
15-19	1252	6.9
20-24	3527	19.6
25-29	4792	26.6
30-34	3589	19.9
35-39	2699	15.0
40-44	1465	8.1
45-49	704	3.9
Region		
North central	3350	18.6
North east	3972	22.0
North west	4888	27.1
South east	1454	8.1
South south	2101	11.7
South west	2263	12.0
Place of residence		
Urban	4825	26.8
Rural	13203	73.2
Educational level		
No education	8870	49.2
Primary	4062	22.5
Secondary and higher	5096	28.3
Literacy		
Cannot reads at all	11129	62.0
Able to read only parts of a sentence	1212	6.8
Able to read whole sentences	5535	30.9
No card with required language	50	0.3
Blind/visually impaired	13	0.1
Religion		
Catholic	1553	8.7
Other Christian	6051	33.8
Islam	9955	55.5
Traditionalist	339	1.9
Other	26	0.1
Wealth index		
Poorest	4760	26.4
Poorer	4232	23.5
Middle	3506	19.4
Richer	3051	16.9
Richest	2479	26.4

Current marital status		
Never married	455	2.5
Married	16728	92.8
Living together	297	1.6
Others	547	3.0
Fertility preferences		
Want another	13098	73.1
Undecided	1990	11.1
Don't want more children	2566	14.3
Sterilized	35	0.2
Declared infecund	222	1.2

Others include Widowed, Divorced and Not living together

The mean number of children ever born by the women was 4.2 ± 2.7 and ranged from 1-18 births. Figure one shows the distribution number of children among women. There was a decrease in the number of women with increase in number of children with about one third of the women having between 1-2 children (33.3%) others had three children and above.

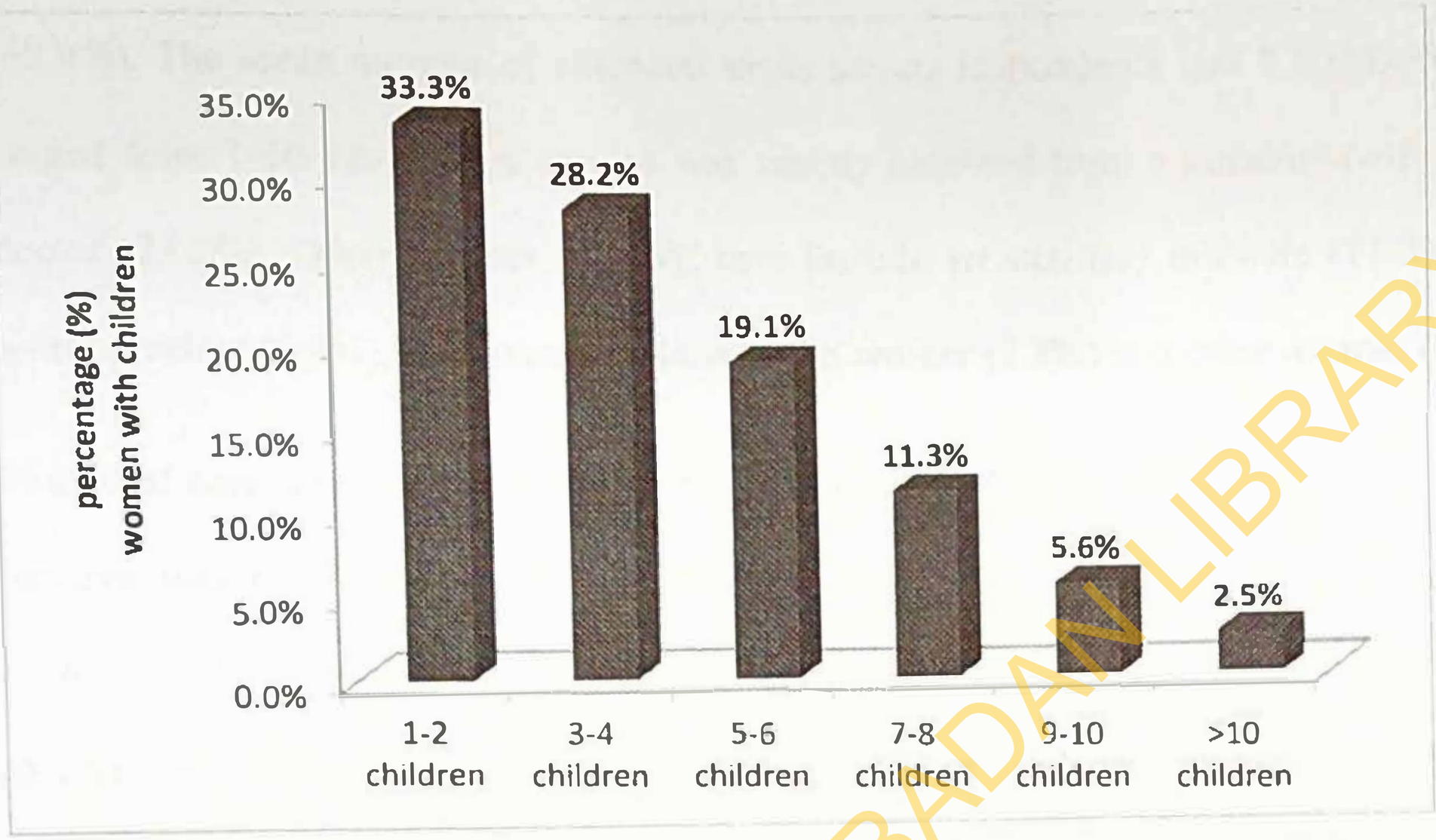

Figure 1: Percentage Distribution of number of women by number of children

4.2 Pattern of ANC and PNC services utilization

The pattern utilization of ANC and postnatal services among women in Nigeria is shown in Table 2 below. More than half of the women received ANC services in their last pregnancy (60.9%). The mean number of antenatal visits among respondents was 7.5 (SD=5.5) visits and ranged from 1-50 visits. This service was mainly obtained from a nurse/midwife (63.1%) or a doctor (33.3%). Other sources of ANC care include an auxiliary midwife (11.7%), traditional birth attendant (5.9%), community/village health worker (5.2%) and other sources (0.6%).

Post natal care services was received by 8.1% (1467) of the women in their last delivery. This services was given mainly by a nurse/midwife (42.8%), traditional birth attendant (27.9%), doctor (11.9%), community/village health worker (9.0%), auxiliary midwife (8.1%) and others (0.3%). Only 6.6% (1,185) women had both ANC and PNC services while 62.5% (11,225) women had either ANC or PNC services.

Table 4.2: Utilization of antenatal and post natal services

Variable	Frequency	Percentage
Received ANC services last pregnancy		
Yes	10943	60.9
No	7013	39.1
Cadre of healthcare provider		
Doctor	3644	33.3
Nurse/midwife	6906	63.1
Auxiliary midwife	1280	11.7
Traditional birth attendant	642	5.9
Community/village health worker	567	5.2
Others	71	0.6
Number of ANC visits		
Mean (SD)	7.5 (5.5)	
<4	294	3.0
4-6	1642	17.0
>6	7715	79.9
Received PNC services last birth		
Yes	1467	8.1
No	16561	91.9
Cadre of healthcare provider		
Doctor	171	11.9
Nurse/midwife	615	42.8
Auxiliary midwife	116	8.1
Traditional birth attendant	400	27.9
Community/village health worker	129	9.0
Others	5	0.3
Had both ANC & PNC services		
Yes	1185	6.6
No	16842	93.4
Had either ANC or PNC		
Yes	11225	62.5
No	6732	37.5

4.21 Pattern of utilization of ANC and PNC services by number of children ever born

Figure 2 shows the pattern of utilization of ANC and PNC services by number of children ever born. There was a decrease in utilization of ANC and PNC services with increase in number of children ever born to women

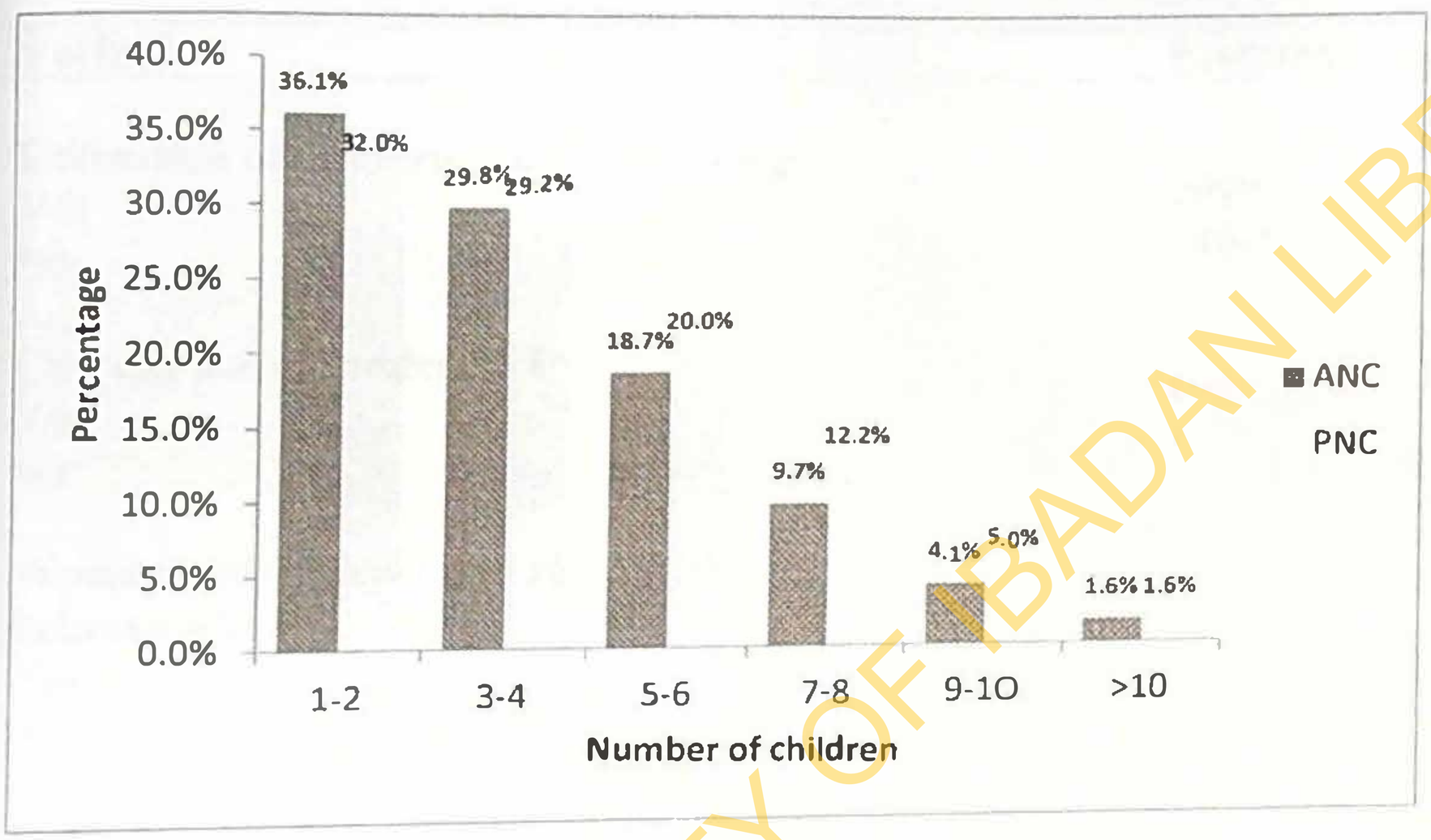

Figure 2: Women's pattern of utilization of ANC and PNC services by number of children ever born

4.3 Maternal family planning and childhood immunization practices

Table 4.3 shows maternal practices of the respondents. About one quarter (21.9%) of the women had ever used a family planning method, and about 9.3% (1685) were currently using a modern method of family planning. Women with at least one child with complete immunization constituted about one third of the population (28.6%).

Table 4.3: Maternal health practices of the respondents

Variable	Frequency	Percentage
Utilization of modern family planning		
Yes	3949	21.9
No	14079	78.1
Current use of modern FP		
Yes	1685	9.3
No	16343	90.7
Women with at least one child with completed immunization		
Yes	5154	28.6
No	12874	71.4

Figure 3 below shows the type of modern family used by the respondents. About one-third of them made use of injectables (29.3%), followed by condom (25.9%). Other methods of modern family planning used include pills (17.2), intrauterine device (5.6%), female sterilization (2.1%) etc.

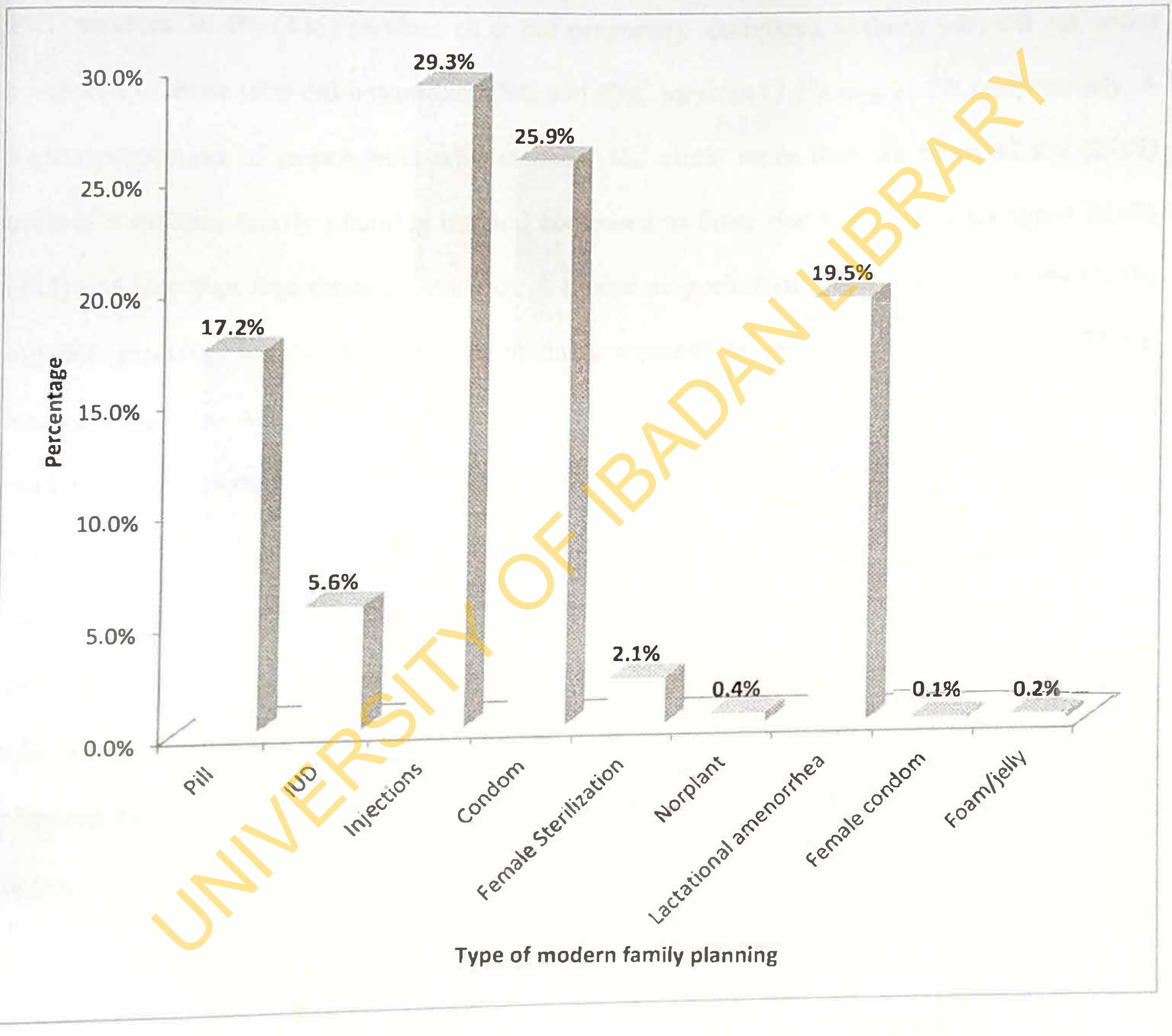

Figure 3: Type of modern family planning used by the respondents

4.4 Factors affecting utilization of modern family planning among women

Table 4a&b shows the association between ANC/PNC utilization, selected characteristics and utilization of modern family planning methods among women. In the total population, a higher proportion of respondents who utilized modern family planning utilized ANC 31.3% (3427) and PNC services 30.4% (446) services as at last pregnancy compared to those who did not utilize compared to those who did not utilize ANC and PNC services (7.2% and 21.2%) respectively. A higher proportion of respondents who visited ANC clinic more than six times 32.8% (2528) utilized a modern family planning method compared to those that had four to six times 26.9% (442) and less than four times 20.4% (60). A higher proportion of urban residents 35.6% (1719) utilized modern family planning methods compared to rural residents 16.9% (2230). Respondents who were currently working 26.1% (3014) had a higher proportion who utilized modern family planning methods compared to not working 14.4% (914). A higher level of education was associated with modern family planning use as respondents who had secondary and higher education 44.2% (2253) had a higher proportion that utilized modern family planning methods compared to those with primary 27.3% (1109) and no education 6.6% (587). Women who were cohabiting with their partners had a higher proportion that utilized modern family planning 44.8% (133) compared to respondents who were never married 35.6% (162), married 20.9% (3499) and others 28.3% (155) .

Table 4.4a: Socio demographic factors affecting utilization of modern family planning among women

Variable	Utilization of modern family planning		TOTAL (%)	X^2test	P value
	Yes (%)	No (%)			
Age (years)					
<25	763 (16.0)	4016 (84.0)	4779(100)	135.64	<0.001
25-34	2044 (24.4)	6337 (75.6)	8381(100)		
35 and above	1142 (23.5)	3726 (76.5)	4868(100)		
Region					
North central	831 (24.8)	2519 (75.2)	3350(100)	2521.38	<0.001
North east	441 (10.3)	3561 (89.7)	3972 (100)		
North west	293 (6.0)	4595 (94.0)	4888 (100)		
South east	427 (29.4)	1027 (70.6)	1454 (100)		
South south	955 (45.5)	1146 (54.5)	2101(100)		
South west	1032 (45.6)	1231 (54.4)	2263(100)		
Place of residence					
Urban	1719 (35.6)	3106 (64.4)	4825(100)	725.19	<0.001
Rural	2230 (16.9)	10973(93.1)	13203(100)		
Religion					
Catholic	513 (33.0)	1040 (67.0)	1553 (100)	1813.05	<0.001
Other Christian	2313 (38.2)	3738 (61.8)	6051(100)		
Islam	1059 (10.6)	8896 (89.4)	9955(100)		
Traditionalist	44 (13.0)	295 (87.0)	339 (100)		
Other	12 (46.2)	14 (53.8)	26 (100)		
Wealth index					
Poorest	379 (8.0)	4381 (92.0)	4760(100)	2395.47	<0.001
Poorer	518 (12.2)	3714 (87.8)	4232(100)		
Middle	716 (20.4)	2790 (79.6)	3506 (100)		
Richer	1032 (33.8)	2019 (66.2)	3051 (100)		
Richest	1304(52.6)	1175 (47.4)	2479 (100)		
Current marital status					
Never married	162 (35.6)	293 (64.4)	455(100)	163.53	<0.001
Married	3499 (20.9)	13229(79.1)	16728(100)		
Living together	133 (44.8)	164 (55.2)	297(100)		
Others	155(28.3)	392(71.7)	547(100)		
Respondent working					
Yes	3014 (26.1)	8554 (73.9)	11568(100)	324.477	<0.001
No	914 (14.4)	5429 (85.6)	6343(100)		

*Others- Widowed, Divorced, Not living together

Table 4.4b: Maternal factors affecting utilization of modern family planning among women

Variable	Utilization of modern family planning		TOTAL (%)	X^2test	P value
	Yes (%)	No (%)			
Fertility preferences					
Want another child	2547 (19.4)	10551(80.6)	13098(100)	644.94	<0.001
Undecided	306 (15.4)	1684 (84.6)	1990(100)		
Dont want more children	991 (38.6)	1575 (61.4)	2566(100)		
Sterilized	35 (100)	0 (0)	35(100)		
Declared infecund	36 (16.2)	186 (83.8)	222(100)		
ANC services last pregnancy					
Yes	3427 (31.3)	7516 (68.7)	10943(100)	1455.34	<0.001
No	504 (7.2)	6509 (92.8)	7013(100)		
PNC services last birth					
Yes	446 (30.4)	1021 (69.6)	1467(100)	67.41	<0.001
No	3503 (21.2)	13058(78.8)	16561(100)		
Ever had ANC & PNC services					
Yes	378 (31.9)	807 (68.1)	1185(100)	74.03	<0.001
No	3571 (21.2)	13271(78.8)	16842(100)		
Ever had ANC or PNC					
Yes	3495 (31.1)	7730 (68.9)	11225(100)	1496.55	<0.001
No	436 (6.5)	6296 (93.5)	6732(100)		
No of ANC visits					
<4	60(20.4)	234(79.6)	294(100)		
4-6	442(26.9)	1200(73.1)	1642(100)		
>6	2528(52.8)	5187(67.2)	77159100)		

4.5 Predictors of family planning utilization

After adjusting for socio demographic and other variables, respondents who received ANC services (OR=1.594; 95%CI=1.390-1.828), PNC services (OR=2.304; 95%CI=1.646-3.265) or received both ANC and PNC services (OR=1.904; 95%CI=1.310-2.767) were twice more likely to utilize modern family planning methods compared to those who did not utilize this services. Also, respondents from regions other than the south west were less likely to utilize modern family planning methods. Similarly, the lower the wealth index of the respondents the less likely they were to utilize modern family planning methods. Also, those not working were less likely to utilize modern family planning methods.

Table 4.5: Predictors of family planning utilization

Variable	Odds ratio	95 % CI	P value
Age (years)			
<25	0.90	0.78-1.03	0.121
25-34	1.06	0.95-1.18	0.277
35 and above	1		
Region			
North central	0.80	0.70-0.92	<0.001*
North east	0.59	0.50-0.69	<0.001*
North west	0.38	0.32-0.45	<0.001*
South east	0.50	0.43-0.60	<0.001*
South south	1.00	0.86-1.14	0.868
South west	1		
Place of residence			
Urban	1.09	0.98-1.21	0.133
Rural	1		
Educational level			
No education	0.82	0.63-1.09	0.177
Primary	1.25	1.00-1.56	0.056
Secondary/Higher	1		
Literacy			
Cannot reads at all	0.45	0.11-1.86	0.267
Read only parts of a sentence	0.79	0.19-3.32	0.752
Able to read whole sentences	0.97	0.23-4.09	0.965
No card with required language	1.08	0.23-5.11	0.920
Blind/visually impaired	1		
Religion			
Catholic	0.39	0.17-0.93	0.033*
Other Christian	0.39	0.17-0.92	0.031*
Islam	0.24	0.10-0.57	0.001*
Traditionalist	0.32	0.13-0.79	0.014*
Other	1		
Wealth index			
Poorest	0.38	0.31-0.46	<0.001*
Poorer	0.39	0.33-0.46	<0.001*
Middle	0.46	0.40-0.53	<0.001*
Richer	0.64	0.57-0.73	<0.001*
Richest	1		
Never married	0.67	0.47-0.95	0.025*
Married	0.84	0.68-1.05	0.123
Cohabiting	1.32	0.94-1.85	0.109
Others	1		

Respondent working			
No	0.77	0.70-0.85	<0.001*
Yes	1		
Fertility preferences			
Want another child	0.35	0.25-0.48	<0.001*
Undecided	0.33	0.21-0.47	<0.001*
Don't want more children	0.69	0.49-0.96	<0.001*
Sterilized/Declared infecund	1		
ANC services last pregnancy			
Yes	1.59	1.39-1.83	<0.001*
No	1		
PNC services last birth			
Yes	2.30	1.65-3.27	<0.001*
No	1		
Ever had ANC & PNC services			
Yes	1.90	1.31-2.77	0.001*
No	1		

*significant; *Others- Widowed, Divorced, Not living together

4.6 Factors affecting complete childhood immunization

Table 6 shows the association between ANC/PNC utilization, selected characteristics and complete childhood immunization. A higher proportion of respondents who completely immunized their children utilized ANC 42.9%(4691) or PNC 38.0% (557) services as at last pregnancy compared to those who did not utilize ANC or PNC services 27.8% (4597). A higher proportion of respondents who had both had ANC and PNC 42.1% (499) had children with complete immunization status compared to those who did not have 27.6% (4655). Women who visited ANC Clinic more than six times 46.0% (354) had a higher proportion who had a child with complete immunization status compared to those that had four to six times 34.5% (567) and less than four times 16.3% (48);

Urban residents 45.6% (2200) had a higher proportion who had children with complete immunization compared to rural residents 22.4% (2954). This was also the case among respondents who were currently working 33.7% (3898) compared to those not working 19.4% (1232). Respondents with secondary education and higher 55.3% (2818) had a higher proportion with children having completed immunization compared to respondents with primary 35.1% (1425) and no education 10.3% (911). Women who were cohabiting 35.0% (104) compared to never married 32.1% (146), married 28.3% (4741) and others 29.8% (163) had a higher proportion of children with complete immunization status.

Table 4.6a: Socio demographic factors affecting complete childhood immunization

Variable	Complete immunization		TOTAL (%)	X^2test	P value
	Yes (%)	No (%)			
Age (years)					
<25	856 (17.9)	3922 (82.1)	4779(100)	382.785	<0.001
25-34	2830 (33.8)	5551 (66.2)	8381(100)		
35 and above	1468 (30.2)	3400 (69.8)	4868(100)		
Region					
North central	1179 (35.2)	2171 (64.8)	3350(100)	3239.62	<0.001
North east	460 (11.6)	3512 (88.4)	3972(100)		
North west	465 (9.5)	4423 (90.5)	4888(100)		
South east	777 (53.4)	677 (46.6)	1454(100)		
South south	935 (44.5)	1166 (55.5)	2101(100)		
South west	1338 (59.1)	925 (40.9)	2263(100)		
Place of residence					
Urban	2200 (45.6)	2625 (54.4)	4825(100)	933.39	<0.001
Rural	2954 (22.4)	10249(77.6)	13203(100)		
Educational level					
No education	911 (10.3)	7959 (89.7)	8870(100)	3322.49	<0.001
Primary	1425 (35.1)	2637 (64.9)	4062(100)		
Secondary and higher	2818 (55.3)	2278 (44.7)	5096(100)		
Literacy					
Cannot reads at all	1621 (14.6)	9508 (85.4)	11129(100)	2945.25	<0.001
Read only parts of a sentence	483 (39.9)	729 (60.1)	1212(100)		
Able to read whole sentences	3006 (54.3)	2529 (45.7)	5535(100)		
No card with required language	19 (38.0)	31 (62.0)	50(100)		
Blind/visually impaired	1 (7.7)	12 (92.3)	13(100)		
Religion					
Catholic	742 (47.8)	811 (52.2)	1553(100)	2060.58	<0.001
Other Christian	2790 (46.1)	3261 (53.9)	6051(100)		
Islam	1529 (15.4)	8426 (84.6)	9955(100)		
Traditionalist	61 (18.0)	278 (82.0)	339(100)		
Other	8 (30.8)	18 (69.2)	26 (100)		
Wealth index					
Poorest	407 (8.6)	4353 (91.4)	4760(100)	3116.80	<0.001
Poorer	709 (16.8)	3523 (83.2)	4232(100)		
Middle	1100 (31.4)	2406 (68.6)	3506(100)		
Richer	1359 (44.5)	1692 (55.5)	3051(100)		
Richest	1579 (63.7)	900 (36.3)	2479(100)		
Current marital status					
Never married	146 (32.1)	309 (67.9)	455(100)	35.84	<0.001
Married	4741 (28.3)	11987(71.7)	16728(100)		
Living together	104 (35.0)	193 (65.0)	297(100)		

Others	163 (29.8)	384 (70.2)	547 (100)		
Divorced	20 (13.6)	127 (86.4)	147(100)		
Not living together	58 (34.1)	112 (65.9)	170(100)		
Respondent currently working					
Yes	3898 (33.7)	7670 (66.3)	11568(100)	408.36	<0.001
No	1232 (19.4)	5111 (80.6)	6343(100)		

Table 4.6b: Maternal factors affecting complete childhood immunization

Variable	Complete immunization Yes (%)	TOTAL (%)	X^2test	P value
Fertility preferences				
Want another child	3521 (26.9)	13098(100)	302.72	<0.001
Undecided	453 (22.8)	1990(100)		
Don't want more children	1088 (42.4)	2566(100)		
Sterilized	17 (48.6)	35(100)		
Declared in fecund	49 (22.1)	222(100)		
Received ANC services last pregnancy				
Yes	4691(42.9)	10943(100)	2789.08	<0.001
No	446 (6.4)	7013(100)		
Received PNC services last birth				
Yes	557 (38.0)	1467(100)	68.82	<0.001
No	4597 (27.8)	16561(100)		
Received ANC & PNC services				
Yes	499 (42.1)	1185(100)	113.55	<0.001
No	4655 (27.6)	16842(100)		
Received either ANC or PNC	4749 (42.3)	11225(100)	2751.66	<0.001
Yes	388 (5.8)	6732(100)		
No				
No of ANC visits				
<4	48(16.3)	294(100)	161.08	<0.001
4-6	567(34.5)	1642(100)		
>6	3547(46.0)	7715(100)		

4.7 Predictors of respondents complete immunization of their child

After adjusting for socio demographic and other variables, respondents who received ANC services in their last pregnancy were about three times more likely to have children with complete immunization status (OR=3.38; 95%CI=2.64-3.86) while those who had PNC services in their last pregnancy were two and a half times more likely (OR= 2.59; 95%CI=1.84-3.65) to have children with complete immunization status compared to those who did not utilize these services. In addition, respondents who had received both ANC and PNC services were about twice more likely to have children with complete immunization status (OR= 2.02; 95%CI=1.40-2.92) compared to those who did not utilize this services. Similarly, the lower the wealth index of the respondents the less likely they were to immunize their children. Also, those not working were less likely to immunize their children.

Table 4.7: Predictors of respondents complete immunization of their children

Variable	Odds ratio	95 % CI	P value
Age (years)			
25	0.57	0.50-0.65	<0.001*
25-34	1.01	0.92-1.12	0.810
35 and above	1		
Region			
North central	0.78	0.68-0.88	<0.001*
North east	0.37	0.32-0.44	<0.001*
North west	0.41	0.35-0.48	<0.001*
South east	0.84	0.71-0.99	0.034*
South south	0.62	0.54-0.72	<0.001*
South west	1		
Place of residence			
Urban	1.02	0.92-1.12	0.763
Rural	1		
Educational level			
No education	0.63	0.48-0.82	<0.001*
Primary	0.82	0.65-1.02	0.079
Secondary/Higher	1		
Literacy			
Cannot reads at all	3.35	0.39-28.74	0.271
Read only parts of a sentence	3.98	0.46-34.28	0.209
Able to read whole sentences	4.24	0.49-36.75	0.190
No card with required language	3.99	0.42-37.06	0.227
Blind/visually impaired	1		
Religion			
Catholic	1.47	0.60-3.62	0.397
Other Christian	1.34	0.55-3.28	0.517
Islam	0.96	0.39-2.35	0.926
Traditionalist	1.00	0.39-2.58	0.997
Other	1		
Wealth index			
Poorest	0.32	0.27-0.39	<0.001*
Poorer	0.43	0.36-0.50	<0.001*
Middle	0.62	0.54-0.72	<0.001*
Richer	0.73	0.64-0.83	<0.001*
Richest	1		

Current marital status			
Never married	1.57	1.09-2.27	0.016*
Married	1.18	0.95-1.47	0.139
Living together	0.87	0.62-1.23	0.436
Others	1		
Respondent working			
Yes	0.81	0.74-0.89	<0.001*
No	1		
Fertility preferences			
Want another child	0.88	0.62-1.26	0.486
Undecided	0.88	0.61-1.27	0.494
Don't want more children	1.04	0.73-1.49	0.829
Sterilized/Declared infecund	1		
ANC services last pregnancy			
Yes	3.38	2.96-3.86	<0.001*
No	1		
PNC services last birth			
Yes	2.59	1.84-3.65	<0.001*
No	1		
Ever had ANC & PNC services			
Yes	2.02	1.40-2.92	<0.001*
No	1		

*significant; *Others- Widowed, Divorced, Not living together

CHAPTER FIVE
DISCUSSION

5.1 Prevalence of ANC utilization

The prevalence of ANC service utilization was 60%. This was similar to the results of a study conducted in Nigeria using Data from the 2005 National HIV/AIDS and Reproductive Health Survey on the determinants of use of maternal health services where it was found that about three-fifths of the mothers used antenatal services at least once during their last pregnancy (Babalola and Fatusi, 2009). This prevalence was also similar to the result of a study done by Kabir et'al (2005) on determinants of utilization of antenatal care services in Kumbotso Village, northern Nigeria which showed a similar prevalence. In contrast, another study done in rural Kano on the barriers to the use of Antenatal and obstetric care, showed a lower prevalence as the majority of women (88%) in the study area did not attend antenatal care four times. Major barriers to ANC utilization were economic, cultural and those related to the women's perception of their condition (Adamu and Salihu, 2002). The higher prevalence of ANC utilization in this study could be attributed to the fact it was a national representative study irrespective of location. Also, there was a higher level of education among those who utilized ANC services which could have been influenced by urban location.

5.2 Prevalence of PNC utilization

The prevalence of PNC services utilization at last delivery was very low.despite this,it was still higher when compared to the prevalence observed in a study conducted among womem on maternal health-seeking behavior and associated factors in Ologbo, South-south Nigeria (Osubor et'al 2006). This low prevalence may be due to poor health seeking behavior of persons

especially in rural communities. The slightly higher disparity may be due to the influence of other experienced in urban communities.

5.3 Association between ANC service utilization and modern family methods utilization

Almost a third of those who received ANC services utilized modern family planning methods and were about twice more likely to utilize modern family planning methods. The commonest method used was injections. This prevalence is however lower than that from a study on the knowledge, attitude and practice of family planning methods among women attending antenatal clinic conducted in Jos, North-central Nigeria, in which nearly half of the respondents utilized modern family planning methods. The commonest family planning method used was condom (Utoo et'al, 2010). The higher prevalence of contraceptive use may be attributed to higher educational status, knowledge and acceptability of family planning methods among the respondents compared to compared to this study (Utoo et'al, 2010).

Similarly, a higher of proportion of women that received PNC services at their last delivery utilized modern family methods 30.4%(446) compared to those who did not utilize modern family methods.

5.4 Factors influencing family planning utilization

Slightly more few a-third of urban residents utilized modern family planning services which was higher than that of rural residents. This is in consonance to a study conducted on the knowledge, attitude and practice of modern contraception among single women in a rural and urban community in south-east Nigeria which had higher modern contraceptive use (68.3% vs 12.5%) among urban residents when compared to rural residents (Osubor et'al 2005). This can be attributed to the fact that urban residents had better education and showed willingness to adopt new things.

Previous studies have shown utilization of modern family planning methods increases significantly with increasing educational levels (Odusina and Olaposi, 2012; Mounira, 2010). The result from this study is consistent with the findings from above studies as women with secondary and higher education had higher modern family planning methods utilization rate 44.2%(2253) compared to those with primary 27.3%(1109) and those without education 6.6%(587). This may also be explained by better receptiveness and acceptance of modern family planning methods among women with secondary and higher education.

Also, on the use of modern family planning method in relation to the participants' employment status, the study showed that respondent who worked had a higher family planning utilization rate 26.1%(3014) and were more likely to use modern family planning method compared to those who were not working 14.4%(914). This finding was similar to as found in the study in Al-Qassim, Saudi Arabia which showed women's working was significantly associated with utilization of modern family planning method. Women were also two and a half times more likely to utilize modern family planning method (Mounira, 2010). This similarity may be attributed to improved standard of living and better affordability of family planning services among women who were working.

Previous study conducted to explore the extent and determinants of condom use within marital and cohabiting partnerships in South Africa found that couples did not usually condom which is a form of modern family planning method((Pranitha and John, 2004). This may be due to due to resistance from husbands, although perceived risk of HIV infection from the partner is the most powerful determinant of use. However, the result of this study is different from the above studies as a higher proportion of respondents cohabiting utilized modern family planning method when

compared to those in other marital status categories. An important factor that improved modern family planning method may be higher educational level among the respondents.

5.5 Association between ANC and PNC service utilization, and childhood immunization

Previous studies have shown that childhood immunization was more among women who utilized ANC and PNC services (Babalola, 2009; Jeniffer et'al, 2008). The result of this study is consistent with the findings from the above studies as women who utilized ANC and PNC services were more likely to immunize their children. This can be explained by maternal use of antenatal care service, maternal knowledge about immunization and maternal exposure to child health information. Also, paternal approval of immunization may play a role in childhood immunization as some husbands were exposed to child health information while accompanying their wives to ANC clinics.

5.6 Factors influencing complete childhood immunization

A higher proportion of respondents with secondary and higher education had their children immunized compared to those at lower educational levels. This finding was supported by a study conducted on the determinants of vaccination coverage in rural Nigerian community (Sabongidda-Ora, Edo State) in which having at least secondary school education was associated with a higher rate of immunization against all the seven vaccine preventable diseases (Olumuyiwa et'al, 2008). This similarity may be due to positive influence of education on maternal health seeking behavior as well as maternal acceptance of immunization.

Similarly, working women had children with better immunization status than non-working ones. This may be possible as employment may translate to better income and more exposure to health information. However, the result of this study contrasts a systematic review to determine whether

maternal employment was associated with childhood vaccination uptake and childhood overweight in countries under Organization for Economic Co-operation and Development (OECD) where it was found that vaccination uptake appeared at least as good or better for children of employed as unemployed mothers (Mindlin, 2009). This difference may be attributed to the fact that women's employment status in OECD countries is not associated with childhood immunization. Also, employed women were as informed as the employed ones.

Also, the finding of this study showed that a higher proportion of urban respondents had their children immunized 45.6%(2200) compared to rural residents 22.4%(2954). This is in consonance with a study carried out on rural-urban inequities in childhood immunization in Nigeria using NDHS 2003 data in which higher proportion of urban children were fully immunized (This similarity can be attributed higher educational level and exposure to health information among urban respondents.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Findings from this study show that both ANC and PNC services utilization are still being under-utilized in Nigeria.as reflected in the relatively low prevalence. However, ANC services utilization is slightly above average; this is still unsatisfactory as optimal utilization of this critical services is highly recommended .The commonest method used was injections. Also, PNC services utilization on the other hand is much lower than ANC services utilization. This may be attributed to more support given to women especially after delivery. Also, respondents who utilized these services according to WHO recommendations are more likely to utilize modern family planning methods and childhood immunization. Increasing wealth index, women working, secondary and higher educational level, resident from south-west region, urban residence and cohabiting were associated with family planning utilization and childhood immunization

5.2 RECOMMENDATIONS.

The influence of antenatal and postnatal care services on modern family methods and childhood immunization services practices is crucial in reducing maternal and child mortality worldwide. Therefore, based on the findings from this study, the following recommendations are made:

1. Improving ANC and PNC services (PNC in particular) at all levels of health care. This can be achieved by :
   - Adequate health education at these clinics
   - Community involvement in ANC and PNC activities
   - Use of media
   - Women empowerment especially by employing them as this will improve their ability in decision making in all matters relating to their health
   - Encourage peer groups so that women who these services can recommend to others

2. Promotion of measures to improve family planning utilization e.g. subsidizing fees of family planning services
3. Promotion of measures to improve childhood immunization e.g.

References

1. Adamu Y, Salihu H. Barriers to the use of antenatal and obstetric care services in rural Kano, Nigeria. Journal of Obstetric and Gynecology 2002; 22(6), 600-603

2. Anna M, Hanneke M, Frank O, John G, Ilse E, Daniel H, Kubaje A, Laurence S. Kim A. Use of antenatal services and delivery care among women in rural western kenya : a community based survey. *Reproductive Health* 2006, 3:2 1742-4755

3. Babalola, S. and Fatusi, A.Determinants of use of maternal health services in Nigeria :looking beyond individual and household factors.2009;BMC Pregnancy and Childbirth 2009, 9:43

4. Bawa SB, Umar US, Onadeko M. Utilization of obstetric care services in a rural community in southwestern Nigeria. 2004 Sep;33(3):239-44.

5. Bibha , Edwin R, Maureen P, Padam S. Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature Journal of Advanced Nursing. 2008; 61(3); 244–260.

6. Doctor H, Findley S, Ager A, Cometto G, Afenyadu G, Adamu F, Green C. Using community-based research to shape the design and delivery of maternal health services in Northern Nigeria. Reprod Health Matters. 2012;20(39):104-12

7. Egbewale B, Bamidele J. Demographic profile of mothers and their utilization of maternal health care services in Osun State, Nigeria. Niger Postgrad Med j.2009 ;16(2):132-8

8. Emmanuel M, Andrea S, John E, James E. Contraceptive practices in Nigeria: Literature review and recommendation for future policy decisions. Journal of contraception.2010; 2010(1); 9 - 22

9. *Emmanuel O. Nathaniel E. Chiagozie U* - Determinants of antenatal care utilization in Nigeria.2012; 2(6).

10. *Erin S. Uzma S. Steve W. and Heidi W.* Postnatal Care: A Critical Opportunity to Save Mothers and Newborns.Save The Children.2007.

11. FBA Health Systems Analysts. The state of routine immunization services in Nigeria and reasons for current problems. Revised version June 2005: 1-4. http://www.technet21.org/index.php/ documents/view-document/757-the-state-of-routine-immunization-services-in-nigeria.html (accessed April, 2014)

12. Fekede B, G/Mariam A. Antenatal care services utilization and factors associated in Jimma Town (south west Ethiopia).2007;45(2):123-33

13. Galadanci HS, Ejembi CL, Iliyasu Z, Alagh B, Umar US. Maternal health in Northern Nigeria—a far cry from ideal.. Journal of Obstetrics & Gynaecology : 2007;14(4): 448–452

References

1. Adamu Y, Salihu H. Barriers to the use of antenatal and obstetric care services in rural Kano, Nigeria. Journal of Obstetric and Gynecology 2002; 22(6), 600-603

2. Anna M, Hanneke M, Frank O, John G, Ilse E, Daniel H, Kubaje A, Laurence S. Kim A. Use of antenatal services and delivery care among women in rural western kenya : a community based survey. *Reproductive Health* 2006, 3:2 1742-4755

3. Babalola, S. and Fatusi, A.Determinants of use of maternal health services in Nigeria :looking beyond individual and household factors.2009;BMC Pregnancy and Childbirth 2009, 9:43

4. Bawa SB, Umar US, Onadeko M. Utilization of obstetric care services in a rural community in southwestern Nigeria. 2004 Sep;33(3):239-44.

5. Bibha , Edwin R, Maureen P, Padam S. Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature Journal of Advanced Nursing. 2008; 61(3); 244–260,

6. Doctor H, Findley S, Ager A, Cometto G, Afenyadu G, Adamu F, Green C. Using community-based research to shape the design and delivery of maternal health services in Northern Nigeria. Reprod Health Matters. 2012;20(39):104-12

7. Egbewale B, Bamidele J. Demographic profile of mothers and their utilization of maternal health care services in Osun State, Nigeria. Niger Postgrad Med j.2009 ;16(2):132-8

8. Emmanuel M, Andrea S, John E, James E. Contraceptive practices in Nigeria: Literature review and recommendation for future policy decisions. Journal of contraception.2010; 2010(1); 9 - 22

9. *Emmanuel O, Nathaniel E, Chiagozie U* - Determinants of antenatal care utilization in Nigeria.2012; 2(6).

10. *Erin S, Uzma S, Steve W, and Heidi W.* Postnatal Care: A Critical Opportunity to Save Mothers and Newborns.Save The Children.2007.

11. FBA Health Systems Analysts. The state of routine immunization services in Nigeria and reasons for current problems. Revised version June 2005: 1-4. http://www.technet21.org/index.php/ documents/view-document/757-the-state-of-routine-immunization-services-in-nigeria.html (accessed April, 2014)

12. Fekede B, G/Mariam A. Antenatal care services utilization and factors associated in Jimma Town (south west Ethiopia).2007;45(2):123-33

13. Galadanci HS, Ejembi CL, Iliyasu Z, Alagh B, Umar US. Maternal health in Northern Nigeria—a far cry from ideal,. Journal of Obstetrics & Gynaecology : 2007114(4): 448–452

14. Igwegbe A, Ugboaja J, Monago E, Knowledge and practice of family planning among antenatal care attendees at Nnewi, south east Nigeria. Niger Postgrad Med J 2010; 17(4):287-90).

15. Joseph N, Uche I. Maternal Mortality in Nigeria: Examination of Intervention Methods: International Journal of Humanities and Social Science 2012;2(20)

16. Kabir M, Iliyasu Z, Abubakar I, Asani A Determinants of utilization of antenatal care services in Kumbotso Village, northern Nigeria. 2005;35(2):110-1

17. Lawn J, Simon C, Jelka Z. "4 Million Neonatal Deaths: When? Where? Why?" The Lancet. 2005; 65(9462):891-900

18. Mai D, David H. Relationships between antenatal and postnatal care and post-partum modern contraceptive use: evidence from population surveys in Kenya and Zambia. BMC Health Services Research.2013; 13:6,

19. Mwifadhi M, Brigit O, Joanna AS, Rachel A H, Adiel KM, Hassan M, Marcel T, David S The use of antenatal and postnatal care: perspectives and experiences of women and health care providers in rural southern Tanzania.*BMC Pregnancy and Childbirth* 2009, 9:10;1471-2393-9-10

20. Mishra, U.S.; Roy, T.K.; Rajan, Irudaya S.: Antenatal Care and Contraceptive Behavior in India: Some Evidence from the National Family Health Survey. The Journal of Family Welfare.1998. 44(2).p.1-14

21. Mojekwu J, Ibekwe M. Maternal Mortality in Nigeria: Examination of Intervention Methods. 2012; 2(20).

22. Osubor K, Fatusi A, Chiwuzie J, Maternal health- seeking behavior and associated factors in rural Nigerian community.Matern Child Health J. 2006;10(2):159-69.

23. Ozumba BC, Obi SN, Ijioma NN. Knowledge, attitude and practice of modern contraception among single women in a rural and urban community in Southeast Nigeria. Journal of Obstetrics & Gynaecology. 2005; 25(3): 292-295

24. Pathak KB, Arvind P, Ashutosh O. Child spacing and utilization of maternal health care services in some selected states in India Journal of Family Welfare.2001- http://medind.nic.in/jah/t01/i2/jaht01i2p18g

25. Sulaiman A. Kareem U. Antenatal care in nigeria: an implication for maternal mortality ISSN 225-1448- http://iussp2009.princeton.edu/abstracts/92455)

26. Tiwari R, Mahajan PC, Lahariya C The determinants of exclusive breast feeding in urban slums: a community- based study.2009; 55(1):49-54

27. *Tongo* O, Orimadegun.A, Akinyinka O. Utilization of malaria preventive measures during pregnancy and birth outcomes in Ibadan, Nigeria.B*MC Pregnancy and Childbirth* 2011, 11:60

28. *UNICEF Nigeria. The children. Maternal and child health. 2007; Available from* www.unicef.org/nigeria/children (Accessed, 12th June, 2013)

29. Utoo B, Mutihir T, Utoo P, 2010 Apr-Jun;19(2):214-8.Knowledge, attitude and practice of family planning methods among women attending antenatal clinic in Jos, North-central Nigeria. Niger Postgrad Med J 2010;19(2):214-8.)

30. Villar J and Bergsjo P. 2003. WHO Antenatal Care Randomized Trial: Manual for the Implementation of the New Model WHO/RHR/01.30. WHO: Genev

31. World Health Organization. Why do so many women still die in pregnancy or childbirth. 2013;Available from http://www.who.int/features/qa/12/en (Accessed, 15th June,2013)

32. *WHO antenatal care randomized trial: manual for the implementation of the new model.* WHO/RHR/01.30. Geneva, World Health Organization, 2001.

33. World Health Organization.OIC Health Report. 2010. Available from http://www.sesric.org/files/article/435 (Accessed, 22nd June,2012)

34. World Health Organization (WHO). Statement for collective action for postpartum family planning. Geneva: WHO; 2012.Available from: http://www.who.int/reproductivehealth/topics/family_planning/Statement_Collective_Action (Accessed,12th June,2013)

35. World Health Organization. Antenatal Care – Available from:www.who.int/pmnch/media/publications/aonsectionIII *(Accessed, 23rd July, 2013)*

36. World Health Organization. Road map for accelerating the attainment of the MDGs related to maternal and newborn health in Africa. World Health Organization, 200; Available from: www.afro.who.int/whd2005/mdg-roadmap-eng.pdf *(Accessed 22nd February, 2014.)*

37. WHO, Maternal, Newborn, Child and Adolescent Health.2013; Available from http://www.who.int/maternal_child_adolescent/topics/newborn/postnatal_care/en/. *(Accessed 22nd February, 2014.)*

38. **Yalem T, Tesfay G, Isabel G, Kerstin, H, Miguel SS** Determinants of antenatal and delivery care utilization in Tigray region, Ethiopia: a cross-sectional study. *International Journal for Equity in Health* 2013, 12:30 ;86/1475-9276-12-30

MEASURE DHS

Subscription Confirmed

Your subscription to our list has been confirmed.

Thank you for subscribing!

The DHS Program/ICF International

530 Gaither Road

Suite 500

Rockville, MD 20850

Add us to your address book

Your subscription to our list has been confirmed.

For your records, here is a copy of the information you submitted to us...

Email Address: kolajinad2@yahoo.com

First Name: Arisekola

Last Name: Jinadu

Country: NG

Email Format: text

If at any time you wish to stop receiving our emails, you can:
unsubscribe here (http://dhsprogram.us1.list
manage.com/unsubscribe?u=4a13c50f402efe6a4dab90feb&id=9fa465188a&e=83a1f33971)
You may also contact us at:
thedhsprogram@gmail.com (mailto:thedhsprogram@gmail.com)