ECONOMIC ANALYSIS OF THE IMPACT OF REPRODUCTIVE HEALTH POLICY ON REPRODUCTIVE HEALTH OUTCOME IN NIGERIA: EVIDENCE FROM WISCONSIN LOGIC MODEL

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ABSTRACT

This study empirically analyzed the impact of reproductive health policy on reproductive health outcome in Nigeria. The study used secondary data from the Nigeria Demographic Health Survey reports for 2003, 2008, 2013 and 2018. Cross-sectional primary data were also collected from two study locations, comprising one rural and one urban in order to validate the hypothesis raised in this study. A questionnaire design, focus group discussions and key-informants interview were used to elicit information from the respondents. A sample size of 118 reproductive healthcare service providers and 400 women of child-bearing age were considered for this study. A set of analytical tools such as chi-square, cross-tabulations, descriptive statistics which include trends and graphical analyses as well as binary logistic regression analysis were used to analyzed the data collected from the field. The study found that government's reproductive health policy interventions programmes such as modern contraceptive, antenatal care, post-natal care as well as pregnant women delivery at health facility by skilled birth attendants targeted towards reducing maternal mortality rate in Nigeria have not achieved their desired result. Based on the cross sectional survey conducted in the two study locations, it was found that 7.18% and 4.22% of the respondents attended Antenatal Care and Post-Natal Care up to eight times before and after delivery which is far below the global benchmark of 75% by the World Health Organization. Also, 6.54% of the respondents practiced modern contraceptives which is below the global benchmark of 64.34%. Meanwhile, 92.92% of the respondents had birth interval of less than two years which is against the World Health Organization's recommendation of two years child spacing practice. In addition, 20.19% of the respondents used healthcare facilities during delivery while 79.81% of the respondents delivered their pregnancies at home. This study found that maternal mortality rate stood at 1,000 deaths per 100,000 live births which is against the targeted reduction of 76. Based on the result of the findings from the Nigeria Demographic Health Survey reports and the cross-sectional survey, this study concludes that reproductive health policy does not have significant impact on reproductive health outcome in Nigeria. Hence, this research did not only query the efficacy of government's reproductive health policy intervention programmes, but it also casts doubt on the strength of the policy in changing the landscape of maternal mortality rate in Nigeria. Therefore, this study recommends the need for government, key stakeholders in the private sector and non-governmental organizations to organize sensitization workshops for religion leaders and household heads on the health benefits of modern contraceptives, antenatal care, post-natal care for pregnant and nursing mothers, pregnant women delivery at health facilities by skilled birth attendants as well as child spacing practice in order to improve maternal health outcome in Nigeria.

1. INTRODUCTION

Government's reproductive health policy towards reducing maternal mortality and morbidity rates in Nigeria have not yielded any positive result despite the huge government spending and commitments to the national demographic policy of trying to have a sustained population growth and decline maternal mortality rate, cases of poor maternal health status and maternal mortality rate are still on the increase (United Nations International Children's Emergency Fund [UNICEF], 2021 & Nigeria Demographic Health Survey [NDHS], 2018). A recent study conducted by World Health Organization (2021) revealed that 810 women approximately die every day from preventable causes related to pregnancy and childbirth of which 94% of these deaths occurred in low and lower-middle income countries. The high number of maternal deaths in some countries of the world especially in the developing countries reflects inequalities in access to quality maternal healthcare services and highlights gap between the rich and the poor. For instance, the maternal mortality rates in low and middle income countries hovered around 462 per 100 000 live births versus 11 per 100 000 live births in high income countries (WHO, 2021, UNICEF, 2020, USAID, 2019). Sub-Saharan Africa and Southern Asia accounted for approximately 86% (254 000) of the estimated global maternal deaths. Sub-Saharan Africa alone accounted for roughly two-thirds (196 000) of maternal deaths in developing countries, while Southern Asia accounted for nearly one-fifth (58 000) (UNICEF, 2019 & WHO, 2021).

In addition, according to the Fragile States Index by World Health Organization (2021) and United States Agency for International Development (USAID, 2021), 15 countries were considered to be "very high alert" or "high alert" being fragile States (South Sudan, Somalia, Central African Republic, Yemen, Syria, Sudan, the Democratic Republic of the Congo, Chad, Afghanistan, Iraq, Haiti, Guinea, Zimbabwe, Nigeria and Ethiopia), and these 15 countries had maternal mortality rates ranging from 31 (Syria) to 1150 (South Sudan). The risk of maternal mortality is higher for adolescent girls under 15 years old and complications in pregnancy and childbirth are higher among adolescent girls aged 10-19 years (compared to women aged 20-24) (USAID, 2020 & NURHI, 2021). Women in less developed countries have, on average, many more pregnancies than women in developed countries, and the lifetime risk of death due to pregnancy of women in less developed countries is higher compared to women in developed countries. A woman's lifetime risk of maternal death is the probability that a 15-year-old woman will eventually die from a maternal cause. In high income countries, this lifetime risk is 1 in 5400, versus 1 in 45 in low and middle income countries (USAID, 2022; NDHS, 2018 & NURHI, 2020).

Also, according to World Health Organization (WHO, 2021) and the United States Agency for International Development (USAID, 2020) maternal deaths were estimated to be 470 per 100,000 live births in Zimbabwe, 400 in Burkina Faso, 380 in Ghana and 578 in Nigeria. In addition, the Nigeria Demographic Health Survey (NDHS, 2018) and World Health Organization (WHO, 2020) report that more than half (56 percent) of women in Nigeria did not receive antenatal care as well as post-natal care before and after each pregnancy deliveries and about 65% of pregnant women do not use healthcare facilities during delivery by skilled birth attendants. Hence, the survival and well-being of a woman and her new-born baby depend

substantially on the quality of the reproductive healthcare services received during pregnancy delivery and the post-natal period as a large number of maternal and neo-natal deaths occur during the first 24 hours after delivery (WHO, 2016 & NURHI, 2020). A large number of women in Nigeria do not have access to reproductive healthcare services during the early post-natal and antenatal periods which put them at risk of complications, diseases and mortality (FMH, 2021 & NURHI, 2021). Also, Odu et al. (2015) and Adeyanju et al. (2020) report that about 4 million women in Nigeria do not live to witness another birth, and a large number of them are disabled due to pregnancies and births that are poorly monitored or handled by skilled birth attendants. Therefore, ensuring a safe motherhood and a healthy childhood remains a major challenge in Sub-Saharan Africa and Nigeria is no exception. However, maternal mortality rate of 578 deaths per 100,000 live births and perinatal mortality rate of 78 deaths per 100,000 pregnancies in Nigeria is particularly very high and worrisome (NDHS, 2003, 2008, 2013 & 2018). A recent report by the Federal Ministry of Health (FMH, 2021) shows that nearly a quarter of a million pregnant women die annually during birth in Nigeria and there has been no significant reduction in the average neo-natal mortality rate. Many of the maternal deaths in Nigeria occur at home and are therefore unaccounted for in the official statistics (FMH, 2020, WHO, 2017 & UNICEF, 2018). Be that as it may, given that Nigeria population is the largest in Africa, the upward trajectory of maternal mortality rates in a developing country like Nigeria in the past five years has significant influence on the rest of the Sub-Saharan African countries' health performance indicators and contribute disproportionately to the global motherhood mortality crisis.

It is evidenced that Nigeria is the leading contributor to negative reproductive health outcomes globally and has accounted for more than 14% of maternal deaths with contraceptive prevalence rate of less than 9% as against the benchmark of 64.34% as well as low child spacing practice (NDHS, 2018, FMH, 2018; NURHI, 2018). In view of the above contexts, the potential of positive reproductive health outcome to improve maternal and child health status has led Nigeria from 2003 up to the current period to be publishing the reproductive health variables electronically. This development has also culminated into the formulation of reproductive health policy with policymakers increasingly linking reproductive health issues to economic development. For example, this momentum has led to the configuration of the Sustainable Development Goals (SDGs) which include a specific target to improve maternal and child health outcomes, ensure women universal access to reproductive healthcare services as well as halt maternal mortality and morbidity rates by 2030 among others (WHO, 2016; NURHI, 2018; Ademiluyi & Arowolo, 2009; Tariq et al., 2014; Patton, 2015; Israel, 2009). Hence, negative reproductive health outcome has serious implications for demographic dividend and socioeconomic development of a country as well as Nigerian global position on maternal and child health indicators. However, general observation of the reproductive health variables from 2003 across the six geo-political zones in Nigeria has shown that despite government's spending on reproductive health policy intervention programmes, cases of maternal mortality rates across the six geo-political zones in the country are still rising. Therefore, it is against this backdrop that this paper seeks to provide answer to the research question below:

What is the impact of reproductive health policy on reproductive health outcome in Nigeria?

2. CONCEPTUAL REVIEW
2.1 Reproductive Health Policy

The World Health Organization (WHO) and Nigerian Urban Reproductive Health Initiative [NURHI] (2020) conceptualize reproductive health policy as the "decisions, plans, and actions of the government, private stakeholders as well as the Non-Governmental Organizations

(NGOs) on some specific reproductive healthcare intervention programmes that are undertaken to achieve specific reproductive healthcare outcomes such as improved maternal health status and decline in maternal mortality and morbidity rates within a society." Therefore, in this present study we rationalized reproductive health policy programmes of the government with modern contraceptives, antenatal care (ANC), post-natal care (PNC), government spending on reproductive healthcare infrastructures (which constitutes the supply side) and pregnant women's deliveries at healthcare facilities by skilled birth attendants.

2.2 Reproductive Health Outcome

Reproductive health outcome is a change in maternal health status as well as decline in maternal mortality rate that result from measures or specific reproductive health policy intervention programmes. Reproductive health outcome includes preventing perinatal and maternal deaths during pregnancy deliveries as well as improvements on women's health status following the introduction of reproductive health policy intervention programmes, this outcome maybe positive or negative.

2.3 Empirical Review

Empirically speaking, analysis of the impact of reproductive health policy on reproductive health outcome has received much attention from researchers across different countries of the world due to the role of women in the process of economic development and the advocacy for improved maternal and child health outcomes in developing countries (Mincer, 2000 & Bongaarts, 2010). Studies like Joshi (2012); Pillai *et al.* (2013); Hamzat (2010); Popoola (2016); Hongbin *et al*. (2015); Green and Merick (2013); Amiri and Gethdam (2012); Davanzo and Adamson (2012) have blamed the causes of high maternal mortality rate in Nigeria on ineffective population policies, low female literacy rate, poverty and lack of access to reproductive healthcare services and information while other studies like Agarwal (2010); Saifuddin *et al*. (2010); Foreman *et al*. (2011) and Sterk (2012) have also found correlation between maternal mortality rate and fertility rate. Meanwhile, the studies conducted by Israel (2009) and Sufiyan et al. (2013) also found strong relationship between poverty, maternal and infant mortality rates in Mali, Afghanistan, Yemen and Kenya.

In another development, Joshi (2012) and Ademiluyi et al. (2017) employed two-stage least square to examined the factors influencing the used of reproductive healthcare services in Senegal and Sudan, the study found that use of modern reproductive healthcare services can be influenced by the socio-economic and demographic characteristics of women. Agarwal (2010) also adopted multinomial logit model to examine the determinants of reproductive healthcare services in Ethiopia. The study found that place of residence, women's education, marital status, and religion have significant influence on women's utilization of reproductive healthcare services. Also, Odu et al. (2015) adopted cross sectional and fixed effects Tobit models to study utilization of reproductive healthcare services and the role of women's education in Nigeria. The study adopted the conceptual framework of health-seeking behaviour developed by Kroeger, the study identified education as only one of many factors influencing women's decisions concerning the utilization of reproductive health-care services utilization. The study concluded that formal education of women influences the women's propensity to seek modern reproductive healthcare services. In addition, Oshinowo and Baba-Ojo (2018) equally employed Probit regression model to estimate the covariates of the utilization of reproductive healthcare services in south India. The study found that the determinants of reproductive health care services are not the same across the study locations and for different

maternal health care indicators across south India. The study concluded that illiterate women, are less likely to use maternal health care services during pregnancy compared to educated women. However, in this present study, an attempt is made to analyze the impact of reproductive health policy on reproductive health outcome in Nigeria using the Wisconsin Logic Model unlike the previous studies which examined the determinants factors of reproductive and maternal healthcare services across some selected developed and developing countries of the world without actually evaluating whether the reproductive health policy of the government have achieved their desired results as it is being analyzed in this present study.

3. METHODOLOGY

This study approached the research problem from macroeconomic and microeconomic perspectives and uses two broad methodological approaches. First, it uses the Nigeria Demographic Health Survey reports for 2003, 2008, 2013 and 2018 to study the research question across the entire country. However, because these quasi-secondary data mask a number of issues and do not render themselves flexible enough, we augmented these with primary-micro data collected from Sabon-Gari and Giwa Local Government Areas of Kaduna State. Therefore, both the secondary information from the Nigeria Demographic Health Survey reports and the data from the field survey are mutually reinforcing each other. Also, this study has two sources of data. It used secondary information from the Nigeria Demographic Health Survey reports (NDHS) for 2003, 2008, 2013 and 2018, field survey data were also collected through questionnaire, focus group discussion (FGD) and key-informants interview from two study locations comprising one rural and one urban.

Consequently, the target population for the cross-sectional survey were women of child-bearing age (15-49 years) and reproductive healthcare facilitators who were residents of Sabon-Gari and Giwa LGAs. The women of child-bearing age in Sabon Gari and Giwa LGAs had the population of 226,640 and 89,842 which was projected at 3% yearly for the two LGAs. Hence, the total population was 316,482 comprising women of reproductive age (National Population Census, 2006). Following the studies of Israel (2015) and Popoola (2016), this study selected 400 women of child-bearing age as being representative of the study population. However, since the study locations had eleven wards each, each of the twenty-two wards was given equal chance of being included in the survey. Specifically, a multi-stage sampling technique was used in selecting the reproductive healthcare beneficiaries. The first stage was the selection of the communities in Sabon-Gari and Giwa LGAs. At the second stage, the ratio of the total sample size to the total population was multiplied by the population of women of reproductive age in each community to get the respective sample size for all the 22 communities. Therefore, 286 and 114 reproductive healthcare programmes beneficiaries were selected across all the 22 communities in Sabon-Gari and Giwa LGAs making a total of 400.

Further, Sabon Gari LGA had a total of 32 public health facilities with 10 licensed private clinics and hospitals making a total of 42 health facilities while Giwa LGA had a total of 64 public health facilities with 11 registered private health clinics and hospitals making a total of 75 health facilities. Sabon Gari and Giwa LGAs had 42 and 75 health facilities making a total of 118 healthcare facilities. The study considered 100 percent (118) sample size for all the public and private health facilities across the two Local Government Areas (LGAs). The study used questionnaire, focus-group-discussion (FGD) and key-informant-interview to elicit responses from the respondents in order to re-affirm the information provided in the Nigeria Demographic Health Survey reports. However, one of the data gathering instruments used in this study was questionnaire, the questionnaire comprised two sections, the first section focused

on the socio-demographic and reproductive health characteristics of respondents and the level of utilization of reproductive health programmes by respondents while the second section focused on the compliance rate of women to the use of modern contraceptives, antenatal care and post-natal care services as well as pregnant women's deliveries at the healthcare facilities by skilled birth attendants. Also, two Focus Group Discussion (FGD) sections were also conducted for this study. The first and the second focus group discussions participants for each LGAs stood around 6 to 10 women of reproductive age. The essence of the focus group discussion was to elicit information from the participants about their perceptions on the use of modern contraceptives, antenatal care, post-natal care services, and delivery at the healthcare facilities by skilled birth attendants. Key-informants' interviews were also held with some reproductive healthcare facilitators in the private and public health facilities in order to re-affirm the information provided by the women of child-bearing age on their compliance rate to the use of reproductive health programmes and the extent of government commitment to funding reproductive health infrastructures in the study locations.

Consequently, the theoretical framework underpinning this paper is the Wisconsin impact assessment logic model. Funnell and Rogers (2010) conceptualize programme theory (logic model) as an explicit theory or model of how interventions, such as a project, a programme, a strategy, an initiative, or policy programmes contributes to a chain of intermediate results and finally to the intended or observed outcomes. This paper therefore adopted Wisconsin Logic Model to evaluate whether government's reproductive health policy intervention programmes have achieved their desired results.
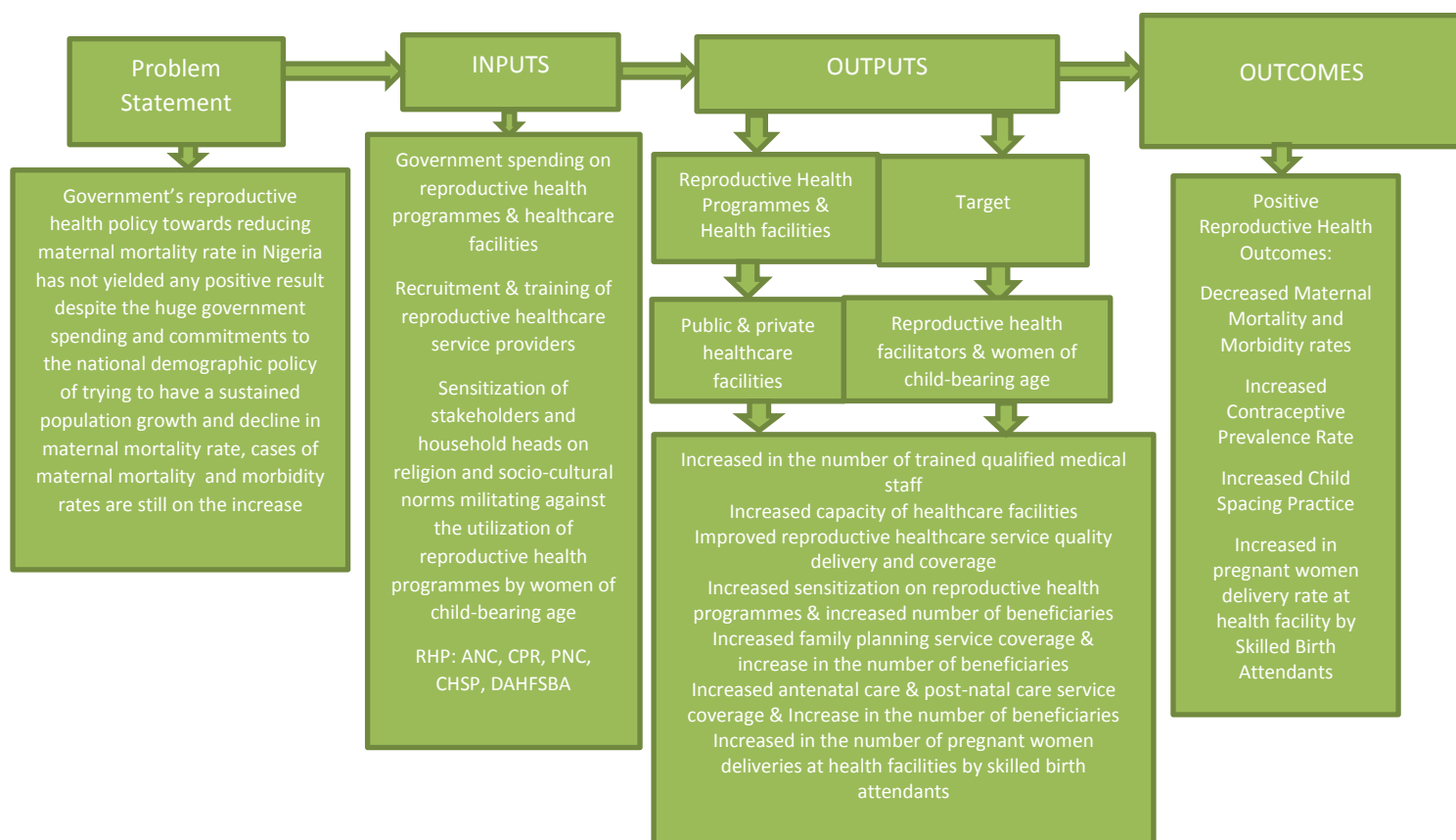

Fig 3.1: Wisconsin Logic Model. Source: Adapted from Ariwodola and Ademiluyi (2016)

The schema shown in figure 3.1 above illustrates inputs-outputs-outcomes impact assessment analysis. As shown in the diagram (figure 3.1) above, it is expected that an increase in government financial commitments to reproductive health policy programmes such as modern contraceptives, antennal care, post-natal care, pregnant women's deliveries at health facilities by skilled birth attendants which are referred to as inputs, will lead to an optimal increase in the capacity of qualified medical staff, increase in the number of health facilities, increased supply of good medicines, increase in effective reproductive healthcare service coverage and quality service delivery, increase in the number of beneficiaries of the reproductive health programmes which is called outputs with resultant decline in maternal mortality rate which is referred to as the outcome.

3.1 Analytical Techniques and Model Specification

The econometrics method adopted in this study is the qualitative response logistic regression model to analyze the impact of reproductive health policy on reproductive health outcome. The study also adopted a set of analytical techniques which include, chi-square, cross tabulation, descriptive statistics which include, trends and graphical analyses as well as binary logistic regression analysis to analyze the data collected from the field. This study employed binary logistic regression analysis to investigate the impact of reproductive health policy on reproductive health outcome in Nigeria. The binary logistic regression model was estimated using the cross-sectional survey data collected from two study locations comprising one rural and one urban. The binary logistic regression model is represented in the equation below:

$$Logit(y) = \ln\left(\frac{\lambda}{1-\lambda}\right) = \beta_\circ + \beta_1 anc + \beta_2 pnc + \beta_3 cpr + \beta_4 dahfsba + \beta_5 gsrhi + \beta_6 chsp + \mu$$

The equation above is the binary logistic transformation function used to analyzed the impact of reproductive policy on reproductive outcome in Nigeria, with its response probability λ where y denotes maternal mortality ratio (MMR) which is the dependent variable and ANC, PCN, CPR, DAHFSBA, CHSP and GSRHI are the independent variables while $\beta_0 - \beta_6$ are unknown coefficients estimated by the likelihood techniques whereas μ is the error term which

follows a standard logistic Bernoulli distribution and $\ln\left(\frac{\lambda}{1-\lambda}\right)$ is the odds ratios which

represent the natural log (odds) of maternal mortality rate. Meanwhile, following the methodology of the Nigeria Demographic Health Survey (2018) this paper measured maternal mortality rate by the number of stillbirths experienced by women of child-bearing age in the past five years. Therefore, λ denotes the probability that a woman may not experience stillbirth or death during a pregnancy delivery while $1-\lambda$ connotes the probability that a woman may experience stillbirth or death during a pregnancy delivery.

4. ANALYSIS OF RESULTS AND DISCUSSIONS OF FINDINGS

The analyses in this section are in two parts: the first part analyzes reproductive health variables using a nationally representative data extracted from the Nigeria Demographic Survey reports for 2003, 2008, 2013 and 2018 for the six geo-political zones in Nigeria while the second analysis used a cross-sectional survey of two Local Government Areas (LGAs) in Kaduna State comprising one rural and one urban in order to re-affirm the reproductive health information published in the Nigeria Demographic Health Survey. Therefore, this section analyzes the various reproductive health policy indices such as contraceptive prevalence rate, antenatal care, post-natal care, child spacing practice and pregnant women's deliveries at healthcare facilities by skilled birth attendants as published in the Nigeria Demographic Health Survey (NDHS)

reports for 2003, 2008, 2013 and 2018 periods in Nigeria. The essence of this analysis is to ascertain whether the reproductive health policy of the government have achieved their results.

Figure 4.1: Modern Contraceptive Prevalence Rates in Nigeria by Residence
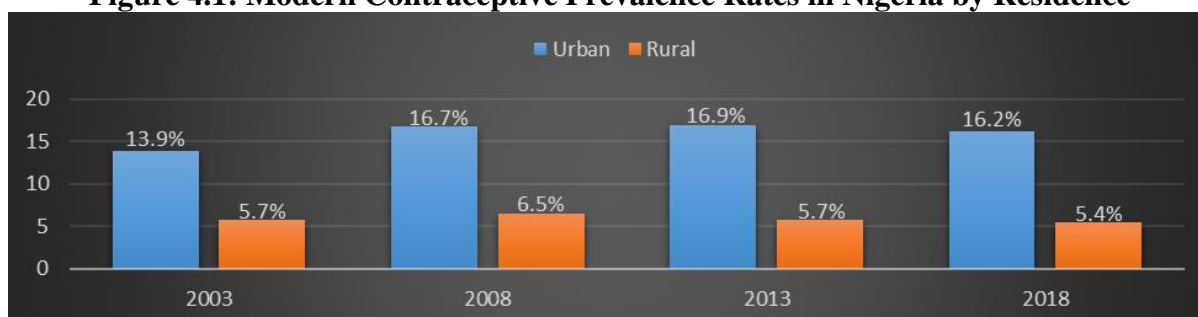
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.1 illustrates that the rate of modern contraceptive use in the urban areas across the six geo-political zones in Nigeria is high compared to the rural settlements. This is due to the high level of educational background embedded in the urban dwellers while conservatism such as religion, culture and traditions characterized by rural women are the reasons for their low modern contraceptives practice in the rural areas of Nigeria. Although, the current contraceptive prevalence rate of less than 16% and 5% in the urban and rural areas as shown in the graph above is far below the 64.34% benchmark rate for a developing country like Nigeria (NDHS, 2018; NPP, 2004; NPC & FMH, 2019). The implication of the above trends is that urban women with high modern contraceptive practice will have the leverage to acquire educational qualifications and skills acquisition programmes to participate in economic activities with improved maternal health status compared to their rural counterparts with low contraceptive compliance rate (NURHI, 2018 & WHO, 2020).

Figure 4.2: Modern Contraceptive Prevalence Rates in Nigeria According to Regions
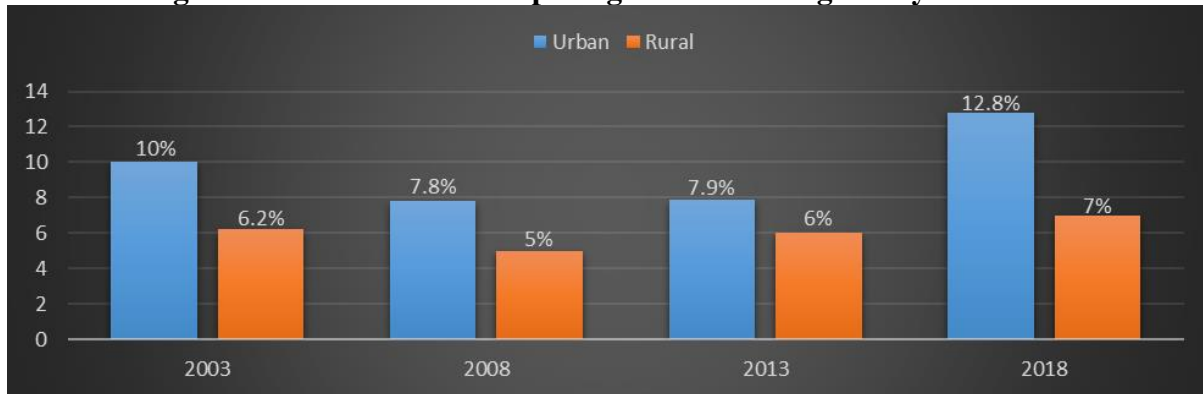

Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.2 shows the modern contraceptive prevalence rates across the six geo-political zones in Nigeria. The movement of the contraceptive trends show that the rate of modern contraceptive practice in the north central, northeast and northwest geo-political zones is extremely low compared to the other three geo-political zones. This is due to the high level of literacy rate among women in the southern, western and eastern part of Nigeria while conservatism and low level of education are accounted as the reasons for the low rate of contraceptive practice in the northern Nigeria (FMH, 2019 & Field Survey, 2018). Nationally, on the average, modern contraceptive prevalence rate in Nigeria currently stands at 9.8% (NPP, 2004; NDHS, 2018; NPC & FMH, 2019). But, the contraceptive trend in the figure above is against the policy target of the 2004 National Population Policy statement to increase modern contraceptive prevalence rate by at least 2 percentage points per year (20.4 percentage points)

to a total of 32.2% nationally by 2015 (NPC & FMH, 2015). The implication of the above trend is that with a population of over 200 million, Nigeria is no doubt the most populous country in Africa. High population without good family planning can be a huge burden on a country, it can increase the poverty rate as well as poor demographic dividends (Okeke *et al.,* 2014; WHO, 2015 & NURHI, 2019).

Figure 4.3: Rates of Child Spacing Practice in Nigeria by Residence

Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.3 shows that only 12% and 7% of women in the urban and rural areas of Nigeria had two years child spacing practice, this is against the government's target of 75% birth interval as stipulated in the 2004 National Population Policy (NPC & FMH, 2015). The figure above also indicates that the child spacing practice of two years is high in the urban areas compared to the rural settlements due to high level of education among urban women and high degree of conservatism and low level of education characterized by rural women (Field Survey, 2018 & NDHS, 2018). The implications of the trends in the figure above is that rural women spend much of their productive time taking care of children thereby giving up their chances to participate in the formal employment sector which could have earned them lifetime income compared to their counterparts in the urban areas. Also, the Nigerian Urban Reproductive Health Initiative (2021) National Population Commission [NPC] (2019) report that child spacing practice of two years and above is more likely to improve maternal health outcome.

**Figure 4.4: Rates of Child Spacing Practice in Nigeria According to Regions**
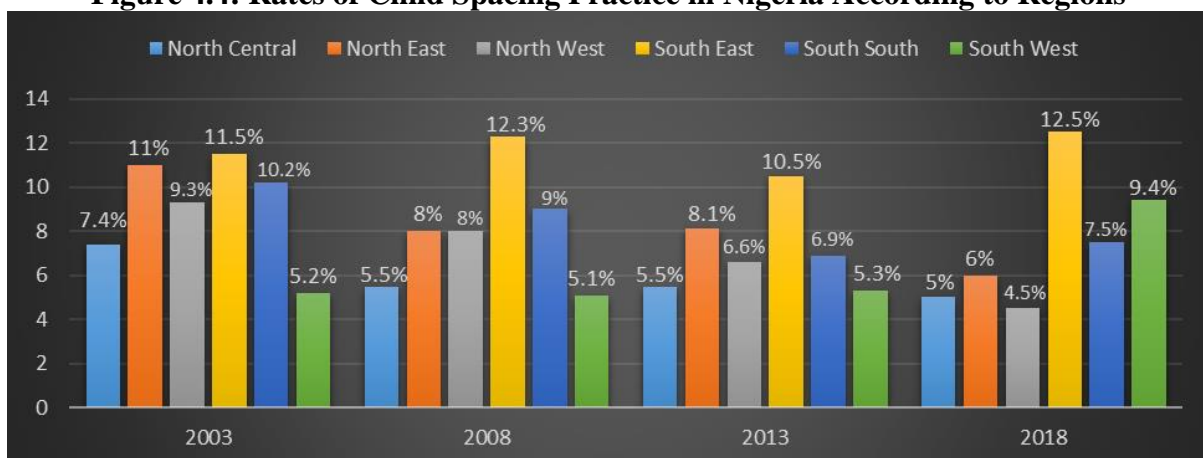
Source: (NDHS, 2003; 2008; 2013 & 2018)

The World Health Organization (2016) recommended a minimum of two years child spacing practice of about 75% target for lactating mothers in the developing countries, but only less

than 21% of women across the six geo-political zones in Nigeria practiced two years child spacing (NPP, 2004; NPC & FMH, 2015). In addition, figure 4.4 above depicts a somewhat declining trends in the number of mothers who complied with the two years child spacing practice recommendation of the World Health Organization in the north-central, north-east and north-west geo-political zones compared to the other three geo-political zones in Nigeria. This has a serious implication for women's health status and educational achievements as well as women's formal employment participation. This result corroborates the findings of Njiforti *et al.* (2016) and Adeyanju *et al.* (2017) who reported that only less than 15% of lactating mothers' keyed into the two years child spacing practice in Nigeria. The Nigerian Urban Reproductive Health Initiative (2020) reports that a less two years child spacing practice increases the chance of maternal complications that may lead to maternal death during pregnancy deliveries. This result is also in line with the study conducted by the World Health Organization (2021) which reported that a less than two years child spacing practice for women has a negative implication on women's welfare because it reduces women's chances to acquire the necessary educational capacities to participate in the formal employment sector.

Figure 4.5: Antenatal Care (ANC) Attendance Rates in Nigeria by Residence
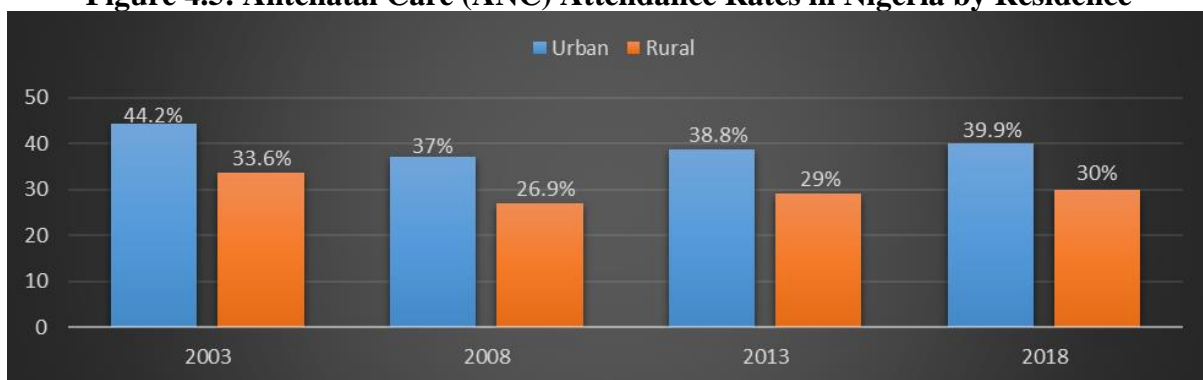
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.5 shows the antenatal care attendance rate of pregnant women in the urban and rural areas of Nigeria. But the figure illustrates that only 40% and 30% of urban and rural women attended ANC during pregnancy. This is against the government's policy target of 95% antenatal care attendance rate for pregnant women (NPP, 2004; NPC & FMH, 2015). The educational background of the urban women influences their utilization of antenatal care services during pregnancy compared to their counterparts in the rural areas (Field Survey, 2018 & NURHI, 2020).
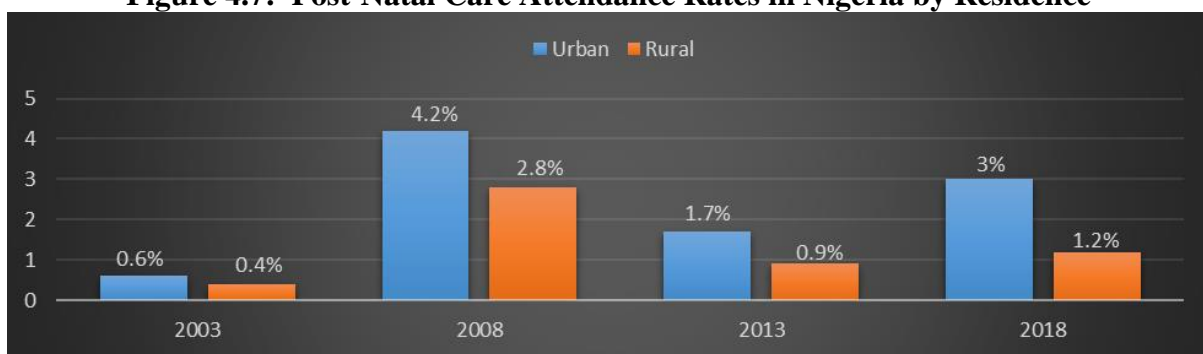
Figure 4.6: Antenatal Care (ANC) Attendance Rates in Nigeria by Regions
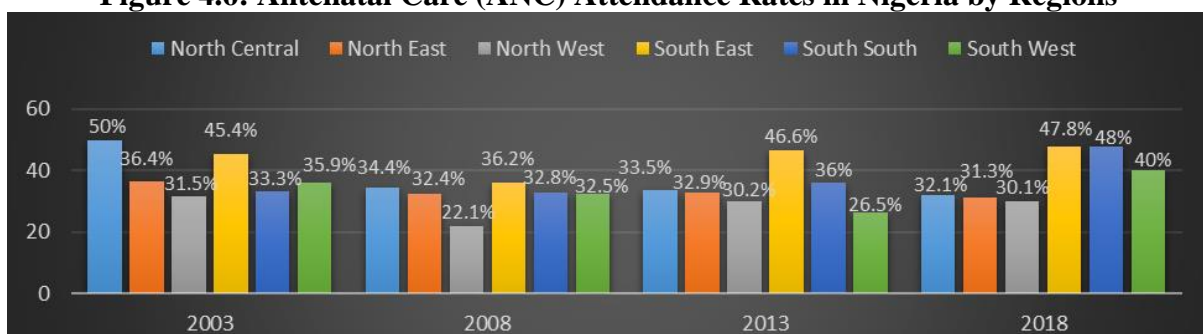
Source: (NDHS, 2003; 2008; 2013 & 2018)

WHO (2003) and NPC (2004) recommended 95% antenatal care attendance rate of minimum of eight times for pregnant women before delivery in order to avoid delivery related complications that may lead to maternal deaths. But figure 4.6 shows that pregnant women from the north-central, north-east and north-west geo-political zones only met below 30% of global antenatal care attendance rate for a developing country like Nigeria while pregnant women from the south-east, south-south and south-west also met below 50% (NDHS, 2018; NPC & FMH, 2015). The declining trends of antenatal care in the north central, north-west and the north-east geo-political zones of Nigeria is due to socio-cultural factors as well as low women's educational background (Field Survey, 2018 & NURHI, 2020). The decrease in antenatal care attendance rates across the six geo-political zones in Nigeria especially in the north-central, north-east and north-west has serious health implications on maternal and child health status during and after each pregnancy deliveries.

Figure 4.7: Post-Natal Care Attendance Rates in Nigeria by Residence

Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.7 illustrates that post-natal care attendance rate in the urban and rural areas of Nigeria is still declining. In addition, figure 4.7 further indicates that post-natal care attendance rate is still below 5% in the urban and rural areas of Nigeria. This is against the government's policy target of 85% in 2015 (NPP, 2004; NPC & FMH, 2019). This situation has the possibility of increasing the potential of neo-natal deaths (NDHS, 2018 & NURHI, 2021).

**Figure 4.8: Post-Natal Care Attendance Rates in Nigeria by Regions**
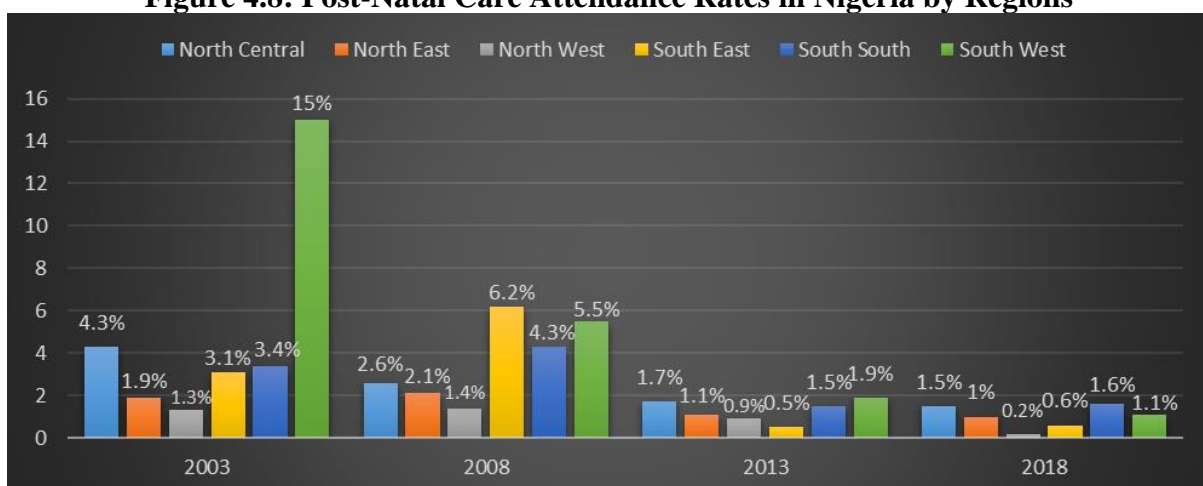
Source: (NDHS, 2003; 2008; 2013 & 2018)

The National population policy of 2004 recommended that lactating mother should attend post-natal care up to 85% with the minimum of eight times to avoid neo-natal death that might arise from delivery complications. But the figure above shows a somewhat declining trends in the

number of women that complied with the post-natal care policy for the four periods across the six geo-political zones in Nigeria. The figure shows that only 5% of women across the six geo-political zones in Nigeria complied with this recommendation which is against 85% government's policy.

Figure 4.9: Use of Public Health Delivery Facilities According to Residence
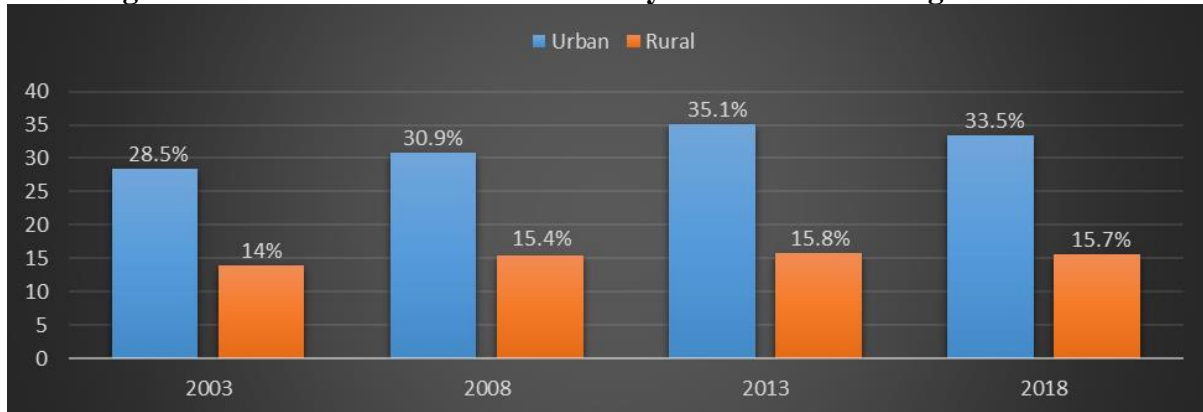
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.9 shows that 30% and 12% of pregnant women in urban and rural areas used public health facilities during delivery. This is 100% against government's target of health facilities deliveries for pregnant women across the six geo-political zones Nigeria. The implication of this is that women who used health facilities during pregnancy deliveries are more likely to escape delivery complications that may lead to maternal death compared to women who delivered their babies at home (FMH, 2019, NDHS, 2018 & NURHI, 2020).

Figure 4.10: Use of Public Health Delivery Facilities According to Regions
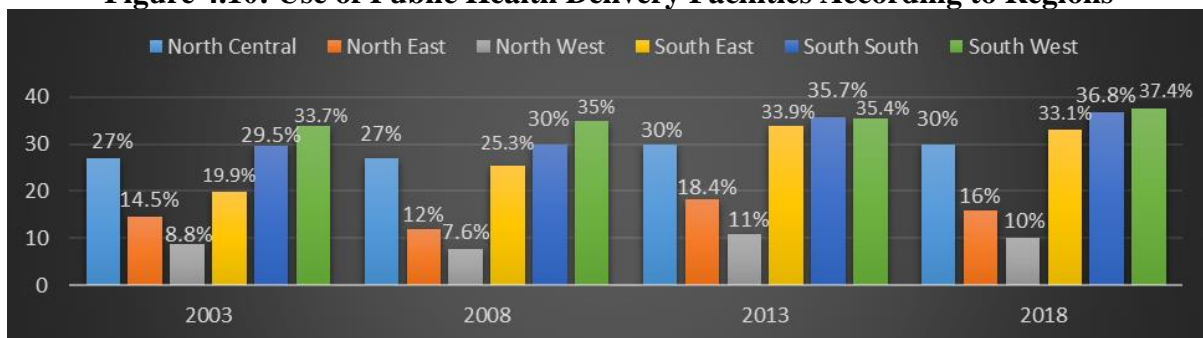
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.10 shows a somewhat declining trends in the number of pregnant women in the north-east and northwest who complied with the health facility delivery by skilled birth attendants. The low women's pregnancy deliveries at health facility trends in the northwest and northeast regions may have been the reason for high mortality rates in these regions (FMH, 2019). Conservatism and low level of education of the north-east and north-west women are accounted as the reasons for their low rate of health facilities delivery by skilled birth attendants (Field Survey, 2018 & NDHS, 2018). In addition, the figure above also indicates that the health facility delivery rate of women in the north-central, south-east, south-south and south-west were rising for the four periods. Babatunde (2015) and Joshi (2012) report that pregnant women who used the health facility during delivery are more likely to escape maternal complications that may lead to maternal death.

Figure 4.11: Use of Private Health Facility Delivery in Nigeria by Residence
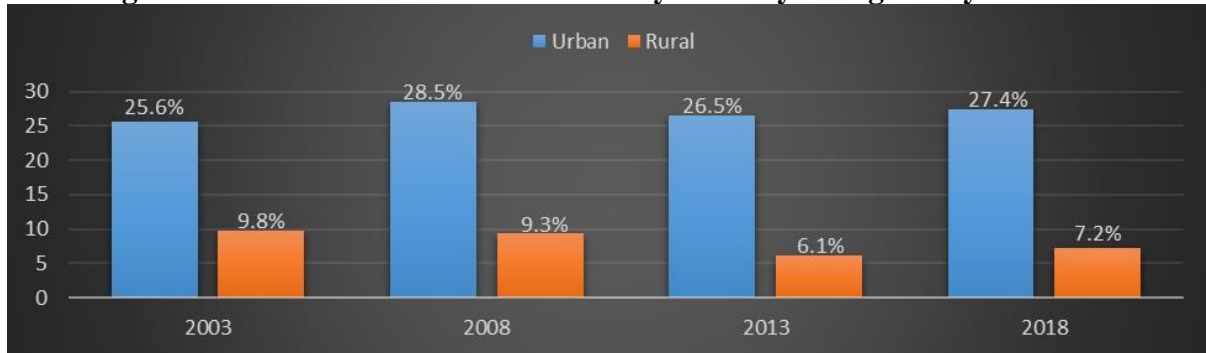
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.11 illustrates that the proportions of women who used the private health clinics during delivery is slightly high in the urban areas compared to rural areas, this is due to high bills charged by private health clinics for reproductive healthcare services. Majority of the rural women might not be able to afford the hospital bills charged by the private health facilities. This of course has accounted as the reason for low rate of patronage of private health facilities by the rural women (Field Survey, 2018 & NDHS, 2018).

Figure 4.12: Use of Private Health Facility Delivery in Nigeria by Regions
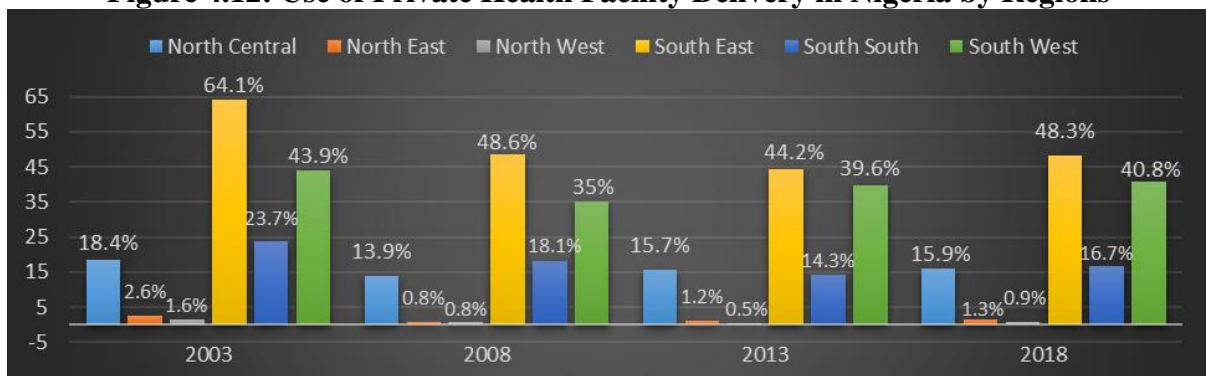
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.12 shows that majority of the pregnant women in the south-west and south-east geo-political zones patronize private health institutions during delivery, followed by the south-south and north-central while northeast and northwest geo-political zones indicate a very low utilization rate of private health facilities delivery. The low rate of private health facility delivery among women in the north-east and north-west can be traced to high cost of hospital bills charged by private health clinics and the inability of the northern women to afford such exorbitant charges (Field Survey, 2018 & NDHS, 2018).

Figure 4.13: Rates of Home Delivery in Nigeria by Residence
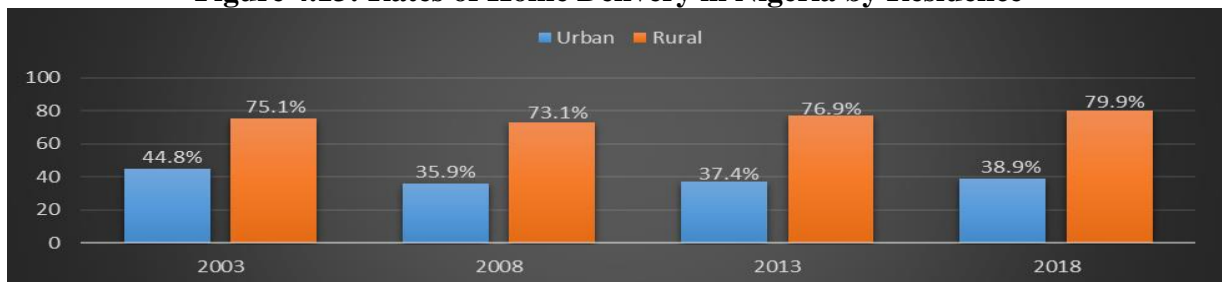
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.13 shows that (80%) of births deliveries by pregnant women in the rural areas were observed at home while the figure also shows a declining trend in the number of women in the urban areas who delivered their babies at home (39%). High proportions of home deliveries among women in the rural areas was traced to poor educational background, conservatism, poverty and lack of enlightenment of the rural women about the importance of health facilities delivery by skilled birth attendants among others (Field Survey, 2018 & FMH, 2019).

Figure 4.14: Rates of Home Delivery in Nigeria by Regions
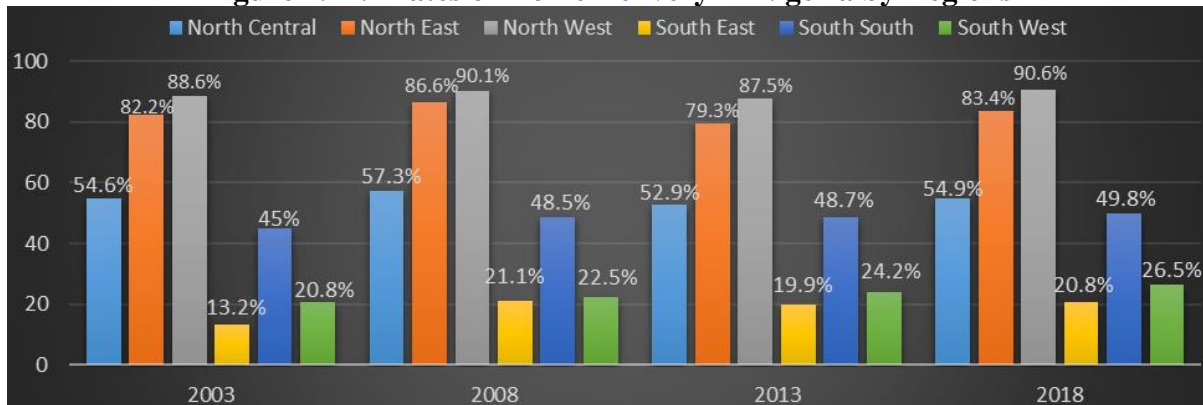
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.14 shows that pregnancy delivery at home across the six geo-political zones in Nigeria is still rising, despite government's policy intervention of healthcare facilities delivery by skilled birth attendants. In line with the above results, the Nigerian Urban Reproductive Health Initiative (2021) reports that pregnancy delivery at home may lead to health-related complications that can cause maternal and child deaths. Federal Ministry of Health (2019) and Field Survey report (2018) revealed that religion, culture and traditions as well as low women's educational background were accounted as the reasons for high home delivery rates in Nigeria especially in the northern Nigeria. In addition, the Nigeria Demographic Health Survey (2018) and the Nigeria Urban Reproductive Health Initiative (2020) report that the northwest region has the highest number of home delivery cases during pregnancy deliveries as compared to other geo-political zones in Nigeria.

Figure 4.15: Reproductive Health Outcome in Nigeria in the Last Five Years
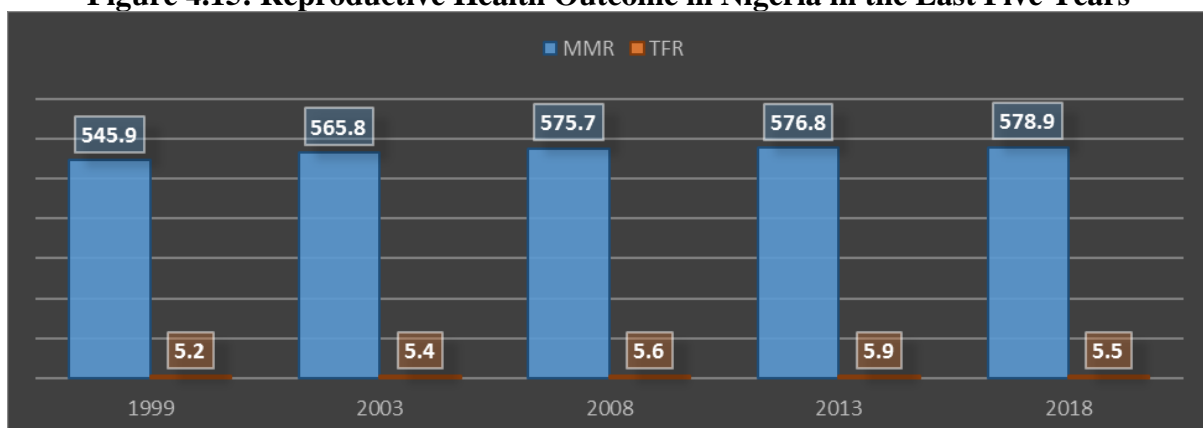
Source: (NDHS, 2003; 2008; 2013 & 2018)

Figure 4.15 depicts reproductive health outcome in Nigeria in the last five years, the figure shows a somewhat increasing trends of maternal mortality rate in Nigeria despite government's reproductive health policy intervention programmes to reduce the menace of maternal death.

The figure illustrates that maternal mortality rate stood at 578 per 100,000 live births as against government target reduction of 76 per 100,000 live births (NPP, 2004; NPC & FMH, 2019).

ANALYSIS OF THE CROSS-SECTIONAL SURVEY

This sub-section constitutes the second part of the analysis in this section. It sets out to present the analyzed responses sourced from the cross-sectional survey conducted in Sabon-Gari and Giwa LGAs in order to re-affirm the information published in the Nigeria Demographic Health Survey reports for 2003, 2008, 2013 and 2018. A total of 280 and 32 questionnaires were administered to women of reproductive age and healthcare service providers in Sabon-Gari LGA. Out of these number 257 and 31 were retrieved. In addition, a total of 114 and 74 questionnaires were also administered to women of child-bearing age and healthcare service providers in Giwa LGA and 113 and 74 were retrieved. Also, a total of 118 questionnaires were administered to reproductive healthcare facilitators across all the public and private health facilities in Sabon-Gari and Giwa LGAs, out of these number 117 were retrieved. Therefore, this section begins with the socio-demographic background of the respondents in the study locations.

Table 4.1.: Socio-Demographic Characteristics of Respondents by Residence

Variables	Sabon-Gari LGA		Giwa LGA	
	Freq.	Percent	Freq.	Percent
Religion Denomination				
Islam	255	97.00	112	98.12
Christianity	2	3.00	3	1.88
Ethnicity (Culture)				
Hausa	257	93.00	107	90.69
Yoruba	2	2.00	6	5.31
Igbo	8	5.00	8	4.00
Marital Status				
Married	257	100	109	96.46
Divorced/Separated/ Widowed	6	4.23	4	3.54
Marital Duration				
0-4 years	51	19.84	17	15.04
5-9 years	80	31.13	28	24.78
10-14 years	49	19.07	34	30.09
15-19 years	14	5.45	11	9.73
20-24 years	9	3.5	11	9.73
25 years and above	48	18.68	12	10.62
Married more than once	6	2.33	5	2.04
Age of Respondents				
less than 18 years	28	10.89	5	4.42
18-34 years	161	62.65	92	81.42
35-49 years	68	26.46	16	14.16
Educational Background (N=370)				
Formal	122	25.47	16	7.16
Informal	135	79.53	97	92.84
Kind of Formal Education (N=138)				
Primary	32	26.23	4	35.81
Secondary	25	20.49	10	62.5
Tertiary	65	53.28	2	1.15

Educational Qualification (N=138)

SSCE	26	21.31	7	83.75
OND	20	16.39	3	1.75
NCE	22	18.03	4	1.76
HND	9	7.38	6	4.17
B.Sc.	16	13.11	8	3.12
Others	29	23.77	2	12.5
Family Structure of Respondents				
Polygamous Family Structure	63	75.51	60	83.10
Monogamous Family Structure	194	24.49	53	16.90

Source: (Field Survey, 2018)

Table 4.1 illustrates that 97% and 3% of the respondents in Sabon-Gari were practicing Islam and Christianity with majority being predominantly Muslims while 98.12% and 1.88% constitute the proportions of the respondents in Giwa Local Government Areas who were practicing Islam and Christianity. Women in Sabon-Gari and Giwa LGAs are often refrained from going out, socializing, and working without their husbands' explicit permission. Some are not even permitted to see their natal relatives after being married neither do their husbands allow them to adopt family planning nor attend antenatal care during delivery or even go for delivery at hospital during pregnancy deliveries (Mairo, 2007 & NURHI, 2018). Therefore, when married women cannot leave their homes, they rely on their daughters as the main contact with the outside world, including buying and selling at the market with these young girls who are supposed to be in school (Popoola, 2016 & Sufiyan, 2013).

Further, marital status shows that 100% and 96.46% of the respondents in Sabon-Gari and Giwa Local Government Areas were married while 99.9% and 3.54% respondents Sabon-Gari and Giwa LGAs were Divorced/ Separated/ Widowed. In addition, 25.47% and 7.16% of the respondents in Sabon-Gari and Giwa LGAs had formal education while 79.53% and 92.84% of the respondents in Sabon-Gari LGA had informal education. Also, the family structure of the respondents indicates that 75.51% of the respondents in Sabon-Gari had polygamous family structure while 83.10% of the respondents in Giwa LGA had polygamous family structure. Meanwhile, 24.49% of the respondents in Sabon-Gari had monogamous family structure while 16.90% of the respondents in Giwa LGA had monogamous family structure. Studies like Popoola (2016) and Adeoti *et al.* (2015) have established correlation between socio-demographic background of households and women's utilization of reproductive healthcare services across the six geo-political zones in Nigeria.

Table 4.2: Reproductive Health Programmes by Respondents in Sabon-Gari & Giwa LGAs

Variables	Sabon-Gari LGA (N=257)		Giwa LGA (N=113)	
	Freq.	Percent	Freq.	Percent
Use of modern contraceptives (N=370)				
Yes	52	5.23	6	1.31
No	205	94.77	107	98.69
Effectiveness of the use of any modern contraceptive methods (N=58)				
Effective	24	66.67	6	46.15
Very effective	25	31.33	2	33.33

Not effective	3	2.00	4	5.77
Husbands and socio-cultural factors as reasons for not using contraceptives (N=312)				
Yes	189	92.20	106	99.07
No	16	7.80	1	0.93
Birth Interval Between Children (CHSP) (N=370)				
Less than 2 years	159	71.87	105	92.92
2 years	53	10.62	8	7.08
3 years	35	13.62	*0.00	*0.00
4 years	8	3.11	*0.00	*0.00
5 years and above	2	0.78	*0.00	*0.00

Source: (Field Survey, 2018) (The Asterisk (*) denotes that respondents do not possess a particular variable)

Table 4.2 shows that 5.23% respondents in urban area (Sabon-Gari LGA) adopted modern contraceptives while 1.31% respondents in the rural area (Giwa LGA) practiced modern contraceptives. By implications, women in urban areas practice modern contraceptives more than their counterparts in the rural areas. This can be traced to the poor educational backgrounds and conservatism of the rural women (WHO, 2016, Field Survey, 2018 & NURHI, 2020).

Table 4.3: Reproductive Healthcare Programmes and Accessibility by Respondents

Variables	Sabon-Gari LGA		Giwa LGA	
	Freq.	**Percent**	**Freq.**	**Percent**
Antenatal Care Attendance Rate (ANC)				
Yes	229	20.11	91	10.53
No	28	79.89	22	89.47
Frequency of ANC Attendance Before Delivery				
Once	85	73.62	45	53.27
Twice	46	22.90	20	25.85
Thrice	49	19.07	19	16.81
Four-seven times	43	5.59	27	1.59
Eight times	24	2.68	2	1.47
Non-Attendance of Antenatal Care				
Yes	78	30.35	35	30.97
No	179	69.65	78	69.03
Non-Attendance of ANC by Birth Order				
First child	67	26.07	61	53.98
Second child	47	18.29	35	30.97
Third child	59	22.96	2	1.77

Fourth child	49	19.07	0	*0.00
Others	35	13.62	15	13.27
Post-Natal Care (PNC)				
Attendance Rate (N=370)				
Yes	181	5.43	87	2.99
No	76	94.57	26	97.01
Frequency of Attending Post-Natal				
Care (N=370)				
Once	93	59.51	84	70.39
Twice	80	24.46	12	10.62
Thrice	30	10.51	13	11.50
Four times	10	3.17	3	1.05
Eight times	5	2.35	10	1.43
Husband and socio-cultural factors as				
reasons for non-utilization of				
antenatal and post-natal cares (N=76)				
Yes	31	59.62	24	100.00
No	21	40.38	*0.0	*0.00

Source: (Field Survey, 2018) (The Asterisk (*) denotes that respondents do not possess a particular variable)

Table 4.3 shows that 20.11% and 10.53% of the respondents in Sabon Gari and Giwa LGAs attended antenatal care during pregnancy. Also, 2.68% and 1.47% of the respondents in Sabon-Gari and Giwa LGAs attended antenatal care for a minimum of eight times before delivery. In addition, 73.62% and 52.27% of the respondents in Sabon-Gari and Giwa LGAs attended antenatal care only once before delivery while 5.59% and 1.59% of the respondents in Sabon-Gari and Giwa LGAs also attended antenatal care four times before delivery. This is against the global benchmark of antenatal care attendance rate of 95% for a minimum of eight times before delivery to avoid preventable maternal morbidity that may lead to death for a developing country like Nigeria (WHO, 2015). On the other hand, 5.43% and 2.99% of respondents in Sabon-Gari and Giwa LGAs attended post-natal care after delivery which is against the global benchmark of 95% post-natal care attendance rate for a minimum of eight times for developing countries (NURHI, 2018).

Table 4.4: Reproductive Health Infrastructures and Accessibility by Respondents

Variables	Sabon-Gari LGA		Giwa LGA	
	Freq.	Percent	Freq.	Percent
Place of Birth During Delivery (N=370)				
Hospital (Health Facility Delivery)	124	15.25	44	4.94
Home (Home Delivery)	133	84.75	69	95.06
Reasons for giving birth at home:				
Cost of delivery (N=202)				
Yes	74	75.64	16	76.81
No	59	24.36	53	23.19
Husbands and family members				
restrictions (N=202)				

Yes		68	81.13	42	89.87
No		65	18.87	27	10.13
Unavailability of female delivery attendants at the hospital (N=202)					
Yes		100	75.19	51	83.91
No		33	24.81	18	16.09
Distance of Hospital from residence (N=202)					
Yes		20	94.96	38	64.93
No		113	5.04	31	25.07
Religion and Culture (N=202)					
Yes		94	90.68	52	95.36
No		39	9.32	17	4.64
Poor Quality Service Healthcare Delivery/Unavailability of 24 hour Healthcare Service (N=202)					
Yes		123	92.48	57	82.61
No		10	7.52	12	17.39
Assisted by a traditional birth attendant (TBA) or relatives during delivery if given birth at home (N=202)					
Yes		29	10.80	33	5.83
No		104	88.20	36	99.17

Source: (Field Survey, 2018)

Table 4.4 above, illustrates that 84.75% and 95.06% of the respondents in Sabon-Gari and Giwa LGAs delivered their pregnancies at home. Meanwhile, 15.25% and 4.94% of the respondents in Sabon-Gari and Giwa LGAs delivered their pregnancies at the health facilities by skilled birth attendants during delivery.

Table 4.5: Reproductive Health Infrastructures in Sabon-Gari and Giwa LGAs

Variables	Public Health Facilities (N=95) Sabon-Gari & Giwa LGAs				Private Health Facilities (N=21) Sabon-Gari & Giwa LGAs			
	Freq.	Percent	Available	Supposed	Freq.	Percent	Available	Supposed
Medical doctors								
Yes	37	39.78	0.59	3.39	21	100.00	2.57	2.57
No	56	60.22			0	0.0		
Nurses								
Yes	93	100.00	3.35	9.62	21	100.00	2.43	2.43
No	0	0.0			0	0.0		
Nurse/midwives								
Yes	72	77.42	2.51	7.10	21	100.00	4.24	4.24
No	21	22.58			0	0		
Midwives								

Yes	74	79.57	2.15	6.51	21	100.00	2.05	2.05
No	19	20.43			0	0.0		
SCHEW								
Yes	93	100.00	3.59	8.37	21	100.00	3.57	3.57
No	0	0.0			0	0.0	0	0.0
JCHEW								
Yes	93	100.00	3.75	8.32	1	4.76	0.14	0.14
No	0	0.0			20	95.24		
Environmental health workers								
Yes	73	78.49	3.31	9.62	1	4.76	0.10	0.10
No	20	21.51			20	95.24	0	0.0
Community Health officer								
Yes	75	80.65	1.63	5.59	1	4.76	0.10	0.10
No	18	19.35			20	95.24		
Environmental health assistance								
Yes	75	80.65	3.32	7.66	21	100.00	3.38	3.38
No	18	19.35			0	0.0		
Lab technicians								
Yes	57	61.29	0.97	4.77	0	0.0	2.86	2.86
No	36	38.71			21	100.0		
Pharmacist								
Yes	0	0.0	0.87	4.39	21	100.00	2.67	2.67
No	93	100.00			0	0.0		
Others								
Attendants	18	19.35	0.39	3.18	7	33.33	3.00	3.00
Record attendant	19	20.43	0.78	5.78	0	0.0		
Record officer	56	60.22	0.45	7.42	14	66.67		

Source: (Field Survey, 2018)

The World Health Organization (2020) recommended 3 medical doctors to 200 patients in a developing country like Nigeria but table 4.5 above depicts a somewhat contradictory figures to this recommendation. For instance, majority of the public health facilities in the study locations on the average had 1 medical doctor attending to over 500 patients instead of 3 medical doctors and 3 nurses instead of 9; and 3 nurses instead of 8; 3 midwives instead of 7; 3 environmental health workers instead of 10; 1 lab technicians instead of 5; 1 pharmacist instead of 4 and 1 record officer instead of 7 while the private health facilities have the minimum numbers of 3 to 4 medical doctors that run 24 hours service shifting unlike some of the public healthcare facilities that do not run 24 hours service due to inadequate medical staff. This was observed both Giwa and Sabon Gari Local Government Areas.

Estimated logistic regression model

Table 4.6: The binary logistic regression result which correlates reproductive health policy with reproductive health outcome in Nigeria:

Number of obs	370
LR chi^2(7)	31.720
Prob > chi^2	0.0034
Pseudo R^2	0.0633
Log likelihood	-235.09958

MMR	Coefficients	Std. Err.	z	P>z	[95% Conf. Interval]	
ANC	-2.13	0.40	-0.32	0.75ns	-0.91	0.66
PNC	-1.93	0.33	0.16	0.064ns	-0.29	1.57
CPR	-9.33	0.34	0.48	0.077ns	-0.67	1.99
DAHFSBA	-8.45	0.26	1.04	0.08ns	-0.06	0.97
GSRHI	-2.66	0.73	-0.90	0.37ns	-2.10	0.78
CHSP	-8.98	0.16	-0.76	0.45ns	-0.43	0.19
_cons	-12.15	0.63	-1.44	0.09ns	-3.38	0.93
Odds Ratio						
ANC	4.88	0.35	-0.32	0.75ns	0.40	1.93
PNC	2.54	0.83	0.16	0.064ns	1.34	4.80
CPR	18.79	1.27	0.48	0.077ns	1.96	7.32
DAHF	16.14	0.41	1.04	0.08ns	0.94	2.63
GSRHI	4.52	0.38	-0.90	0.37ns	0.12	2.18
CHSP	16.89	0.14	-0.76	0.45ns	0.65	1.21
_cons	**30.24**	**0.07**	**-1.44**	**0.90**ns	**0.30**	**0.40**

Source: (Field Survey, 2018)

Note: Dependent Variable: MMR = Maternal Mortality Rate; Independent Variables: ANC = Antenatal Care, PNC = Post-Natal Care, CPR = Contraceptive Prevalence Rate, DAHFSBA = Delivery at Health Facility by Skilled Birth Attendants, GSRHI = Government Spending on Reproductive Health Infrastructures and CHSP = Child Spacing Practice while the coefficients with "ns" denote that the variables are not significant at 5% level.

Table 4.6 illustrates that the Prob >Chi^2 0.034 gives the probability that the null hypothesis is valid and that the model is well fitted as there is no statistical probability that the alternative hypothesis occurred. The shows further that the estimated binary logistic regression parameters are all insignificant at 5% level of significance as we can see that the p-values of the estimated parameters are beyond the threshold of 5%. Therefore, the null hypothesis that reproductive health policy does not have any significant impact on reproductive health outcome is thereby validated against the alternative hypothesis. By implications the odd ratios indicate that the reproductive health variables are less likely to change the landscape of maternal mortality rate in the study locations. This result corroborates the findings of Adeyanju et al. (2017) and USAID (2018) who found negative correlation between child spacing practice, antenatal care, delivery at health facility, modern contraceptives and maternal morbidity rate in Ghana, Mali and Senegal. In addition, this result is also in line with the studies conducted by Speizer et al. (2012), Njiforti et al. (2016), Sufiyan (2013), Popoola (2016), Onarheim et al. (2016) and Odu et al. (2015), who reported that reproductive healthcare services are less likely to reduce maternal morbidity rate in Nigeria. Further, from the result in table 4.6 above, antenatal care (ANC) coefficient is negative with the value -2.13. This means that ANC is 4.88 times less likely to reduce maternal death and stillbirth in the study locations. This is because majority of the respondents did not attend antenatal care up to eight times before delivery. In agreement to this

statement, the cross-sectional survey from the study areas report that only 6% respondents attended antenatal care up to eight times before delivery while the rate of stillbirths in the study locations stands at 79.15% to 88.595% per 100,000 live births. In addition, the reports of antenatal attendance rate of 6% from the study areas is not in line with the World Health Organization recommendation of 95% (minimum of 8 times) antenatal care attendance rate for pregnant women. Meanwhile, post-natal care (PNC) coefficient also appears to be insignificant factor in reducing neo-natal mortality in the study locations with a negative value of -1.93. This connotes that women who do not attend post-natal care within 1-40 days of delivery are 2.52 times less likely to escape maternal complications that may lead to death during delivery. World Health Organization (2015) and National Urban Reproductive Health Initiatives (2020) recommend that lactating mothers must attend post-natal care up to the minimum of 8 times (75%) within 1-40 days of delivery. But the cross-sectional survey from the study locations reveals that only 3% of the respondents went for post-natal care check-up within 1-40 days of delivery which is not in line with the World Health Organization's recommendation of post-natal care check-up of 85% within 40 days of delivery. The Focus Group Discussions conducted in the two study locations for this survey revealed that religion, culture and husband restrictions accounted for the reasons for low utilization of antenatal care and post-natal services.

Contraceptive prevalence rate (CPR) also appears to be insignificant with negative value of -9.33. This connotes that modern contraceptive is 18.79 times less likely to influence stillbirths and maternal complications in the study areas. In agreement to this statement, cross-sectional survey from the study locations reveals that only 6.45% respondents were currently using any modern methods of contraceptives as at the time of conducting this survey. This is against 64.34% benchmark contraceptive usage for a developing country like Nigeria (NDHS, 2013 & FMH, 2015). Also, delivery at health facility by skilled birth attendants (DAHFSBA) equally appears to be insignificant with negative value of -8.45. This means that women who do not use the health facility during pregnancy deliveries are 16.79 times less likely to escape maternal complications that may result to death compared to pregnant women who are being attended to by skilled birth attendants at the healthcare facility. This result is in line with the findings of Sufiyan *et al*. (2013) and Sinai (2015) who found that delivery at health facility by pregnant women during labour reduces the likelihood and risks of stillbirths and maternal deaths by 45% and increases the chances of women survival by 35%, but the cross-sectional survey reports of this study reveals that the rate of health facility deliveries in Sabon Gari and Giwa LGAs by pregnant women is 15.25% and 4.94% while home deliveries accounted for about 81%.

Government spending on reproductive health infrastructures (GSRHI) also has an insignificant impact in averting maternal deaths in the study locations with a negative value of -2.66. This implies that government spending on reproductive health infrastructures is 4.52 times less likely to reduce stillbirth and maternal mortality rate in the study locations. In agreement with this statement, a cross-sectional survey reports from the 93 sampled public health facilities shows that public health institutions in the study locations were found wanting in the area of medical staff capacity. For example, cross-sectional survey reports from the study location revealed that 85% of the health facilities do not have adequate medical staff to provide reproductive healthcare services. The shortage of medical staff across the sampled public healthcare facilities varied from ANC and PNC service providers, family planning service providers, nurses, medical doctors as well as mid-wives. In addition, the cross-sectional survey also reveals that most of the general hospitals and primary healthcare centers were also found wanting in the area of doctor-patients' ratios. For instance, the World Health Organization recommends 3 medical doctors to 200 patients (3:200) but the doctor-patients ratios of most

sampled healthcare facilities in the study locations stood at 1 medical doctor to over 500 patients (1:500). This was observed both in Sabon-Gari and Giwa LGAs. This report is in line with the study conducted by Popoola (2016) who reported that the ratio of medical doctors to patients in Sabon-Gari and Giwa LGAs stood at 1 medical doctor to over 500 patients. Child spacing practice also appears to be insignificant in averting maternal deaths in the study locations with the negative value of -8.98. This means that women who practiced child spacing of less than two years are 16.89 times less likely to escape maternal complications that may lead to death during delivery compared to women who had more than two years birth interval. However, the descriptive statistics from the study locations revealed that 92% of the respondents had a birth interval of less than two years. This is against the World Health Organization's recommendation of a minimum of two years child spacing practice for lactating women in developing countries. Mairo and Abdallah (2017) reported that women with less than two years child spacing practice are more exposed to the risks of maternal death compared to women with more than two years child spacing practice. Therefore, the log-odds of the constant is -12.15 which is negative and insignificant at p-value of 0.90 with the odds ratio of 30.24. This indicates that the insignificant determinants of maternal mortality rate in the study locations are antenatal care, post-natal care, contraceptive prevalence rate, delivery at health facility by skilled birth attendants, government spending on reproductive health infrastructure and child spacing practice.

5. CONCLUSION

Based on the selected reproductive health variables such as modern contraceptive prevalence rate, antenatal care, post-natal care, delivery at the healthcare facility by skilled birth attendants and child spacing practice extracted from the Nigeria Demographic Health Survey reports for 2003, 2008, 2013 and 2018 periods and the cross-sectional result from the field survey. It was observed that these reproductive health indices were negative in the rural areas as compared to the urban areas of Nigeria even though the reproductive health policy programmes were extended to the rural areas, but conservatism such as religion, culture and traditions did not allow most of these rural women to key into the various reproductive health policy programmes of the government as compared to women in the urban areas. Therefore, this development has accounted for the reason for high maternal mortality rate in the rural areas of Nigeria compared to the urban areas.

Further, in the course of the cross-sectional analysis of the selected reproductive health variables across the 93 sampled public health facilities in Sabon-Gari and Giwa LGAs, this research also found lapses on the part of the government in respect to the reproductive health policy programmes in the area of doctor-patients ratios, this is because most of the public health facilities had inadequate medical staff to effectively carry out the various reproductive healthcare activities and the doctor-patients-ratios of the sampled public health facilities were still far below expectations, this was observed in Giwa and Sabon-Gari LGAs of Kaduna State of Nigeria.

6. RECOMMENDATIONS

Following the analysis of the impact of reproductive health policy on reproductive health outcome in Nigeria, this study recommends that:

Government, private stakeholders, and non-governmental organizations should organize sensitization workshops for religion leaders and households' heads on the health benefits of

family planning and pregnant women deliveries at healthcare facilities by skilled birth attendants as well as the health implications of poor child spacing practice, non-compliance of pregnant women to key into antenatal care and post-natal care programmes during and after each pregnancy delivery. Government, non-government organizations and private stakeholders should pull resources together to increase the structure and capacities of public health facilities as well as recruit qualified medical staff to man the various reproductive health activities across the healthcare facilities in Nigeria for effective reproductive healthcare services delivery.

There is need for pregnant women to be enlightened about the importance of healthcare facilities delivery and the number of times they must attend antenatal care and post-natal care before and after delivery to avoid delivery related complications that may lead to maternal death. There is need for the government, non-governmental organizations and private stakeholders to increase the number of female reproductive health workers to outweigh male maternal health service providers especially in the Northern Nigeria in order to encourage the northern women to utilize the various reproductive health programmes during their reproductive lifetime.

REFERENCES

Adeoti, A.I., P.A., Adejanju & O.T., Ibrahim (2015). The link Between Demand for Reproductive Health and family planning, Poverty and Economic Growth in Nigeria, *Working Paper Published by Department of Agricultural Economics, University of Ibadan Printing Press, Ibadan, Nigeria.*

Ademiluyi, D. D., & Arowolo, A.J. (2009). The determinants of Motherhood and work status: *A Journal of Development Economics, 1*(4), 123-156.

Adeyanju, B.O., Tubeuf, S.G, & Ensor, T.M. (2017). A decomposition analysis of the changes in modern contraceptive use, Academic *Unit of Health Economics, Leeds Institute of Health Sciences, University of Leeds,* LS2 9NL. Leeds Institute for Health Sciences, University of Leeds, Leeds LS2 9NL

Amiri, A.J. & Gerdtham, U.G. (2013), Economic Analysis of Reproductive Health, Family Planning, Inequality and Economic Development. *Journal of Development Economics 2(3),* 19-40, University of Leeds Publication, United Kingdom.

Anyebe, R., McCurdy, T., & Amoo, U.I. (2014). "Labour Supply a review of Alternative approaches", *The Institute for Fiscal Studies Working Paper Series No. W98/18.*

Babatunde, G.D. (2015). Reproductive outcomes in Nigeria and Women Employment Participation. *International Journal of Development Economics*, 2(3), 15-35.

Bandura, J.R., James, C.K., & Michael, G. (2014). Population Growth Rate and Reproductive Health: An Economic Framework for Policy Evaluation, *Journal of Development Economics, 3(1),* 123-165.

Bongaarts, J. (2010), Causes of Educational Differences in Fertility and Maternal Mortality Rate in Sub-Saharan Africa, *Working Paper 2(20), Population Council One Dag Hammarskjold Plaza New York, New York 10017 USA.*

Davanzo, D. & Adamson, S. (2012). Economic Analysis of Reproductive Health of Women, Infant Mortality and Repeal of Federal Prohibition, Working Paper Published by National Bureau of Economic Research Massachusetts Avenue, Cambridge United States of America.

Federal Ministry of Health (2018, 2020 & 2021): Reproductive Health and Family Planning in Nigeria: A Socio-economic Issue

Funnel, M.Z., & G.U. Rogers (2010). The socioeconomic and demographic determinants of women work participation in Pakistan: Evidence from Bahawalpur District". *A Research Journal of South Asian Studies, 24(2),* 351-367. George Washington

University Printing Press, Washington DC. USA.

Green, E. & Merick, J. (2014). Expert Panel on Fertility, Reproductive Health and Economic Development, *Working Paper Published by United Nations (UN) Research Department.*

Hongbin, E.I., Joshi T.S., & Amiri I.H. (2015). Adolescent Fertility, Family Planning and Reproductive Health in Low and Middle-Income Countries: Economic Consequences, Effects and Solutions, a Working Paper Published by Center for Global Development Washington DC, USA

Hamzat, S. (2010). An Evaluation of the theory of demand and demand for children in Nigeria: An Axiomatic Approach. M.Sc. Thesis Submitted to *Economic Department, Faculty of Social Sciences, Ahmadu Bello University-Zaria*

Israel, R. (2009). ''Reproductive Health Outcomes and Theories of occupational segregation by gender: An overview'', in Women, Gender and Work, Martha F. Loutfi, ed. Geneva. *International Labour 3(5),* 129-156.

Joshi, S.B. (2012). Reproductive Health and Economic Development: What Connections Should We Focus On? *A Working Paper Published by POPPOV Research Network*.

Kreyenfeld, M. & Anderson, G. (2014), Socioeconomic differences in the unemployment and fertility Rate and Maternal-Infant Mortality Nexus: Evidence from Denmark and Germany Max Planck Institute for Demographic Research and Hertie School of Governance, Germany, Stockholm University Demography Unit, Sweden.

Mincer, J. (2000) "Investment in Human Capital and Personal Income Distribution," *Journal of Political Economy, 6(4),* 281-302.

National Population Census (2006). Federal Government of Nigeria (FGN), 4-55

National Population Commission (2015): 1988 & 2004 National Population Policies: Progression or Retrogression?

Njiforti, P.P., S.I. Isah., & T.O. Popoola (2016). Economic Consequences of Reproductive Health in Nigeria. A Paper Presented at the Fertility and Reproductive Health Workshop, 22nd - 26th July, 2016, Held at NAERLS Conference and Suites Zaria-Kaduna State.

Nigerian Urban Reproductive Health Initiative (2016, 2018, 2019, 2020 & 2021). Applying Science to Economic Analysis of Family Planning and Reproductive Health Challenges in Sub-Saharan Africa.

Nigeria Demographic Health Survey (2003, 2008, 2013 & 2018). Reproductive Health and Family Planning, Population Dynamics, Economic and Demographic Issues in Nigeria.

Odu, O.O., Adeyemo, M.T., & Adeyemi, M.O. (2015). Economic Analysis of Reproductive Health Behaviour and Determinants of Fertility Among women in Semi-Urban Nigeria Community. *Journal of Community Medicine and Primary Healthcare, 2(4),* 34-123.

Onarheim, K.H., Johanne, H.I., & David E.B (2016). Economic Benefits of Investing in Women's Reproductive Health: A Systematic Review, 1 Department of Global Health and Population, Harvard T.H. Chan School of Public Health, Harvard University, Boston, Massachusetts, United States of America, 2 Department of Global Public Health and Primary Care, University of Bergen, Bergen, Norway.

Patton M., (2015). Labour force participation in Pakistan: An instrumental variable approach. *CREB working paper No. 01-11.*

Popoola, O.T. (2016). Accessibility and Effectiveness of Healthcare Service Delivery: Micro-Evidence from Sabon-Gari and Giwa Local Government Areas. An M.Sc. thesis submitted to *department of economics, Faculty of Social Science, Ahmadu Bello University, Zaria.*

Saifuddin, B., David, S., & Smith, J. (2010). Economics of Reproductive Health, Family Planning and the Millennium Development Goals: The Missing Link. *Journal of Health Economics Published by Population Program of the William and Flora Hewlett Foundation, 3(4),* 123-345.

Silverman, A., Bruce, J., & Bandura, M. (2012). Economic Analysis of Reproductive Health and Family Planning. *Journal of Health Economics, Vol. 2(3),* 14-80 Published by African Population and Health Research Center.

Smith, C., David, G., & Margret, C. (2013). Applying Science to Economic Analysis of Family Planning and Reproductive Health Challenges in Sub-Saharan Africa, Published by Woodrow Wilson School of Public Health and International Affairs, Princeton University Printing Press.

United Nations International Children's Emergency Fund (2012 & 2021). Positive Reproductive Health Outcomes and Women Labour Productivity in Sub-Saharan African Countries

United Nations International Children's Emergency Fund (2015). Economic Implications of Maternal and Child Health Outcomes in Nigeria

United Nations International Children's Emergency Fund 2018). The Impact of Family Planning on Economic Growth in Sub-Saharan African Countries.

United States Agency for International Development (2020). Women Economic Empowerment and Youth Sexual Reproductive Health and Family Planning, Working Paper Published by Research Department USAID Triangle Park, USA.

United States Agency for International Development (2021). Economic Analysis of Sexual and Reproductive Health Rights and the Post Development Agenda, Working Paper Published by Family Care International Printing Press, USA.

Uwalem, I.S. (2011). "The Determinants of Women Empowerment in Southern Punjab (Pakistan): An Empirical Analysis" European Journal of Social Sciences – Volume 10, Number 2.

World Health Organization (2020). Introduction to Reproductive Health, Family Planning, Environment, Training Module 1 on Public Health and Environment.

World Health Organization (2021). Developing Sexual Reproductive Health Programs and Guidelines, Journal of Public Health Published by Research Department, WHO, USA.

World Health Organization (2018). Towards Improve Economic and Sexual Reproductive Health Outcomes for Adolescent Girls (TESFA) CARE ETHIOPA, A Working Paper USA Demographic Research Department.

World Health Organization. (2019). Mental Health Aspect of Women Reproductive Health and Family Planning, a Global Review of the Literature Published by Research Department WHO, Geneva, Switzerland.