



Original Article

Family planning method discontinuation among Nigerian women: Evidence from the Nigeria Demographic and Health Survey 2018



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المخلص

أهداف البحث: وقف تنظيم الأسرة بين السيدات النشيطات جنسيا اللواتي لا يرغبن بالأطفال يزيد من عدد الحمل غير المخطط له والمخاطر على الأمهات. يدرس هذا البحث التنبؤات لطرق وقف تنظيم الأسرة لدى السيدات النيجيريات النشيطات جنسيا

طرق البحث: تم استخدام البيانات من المسح الديموغرافي والصحي في نيجيريا. تم تضمين ما يقارب من ٤٥٥٣ سيدة أعمارهم بين ١٥ إلى ٤٩ اللاتي توقفن عن استخدام طرق تنظيم الأسرة خلال الأعوام الخمسة الماضية في هذه الدراسة

النتائج: أكثر من ٦٠٪ من السيدات المشمولات توقفن عن تنظيم الأسرة مع عدم الرغبة بالأطفال. توقفت المستجيبات عن استخدام طرق تنظيم الأسرة بسبب الأثر الجانبي للطريقة (١٥,٢٪) فشل الطريقة (١٢,٩٪). كانت التوقعات الحديثة للتوقف عن تنظيم الأسرة التعليم الثانوي، الدين الإسلامي، المنطقة الجيوسياسية الجنوبية الشرقية، ومن لديهم ٣ أطفال أو أكثر والعمل بأجر

الاستنتاجات: تؤثر العوامل الاجتماعية-الاقتصادية والثقافية على توقف طرق تنظيم الأسرة بين السيدات النيجيريات. هناك حاجة الى خيارات سياسية لزيادة استيعاب تنظيم الأسرة، تحديد الآثار الجانبية الشائعة لتنظيم الأسرة، والتركيز على رفع الوعي العام عن العواقب السلبية لتوقف تنظيم الأسرة على الأفراد، الأسر، والأمة

الكلمات المفتاحية: التوقف؛ تنظيم الأسرة؛ السيدات النشيطات جنسيا؛ الآثار الجانبية؛ نيجيريا

Abstract

Objectives: The cessation of family planning among sexually active women who do not intend to have children increases the number of unplanned pregnancies and the risks to maternal health. This study examined the predictors of family planning method discontinuation among sexually active Nigerian women.

Methods: Data from the Nigeria Demographic and Health Survey (NDHS) were used. A total of 4553 women 15–49 years of age who had stopped using family planning methods in the previous 5 years were included in the study. Descriptive and binary logistic regression were used in the analysis.

Results: More than 60% of the women sampled had stopped family planning and had no intention of having children. Respondents discontinued family planning because of adverse effects (15.2%) and method failure (12.9%). Predictors of modern family planning discontinuation were secondary education (OR = 1.302, 95% CI: 1.006–1.685), Islamic religion (OR = 1.281, 95% CI: 1.059–1.550), residence in the South-East geopolitical zone (OR = 0.248, 95% CI: 0.195–0.316), having three or more children (OR = 0.848, 95% CI: 0.735–0.978) and having paid employment (OR = 0.838, 95% CI: 0.715–0.982).

Conclusion: Socio-economic and cultural factors influence discontinuation of family planning among Nigerian women. Policy options are needed to increase family planning uptake, identify common adverse effects of family planning and focus on raising public awareness regarding the negative consequences of discontinuing family planning on individuals, families and the nation.

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Keywords: Adverse effects; Discontinuation; Family planning; Nigeria; Sexually active women

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Introduction

Family planning (FP) is a deliberate action taken by individuals and families to space their children's births or limit the number of children.¹ FP is accomplished through the use of contraceptives.^{2,3} Both modern and traditional FP/contraception methods are available.^{4,5} The modern method is considered effective in preventing unplanned pregnancies, unsafe abortions, sexually transmitted infections and maternal health risks.^{6,7} In contrast, the traditional method is considered unreliable.^{8,9} Modern contraceptive methods include condoms, sterilization, contraceptive pills, intra-uterine devices (IUDs), injectables, the standard days method (using a menstrual cycle calendar), implants and lactational amenorrhoea.^{1,10} The traditional method includes the rhythm method (periodic abstinence) and withdrawal.¹⁰

Globally, women use FP at a rate of 62%.^{11,12} Worldwide, approximately 56% of married women use a modern method of FP, whereas 6% use a traditional method.¹² A small proportion of married women who use a modern method (29%) and most married women who use a traditional method (4%) live in low-income countries.^{9,12} In sub-Saharan Africa, 29% of married women use a modern method of FP for child spacing and birth control, whereas 5% use a traditional method.¹² Despite improvement efforts, the region's use of birth control remains appreciably low.^{13,14}

In Nigeria, 98% of sexually active unmarried women and 94% of married women are aware of modern FP methods.¹⁰ Approximately 72% of married women in the country are aware of the traditional methods of FP.¹⁰ However, only 19.0% of married Nigerian women 15–49 years of age use a modern method of contraception, whereas 8.6% use a traditional method.¹² Therefore, a mismatch appears to exist between women's awareness and use of FP methods in Nigeria, despite the country's high total fertility rate (TFR). Nigeria has a TFR of 5.3,¹⁰ which exceeds the global TFR of 2.5¹² and the globally acceptable fertility replacement level of 2.1.^{15,16} Nigeria also has a substantial unmet need for FP,^{17,18} which has been reported to be 27.6%.¹⁹ Two of every five Nigerian women who used a FP method stopped using it within the first year, thus resulting in a 41% discontinuation rate.¹⁰ According to some researchers, given its current discontinuation rate for modern FP, Nigeria is currently unlikely to achieve the sustainable development goals aimed at decreasing unmet needs for FP by 2030.^{20–22}

Although studies on FP methods use have been conducted,^{23,24} no scholarly research has investigated the combined effects of socio-demographic, economic and cultural factors as predictors of discontinuation of FP methods in Nigeria. Therefore, the current study was aimed at

identifying determinants of FP method discontinuation among sexually active Nigerian women.

Materials and Methods

Data source and design

The data for this study came from the 2018 Nigerian Demographic and Health Survey (NDHS). The survey was cross-sectional in nature, with a national representative sample of women drawn from all geopolitical zones, ethnic groups and religions in Nigeria. Respondents provided information on FP methods, the most recently used method, the reason for discontinuing the method, the number of children already born, the place of residence, and household and socio-demographic characteristics.

Sampling and data collection

The women in the sample were of reproductive age (15–49 years). The stratified sampling technique was used in two stages. The first step involved choosing enumeration areas. The second stage involved a random sample of households. The data covered the Federal Republic of Nigeria's 774 local government areas. The sampling frame comprised the enumeration areas listed in Nigeria's Population and Housing Census. Each enumeration area was classified as rural or urban, with a minimum population of 20,000 for urban areas. From the 1,400 enumeration areas chosen for the survey, approximately 42,000 households were selected. A total of 41,821 women who were either permanent or temporary residents of the selected households were chosen at random for interviews. This study's sample consisted of 4553 women who reported that they had stopped using FP methods in the previous 5 years. Women who stated they had been sterilized were excluded from the study to avoid confounding effects in determining the relationships between variables of interest.

Variable description

To eliminate potential biases and sampling errors, we weighted the NDHS datasets with the command V005/1000000, where v005 is the sample weight, thus yielding a total weighted sample of 41,821 women who had stopped using FP. The study's outcome variable was the discontinuation of FP methods in the previous 5 years. The study's FP methods were classified as modern or traditional. A discontinued modern method was coded as a 1, and a discontinued traditional method was coded as a 0 to create a dichotomous dummy variable suitable for binary logistic regression analysis. After controlling for potential confounding variables, the following independent variables were considered in the analysis: respondents' current age, type of residence, educational level, religion, wealth index, region, marital status, number of children, reason for discontinuation of FP, employment status, contraception decision-making and awareness of the adverse effects of FP methods.

Data analysis

The analysis was performed in two stages. The first stage began with the selection of variables measuring FP and respondents' socio-demographic characteristics. Several variables were recorded for further investigation. The data were then analyzed at the descriptive (frequencies and percentages), bivariate (chi-square) and multivariate (regression) levels in the second stage. The chi square test was used to examine the relationships between variables. The binary logistic regression model explained the independent variables' odds of predicting the outcome variable. Only variables that were statistically significant at the chi-square level of analysis were included in the logistic model, to increase the accuracy of prognostic factors, with the exception of the total number of children ever born, which was a variable of interest and needed to be recoded for advanced analysis. All statistics were tested at a confidence level of 0.95.

Results

Background characteristics of the respondents

A total of 4553 women who discontinued FP methods were chosen for this study. Of the total respondents, 3233 (71.1%) used modern methods of FP, whereas 1320 (28.9%) used traditional methods. Most respondents (20–39 years of age) used either modern (83.3%) or traditional (83.2%) methods of FP. Among modern method users, 53.4% lived in cities, 49.8% were Christians (excluding Catholics), and 29.4% were from the wealthiest households. Among users of traditional methods of FP, 53.2% had secondary education, and approximately 36% were from the South-East region. Among users of modern methods of FP, 87.1% were married and lived with their partners. Few (6.6%) women who used modern methods of FP had no children. Similarly, 6.5% of women who used traditional methods did not have a child (Table 1).

Table 2 shows the reasons for discontinuation of FP among women in Nigeria. Overall, 36.1% of respondents stopped using FP because they wanted to become pregnant. Those who used contraceptive pills (34.3%), IUDs (46.4%), male condoms (31.8%) or periodic abstinence/the rhythm method (45.3%) stopped using these methods because they desired to become pregnant. Overall, 15.2% of all respondents discontinued the use of FP methods because of perceived adverse effects. Women who used implants (41.4%), injections (35.3%) and contraceptive pills (21.0%), for example, stopped using those methods because of negative health effects. Overall, 12.9% of all respondents stopped using FP because they became pregnant. Those who used the rhythm method (26.5%), withdrawal (23.6%), emergency contraceptives (13.3%) and contraceptive pills (12.8%) stopped using those methods because they became pregnant. Overall, 11.4% of the women stopped using FP because of infrequent sex or the absence of their husbands. Those who used male condoms (27.1%), emergency contraception (20.0%), withdrawal (13.2%) and the rhythm method (13.0%) stopped using these methods because of infrequent sex or the absence of their husbands.

Table 3 shows the logistic regression of respondents' likelihood of discontinuing an FP method. Education, religion, region, number of children, women's working status and decision-making disfavoring the use of contraception all contributed to the likelihood of women of reproductive age discontinuing modern methods of FP. When other variables were controlled for, women with a secondary school education were approximately twice as likely as women with no formal education to discontinue modern FP (OR = 1.302, 95% CI: 1.006–1.685). Non-Catholic Christians and Muslims were 1.3 times

Table 1: Number and percentage distribution of family planning method discontinuation among women according to socio-demographic variables (n = 4553).

Variables	Modern methods N (%)	Traditional methods N (%)	χ^2
All women	3233 (100)	1320 (100)	
Current age			
15–19	88 (2.7)	26 (2.0)	3.244
20–29	1262 (39.0)	499 (37.8)	
30–39	1431 (44.3)	599 (45.4)	
40–49	452 (14.0)	196 (14.8)	
Type of residence			
Urban	1727 (53.4)	804 (60.9)	21.306***
Rural	1506 (46.6)	516 (39.1)	
Educational level			
No education	523 (16.2)	154 (11.7)	25.568***
Primary	558 (17.3%)	192 (14.5)	
Secondary	1594 (49.3%)	702 (53.2)	
Higher	558 (17.3%)	272 (20.6)	
Religion			
Catholic	434 (13.4)	322 (24.4)	124.589***
Other Christian	1609 (49.8)	695 (52.7)	
Islam	1182 (36.6)	300 (22.7)	
Other	8 (0.2)	3 (0.2)	
Wealth index			
Poorest	243 (7.5)	71 (5.4)	19.758***
Poorer	444 (13.7)	145 (11.0)	
Middle	694 (21.5)	263 (19.9)	
Richer	900 (27.8)	397 (30.1)	
Richest	952 (29.4)	444 (33.6)	
Region			
North-Central	665 (20.6)	147 (11.1)	328.643***
North-East	515 (15.9)	170 (12.9)	
North-West	457 (14.1)	55 (4.2)	
South-East	509 (15.7)	486 (36.8)	
South-South	451 (13.9)	173 (13.1)	
South-West	636 (19.7)	289 (21.9)	
Marital status			
Never married	250 (7.7)	89 (6.7)	1.781
Married/living with partner	2815 (87.1)	1168 (88.5)	
Other	168 (5.2)	63 (4.8)	
Total children ever born			
0	212 (6.6)	86 (6.5)	6.408
1–2	864 (26.7)	396 (30.0)	
3–4	1054 (32.6)	429 (32.5)	
5+	1103 (34.1)	409 (31.0)	

Pearson chi-square (χ^2) significant at $p < 0.05^*$, $p < 0.01^{**}$, $p < 0.001^{***}$; N = number.

Table 2: Percentage distribution of discontinuation of family planning methods among women according to the primary reason for discontinuation.

Reason for discontinuations	Modern methods							Traditional methods			Total%	
	Pill	IUD	Injections	Male condom	Implants	LAM	Emergency contraception	Other modern method	Periodic abstinence/rhythm	Withdrawal		Other traditional method
Became pregnant	12.8	7.2	5.3	10.2	4.6	7.4	13.3	22.2	26.5	23.6	21.0	12.9
Wanted to become pregnant	34.3	46.4	31.3	31.8	32.9	35.3	30.7	27.8	45.3	43.6	39.5	36.1
Husband disapproves	2.6	5.2	4.1	7.4	2.6	1.0	5.3	5.6	0.2	3.1	1.2	3.4
Adverse effects	21.0	20.6	35.3	1.6	41.4	1.0	14.7	0.0	0.2	0.4	8.0	15.2
Access/availability	2.1	0.0	2.1	0.3	1.0	0.0	0.0	0.0	0.0	0.0	2.5	1.0
Wanted a more effective method	9.1	6.2	6.4	6.6	2.0	23.0	5.3	8.3	6.2	9.1	6.8	8.5
Inconvenient to use	5.3	4.1	4.1	8.6	3.6	11.0	2.7	2.8	2.4	3.1	8.0	5.3
Infrequent sex/husband absence	8.3	2.1	5.3	27.1	4.3	10.3	20.0	19.4	13.0	13.2	5.6	11.4
Others	4.5	8.2	6.0	6.3	7.6	11.0	8.0	13.9	6.2	3.8	7.4	6.3
Total count	624	97	1061	619	422	736	162	304	417	75	36	4553

Table 3: Logistic regression coefficients of the likelihood of discontinuation of modern family planning methods according to socio-demographic variables.

Variables	B	S.E.	Wald	p-value	Odds ratio	95% CI	
						Lower	Upper
Type of residence							
Urban (RC)					1.000		
Rural	0.109	0.082	1.797	0.180	1.116	0.951	1.309
Educational level							
No education (RC)					1.000		
Primary	0.259	0.140	3.415	0.065	1.295	0.984	1.704
Secondary	0.264	0.132	4.009	0.045	1.302*	1.006	1.685
Higher	0.087	0.153	0.328	0.567	1.091	0.809	1.472
Religion							
Catholic (RC)					1.000		
Other Christian	0.248	0.097	6.492	0.011	1.281**	1.059	1.550
Islam	0.314	0.131	5.731	0.017	1.368**	1.058	1.769
Other	0.553	0.697	0.630	0.427	1.739	0.443	6.823
Wealth index							
Poorest (RC)					1.000		
Poorer	-0.074	0.172	0.188	0.665	0.928	0.663	1.300
Middle	0.055	0.170	0.106	0.745	1.057	0.758	1.473
Richer	0.025	0.174	0.020	0.888	1.025	0.729	1.441
Richest	-0.046	0.180	0.063	0.802	0.955	0.669	1.365
Region							
North-Central (RC)					1.000		
North-East	-0.406	0.137	8.775	0.003	0.667**	0.510	0.872
North-West	0.607	0.177	11.746	0.001	1.836***	1.297	2.598
South-East	-1.393	0.123	128.683	0.000	0.248***	0.195	0.316
South-South	-0.564	0.134	17.586	0.000	0.569***	0.437	0.741
South-West	-0.710	0.123	33.552	0.000	0.492***	0.387	0.625
Total children ever born							
0 (RC)					1.000		
1-2	-0.043	0.134	0.104	0.747	0.958	0.736	1.246
3+	-0.165	0.073	5.117	0.024	0.848**	0.735	0.978
Working status							
Not working (RC)					1.000		
Working	-0.177	0.081	4.762	0.029	0.838**	0.715	0.982
Decision-maker deciding against the use of contraception							
Respondent alone (RC)					1.000		

Table 3 (continued)

Variables	B	S.E.	Wald	p-value	Odds ratio	95% CI	
						Lower	Upper
Respondent's partner/husband alone	-0.027	0.193	0.019	0.889	0.974	0.668	1.420
Joint decision	0.034	0.129	0.070	0.791	1.035	0.803	1.333
Others	-0.872	0.334	6.824	0.009	0.418**	0.218	0.804
Told about adverse effects by healthcare or family planning worker							
Not told (RC)					1.000		
Told	-0.580	0.449	1.673	0.196	0.560	0.232	1.349
Overall model evaluation							
Omnibus tests: 353.369***							
Nagelkerke R square: 0.107							
-2 log likelihood: 5129.161							
Hosmer and Lemeshow Test: 0.547							
Significance at * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; RC = reference category; CI = confidence interval; OR = odds ratio.							

(OR = 1.281, 95% CI: 1.059–1.550) and 1.4 times (OR = 1.368, 95% CI: 1.058–1.769) more likely than Catholics to discontinue a modern method of FP, respectively.

Respondents from the North-East region were 33% less likely than respondents from the North-Central region to discontinue a modern method (OR = 0.667, 95% CI: 0.510–0.872). Those from the North-West region were twice as likely as those from the North-Central region to discontinue a modern FP method (OR = 1.836, 95% CI: 1.297–2.598). Women in the South-East region were 75% less likely than those in the North-Central region to discontinue a modern method of FP (OR = 0.248, 95% CI: 0.195–0.316). Women in the South-South region were 43% less likely than those in the North-Central region to discontinue a modern method of FP (OR = 0.569, 95% CI: 0.437–0.741). Similarly, respondents from the South-West region were 51% less likely than those from the North-Central region to discontinue a modern FP method (OR = 0.492, 95% CI: 0.387–0.625).

Women with three or more children were 15% less likely to stop using modern FP methods than women without children (OR = 0.848, 95% CI: 0.735–0.978). Respondents with a paid job were 16% less likely than those without a paid job to discontinue a modern FP method (OR = 0.838, 95% CI: 0.715–0.982). Respondents who made the decision to discontinue the use of contraception through other means/people (including family members, friends, health care workers, leaders, and fellow members at places of worship, businesses and learning centers; excluding partners/husbands) were 58% less likely to discontinue modern methods of FP than those who made the decision themselves (OR = 0.418, 95% CI: 0.218–0.804).

Discussion

The purpose of this study was to examine the factors leading to the discontinuation of FP among Nigerian women of reproductive age. According to the findings, 36.1% of respondents discontinued FP to become pregnant. Women who used contraceptive pills, IUDs, male condoms and periodic abstinence/the rhythm method, for example, stopped using these methods because they wanted to become pregnant. Discontinuing a method because of a desire to become pregnant is acceptable as long as the pregnancy is planned

and within the globally acceptable fertility replacement level of 2.1.^{15,16} Previous research has found that women stop using FP methods because they desire children.^{17,25–27}

Concerningly, more than 60% of the women in our study stopped FP for reasons other than wanting to become pregnant. Fear of adverse effects caused 15% of the total respondents in our study to stop using a modern method of FP. Women who used implants, injections and contraceptive pills discontinued use because of perceived adverse effects and health concerns. According to previous research, women may stop using contraception because of perceived adverse effects.^{11,28} Prolonged bleeding, irregular menstruation, abdominal pain, headache, weight gain, decreased libido and nausea are some adverse effects of contraceptive use.^{29–31} Misconceptions regarding abnormal bleeding and irregular menstruation caused by FP include the possibility of cancer, fibroids, infertility and blood circulation restriction.^{30,32,33} These myths may encourage women to stop using contraception.

Notably, findings regarding discontinuation of FP because of adverse effects indicated that these women may acutely need FP and do not wish to become pregnant at the time of discontinuation.^{11,34} In these cases, women should ideally switch from an undesirable method of FP to a more acceptable and effective method.^{30,35,36} Allowing a sexually active women to remain without FP may result in unplanned pregnancy and consequently unsafe abortions or even death, particularly in Nigeria, where induced abortion is illegal.^{37,38} Women who induce abortions tend to do so in secret. Therefore, even if women are abused or violated during the abortion process, they are unlikely to fight for their rights, because they already see themselves as violators of the law.

Thirteen percent of our study's respondents discontinued using FP methods such as the rhythm method, withdrawal, emergency contraception or contraceptive pills because they became pregnant while using FP. Previous research has found that unplanned pregnancy influences users' discontinuation of FP.^{39–41} Unplanned pregnancy due to method deficiency necessitates more urgent and regular sensitization and counseling regarding the best way to use FP, because some users are unfamiliar with the best ways to use a method.^{26,31} By extension, the government, health care providers, contraceptive manufacturers and distributors must critically

ensure that deficiencies in production, distribution, storage and administration are addressed to avoid discouraging use of FP. Consumers are more likely to abandon FP when they are discouraged and doubt the efficacy of a method.^{32,33}

Our study determined that education, religion, region, number of children, occupation and decision-making styles all predict the likelihood of abandoning modern methods of FP. Similarly, previous research has shown that socio-demographic and cultural factors are predictors of FP discontinuation.^{34,42,43} Our study indicated that women with a secondary school education were more likely than women without a formal education to abandon modern FP methods. Non-Catholic Christians and Muslims were more likely than Catholics to abandon modern methods of FP. Consequently, providing continuous schooling to women and girls through secondary school or higher education is critical to sustaining contraceptive use among sexually active women.^{1,20} Moreover, religious leaders could help encourage members to use FP. Previous research has indicated that education, religion and socio-cultural factors all contribute to the discontinuation of FP use.^{44,45}

Respondents from the North-East, South-East, South-South and South-West regions were less likely to abandon modern methods of FP than respondents from the North-Central region. Women from the North-West, in contrast, were more likely than those from the North-Central region to abandon modern methods of FP. These findings are consistent with previous research indicating that women's use of FP is influenced by their region, ethnicity and environmental circumstances.^{28,35,36} The regional differences observed in our study are concerning, because the findings clearly show that women in the southern part of Nigeria are less likely than their northern counterparts to discontinue FP. Might this finding be associated with women's rights to make their own decisions about contraception use? According to prior studies, female autonomy over their bodies influences contraceptive use in Nigeria.^{10,46}

Our findings also revealed that women who made contraception decisions independently of their partners or husbands were less likely to discontinue FP than those who made decisions jointly with their partners or husbands. We also discovered that respondents with paid jobs were less likely than those without paid jobs to abandon modern FP methods. Women's economic and sexual autonomy improves when they have paid jobs.⁴⁷ Our findings were consistent with previous research results indicating that partner decisions influence the continuation or discontinuation of FP methods among women.^{48–50}

Limitations

Although our study used a large survey data set that is nationally representative, thus adding to the study's strength, the main limitation is that the data were gathered through a self-reported questionnaire, which might have been subject to biases and cultural influences. Furthermore, the survey was cross-sectional, thereby limiting its ability to establish cause-effect relationships and track respondents over time to understand behavioral changes.

Conclusion

FP discontinuation among Nigerian women is influenced by their level of education, religion, parity, employment, region, fear of adverse effects, method failure and decision-making styles. More than half of the study participants discontinued FP for reasons other than wanting to have children. A discontinuation of this magnitude and scope without fertility intention or a desire to bear children is disastrous to individuals, families and communities; could result in unplanned pregnancy, unsafe abortion, maternal health risks and even death; and may also contribute to increasing Nigeria's already uncontrollable high fertility rates.

Providing easy access to health care providers and friendly networks of relationships that allow women to freely discuss the potential adverse effects of FP; an ability to seamlessly and instantaneously switch from an uncomfortable method to an acceptable, appropriate and effective method; involving male partners, community and religious leaders in the discussion; dispelling misconceptions about FP; using an adequate follow-up mechanism for women who use an FP method; and bringing FP methods to women through outreach to communities, worship centers and marketplaces could increase FP continuation in Nigeria. Policies to raise awareness are needed so that women understand the negative effects of FP discontinuation on their reproductive health, children and communities. Future research should focus on men's roles in contraceptive discontinuation, as well as the factors that may increase men's involvement in FP use.

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Conflict of interest

The authors have no conflict of interest to declare.

Ethical approval

The National Health Research Ethics Committee of Nigeria (NHREC) and the ICF Institutional Review Board provided ethical approval to the DHS program for the survey. The DHS program granted permission to use the 2018 NDHS datasets for this study.⁵¹ There was no identifiable information about the respondents. Detailed information on the DHS program's ethical procedures can be found at <https://goo.gl/ny8T6X>. In addition, there were no additional ethical requirements because this study was based on publicly available data.

Authors contributions

TOM, RDA and TFO conceptualized and designed the study. TOM analyzed and interpreted the data. TOM, RDA and TFO wrote the manuscript. All authors have critically

reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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