Trends and Socio-Economic Correlates of Contraceptive Choice among High-Fertility Ever-Married Women of Reproductive Age in Nigeria

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Background

Contraception is a fertility control measure; it is commonly understood to have a beneficial impact on women within reproductive age by preventing unwanted pregnancy, ensuring proper timing of conception, and reducing the incidence of abortion, hence collectively influencing the fertility rate. Out of approximately 1.9 billion fecund women, the number of those wishing to use contraception increased from 900 million in 2000 to nearly 1.1 billion in 2021 over the past twenty years (United Nations - DESA, 2022). A significant fraction of pregnancies have been reported to be unintended globally, and approximately 44% of pregnancies are thought to be unplanned (Beyene, 2019). In 2019, 121 million unintended pregnancies occurred, with married women experiencing three in ten such pregnancies (United Nations, 2020). Research has previously confirmed that women who have previously given birth to at least five children tagged as having high fertility have a greater risk of dying due to maternal causes, and are likely to experience poor child survival (Angko et al., 2022). Out of 100,000 births in African countries with high fertility, 640 women die due to complications related to pregnancy and childbirth (Reda et al., 2020).

The average total fertility rate globally ranges from 1.7 children per woman in more developed countries to 4.6 in less developed countries (Mohammed et al., 2014). In contrast to the global average of 2.5 children per woman, sub-Saharan Africa and Nigeria have 4.6 and 5.2 children per woman respectively (United Nations – DESA, 2020). This puts Nigeria among the countries with the highest total fertility rates in the world. To experience a notable decrease in fertility levels, as in more developed countries, access to and use of preferred contraceptive choices play an important role in developing countries such as Nigeria. Despite the present policy in place in Nigeria for subsidized family planning and contraceptive use in government health facilities (Federal Ministry of Health; National Family Plan, 2020), Nigeria is still among the countries with low contraceptive prevalence rates, with 18% and 21% among all women and married women respectively (Fadeyibi et al, 2022), contributing to a high fertility rate, and uncontrolled pregnancy with a direct link with maternal and child health. The aim is to achieve contraception in maximum comfort and privacy, while maintaining contraception with minimum cost and side effects.

Contraceptive choices are the ability to choose among diverse methods, devices, sexual practices, chemicals, drugs, or surgical procedures for the intentional prevention of conception. Variation in the choice of contraceptive method differs widely across societies and this variation is the result of different factors (Jain et al., 2020). Contraceptive practices are widely influenced by multifaceted factors such as knowledge

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about family planning methods (Sumiati et al., 2019), ovulatory cycle (Mandiwa et al., 2018), (Fagbamigbe et al., 2015; Mandiwa et al., 2018; Olika et al. 2021). In Nigeria, studies have established associations between modern contraceptive use and educational status among women (Abada & Tenkorang, 2012; Reda et al., 2020), women's empowerment (Maxwell et al., 2015), and decision-making (Dala et al., 2012; Id et al., 2021). Other factors that contribute to low usage of in the country include factors such as method mix, provider technical and interpersonal skills, provider bias, erratic supply of contraceptives, the type of facility (Nigerian Federal Ministry of Health 2014; Schwandt et al., 2017), and demand factors which are sociodemographic and socioeconomic characteristics that include age, parity, education, religion, monogamous marriage, urban residence, and household wealth (Ankomah, et al., 2011; Ejembi et al., 2015; Odewale, et al., 2016; Okigbo et al., 2017; Sekoni and Oladoyin 2016).

Evidence from Nigeria's demographic and health survey (NDHS) shows that there is a difference in the total fertility rate across the regions in the country, with the highest rate of 6.7% in NorthWest Region and the lowest of 4.3% in the South-South Region. This finding suggests that there are factors responsible for this variation. Based on empirical evidence in Nigeria, this study identified various factors such as personal reasons, spousal disapproval, lack of knowledge of contraceptives, religious and ethnic objections as the most common reasons for not choosing any method. Notably, no substantial relevance was given to the influence of the choice of contraceptive.

Numerous intervention measures such as the National Family Planning (NFPCP); and National Strategic Health Development Plan (NSHDP) instituted by the Nigerian Government and International Agencies such as United States Agency for International Development (USAID) have supported voluntary family planning and reproductive health programmes. This is done through major stakeholders, development partners, civil society organizations, traditional and religious leaders, mass media, the organized private sector, and community/faith-based organizations (C/FBOs), all aimed at promoting contraception, nevertheless the modern contraceptive prevalent rate (mCPR) in Nigeria is among the lowest (16.6%) worldwide (NDHS, 2018). Issues around contraceptive choices and use particularly among high-fertility women remain a gray area for research in Nigeria. Most available studies (Fagbamigbe et al., 2015; United Nations, 2019; Fadeyibi et al., 2022; Bello et al., 2022) have focused on a national estimate of contraceptive choices. Consequently, these studies failed to address the peculiarity of trends and socioeconomic correlates due to differences in culture and the characteristics of high-fertility married women of reproductive age in Nigeria. Another study over two decades ago (Odimegwu et al., 1997) in Nigeria discussed regional correlates of contraceptive choices with no relation to high fertility and its disadvantages. Therefore, the current study was conceptualized to address these gaps. The objective of this study was to examine the trends and socioeconomic correlates of contraceptive choices among high-fertility ever-married women in Nigeria between 2008 and 2018.

Methods

Study area

Nigeria, as the most populous country in Africa and the 14th largest in land mass, exhibits a diverse demographic landscape with a population estimated to be more than 200 million. Nigeria comprises of 36 states and a Federal Capital Territory, which are further organized into six geopolitical zones: North Central, Northeast, Northwest, Southeast, South South, and Southwest.

Study design and data source

This cross-sectional study utilized 2008, 2013, and 2018 consecutive rounds of nationally representative data from the Nigeria Demographic and Health Survey (NDHS). These datasets provided a rich source of data for the study, enabling the exploration of key research questions and the analysis of important trends related to demographic and health factors in Nigeria.

Study population and sample size

In 2008, 2013, and 2018 respectively there were 36800, 40320, 42000 households and 33385, 39902, 41821 women between the ages of 15 and 49 years were interviewed (ICF Macro and NPC, 2019). For the purpose of this study, this group of women was narrowed down to those who had at least five children

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and had ever been married (whether they were still together, separated, or divorced). The NDHS is a cross-sectional study design that employs a two-stage cluster sampling technique for sample selection. The sub-samples extracted for this study included 9,524 (2008), 10,846 (2013), and 11,485 (2018), high-fertility ever-married women. Background and reproductive characteristics such as age, level of education, religion, region, ethnicity, wealth quintile, media exposure, Family Planning Information on Media (FPIM), and fertility preference were controlled.

Variables

The dependent(outcome) variable is a contraceptive choice. For the purpose of analysis, the outcome variable contraceptive choice was categorized as none, short, or long-term/permanent methods. Contraceptive choice refers to the decision made by individuals or couples regarding the type of contraceptives to be adopted for the prevention of unintended pregnancies. It was categorized into three groups: "Not Using," which indicates individuals or couples who do not use any form of contraception; "Short-term Using," which refers to individuals or couples who use temporary contraceptive methods; and "Long-term/Permanent Using," which represents individuals or couples who opt for long-term or permanent contraceptive methods. Individuals who indicated that they were not currently using any form of contraception were classified as "non-users". It is important to note that this categorization does not imply a deliberate choice of non-use but rather reflects their current contraceptive status.

The independent (explanatory) variables considered in this study are Age, Education, Number of Surviving Children (NSC), Religion, Region, Ethnicity, Marital Status, Wealth Quintile, Media exposure, Family Planning Information on Media (FPIM), and Fertility preference, Age at first birth, Age at first cohabitation, Age at first marriage, Partners' Educational Level, Place of Residence, Working Status, Husband Desire for Children (HDC), Health Related Family Planning Information (HRFPI), and Respondents' Autonomy in Decision Making (RADM).

Data analysis

The datasets were analysed using descriptive statistics, the chi-square test, and multinomial logistic regression at a 5%. The chi-square test was conducted to examine the association between contraceptive choices and ever-married high-fertility women of reproductive age.

Ethical approval and consent to participate

This study does not involve the collection of information from participants. Consent to the respondent is not applicable.

Results

Table 1 Sociodemographic Characteristics of the Study Population

The mean ages of the participants were 37.5±6.7 years in 2008, 37.6±6.6 years in 2013, and 37.7±6.54 in 2018. The distribution among wealth quintiles was relatively stable across the groups over the years, with the poorest constituting the highest percentage between 2008 and 2018. In terms of the number of surviving children, over the years, there was an increase in the percentage of respondents with five or more surviving children from 72.6% to 79.9% in 2018. The distribution by respondent's highest educational qualification revealed that there was a decline in the proportion of respondents with no education (from 58.5% in 2008 to 54.8% in 2018) and an increase in those with at least secondary education (from 16.0% in 2008 to 22.9% in 2018). The distribution by partner's educational level revealed that nearly half of the respondents' spouses had no formal education between 2008 and 2018, and those with at least secondary education increased from 26.7% in 2008 to 32.4% in 2013 and 40.6% in 2018.

Table 2 Social Characteristics of the Respondents

The distribution of respondents by age at first sex revealed that in 2008, 45.9% of respondents had their first sexual intercourse before the age of 18, but this percentage decreased drastically to 16.5% in 2013 before increasing again to 75.8% in 2018. The distribution by age at first cohabitation suggested that across the survey years, a significant majority of respondents cohabited before the age of 18, with the percentages of 69.6% in 2008, 68.1% in 2013, and 64.0% in

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2018. The percentage of respondents who gave birth before the age of 18 remained relatively stable over time, ranging from 50.2% in 2013 to 50.1% in 2018.

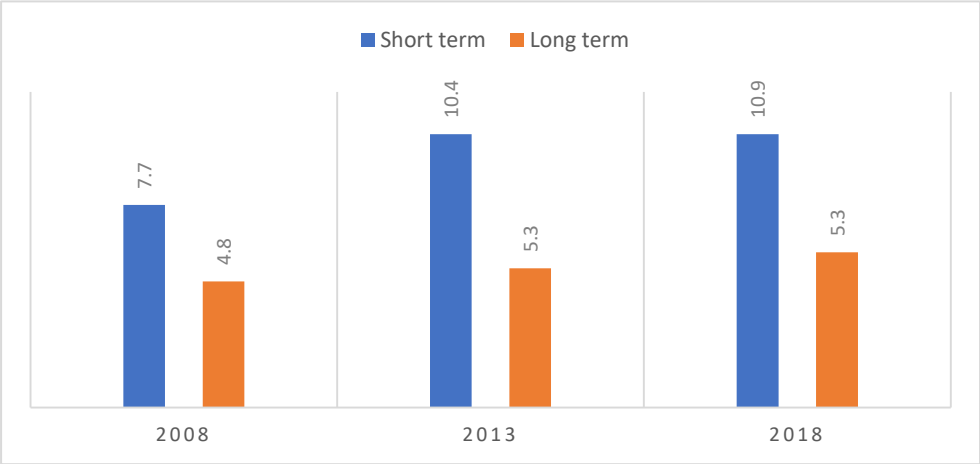

Figure 1 Prevalence of short-term and long-term/permanent Contraception from 2008-2018

Figure 1 shows the prevalence rate of short-term and long/permanent contraceptive method in the study years. The chart revealed that the short-term prevalence of contraceptive such as injections and condom increased from 7.7% in 2008 to 10.9% in 2018. The long-term contraceptive prevalence rate also experienced a slight increase from 4.8% in 2008 to 5.3% in 2018.

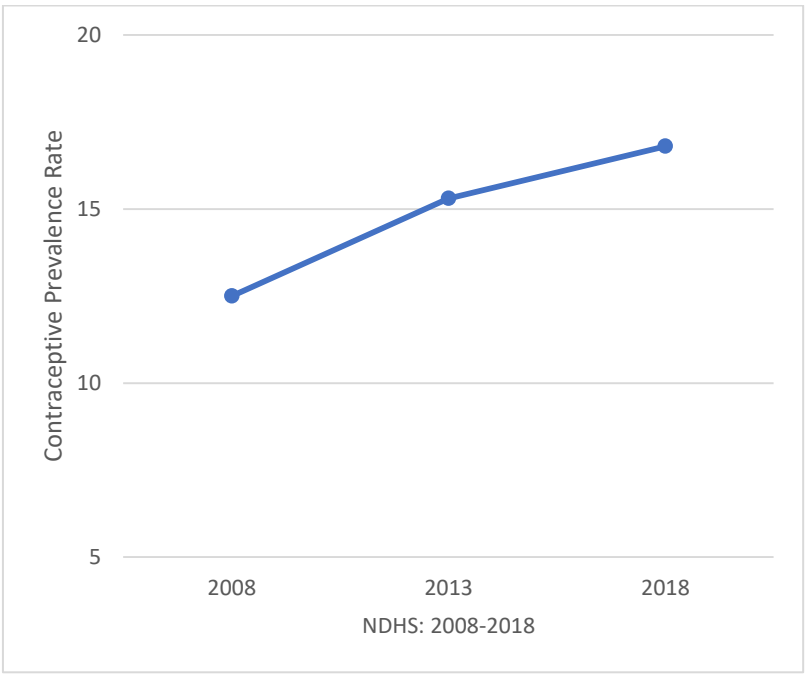

Figure 2 The Trend of Contraceptive Prevalence from 2008-2018

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Figure 2 shows the trend of contraceptive prevalence rate in the study years. The chart revealed that the contraceptive prevalence rate in 2008 was estimated to be 12.5%, which increased to 15.8% in 2013 and to 16.3% in 2018.

Table 3 Factors influencing contraceptive choice among ever-married high-fertility women in Nigeria

The results revealed that in 2008, the likelihood of using a long-term/permanent contraceptive method was greater among high-fertility women who had primary education (aOR=1.41; 95% C.I=0.99-2.01), and those who had at least secondary education (aOR=1.65; 95% C.I=1.11-2.46), than among women who did not receive any formal education. This trend was also observed in 2013 [primary education (aOR=1.39; 95% C.I=1.00-1.93); secondary education (aOR=1.52; 95% C.I=1.06-2.17)] and 2018. For religion, the use of sheort-term contraceptive methods was lower among women who practised Islam in 2008 (aOR=0.87; 95% C.I=0.68-1.12), 2013 (aOR=0.59; 95% C.I=0.48-0.74), and 2018 (aOR=0.61; 95% C.I=0.30-0.52) than among women who practised Christianity. Furthermore, the odds of long-term/permanent contraceptive methods in 2008 were greater among women who had low FPIM (aOR=1.73; 95% C.I=1.31-2.28), and those with high FPIM (aOR=1.91; 95% C.I=1.26-2.88) than those with no FPIM exposure. Similar pattern was observed in 2013 and 2018, for women with low FPIM (aOR=1.24; 95% C.I=0.99-1.55), (aOR=1.49; 95% C.I=1.21-1.85) and high FPIM (aOR=1.44; 95% C.I=0.97-2.14), (aOR=2.64; 95% C.I=1.74-4.01) who were more likely to choose long-term/permanent methods than women with no FPIM exposure.

Discussion

Description of Contraceptive Choice among High Fertility Women

This study revealed that a significant proportion of participants in this study fell within the age range of 35 to 49 years, while those aged between 25 and 34 years constituted a substantial portion of the sample compared to those aged between 15 and 24 years. These results indicate that the study predominantly captured the middle-aged population, with a mean age of approximately 38 years and a moderate standard deviation. The majority of the sample comprised rural residents, while a smaller percentage were urban dwellers. A large proportion of the ethnic population was identified as Fulani/Hausa, followed by Igbo and Yoruba, while the Muslims constituted the largest proportion, followed closely by the Christians and traditional/other religions.

Most participants were currently married or cohabiting and employed, while a smaller percentage were formerly married and not currently working. The largest proportion of participants fell into the "poorest" category, followed by the "poorer," "middle," "richer," and "richest" categories. These results indicate significant income inequality among the study population, with a substantial proportion belonging to the lower wealth quintile. Nearly half of the participants reported that their partners had no education, while a significant percentage stated that their partners had at least a secondary education. A smaller proportion indicated that they did not know their partners' educational level.

Associations between the Sociodemographic Characteristics of the Respondents and Contraceptive Choice

This study examined three significant age-related milestones: age at first sexual experience, age at first cohabitation, and age at first birth. The data indicated that a considerable proportion of participants reported engaging in sexual activity, and early cohabitation in 2018 were more at an early age compared to 2008-2013 which was relatively greater for older participant aged 18+ years. This could be because the study population focused on married women which reduced the number of adolescents in the study population. This was in line with a study by Aderibigbe et al., (2013) who reported 60% of young people in Nigeria had their first cohabitation experience before the age of 18. In terms of age at first birth, the findings revealed that 51%, 50.2%, and 50.1% of participants from 2008-2013 respectively, had their first child before the age of 18, indicating a significant proportion of adolescent mothers despite the low number of the adolescent population in this study.

The majority of participants had no exposure to media. A small proportion (21.9%, 19.8%, 14.0%) reported high exposure, which is in line with findings from a study by Bankole et al., (2012) that young people who were exposed to more media messages about family planning were more likely to adopt family planning methods. A study conducted by Oluwasanu et al., (2019), also highlights and underscores the need to access the media-related information. Although their study focused on the use of contraceptives, this study focused on the contraceptive choices.

FPIM is essential for making informed choices about contraception. This study revealed that most participants (68%, 70.2%, 69.3%) did not see or hear much about family planning in the media, while 28.1%, 26.6%, 28.5% did a little, and only a small group (3.8%, 3.2%, 2.2%) received lots of FPIM. Similarly, 68%, 70.2%, and 69.3% of participants did not receive any health-related family planning information, while 32%, 29.8%, and 30.7% received some.

This study further revealed that only 45.5%, 47.3%, and 41.4% of participants expressed a desire to have another child, while more than half (53.8%, 52.1%, and 58.1% respectively) were undecided or did not want more children. A total of 26%, 27.9%, and 31.8% of participants reported having the same desired number of children as their husbands, and a graeter proportion (33%, 42.2%, 46.3%) reported that their husbands wanted more children. A large number of participants(62.7%, 81.2%, 69.3%) did not have health decision autonomy, and a smaller group (37.3%, 18.8%, 30.7%) reported having more control.

This study examined the trends of contraceptive choices from 2008 to 2018, among 9524, 10846, and 11485 respondents respectively. The majority of individuals (87.5%, 84.3%, 83.8%) were classified as non-users, 7.7%, 10.4%, 10.9% were short-term contraceptive users, and 4.8%, 5.3%, 5.3% were long-term contraceptive users respectively. These findings indicate that a significant proportion of the population is not currently using any contraceptive method, with short-term methods being more prevalent than long-term or permanent methods**.**

The consistent trend in the lack of information on the appropriate contraceptive choice among high-fertility women of reproductive age over the years is more evident. Emphasis on the need for an inflow of proper family planning information, and the availability of appropriate contraceptives across all regions of the country is paramount. Furthermore, interventions that can increase spousal involvement, will in turn increase women's health decision autonomy. Overall, the findings emphasize the importance of considering multiple factors when understanding contraceptive choices in Nigeria, as they a play crucial role in shaping contraceptive preferences.

Conclusion and Recommendations

In all the survey years, the majority of individuals were classified as non-users of contraceptives. All charactertics of the women in this study, including age, education, region, residences, religion, marital status, working status, wealth quintile, partner education, media exposure, age at first sex, birth, cohabitation, fertility preference, HDC, FPME, HRFPI, and RADM had significant associations with contraceptive choice. However, at the multivariate level, education, religion, and exposure to family planning information had a strong influence on contraceptive choice over the years. Improving women's education, and family planning information flow through media, and adopting regional and religious specific strategies will advance the choice of contraceptive among high-fertility women in Nigeria. The diversity in the individual or cultural characteristics of women affects contraceptive choices and in the long-run contributes to total fertility.

Limitations and Strengths of the Study

To our knowledge, this is the first study to explore the trends and socioeconomic correlates of contraceptive choice among ever-married women with at least five children in Nigeria. The strengths of this study lie in the fact that we considered a wide range of independent variables over 10 years and the use of nationally representative data to assess the trends and socioeconomic correlates of contraceptive choice among high-fertility ever-married women of reproductive age (15-49 years). The high response rate supported the study's methodology's finest data collection practices, which were carried out by highly trained professionals. The findings from this study can be generalised to all women aged 15-49 years in Nigeria.

Abbreviations

NDHS: Nigeria Demographic and Survey
UN: United Nations
UNDESA: United Nations Department of Economic and Social Affairs
TFR: Total Fertility Rate

Availability of data and materials

The data extracted for this current study are available from the DHS program Demographic Health Survey(archive@dhsprogram.com).

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Table 1 Sociodemographic Characteristics of Ever-Married Women with High Fertility

Characteristics	NDHS 2008	NDHS 2013	NDHS 2018
	N=9524	N=10846	N=11485
	(n)%	(n)%	(n)%
Age			
15-24	(104)1.1	(78)0.7	(73)0.6
25-34	(2942)30.9	(3352)30.9	(3543)30.8
35-49	(6478)68.0	(7416)68.4	(7869)68.5
Mean age ±S.D	37.5 ± 6.7	37.6 ± 6.6	37.7 ± 6.54
NSC			
0-2	(353)3.7	(312)2.9	(210)1.8
3-4	(2257)23.7	(2289)21.1	(2102)18.3
5+	(6814)72.6	(8245)76.0	(9173)79.9
Highest Educational Status			
No education	(5570)58.5	(5788)53.4	(6295)54.8
Primary	(2427)25.5	(2830)26.1	(2555)22.2
At least Secondary	(1527)16.0	(2228)20.5	(2635)22.9
Region			
North Central	(1659)17.4	(1497)13.8	(1940)16.9
North East	(2221)23.3	(2216)20.4	(2480)21.6
North West	(2731)28.7	(3586)33.1	(3806)33.1
South East	(905) 9.5	(1068)9.8	(1297)11.3

South South	**(1083)11.4**	**(1332)12.3**	**(1000)8.7**
South West	**(925) 9.7**	**(1147)10.6**	**(962)8.4**
Residence			
Urban	**(2235)23.5**	**(3335)30.7**	**(3739)32.6**
Rural	**(7289)76.5**	**(7511)69.3**	**(7746)67.4**
Ethnicity			
Fulani/Hausa	**(3618)38.0**	**(4429)40.8**	**(5093)44.3**
Igbo	**(1056)11.1**	**(1198)11.0**	**(1471)12.8**
Yoruba	**(846)8.9**	**(1060)9.8**	**(950)8.3**
Religion			
Christianity	**(3857)40.5**	**(4288)39.5**	**(4230)36.8**
Islam	**(5352)56.2**	**(6353)58.6**	**(7165)62.4**
Traditional/Others	**(315)3.3**	**(205)1.9**	**(90) 0.8**
Marital Status			
Currently-married/Cohabiting	**(8980)94.3**	**(10187)93.9**	**(10700)93.2**
Formerly Married	**(544)5.7**	**(659) 6.1**	**(785) 6.8**
Working Status			
Not Working	**(2192)23.0**	**(2152)19.8**	**(2441)21.3**
Working	**(7332)77.0**	**(8694)80.2**	**(9044)78.7**
Wealth Quintile			
Poorest	**(2676) 28.1**	**(2707)25.0**	**(3016)26.2**
Poorer	**(2434)25.6**	**(2557)23.6**	**(2775)24.2**
Middle	**(1991)20.9**	**(2349)21.7**	**(2517)21.9**
Richer	**(1488)15.6**	**(2033)18.7**	**(2045)17.8**
Richest	**(935) 9.8**	**(1200)11.1**	**(1132)9.9**
Partners' Educational Level			
No Education	**(4623)48.5**	**(4731)43.6**	**(4637)40.4**
Primary	**(2221)23.3**	**(2512)23.2**	**(2034)17.7**
At least Secondary	**(2544)26.7**	**(3511)32.4**	**(4664)40.6**
Don't Know	**(136)1.4**	**(92)0.8**	**(150)1.3**

Table 2 Social Characteristics of High-Fertility Ever-Married Women

Characteristics	**NDHS 2008**	**NDHS 2013**	**NDHS 2018**
	N=9524	**N=10846**	**N=11485**
	(n)%	**(n)%**	**(n)%**
Age At First Sex			
<18	(4367) 45.9	(1788)16.5	(8703)75.8
18+	(5157) 54.1	(9058)83.5	(2782)24.2
Age At First Cohabitation			
<18	(6627)69.9	(7382)68.1	(7345)64.0
18+	(2897)30.4	(3464)31.9	(4140)36.0
Age At First Birth			
<18	(4856)51.0	(5440)50.2	(5758)50.1
18+	(4668)49.0	(5406)49.8	(5727)49.9
Media Exposure			

No Exposure	(3607)37.9	(4013)37.0	(4906)42.7
Low Exposure	(3831)40.2	(4681)43.2	(4978)43.3
High Exposure	(2086)21.9	(2152)19.8	(1601)13.9
Fertility Preference			
Wants to have another child	(4330)45.5	(5128)47.3	(4760)41.4
Undecided/ Doesn't want more	(5121)53.8	(5653)52.1	(6674)58.1
Unable to have more	(73)0.8	(65)0.6	(51)0.4
HDC			
Both want same numbers of children	(2472)26.0	(3030)27.9	(3652)31.8
Husband wants more	(3144)33.0	(4582)42.2	(5315)46.3
Husband wants fewer	(228)2.4	(297)2.7	(522)4.5
Don't know	(3680)38.6	(2937)27.1	(1996)17.4
FPIM			
No FPIM	(6481)68.0	(7617)70.2	(7966)69.4
Low FPIM	(2681)28.1	(2885)26.6	(3272)28.5
High FPIM	(362)3.8	(344)3.2	(247)2.2
HRFPI			
No – HRFPI	(6481)68.0	(7617)70.2	(7966)69.4
Yes – HRFPI	(3043)32.0	(3229)29.8	(3519)30.6
RADM			
No autonomy	(5968)62.7	(8810)81.2	(8761)76.3
Have autonomy	(3556)37.3	(2036)18.8	(2724)23.7
HDC – Husband desire for children **FPIM – Family planning Information on media** **HRFPI – Health related family planning information** **RADM – Respondents' autonomy in decision making**			

Table 3 Adjusted odds ratios of factors influencing contraceptive choice among ever-married high-fertility women in Nigeria

Background Characteristics	2008		2013		2018	
	ST Users	L/PT Users	ST Users	L/PT Users	ST Users	L/PT Users
	OR (C.I)	OR (C.I)	OR (C.I)	OR (C.I)	OR (C.I)	OR (C.I)
Age						
15-24	R.C	R.C	R.C	R.C	R.C	R.C
25-34	0.75(0.29-1.94)	0.95(0.13-7.14)	0.80(0.29-2.18)	1.55(0.20-11.90)	2.39(0.56-10.18)	0.54(0.16-1.88)
35-49	0.53(0.20-1.39)	0.92(0.12-6.97)	0.73(0.27-1.98)	1.13(0.15-8.74)	1.72(0.40-7.33)	0.44(0.12-1.54)
NSC						
0-2	R.C	R.C	R.C	R.C	R.C	R.C
3-4	2.98(1.18-7.51)*	2.38(0.56-10.11)	2.01(0.90-4.50)	1.19(0.41-3.43)	1.30(0.65-2.59)	5.09(0.69-37.69)
5+	3.62(1.45-9.06)*	2.97(0.71-12.41)	2.31(1.04-5.14)***	1.76(0.62-4.98)	1.65(0.84-3.24)	7.99(1.09-58.46)***
Highest Educational Status						
No education	R.C	R.C	R.C	R.C	R.C	R.C
Primary	1.55(1.21-2.00)*	1.41(0.99-2.01)	1.85(1.47-2.34)*	1.39(1.00-1.93)***	1.61(1.32-1.96)*	1.83(1.38-2.44)*
At least Secondary	2.04(1.52-2.73)*	1.65(1.11-2.46)*	2.27(1.75-2.95)*	1.52(1.06-2.17)*	1.38(1.10-1.73)*	2.13(1.56-2.90)*
Region						
North Central	R.C	R.C	R.C	R.C	R.C	R.C
North East	0.59(0.43-0.81)*	0.33(0.19-0.59)*	0.71(0.53-0.96)*	0.46(0.27-0.78)*	1.38(1.10-1.73)**	0.99(0.71-1.39)
North West	0.59(0.38-0.90)*	0.56(0.30-1.03)	0.87(0.59-1.28)	0.71(0.37-1.33)	0.52(0.39-0.69)*	1.15(0.78-1.68)
South East	1.08(0.67-1.74)	0.62(0.35-1.10)	0.76(0.49-1.18)	1.30(0.73-2.33)	0.96(0.63-1.43)	0.25(0.15-0.43)*
South South	1.04(0.79-1.37)	0.84(0.57-1.24)	0.76(0.60-0.96)*	1.00(0.70-1.44)	0.55(0.43-0.71)*	0.36(0.26-0.51)*
South West	0.66(0.46-0.95)*	1.01(0.66-1.55)	0.74(0.55-0.99)***	1.04(0.71-1.54)	0.90(0.66-1.23)	0.73(0.49-1.09)
Residence						
Urban	R.C	R.C	R.C	R.C	R.C	R.C
Rural	0.84(0.69-1.03)	0.53(0.41-0.69)*	1.01(0.86-1.20)	0.84(0.67-1.05)	0.81(0.69-0.94)*	0.60(0.48-0.75)*
Ethnicity						
Fulani/Hausa	R.C	R.C	R.C	R.C	R.C	R.C
Igbo	2.56(1.40-4.67)*	2.14(0.99-4.64)	3.28(1.92-5.61)*	4.10(1.89-8.89)*	0.97(0.62-1.52)	1.55(0.85-2.83)
Yoruba	4.45(2.60-7.64)*	2.87(1.41-5.82)*	4.09(2.60-6.45)*	6.02(3.04-11.92)*	1.53(1.06-2.20)*	2.29(1.36-3.82)
Others	3.38(2.19-5.21)*	1.83(0.98-3.41)	2.51(1.69-3.72)*	2.19(1.17-4.11)*	1.04(0.82-1.33)	1.53(1.04-2.27)
Religion						
Christianity	R.C	R.C	R.C	R.C	R.C	R.C
Islam	0.87(0.68-1.12)	0.81(0.58-1.12)	0.59(0.48-0.74)*	0.83(0.62-1.11)	0.61(0.49-0.73)*	0.33(0.24-0.44)*
Traditional/Others	0.95(0.57-1.59)	1.64(0.85-3.18)	0.78(0.44-1.40)	0.51(0.18-1.42)	0.16(0.04-0.66)	0.69(0.27-1.79)
Marital Status						
Currently Married/Cohabiting	R.C	R.C	R.C	R.C	R.C	R.C
Formerly Married	0.31(0.18-0.53)*	0.59(0.34-1.02)	0.64(0.46-0.90)*	0.77(0.47-1.25)	0.19(0.14-0.29)*	0.45(0.26-0.78)*
Working Status						
Not Working	R.C	R.C	R.C	R.C	R.C	R.C
Working	1.16(0.90-1.48)	1.24(0.86-1.80)	1.26(0.98-1.64)	0.94(0.66-1.34)	1.15(0.95-1.40)	1.49(1.09-2.05)
Wealth Quintile						
Poorest	R.C	R.C	R.C	R.C	R.C	R.C

Poorer	**1.01(0.73-1.39)**	**1.03(0.60-1.78)**	**1.10(0.77-1.57)**	**0.74(0.41-1.33)**	**1.24(0.98-1.58)**	**0.96(0.68-1.36)**
Middle	**1.24(0.90-1.71)**	**1.19(0.70-2.02)**	**1.53(1.07-2.18)***	**1.57(0.92-2.67)**	**1.46(1.15-1.87)**	**1.13(0.79-1.60)**
Richer	**1.61(1.14-2.28)**	**1.59(0.92-2.75)**	**1.49(1.03-2.16)**	**1.78(1.02-3.08)**	**1.73(1.34-2.36)***	**1.17(0.80-1.71)**
Richest	**1.87(1.25-2.79)***	**1.89(1.04-3.43)***	**2.28(1.53-3.41)***	**2.64(1.47-4.74)***	**1.87(1.38-2.52)***	**1.39(0.91-2.12)**
Partners' Educational Level				**1.19(0.41-3.43)**		**5.09(0.69-37.69)**
No Education	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**
Primary	**1.43(1.09-1.88)**	**1.47(0.99-2.18)**	**1.47(1.14-1.89)***	**1.41(0.98-2.03)**	**1.43(1.14-1.81)**	**1.62(1.14-2.29)**
At least Secondary	**1.47(0.98-2.18)**	**1.47(0.98-2.18)**	**1.55(1.08-2.22)***	**1.55(1.08-2.22)***	**1.52(1.23-1.89)***	**1.87(1.35-2.59)***
Don't Know	**1.87(0.73-4.79)**	**1.87(0.73-4.79)**	**0.94(0.21-4.19)**	**0.94(0.21-4.19)**	**1.15(0.61-2.17)**	**1.30(0.46-3.71)**
Age At First Sex						
<18	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**
18+	**1.01(0.84-1.21)**	**1.04(0.81-1.34)**	**0.86(0.72-1.02)**	**0.87(0.69-1.10)**	**1.07(0.91-1.26)**	**1.05(0.84-1.31)**
Age At First Cohabitation						
<18 (RC)	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**
18+	**0.98(0.79-1.22)**	**1.07(0.79-1.45)**	**1.13(0.93-1.36)**	**1.20(0.92-1.56)**	**1.27(1.06-1.52)**	**1.13(0.88-1.45)**
Age At First Birth						
<18 (RC)	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**
18+	**1.20(0.97-1.49)**	**0.95(0.70-1.29)**	**1.10(0.91-1.33)**	**0.90(0.68-1.18)**	**0.98(0.82-1.17)**	**0.99(0.77-1.28)**
ME						
No Exposure	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**
Low Exposure	**0.85(0.67-1.07)**	**1.03(0.71-1.51)**	**1.33(1.08-1.65)***	**1.12(0.83-1.52)**	**1.44(1.21-1.71)***	**1.07(0.83-1.37)**
High Exposure	**1.01(0.76-1.33)**	**1.38(0.91-2.09)**	**1.34(1.05-1.70)***	**0.90(0.64-1.28)**	**1.54(1.23-1.94)***	**1.08(0.78-1.49)**
Undecided/ Doesn't want more	**1.36(1.12-1.65)***	**2.36(1.72-3.24)***	**1.92(1.59-2.30)***	**2.24(1.69-2.95)**	**1.49(1.26-1.75)***	**2.02(1.56-2.60)***
Husband wants more	**0.74(0.60-0.92)***	**0.97(0.72-1.29)**	**0.71(0.59-0.84)***	**0.74(0.58-0.93)***	**0.81(0.69-0.94)**	**0.79(0.64-0.97)**
Husband wants fewer	**0.92(0.61-1.38)**	**1.13(0.67-1.90)**	**1.28(0.93-1.76)**	**1.46(0.97-2.20)**	**0.01(0.77-1.34)**	**1.19(0.84-1.71)**
Don't know	**0.54(0.43-0.66)***	**0.59(0.44-0.79)***	**0.68(0.56-0.83)***	**0.55(0.41-0.74)***	**0.03(0.83-1.27)**	**0.47(0.32-0.69)***
FPIM						
No FPIM	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**
Low FPIM	**1.87(1.53-2.29)***	**1.73(1.31-2.28)***	**1.31(1.11-1.54)***	**1.24(0.99-1.55)**	**1.10(0.96-1.29)**	**1.49(1.21-1.85)***
High FPIM	**1.57(1.11-2.22)***	**1.91(1.26-2.88)***	**1.36(1.01-1.83)**	**1.44(0.97-2.14)**	**1.17(0.83-1.66)**	**2.64(1.74-4.01)***
RADM						
No autonomy	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**	**R.C**
Have autonomy	**1.18(1.00-1.41)**	**1.72(1.36-2.18)***	**2.14(1.83-2.52)***	**1.65(1.32-2.07)***	**0.59(0.51-0.69)***	**0.53(0.42-0.66)***

***p<0.001; **p<0.01; ***p<0.05**