

Original Article

Investigation on Determinants and Choice of Contraceptive Usage among Nigeria Women of Reproductive AgeAlabi Waheed Banjoko^{1*}, Waheed Babatunde Yahya¹, Mohammed Kabir Garba¹, Razaq Bayo Afolayan¹, Kazeem Adesina Dauda², and Dorcas Damilola Adewara²¹Department of Statistics, University of Ilorin, Ilorin, Nigeria.²Department of Mathematics and Statistics, Kwara State University, Ilorin, Nigeria.

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ABSTRACT

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Introduction: Contraception is the intentional prevention of conception and Sexually Transmitted Diseases using devices. This study investigates the prevalence, use and choice of different contraceptive methods among Nigeria women of reproductive age (15 – 49 years).

Methods: This study utilized the most current dataset from the National Demographic and Health Survey (NDHS). Chi-squares tests of Homogeneity of proportion was utilized to validate the equality of proportions for the distinct groups of contraception methods. Also, Multinomial logistic regression was employed to obtain the determinants of contraceptive choices among the selected factors.

Results: As reveal in this study, 83.86% of Nigeria women within the reproductive age do no use any method of contraceptives while only 16.14% use one form of contraceptives. Although, all the selected factors (respondent's age, respondent's access to radio, respondent's access to television, respondent's place of residence, respondent's geopolitical region, respondent's husband's education level, respondent's husband's occupation, respondent's religion affiliation, respondent's response to desire for more children, respondent's husband's age, and respondent's number of children born) contributed significantly (p -value < 0.05) to the choice of contraceptive usage in this study, certain level(s) of some factors such as women from the South-West region, women with more desire for children and women within the age bracket 20 – 24 and 45 – 49 are not significant to the usage of contraception among Nigeria women. The significant factors observed in this study indicated either an increased or decreased risk in the usage of contraceptive methods.

Conclusion: The choice of contraceptive methods used by Nigerian women is influenced by most of the selected maternal and social-demographic factors used in this study. However, enlightenment on the important and use of contraceptives are needed to be put on media to increase the usage of contraceptives among Nigerian women.

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Introduction

According to the world population data sheet 2022,¹ Nigeria is the 7th highest most predicted populated country in the world with 218.5 million people and a global share of 2.64 %. In 2018, the Nigeria Demographic and Health Survey (NDHS) reported a high Total Fertility Rate (TFR) of 5.3 children per women.² This implies that a Nigerian woman will give birth to an average of 5 to 6 children during her reproductive years following the current Age Specific Fertility Rate (ASFR). Although, there has been gradual decline in the TFR over time, from 6.0 children per woman in 1990 to 5.3 in 2018,² the report indicated that 41% of women that began the use of contraception in the 5 years preceding the survey, discontinued contraception within 12 months of usage with a common reason of desire to get pregnant. This suggests that there is possibility of an increase in the number of non-usage of contraceptives which would expectedly lead to an increase in the TFR that would be reported in the next 5 years after the current study.

Contraception is the intentional prevention of conception through the use of various devices, sexual practices, chemicals, drugs, or surgical procedures.³ It is a birth control method used in preventing pregnancy and Sexually Transmitted Diseases (STD's) among others.^{4, 5} The major form of contraception is the barrier methods of which the commonest is the condom or sheath; the contraceptive pill, which contains synthetic sex hormones that prevent ovulation in the female; intrauterine devices, such as the coil, which prevent the fertilized ovum from implanting in the uterus; and male or female sterilization.⁶⁻⁸ Only one contraceptive method, condoms, can prevent both pregnancy and the

transmission of sexually transmitted infections, including Human Immunodeficiency Virus (HIV).⁹ Among the world 1.9 billion population of women within the reproductive age group (15 – 49), about 44.3% (842 million) are using contraceptive method.¹⁰ The use of contraception for preventing pregnancy is an advancement on the human right of people to determine the number and spacing of their children.¹¹ Past studies have shown low uptake of contraceptive methods in Nigeria due to lack of knowledge, fear of complications and/or high unmet needs.¹²⁻¹⁴

Contraceptives method are classified into traditional/folkloric methods and the Modern methods.¹⁵ The traditional or folkloric method of using contraceptive which include Lactational Amenorrhea Method (LAM), Coitus Interruptus (Withdrawal Method), Calendar Method or Rhythm Method, Cervical Mucus Method and Abstinence etc. was said to have no harmful effects on a woman's health but might have dangerous or counterproductive effects.¹⁵⁻¹⁷ Other forms of traditional method can be custom or beliefs which include some rituals and use of traditional medicine and herbs.¹⁷ In addition, the complete effectiveness of many traditional methods remains doubtful.^{15, 17} The modern method of contraception includes Oral Contraceptive Pills, Implants, Injectable, Contraceptive Patch and Vaginal Ring, Male and Female Condoms, Diaphragms, and Intrauterine Devices (IUDs).^{15, 18}

Demographic surveys reveal that women's reasons for not using any method of contraceptive can generally be grouped into broad categories relating to; infrequent sexual activity or perceived infecundity; opposition to contraceptive use by the woman, her partner, or someone else close to her; lack of awareness of

contraceptive methods, or limited availability and/or accessibility to family planning methods and/or services and; concerns about side effects or health risks of contraceptive method usage.¹⁹ Several factors that can influence the usage or otherwise of contraceptives have been studied in literature such as; Afriyie and Tarkang,²⁰ Ajayi et al¹⁵ among others. But the simultaneous combination of the three categories studied in this work using of multinomial logistic regression approach has received little or no attention. Furthermore, as the rate of maternal mortality is very high in the Sub-Saharan Africa which Nigeria is also a part,²¹ there is a need to investigate the prevalence of contraceptive usage which may in turn leads to high rate of unintended pregnancies thereby resulting into elective abortions.^{22, 23}

This study is therefore intended to investigate prevalence, determinants, and choice of contraceptive usage among women of reproductive age in Nigeria. The impacts of the identified risk factors of contraceptive utilization shall also be examined. Findings from this study will assist policy makers, government agencies and health organizations by providing information regarding the intervention programs targeted at reducing maternal mortality due to abortions from unintended pregnancies, spread of sexually transmitted diseases, overpopulation and so on in Nigeria through adequate usage of contraceptives.

Material and Methods

Data and study design

The data used in this study is the most current one based on National population survey that

was conducted through a multistage stratified design by the National Population Commission (NPC) through the NDHS for 2018. The survey included information on women of reproductive age. Details of the survey and more information about the data have been previously reported by NPC and ICF.²

The Children's Recode dataset for the NDHS 2018 used in this study and can be obtained at https://dhsprogram.com/data/dataset/Nigeria_Standard-DHS_2018.cfm?flag=0. The electronic data is available from the DHS Program under its terms of use. Potential users of NDHS data must register before been granted access to download the dataset under some restrictions laid out on the DHS program website and dataset access is only granted for legitimate research purposes. Several NDHS data has been used in the past studies regarding contraceptive usage with different method of analysis.^{24, 25} The multinomial logistic regression approach adopted in this study has not received much attention in the literature.

The data was collected via direct interview on a total of 127,545 respondents. However, complete information on the outcome and predictor variables considered in this study are available for only 101,074 (79.25%) respondents while the remaining 26,471 (20.75%) respondents with incomplete information i.e., missing observations on the same factors considered were excluded from the analysis.

Nigeria is the most populous African country and seventh most populous country in the world with an estimated population of 216.7 million. The country is divided into geopolitical zones/regions namely, South-West (SW), South-East (SE), South-South (SS), North-West (NW), North-East (NE) and North-Central (NC). Each of the geopolitical zones is divided into states

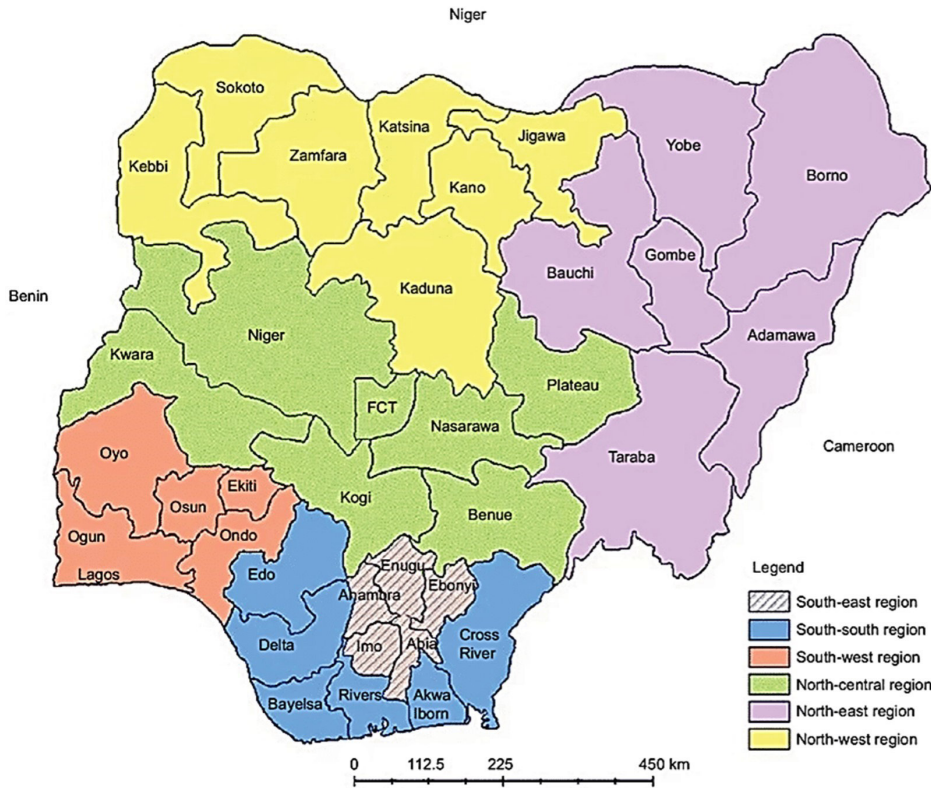


Figure 1. Map of Nigeria by geopolitical region and states²⁶

coming to a total of 36, with the Federal Capital Territory in Abuja.²² The figure 1 below shows the map of Nigeria by regions and states within each region.

Outcome variable (Y)

The outcome variable also known as the response variable used in this study was based on the question on whether or not and the choice of contraceptive usage by each of the respondent. The response to the question was based on three levels and can be summarized below.

$$Y_i = \begin{cases} 0; & \text{if respondent does not use contraceptive} \\ 1; & \text{if respondent use traditional or folkloric method} \\ 2; & \text{if respondent use modern method} \end{cases}$$

(1)

Figure 2 below shows the distribution of the outcome variable among the three different categories.

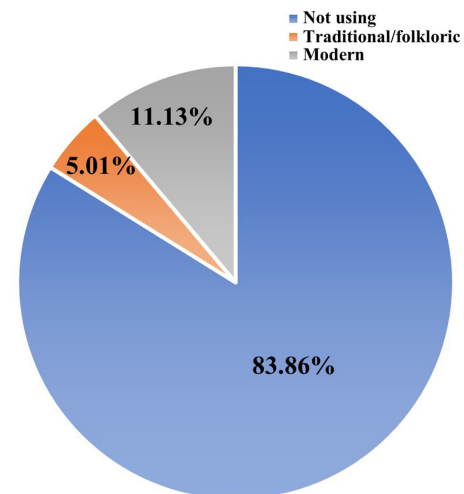


Figure 2. Pie chart showing the percentage distribution of the outcome variable

Predictor variables

The choice of predictor variables to be included in this study is based on past studies that was carried out on contraceptive usage.²⁷ The predictors are labelled as X_1 - respondent's age (grouped into seven groups); X_2 - respondent's access to radio; X_3 - respondent's access to television; X_4 - respondent's place of residence; X_5 - respondent's geopolitical region; X_6 - respondent's husband's education level; X_7 - respondent's husband's occupation; X_8 - respondent's religion affiliation, X_9 - respondent's response to desire for more children; X_{10} - respondent's husband's age (in years); X_{11} - respondent's number of children born.²⁷ The classification and distribution of the categorical predictor variables with respect to the usage of contraceptive is presented in table 1.

Ethical approval

Most of the NDHS data including the one used in this study were usually obtained via the United States Agency for International Development (USAID) funded Demographic and Health Surveys (DHS). The National Population Commission (NPC) is an agency that is responsible for the survey in Nigeria and investigation obtained relied upon mysterious collection of information without any hints of recognizable fact on any of the respondents. Therefore, no further ethical endorsement was necessary.

Statistical analysis

In this study, descriptive statistics was used to determine the distribution of the predictor

variables with respect to contraceptive utilization. The employed statistical techniques assume that the proportion of responses as to the use of contraceptive obtained from the three categories are equally distributed. Hence, Pearson Chi-squared (χ^2) test of homogeneity of proportion was utilized to determine if the proportions of the three levels in the outcome variable are equal. The multinomial logistic regression (MLR) model was also employed to determine the relationships between contraceptive usage and the selected factors among the Nigerian reproductive aged mothers. The choice of MLR is to allow K categories to be modeled as a set of K-1 independent binary choices, in which one category (i.e., Not using any contraceptive method) is chosen as a "pivot" or reference and the other K-1 compared against it, one at a time.²⁸

Generally, the MLR is a generalization of the binary logistic regression that depends on the logit analysis.²⁹ For an outcome variable Y with binary or dichotomous (0, 1) levels of measurement and a predictor variable X the analyses were performed using IBM SPSS 23.

Analysis

This section presents the analysis on the 2018 National Demographic and Health Survey data. The prevalence or proportion of contraceptive methods and multinomial logistic regression are all presented in this section.

Descriptive

Prevalence of contraceptive usage

The percentage of contraceptive usage reported in figure 2 above shows there is a significant difference in the homogeneity of proportions

Table 1. Frequency distribution (percentages) of determinants of Type of contraceptive method used by Nigerian women.

Factor	Factor's level	Type of Contraceptive method used			Total 101,074 (100%)
		Not Using (83.86%)	Traditional/ Folkloric (5.01%)	Modern (11.13%)	
Age	15-19 (ref)	1047 (94.75)	21 (1.90)	37 (3.34)	1,105 (1.09)
	20-24	6067 (89.68)	224 (3.31)	474 (7.01)	6,765 (6.69)
	25-29	13350 (85.50)	787 (5.04)	1476 (9.45)	15,613 (15.45)
	30-34	16215 (82.68)	1,110 (5.66)	2286 (11.65)	19,611 (19.4)
	35-39	17,231 (79.01)	1,380 (6.32)	3196 (14.65)	21,807 (21.58)
	40-44	15,070 (81.19)	1,084 (5.84)	2407 (12.96)	18,561 (18.36)
	45-49	15,776 (89.57)	459 (2.60)	1377 (7.81)	17,612 (17.42)
Household having radio	Yes	36,770 (88.88)	1,292 (3.12)	3,304 (7.98)	41,366 (40.93)
	No (ref)	47,986 (80.36)	3,773 (6.38)	7,949 (13.31)	59,708 (59.07)
Household having Television	Yes	54,713 (91.05)	1,599 (2.66)	3,779 (6.28)	60,091 (59.45)
	No (ref)	30,043 (73.31)	3,466 (8.45)	7,474 (18.23)	40,983 (40.55)
Husband's educational level	No education (ref)	38,938 (94.94)	726 (1.77)	1,348 (3.28)	41,012 (40.58)
	Primary	14,272 (79.52)	1,112 (6.35)	2,112 (12.07)	17,496 (17.31)
	Secondary	22,000 (74.80)	2,297 (7.81)	5,114 (17.39)	29,411 (29.10)
	Higher	9,546 (72.56)	930 (7.06)	2,679 (20.36)	13,155 (13.02)
Region	North-Central (ref)	13,205 (79.69)	487 (2.93)	2,878 (17.18)	16,570 (16.39)
	North-East	20,171 (90.12)	779 (3.48)	1,431 (6.39)	22,381 (22.14)
	North-West	31,226 (93.53)	283 (0.84)	1,877 (5.62)	33,386 (33.03)
	South-East	7,391 (69.72)	1,893 (17.85)	1,316 (12.41)	10,600 (10.49)
	South-South	6,444 (77.39)	574 (6.89)	1,308 (15.71)	8,326 (8.24)
	South-West	6,319 (64.41)	1,049 (10.69)	2,443 (24.90)	9,811 (9.71)
Place of Residence	Urban	25,024 (74.45)	2,775 (8.25)	5,809 (17.28)	33,608 (33.25)
	Rural (ref)	59,732 (88.53)	2,290 (3.39)	5,444 (8.06)	67,466 (66.75)
Husband's Occupation	Not working (ref)	51,313 (86.81)	2,083 (3.52)	5,712 (9.66)	59,108 (58.48)
	skilled	6,754 (78.41)	589 (6.83)	1,270 (14.74)	8,613 (8.52)
	unskilled	26,689 (80.01)	2,393 (7.17)	4,271 (12.80)	33,353 (33)
Religion	Traditional	6,415 (71.98)	1,166 (13.08)	1,330 (14.92)	8,911 (8.82)
	Christianity	20,649 (70.97)	2,448 (8.41)	5,997 (20.63)	29,094 (28.78)
	Islam	57,692 (91.48)	1,451 (2.30)	3,926 (10.88)	63,069 (62.40)
Desire for children	Both want (ref)	32,205 (77.63)	2,796 (6.74)	6,480 (15.62)	41,481 (41.04)
	Husband wants more	48,264 (89.36)	1,818 (3.36)	3,926 (7.26)	54,008 (53.43)
	Wife wants more	4,287 (76.75)	451 (8.07)	847 (15.16)	5,585 (5.53)

on the contraceptive usage among Nigerian women with p-value < 0.001. It is evident that a higher percentage (83.9%) of women do not use any method of contraceptive method.

Multinomial logistic regression

The result of the multinomial logistic regression

model that shows the relationship between the selected factors and the type of contraceptive

method used is presented in Tables 2.

Table 2. Results of multinomial logistic regression model on the contraceptive usage.

Factor	Factor level	Traditional/Folkloric Method	Modern Method
		OR (95% CI for OR)	OR (95% CI for OR)
Age	15-19 (ref)		
	20-24	1.38* (0.87 – 2.20)	1.59 (1.12 – 2.25)
	25-29	1.66 (1.05 – 2.61)	1.78 (1.27 – 2.51)
	30-34	1.76 (1.12 – 2.77)	2.07 (1.47 – 2.92)
	35-39	1.90 (1.20 – 3.00)	2.48 (1.76 – 3.51)
	40-44	1.87 (1.18 – 2.99)	2.24 (1.58 – 3.18)
	45-49	0.69* (0.43 – 1.11)	1.13* (0.79 – 1.61)
Household had Radio	No (ref)		
	Yes	1.10 (1.02 – 1.18)	1.06 (1.01 – 1.12)
Household had television	No (ref)		
	Yes	1.52 (1.41 – 1.65)	1.56 (1.48 – 1.65)
Husband's education level	No Education (ref)		
	Primary	1.13 (1.01 – 1.26)	2.24 (2.07 – 2.42)
	Secondary	1.40 (1.26 – 1.55)	2.73 (2.54 – 2.94)
	Higher	1.89 (1.68 – 2.13)	3.33 (3.08 – 3.61)
Residence	Rural (ref)		
	Urban	1.80 (1.75 – 1.89)	1.64 (1.61 – 1.67)
Region	North-central (ref)		
	North-East	1.53 (1.35 – 1.73)	0.68 (0.63 – 0.73)
	North-West	0.36 (0.30 – 0.42)	0.64 (0.59 – 0.69)
	South-East	4.07 (3.61 – 4.58)	0.37 (0.34 – 0.40)
	South-South	1.55 (1.36 – 1.77)	0.44 (0.40 – 0.47)
	South-West	3.43 (3.04 – 3.86)	1.07* (1.00 – 1.15)
Husband's Occupation	No occupation (ref)		
	Skilled	1.40 (1.27 – 1.56)	1.11 (1.03 – 1.19)
	Unskilled	1.39 (1.30 – 1.49)	1.17 (1.12 – 1.23)
Desire for children	Both want more (ref)		
	Husband wants more	0.87 (0.81 – 0.93)	0.71 (0.68 – 0.75)
	Wife wants more	1.25 (1.11 – 1.39)	1.00* (0.92 – 1.09)
Religion	Traditional (ref)		
	Christianity	0.75 (0.69 – 0.82)	1.16 (1.08 – 1.24)
	Islam	0.47 (0.42 – 0.53)	0.40 (0.37 – 0.43)
Partner's age (years)	–	0.99 (0.98 – 0.99)	0.99 (0.98 – 0.99)
Number of children	–	1.13 (1.11 – 1.15)	1.14 (1.12 – 1.15)
Constant estimates with std. error		– 3.88 (0.25)	– 3.14 (0.18)

* Not significant at 5% level of significance.

None usage of contraceptive is the reference category.

Results

From the descriptive statistics in Table 1, higher percentage (94.75%) of teenage (15 – 19 years) women do not use any type of contraceptive method. Also, from those that uses contraceptive among the teenage women, it was observed that more women (3.34%) use the modern method of contraceptive than the traditional/folkloric method. Generally, this same trend of result was observed for all the factors/factor levels considered in this study as higher percentages of women do not use contraceptives and also the modern method of contraceptive usage is more than the traditional method among those who use contraceptives except for women from the south east region that uses more traditional/folkloric method (17.85%) than the modern method.

The result of prevalence indicated a higher percentage (83.9%) of women do not use any type of contraceptive method. The high percentage of none usage of contraceptives is noted among all age groups. In general, this none usage could give rise to teenage pregnancies, maternal mortality among young girls and also the spread of STD's in Nigeria.³⁰ Except for age groups 20 – 24 and 45 – 49 for the traditional/folkloric method of contraceptive, also, age group 45 – 49 for the modern method of contraceptive in the multinomial logistic regression results presented in Table 2, most of the identified socio-demographic factors are statistically significant (p -value < 0.05) in the modelling the choice and usage of contraceptive as presented in the study.

According to the results presented in Table 2, the women between 20 and 44 years in Nigeria are positively associated with the use of any type of contraceptive methods. This is evident

by the increase in the odds ratio ($OR > 1$). The percentage (%) usage for each age group can be obtain in the % change in OR column for both the traditional and modern methods. Although not significant, women between the age of 45 and 49 years have a negative association ($OR < 1$) with the traditional type of contraceptive but a positive association ($OR > 1$) with the modern type. These associations could be as a result of the knowledge that the use contraceptive use stabilizes over time, with women often switching to more effective methods as they age.³¹ This is evident as the OR increases with the different age group. For instance, women of age group of 25 – 29 years have an increased odds of about 66% and 78% of using the traditional and modern method of contraceptive respectively, relative to their teenage counterpart. Women of age group of 30 – 34 years, 35 – 39 years and 40 – 44 years all have about 76%, 90% and 87% respectively increased odds of using the traditional method of contraceptive as compared to the women between the age of 15 and 19 years.

Household having both radio and television are positively associated with the use of contraceptive methods. Specifically, household having either radio or television have an increased odd of about 10% and 52% respectively of using traditional method of contraceptive as compared to household without a radio or television. Same trend of results were obtained for modern method of contraceptive.

According to the results, husband's educational level also have a positive association with the use of both traditional and modern methods of contraceptive. Women whose husband have a primary education have about 13% increased odds of using traditional method as compared to

women whose husband has no education. Also, husbands who have a secondary and higher education have about 40% and 89% increased odds of using the traditional/folkloric method of contraceptive. The same trend of result was also obtained for the modern method.

In terms of locality, women who lived in urban communities have an increased odds of using the traditional or modern method of contraceptive than their counterpart that live in the rural communities. This increase in odds may be due to accessibility and knowledge of contraceptive usage.³²

Furthermore, the results from multinomial logistic model in Table 2 showed that geopolitical region of mothers is positively associated with the traditional contraceptive method used except for the North Western region which is negatively associated with the type of contraceptive method used. In particular, women from the North East geopolitical region in Nigeria have increased odds of about 53% of using the traditional method of contraceptive relative to their counterpart in the North-Central region (OR = 1.5253, $P < 0.001$). Similarly, women from the South East, South-South, and South-West zones have about 307%, 55%, and 243% increased relative risks of using the traditional method of contraceptive, respectively and about 64% decreased relative risk of using the traditional method of contraceptive of women in the North Western region, as compared to women from the North-Central zone. Therefore, it could be inferred from the result of the multinomial logistic model that the risk of using the traditional method of contraceptive by women of reproductive age in Nigeria is highest in the South-East (307%) followed by South-West (243%), South-South (55%) and North-East

(53%) in that order and is lowest in the North West (64%). Conversely, women from all the geopolitical regions have negative association with using modern method of contraceptive and compared to their North central region. Women from North East, North west, South East, and South South have 32%, 35%, 62% and 56% reduced risk of using modern contraceptive method, respectively.

Women whose husbands have skilled jobs have about 40% and 11% increased odds of using the traditional and modern method of contraceptive respectively than women whose husband has no occupation (OR>1). Similarly, women whose husband have an unskilled manual has about 39% and 17% increased odds of using traditional and modern method of using contraceptive respectively than women whose husband has no occupation.

Women whose husband desire more children have about 13% and 28% reduced risk of using traditional and modern contraceptive methods respectively compared to women who both husband and wife wants more children. The sole desire for more children by the wife increases the risk of women by 25% of using the traditional contraceptive method than when both spouses have a joint desire.

Both Christianity and Islamic religion have negative association with using traditional method of contraceptive as compared to the traditionalist women. Women who are Christians and Muslims have about 25% and 53% reduced risk of using traditional method in comparison to the women who are traditionalist. This could be as a result of some traditional methods which may not be acceptable to the two religions. Christian women tends to have an increased risk of 15% more likely to use the modern contraceptive compared to the

traditional women, while the Muslim women have a 60% reduced risk less likely to use same as compared to their counterpart women from the traditional religion.

Finally, the result from in Table 2 indicated that an increase in the partner's age would decrease the relative risk of using any method of contraceptive by about 1% by the women. While in the contrary, an increase in the number of children would increase the risk of using traditional or modern method of contraceptive by 13%.

Discussion

The objectives of this study were to investigate the prevalence, use and choice of different contraceptive methods among Nigeria women of reproductive age. This study focused on exploratory analysis on the determinants of contraceptive usage based on Nigeria's Demographic and Health Survey in 2018. Descriptive statistics and test of Homogeneity of proportion were employed to determine the distribution and prevalence of the choice of contraceptives among the selected factors. The Multinomial logistic regression model was also employed to examine the relationship between contraceptive usage and the selected factors. This study involve 101,074 women aged between 15 – 49 years.

The descriptive statistics obtained shows that an exceptionally large percentage of Nigerian women do not use any form of contraceptives, followed by those women who prefer the modern methods and lastly, those who prefer the traditional/folkloric method of contraception. This result also confirms the United Nation report on contraceptive use by method³³ with similar pattern of distribution.

The test of homogeneity of proportion reveals that there is a significant difference among the three categories of contraceptive choice used in this study. This shows that the contraceptive non-usage group will contribute more to increase in teenage pregnancies, maternal mortality and also the spread of STDs in Nigeria. This result confirmed the report of a similar study in 2019.³⁰

The type of association for each factor considered on the type of contraceptive method is decided by the percentage change in its odds ratio (OR) as presented in the last column of the Table 2. The respondent age groups have positive association with the use and choice of contraceptive usage except for women between 20 – 24 and 45 – 49 years old. This is clear by the value of their respective $OR > 1$. Similar studies^{34, 35} have also shown that age group is significant in the use of contraceptive methods. Access to radio and television is another factor that figures out the use of contraceptives. An access to radio or television is significantly associated with the choice and use of contraceptives. Women with such access are more likely to have information about the use of contraceptive which so leads to high chance of using contraceptives when compared to their counterparts who do not have such access. This is also evident by the value of $OR > 1$ for either traditional/folkloric or modern method. A study that was done in Nigeria in 2016 using the 2013 NDHS³⁶ data also reported that access to mass media such as radio, television etc. increases the likelihood of the use of contraceptives.

Husband's level of education is another significant determinant of contraceptive usage in this study. Women whose husband are not educated are at risk of not using any method of contraceptives compare to women with

educated husbands. The higher the education of the husband, the more likely a women will consider using either of the two methods of contraception. Similar studies of 10 years conducted in Nepal between 1996 – 2006³⁷ also confirms this report. It was reported in the study that although the wife's education level was associated with the type of contraceptive method used by the couple, the husband's education level had more influence.

Similarly, place of residence of the respondent contribute significantly to the usage and choice of contraceptives among Nigerian women. Since most women living in urban area have access to modern facilities, it is consequentially that such women will have access to information regarding contraceptives. It is therefore evident in the multinomial logistic regression results that women living in urban area have increase chance of using traditional/folkloric and modern method of contraception than their counterparts living in the rural area. This result was also supported by report of similar studies due to availability and proximity to contraceptive usage in the urban places of residence.³⁸⁻⁴⁰

Furthermore, there is a significant association between the region of the respondent and the use of contraceptives in this study. While the result of the multinomial logistic regression shows that women from NE, NW, SE, SW and SS are more likely to use the traditional/folkloric method of contraceptives compared to their counterparts in the NC, same sets of women are less likely to use the modern methods of contraceptives when compared to their counterparts in the NC. Other studies have also reported the significance or otherwise of region in studies relating to contraception.⁴¹⁻⁴³ Husband's occupation is positively associated with the two methods of contraceptive.

Another key factor in this study is the desire for children by both partners. When husbands or wives wants more children, there is a decreased and increased chance of contraceptive usage compared to when both jointly agreed to more children. This implies that the sole independent desires for more children by the husband or wife affects the chance of a woman using any type of contraceptives as compared to the joint desires of the couple. Similar studies have also reported various positions on the desire for more children between couples and contraceptive usage by the mother.^{44,45}

Although negatively associated with choice and usage of contraceptives, both Islamic and Christianity religion have been a significant determinants of contraception in this study. A Muslim and Christian woman are observed to have a reduced chance of contraception compared to a woman with traditional belief. This may be in accordance with the teachings of the religious belief of both Islam and Christian. A study by Obasohan⁴⁶ also show a similar trend with the result reported in this study.

Finally, partner's age and Number of children are significant to the usage and choice of contraceptives in this study. It was observed in this study that the higher the partner's age the lower the likelihood/chance of using any of the contraceptive methods. This means that as the age of the partner of the respondent increase, there are low chances that the respondent will adopt any of the contraceptive methods. Similar studies have also reported the significance or otherwise of partner's age with the use of contraceptives.^{47, 48} Conversely, the higher the number of children by the respondent, the higher the chances of the respondent using any of the contraceptive methods. As the number of children increases, the mother have high

likelihood of using any of the contraceptive methods. Also, similar studies have reported the significance of the number of children in the study about contraceptives usage.⁴⁹

This study has presented the findings from the use of Multinomial logistic regression in modelling the determinant of contraceptives usage. The strength in this work is that it is one of the very few study that has been conducted by simultaneously investigating three levels of contraceptive usage in recent times. However, there is a need for more information and validation on the results obtained in this study to serve as a guide for policy makers and government agencies on the needed interventions regarding non-usage or otherwise of contraceptives.

Conclusion

This study presented in this investigation has shown the pattern and prevalence of contraceptive usage among women of child-bearing age in Nigeria. The choice of contraceptive methods used by Nigerian women is influenced by the selected factors in this study. The findings provided in this study is very crucial for the stakeholders (government and non-governmental organizations) and policy makers in order to improve uptake of contraceptives usage. Infrastructural development and investment in rural education of women, teenage women, women whose husbands wants more children and orthodox women by the government through the Ministry of Education is very paramount in closing the gaps in the contraceptive usage. To further improve uptake and utilization of contraception among Nigerian women, enlightened programs that will address the

important and use of contraceptives are needed to be put on media (Television and radio) across the country. Finally, innovative, and strategic ways should be instituted via policy formulation and implementation by the government and policy makers to stimulate and develop the economy of the country as the role of job creation in mitigating the disparity in the use of contraceptive.

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