

## **Determinants of modern contraception among unmarried adolescents in Nigeria: Analysis of 2018 Demographic and Health Survey**

O.O. OJONIYI<sup>1</sup>, K.K. OGUJIUBA<sup>2</sup> AND N. STIEGLER<sup>1</sup>

<sup>1</sup>*Statistics and Population Studies, Department, University of the Western Cape, Robert Sobukwe Rd, Bellville.7535, Cape Town, South Africa. E-mail:3984779@myuwc.ac.za*

<sup>2</sup>*School of Development Studies, University of Mpumalanga, Cnr R40 and DA725 Roads, Mbombela, South Africa.*

ORCID nos.: OOO ([orcid.org/0000-0001-6437-8385](https://orcid.org/0000-0001-6437-8385)), KKO ([orcid.org/0000-0001-9155-7039](https://orcid.org/0000-0001-9155-7039)),

NS ([orcid.org/0000-0003-1107-5166](https://orcid.org/0000-0003-1107-5166))

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### **Abstract**

Adolescence is the most important phase in life. Unfortunately, this age group is the most affected group with the challenge of sexual and reproductive wellbeing. This cross-sectional study examines factors related to contemporary contraceptive behaviour among adolescents in Nigeria. Data of 983 adolescents aged 15 - 19 (mean age: 17.6±1.2 years) who were never married but have previously had sex were extracted from the 2018 Nigerian Demographic and Health Survey (NDHS) for analysis. Multinomial logistic regression analysis was undertaken to examine issues associated with modern contraceptive use and intention among the adolescents. Based on the survey data, only 15.8% of sexually active single adolescents in Nigeria used modern contraceptives. About half (49%) of the adolescents who did not use contraceptives plan to do so in the future. Results also indicated that current age [ARR=1.267, CI 1.049-1.529], having at least secondary education [ARR=3.057, CI 1.111-8.405], being from poor households [ARR=4.336, CI 1.357-13.853], having a sexual partner [ARR=3.959, CI 1.913-8.193], multiple sexual partners [ARR=11.661, CI 3.767-36.093] and internet use [ARR=1.852, CI 1.098-3.125] were all positively related to contraceptive use. Health intervention programmes targeted at early education of adolescents about the importance of contraception are warranted.

**Keywords:** Modern contraceptives, unmarried, intention, adolescents, Nigeria.

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### **Introduction**

The timing of the onset of puberty is declining globally, and young people are having sex before marriage (Blanc *et al.*, 2009). Consequently, they are vulnerable to unwanted pregnancy and sexually transmitted infection. Non-marital sex is increasing among adolescents, but most of them do not practice contraception (Singh & Darroch, 2012). Young people ascertain their individual identity as they

transition to adulthood by experimenting with different behaviours including sexual behaviour (Avery & Lazdane, 2010). Young people who are having sex are more exposed to undesirable health and social effects in addition to unpremeditated pregnancy or Sexually Transmitted Infection (STI) compared with older populations (Matkins, 2013). Adolescence, the period between childhood and adulthood, is a critical period when behaviours, attitudes, and practices for safer future life are formed (Patton *et al.*, 2016). Choices made at this stage especially regarding reproduction, have serious implications for health, education, and work potential later in life. The World Health Organisation (WHO) (2015) defines adolescence as a period between the ages 10 and 19 years, when the young individual move towards adulthood. The population of adolescents is high globally. Although the number is declining in developed regions, it is increasing in the less developed regions and is expected to continue to rise into the next few decades (United Nations: UN, 2015). In developing countries, 14% of sexually active adolescents aged 15-19 do not want a child for at least two years, and more than half of this population (57%) are in need of a modern contraceptive method; but 85% do not use any contraceptive method, while others use less effective methods (Biddlecom *et al.*, 2018).

Adolescents constitute 22.3% of the Nigerian population of over 190 million people; 5% percent of this fraction contract STIs every year and contribute 40% of the incidence of HIV in the country (UNICEF, 2020). This is the consequence of early exposure and unprotected sex. On average, women and men initiate sex at age 17.6 and 21.1 years, respectively; but they only get married at age 18.1 and 27.2 years, respectively (NPC & ICF, 2014). Nigeria's abortion law and policy forbid abortion services, yet 1.25 million unsafe abortions are done annually by quacks resulting in serious problems as there is no post-abortion care (IPAS, 2015). A major way to avoid unintended pregnancies and their aftermath is effective contraception, which is the modern fundamental health care intervention. The use of contraceptives has profound advantages at all levels of social life (Bongaarts *et al.*, 2012). Despite the benefits and continuous efforts to increase its access, contraceptive use is still low in developing countries.

According to the NDHS report of 2013, nearly one quarter (23%) of adolescent girls aged 15-19 years had given birth and young motherhood is highest in the northwest zone (36%) (NPC & ICF, 2014). Sub-Saharan African countries have the highest teenage fertility rate globally. Annually, about 2 out of every 10 women who give birth in Nigeria have not celebrated their 20<sup>th</sup> birthday (Aigbe & Zannu, 2012). Postponing adolescent birth can halt population growth, increase economic and social values, and improve the health of adolescents (Aigbe & Zannu, 2012; Obi *et al.*, 2002). Exposure to contraceptives is one of the strategies released by the WHO in 2011 to ultimately avert pregnancy and unacceptable reproductive consequences in adolescents from developing countries (WHO, 2015). All women, irrespective of their socio-demographic status, should have access to and

practice lifesaving contraception for as long as they desire. This is consistent with UN's Sustainable Development Goal 3 designed to promote sexual and reproductive health care services world-wide by 2030.

The family planning summit held in London in 2012 focused on raising the knowledge of contraceptives among women who are not ready to have a child. To achieve this, actions were taken at the summit to ensure government commitment (Singh & Darroch, 2012). The national government, private sector companies, and non-governmental organisations were present at the summit with the aim of breaking down barriers to contraception. The meeting gave Nigeria and other countries an opportunity to demonstrate their allegiance to family planning (Smith & Belizan, 2012). At the summit, the Nigerian government committed to increase CPR by 2% every year and attain a 27% modern contraceptive prevalence rate (mCPR) by 2020 (Askew & Castle, 2015). One of the strategies to achieve this target is to engage the Nigerian ministries of youth and education to provide age-fitting information on sexual reproductive health to young people. This will enable girls not mentally and physiologically matured for motherhood to postpone pregnancy, giving them the benefit of enjoying their childhood (Smith & Belizan, 2012).

Contraceptive awareness is an important factor in determining its use; however, there is mixed research evidence on this viewpoint. Numerous studies have been conducted to explain young peoples' modern contraceptive uptake in all regions of the world. Duru *et al.* (2015) found that less than half of people who reported awareness had good knowledge about contraceptives. Amoran (2012) posits that about 50% of the teenagers with unwanted pregnancies cannot use a condom correctly to prevent pregnancy. Similarly, Ezenwaka *et al.* (2020) maintained that one of the individual factors that limit adolescent use of contraceptives is poor knowledge and lack of awareness. Thus, except condomising, there is low prevalence of modern contraceptives use largely because very few adolescents are aware of any other contraceptive method. In South Africa, Seutlwadi *et al.* (2012) found adequate knowledge of contraceptives among young males as a determinant of use. Conversely, Onasoga *et al.* (2016) reported low usage of emergency contraceptives pills among Nigerian adolescents in the Niger Delta region, notwithstanding being knowledgeable about it.

Several factors influence access to modern contraceptive practice in some sub-Saharan African countries. These include ease of access to contraceptives and lack of money for contraceptives (Abdul-Rahman *et al.*, 2011; Seutlwadi *et al.*, 2012), religious belief (Ahinkorah *et al.*, 2020; Renjhen *et al.*, 2010), self-esteem (Ramseyer *et al.*, 2017). About sixty-two percent (62%) of adolescents in Sub-Saharan Africa, who engage in sexual activity, do not use modern contraceptives; consequently, more than half of sexually active unmarried adolescents aged 15-19 in the region do not have their need for contraception met (Biddlecom *et al.*, 2018).

About one in two pregnancies among this age group is unwanted, 50% of which ends in abortion with the majority being unsafe (Chae *et al.*, 2017; Sully *et al.*, 2018). The high prevalence of unmet needs further stresses the importance of examining adolescents' usage of modern methods of contraception and its militating factors in Nigeria. Policy recommendations from this study could improve the sexual and reproductive health outcomes of adolescent Nigerian girls.

## **Methodology**

### *Research design*

This cross-sectional nationally representative study was based on the data from the 2018 Nigerian Demographic and Health Survey. It is the sixth of its kind in the country. The survey used the 2006 Population and Housing census sampling frame. The enumeration areas from the census defined the primary sampling unit called clusters.

### *Study population and sampling*

The survey covered 1389 clusters, of which 42000 households were selected. A total sample of 40567 women in the reproductive age group of 15-49 years were involved in this survey. However, for this study, a weighted sample of 983 adolescents who were never-married (ages 15 and 19 years) but have previously had sex were used.

### *Survey instrument*

The 2018 NDHS used separate questionnaires for the households, men, women, and biomarkers. These questionnaires were based on the DHS programme's standard Demographic and Health Survey (DHS-7) (NPC & ICF, 2014) . The questionnaire for women was used to elicit information on demographics and health-related topics from the selected women aged 15-49 years.

### *Measurement of variables*

The dependent variable for this study was 'modern contraceptive use and intention.' This was measured using a nominal variable with four categories, i.e the actual current practice at the time of the survey. The variable 'contraceptive intention and use' from the NDHS dataset was categorised as 'using modern method', 'using traditional method', 'not using any method and does not intend to use later', and 'not using any method but intends to use later'. The independent variables were the background and reproductive characteristics of the respondents. The variables were current age, education, place of residence, religion, region, wealth index, internet use, age at first sex, number of sexual partners, last sexual activity, birth history, and abortion history.

### *Data analysis*

Weights were applied to the data analysis to control for sampling errors and make the results from the analysis nationally representative. Frequency distributions and cross-tabulation were computed to describe the study population and present the prevalence of use, and intention to use contraceptives in the sample. Multinomial logistic regression was performed to determine the significant predictors of modern contraceptive use, and intention to use among the adolescent girls. The choice of the variables in the multivariate model was based on the results of bivariate analysis, and only the significant variables in the bivariate analyses were subsequently used in the multivariate logistic regression analysis. Multinomial logistic regression is appropriate when the outcome is a nominal variable with three or more categories that do not have an order. In this case these included the following variables: “currently using”, “non-user does not intend to use”, and “intends to use later”. Multinomial logistic regression tests the probability of the independent variable(s) being statistically significant in a specific category, compared to the baseline outcome category of a nominal outcome variable. Stata (version 14) was used for the data analysis. For all inferential statistical analyses, a  $p$ -value of  $p \leq 0.05$  was considered significant.

### *Ethical considerations*

Data for this study were de-identified and freely available online at <https://dhsprogram.com>. It was assumed that the DHS obtained informed consent from the participants before data collection. However, permission and access to the dataset were granted after an online application on the website.

## **Results**

Table 1 presents the participants' (mean age:  $17.6 \pm 1.2$  years) demographic, socio-economic, and reproductive characteristics, as well as their knowledge and contraceptive behaviour. About 85% of the participants had at least secondary education, while 5.5% had no formal education. Regional distribution of the respondents are as follows: South-south (25.6%), North-Central (22.5%), South-West (22.2%), South-East (16.3%), North-Eastern (9.9%), and North-West (3.6%). Respondents were almost evenly split between the two areas, i.e. 50.6% and 49.4% in urban and rural areas, respectively. The respondents were mostly Christians (61.1%) and Catholics (18.5%). More than a quarter of the sample were from richer households (28.5%), while 7.4% were from the poorest households. Of the whole sample, 71% had never used the internet, while about 2.8% used the internet in the last 12 months before the survey. Most of the respondents (81.7%) had their first sex at age 15 years or older and 72% reported having only one sexual partner within the last 12 months. More than a quarter of the respondents (29.8%) reported having sex in the last four weeks. Most of the respondents knew at least one modern method of contraceptive (95.9%), while 2.1% confirmed that they had done abortion in the past.

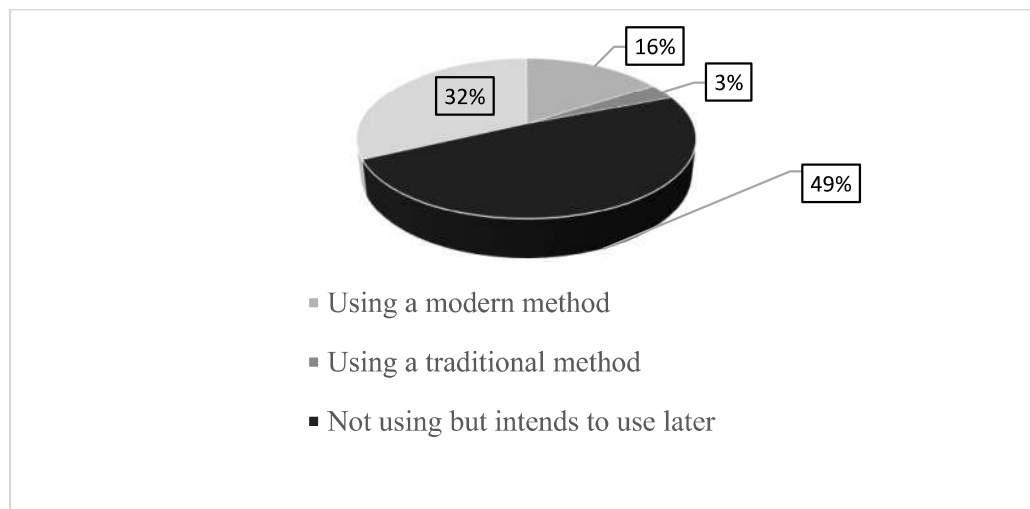
**Table 1:** Frequency and percentage distribution of respondents' characteristics.

<b>Study variable</b>		<b>Frequency</b>	<b>Percentage</b>
Modern contraceptive	Use	155	15.8
	Non-use	828	84.2
Residence	Current Age	17.54	SD=1.29
	Urban	498	50.6
Education	Rural	486	49.4
	No Education	54	5.5
Region of residence	Primary	89	9.1
	Secondary and Higher	840	85.4
	North-Central	221	22.5
	North-East	98	9.9
	North-West	35	3.6
Religion	South-East	160	16.3
	South-South	252	25.6
	South-West	218	22.2
	Catholic	181	18.5
Wealth index	Other Christian	601	61.1
	Poorest	72	7.4
	Poorer	154	15.7
	Middle	254	25.8
	Richer	280	28.5
Internet use	Richest	223	22.6
	Never use	698	71.0
	Yes, last 12-months	244	24.8
Age at first sex	Yes, before last 12-months	41	4.2
	Less than 15-years	194	18.3
Sexual partners in the last 12 months	Age 15 and above	866	81.7
	None	219	22.3
	One	708	72.0
Last sexual activity	More than one	56	5.7
	Active in last 4-weeks	293	29.8
	Not active-Postpartum	49	4.9
Knowledge of method	Not active-not postpartum	642	65.3
	Knows no method	40	4.1
Abortion history	Knows modern method	943	95.9
	None	963	98.0
	Yes	20	2.1

**Source:** NDHS 2018 dataset.

*Percentage distribution of respondents' contraceptive use and intention and method*

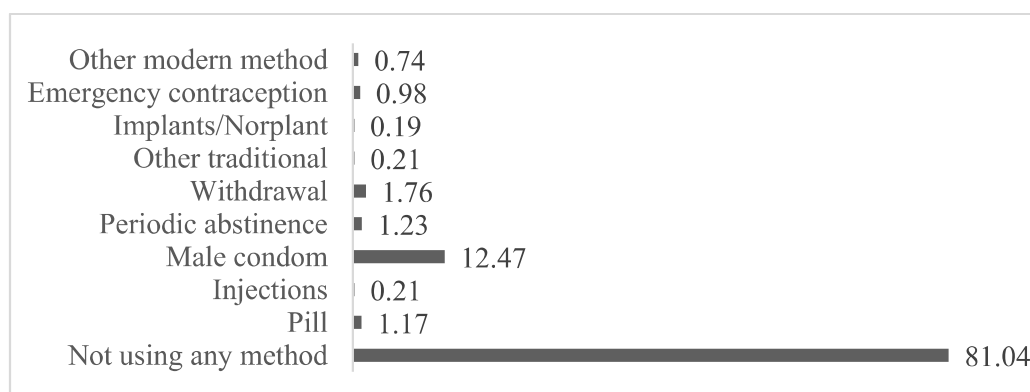
Figure 1 shows the prevalence of contraceptive use and intentions among sexually active Nigerian adolescents aged 15-19 years.



**Figure 1:** Current contraceptive use and intentions among sexually active unmarried adolescents in Nigeria.

**Source:** NDHS 2018 dataset.

Figure 2 depicts the modern contraceptive methods currently used by 15-19 year-old Nigerian adolescents.



**Figure 2:** Type of contraceptives currently used reported by the respondents.

**Source:** NDHS 2018 dataset.

Table 2 presents the percentage distribution of contraceptive use and intention across respondents' demographic and socio-economic characteristics.

Table 2 shows that the average age of those who were using modern contraceptives was 17.9 years. The prevalence of use of modern contraceptive methods was highest among those who were highly educated (16.9%), while the prevalence of not using and not intending to use is highest among those with no formal education (58.2%).

**Table 2:** Percentage distribution of respondent demographic and socio-economic characteristics by modern contraceptive use and Intention.

VARIABLE	NOT USING & DOES NOT INTEND TO USE=31.99%		USING MODERN METHOD=15.76		USING TRADITIONAL METHOD=3.2%		INTEND TO USE LATER=49.05%	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
AGE								
Mean Age	17.54	SD=1.29	17.88	SD=1.10	17.59	SD=1.16	17.61	SD=1.19
PLACE OF RESIDENCE								
Urban	154	30.9	79	16.0	16	3.3	248	49.9
Rural	161	33.1	76	15.6	15	3.1	234	48.2
EDUCATIONAL ATTAINMENT								
No Education	31	58.2	7	12.1	0	0	16	29.6
Primary	30	33.7	9	10.1	2	1.9	48	54.2
Secondary/ Higher	253	30.1	139	16.6	30	3.5	418	49.7
REGION								
North-Central	73	33.1	23	10.2	3	1.5	122	55.2
North-East	30	30.4	27	28.1	0	0.0	40	41.5
North-West	3	8.5	4	11.4	0	0.0	28	80.1
South-East	51	31.9	26	16.5	8	5.3	74	46.4
South-South	93	36.8	50	19.8	15	6.0	94	37.4
South-West	65	29.9	25	11.3	5	2.2	123	56.6
RELIGION								
Catholic	49	27.3	25	13.9	12	6.7	95	52.1
Other Christian	192	32.0	106	17.6	16	2.7	286	47.7
Islam & others	73	36.2	24	11.8	3	1.5	101	50.5
WEALTH INDEX								
Poorest	27	37.2	5	6.4	0	0.0	41	56.3
Poorer	47	30.7	29	18.8	5	2.9	73	47.5
Middle	79	30.9	41	16.3	7	2.8	127	50.0
Richer	81	28.8	43	15.4	13	4.7	143	51.1
Richest	81	36.5	37	16.5	7	3.0	98	44.1
INTERNET USE								
Never	240	34.4	96	13.7	12	1.8	350	50.2
Yes, last 12 months	59	24.0	50	20.3	16	6.5	120	49.3
Yes, before last 12 months	16	39.6	10	23.8	3	8.0	12	28.6

Source: NDHS 2018 dataset.



More than half (55.2%) of adolescents in the North-Central part of Nigerian and 41.5% in the North-East were not using contraceptives, but intend to use a method later. About 11.8% of Islamist and other categories were using a modern method, while half of the same group intends to use it later. Only 6.4% of participants in the poorest household were using a modern method, while 56.3% intend to use contraception later. Respondents (20.3%) who used the internet in the last 12 months of the survey were practising contraception.

Table 3 presents the percentage distribution of contraceptive use and intention across respondents' reproductive characteristics. From Table 3, of those who had their first sex at age 15 and above, 15.8% were using a modern method while 49.7% of the same group intend to use a method later. Respondents (33.8%) with multiple sexual partners within a year before the survey were using a modern method while only 17.8% of those with only one sexual partner within the same period used a modern method. Twenty-two percent (22.6%) of adolescents who had sex in the last four weeks prior to the survey were using a modern method. About 16.4% of those who knew at least a modern method were currently using a method while 49.2% intend to use it later. More than a quarter of those who have a history of abortion were using a modern method of contraception, while 35.8% of the same category of people intend to use it later.

Table 4 shows the unadjusted and adjusted relative risk ratios with confidence intervals of factors associated with contraceptive use and intention.

From Table 4, the relative risk ratio (RRR) of currently using the modern method versus not using and not intending to use it increased with age (RRR=1.311, CI=1.102-1.560). Controlling for covariates, the likelihood of use still increased with age (Adjusted relative risk ratio ARR=1.267, CI=1.049-1.529).

Adolescents with secondary or higher education tend to be using a modern method more than not using it compared to the uneducated (RRR=2.643, CI=1.111-6.288). Adjusting for other variables in the model, adolescents with secondary schooling were three times more likely to be using modern contraceptives vs not using and not intending to use it as those who have no education (ARR=3.057, CI=1.049-1.529).

**Table 3:** Percentage distribution of respondents' reproductive characteristics by modern contraceptive use and Intention.

VARIABLE	NOT USING & DOES NOT INTEND TO USE =32%		USING MODERN METHOD =15.8%		USING TRADITIONAL METHOD =3.2%		INTEND TO USE LATER =49.1%	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
<b>AGE AT FIRST SEX</b>								
Less than 15 years old	64	37.2	27	15.5	2	1.1	80	46.2
15 years old and above	251	30.9	128	15.8	30	3.7	403	49.7
<b>NUMBER OF SEX PARTNERS IN THE LAST 12 MONTHS</b>								
None	87	39.7	10	4.5	1	0.3	122	55.6
One	219	30.9	126	17.8	26	3.7	337	47.6
More than one	9	15.8	19	33.8	5	9.1	23	41.3
<b>LAST SEXUAL ACTIVITY</b>								
Active in last 4 weeks	82	27.9	66	22.6	19	6.4	126	43.1
Not active-Postpartum	17	34.4	1	1.1	0	0.0	31	64.5
Not active -not postpartum	216	33.7	88	13.8	13	2.0	325	50.6
<b>BIRTH HISTORY</b>								
None	283	31.8	145	16.3	30	3.4	431	48.5
Yes	32	33.7	10	11.0	1	1.2	51	54.2
<b>KNOWLEDGE OF ANY METHOD</b>								
Knows no method	22	54.9	0	0	0	0	18	45.1
Knows modern method	292	31.0	155	16.4	32	3.3	464	49.2
<b>ABORTION HISTORY</b>								
None	309	32.1	149	15.5	30	3.1	475	49.3
Yes	6	29.1	6	28.4	1	6.7	7	35.8

Source: NDHS 2018 dataset.

**Table 4:** Demographic and Socio-economic risk factors of contraceptive behaviour (use and intention) among sexually active unmarried adolescents in Nigeria.

VARIABLE	UNADJUSTED RELATIVE RISK RATIO		ADJUSTED RELATIVE RISK RATIO	
	MODERN METHOD	NOT USING BUT INTEND TO USE LATER	MODERN METHOD	NOT USING BUT INTEND TO USE LATER
AGE	1.311*[1.102-1.560]	0.983[0.876-1.107]	1.267*[1.049-1.529]	0.960[0.878-1.089]
RESIDENCE				
Urban				
Rural	0.908[0.618-1.335]	0.900[0.678-1.196]		
EDUCATIONAL ATTAINMENT				
No education				
Primary	1.445[0.470-4.442]	3.164*[1.488-6.729]	2.625[0.764-9.015]	3.574*[1.625-7.860]
Secondary or Higher	2.643*[1.111-6.288]	3.244*[1.742-6.041]	3.057*[1.111-8.405]	3.964*[2.003-7.845]
REGION				
North-Central				
North-East	2.991*[1.483-6.031]	0.816[0.469-1.423]	2.611*[1.179-5.783]	0.905[0.489-1.675]
North-West	4.343[0.904-20.865]	5.662*[1.661-19.300]	4.260[0.844-21.493]	6.125[1.756-21.369]
South-East	1.672[0.859-3.255]	0.872[0.551-1.381]	1.599[0.787-3.249]	0.796[0.490-1.295]
South-South	1.743[0.972-3.126]	0.608*[0.404-0.914]	1.335[0.712-2.503]	0.549*[0.355-0.848]
South-West	1.225[0.632-2.373]	1.133[0.746-1.720]	0.922[0.449-1.893]	1.145[0.730-1.797]
WEALTH INDEX				
Poorest				
Poorer	3.549*[1.197-10.519]	1.024[0.557-1.883]	4.336*[1.357-13.853]	0.997[0.519-1.912]
Middle	3.039*[1.060-8.712]	1.068[0.609-1.874]	3.126[1.004-9.730]	0.908[0.490-1.681]
Richer	3.104*[1.085-8.875]	1.176[0.673-2.055]	2.920[0.917-9.929]	0.968[0.516-1.817]
Richest	2.617[0.908-7.536]	0.799[0.452-1.411]	2.451[0.741-8.102]	0.653[0.335-1.271]
INTERNET USE				
Never				
Yes, last 12 months	2.123*[1.358-3.317]	1.408[0.989-2.004]	1.852*[1.098-3.125]	1.551[1.038-2.316]
Before last 12 months	1.503[0.656-3.445]	0.495[0.229-1.068]	1.361[0.542-3.415]	0.543[0.240-1.231]
AGE AT FIRST SEX				
Less than 15 years old				
15 years and above	1.227[0.745-2.021]	1.294[0.898-1.864]		
NUMBER OF SEXUAL PARTNER IN THE LAST 12 MONTHS				
None				
One	5.064*[2.533-10.125]	1.101[0.797-1.521]	3.959*[1.913-8.193]	1.096[0.761-1.578]
More than one	18.747*[6.664-52.736]	1.863[0.818-4.240]	11.661*[3.767-36.093]	2.267[0.926-5.547]
LAST SEXUAL ACTIVITY				
Active in last 4 weeks				
Not active postpartum abstinence	0.038*[0.002-0.619]	1.216[0.63-2.343]	0.079[0.005-1.325]	1.448[0.695-3.017]
Not active non postpartum abstinence	0.505*[0.336-0.759]	0.974[0.702-1.350]	0.782[0.490-1.248]	1.062[0.731-1.544]
ABORTION HISTORY				
None				
Yes	2.020[0.629-6.487]	0.800[0.267-3.397]		

NOTE: The probability of choosing all possible outcome categories equal 1 with traditional category not presented.

\*Significant at p-value &lt; 0.05, 95% confidence interval in parenthesis

Source: NDHS 2018 dataset.

Adolescents with only primary education, along with those who had secondary or higher education, tend to use contraceptive later than not intending to use it compared to the uneducated adolescents (RRR=3.164, CI=1.488-6.729; RRR=3.244, CI=1.742-6.041, respectively). Considering the covariates, the risk of intending to use a method later is more for an adolescents with primary education and those with higher education compared to the uneducated (ARR=3.574, CI=1.625-7.860; ARR=3.964, CI=2.003-7.845).

Adolescents in the North-East region were more likely to be using modern contraceptives rather than not using and not intending to use it later compared to those in North-Central Nigeria (RRR=2.991, CI=1.483-6.031). Controlling for other variables, the risk of using modern contraceptives was higher for adolescents in North-East Nigeria compared to those in the North-Central part of the country (ARR=2.611, CI=1.176-5.783). Adolescents in the North-West were five times as likely to intend to use a method later than not intend to use it later as those in North-Central Nigeria (RRR=5.662, CI=1.661-19.300). Participants in the South-South were less likely to intend to use a method later than not intend to use it later compared to those in North-Central Nigeria, the covariates notwithstanding (RRR=0.608, CI=0.404-0.914; ARR=0.549, CI=0.355-0.848).

Results further indicated that participants in the poorer households were more likely to use modern contraceptives than not using and not intending to use it compared to those in the poorest household, even after adjusting for other variables (RRR=3.549, CI=1.197-10.519; ARR=4.336, CI=1.357-13.883). Adolescents in middle wealth households and those in the richer households were more likely to be using a modern method than not using and not intending to use it compared to their peers in the poorest households (RRR=3.039, CI=1.060-8.712, RRR=3.104, CI=1.085-8.875, respectively).

Regarding internet usage, adolescents who used the internet within the last 12 months tend to use a modern method more than not using and not intending to use it compared to participants who had never used the internet (RRR=2.123, CI=1.358-3.317). Adjusting for other variables, the trend remained unchanged (ARR=1.852, CI=1.098-3.125).

Adolescents with a sexual partner were more likely to be using a modern method than not using and not intending to use it compared to those with none in the last 12 months before the survey (RRR=5.064, CI=2.533-10.125). Controlling for other variables, adolescents who had a sexual partner tend to use a modern method more than not using and not intending to use it compared to those who had no sexual partner in the same period (ARR=3.959, CI=1.913-8.193).

Respondents who had multiple sexual partners tend to use modern methods more than not using and not intending to use it compared to adolescents with no sexual

partner (RRR=18.747, CI=6.664-52.736). When other variables were controlled, adolescents who had more than one sexual partner will use a modern method more than not using and not intending to use it compared to those with no sexual partner (ARR=11.661, CI=3.767-36.093).

Adolescents who did not have sex due to postpartum abstinence in the last 4-weeks before the survey were less likely to be using a modern method than not using and not intending to use it compared to adolescents who had sex (RRR=0.038, CI=0.002-0.619). Adolescents who did not have sex and were not postpartum in the last 4-weeks before the survey were less likely to be using a modern method than not using and not intending to use it compared to those who had sex (RRR=0.505, CI=0.336- 0.759).

## Discussion

This study examined modern conception and its associated factors among unmarried Nigerian adolescents. Although awareness of the modern method of contraception is high from our results, the proportion of usage is far lower than the adolescents' knowledge. This finding corroborates those of previous Nigerian studies (A Moran, 2012; Duru *et al.*, 2015; Onasoga *et al.*, 2016). Generally, in Sub-Saharan Africa, even with rising awareness and knowledge, modern contraception has remained low (Sarah *et al.*, 2017). It could be that adolescents get incorrect knowledge from their peers. However, an exploratory study in Ebonyi state of Nigeria revealed that one of the reasons adolescents reported not using contraceptives was lack of access and poor knowledge (Ezenwaka *et al.*, 2020).

Only 15.8% of sexually active unmarried adolescents between ages 15 and 19 were using a modern method of contraceptive. This percentage is higher than the 12.3% reported among Ethiopians of the same age group, 13.3% in Mali and 9.8% in Zambia (Abebe *et al.*, 2020; Ahinkorah *et al.*, 2020; Chola *et al.*, 2020). However, these statistics included both married and unmarried members of the population. One-third of the adolescents did not use contraception and didn't intend to do so later, while 49% postponed the use of any method, which is lower compared to the 54.3% reported in rural Ghana (Abubakari *et al.*, 2015). This portrays a large gap in contraceptive use and underscores the need to increase contraceptive services for adolescents.

The male condom is the most prevalent method reported in this study. A population-based study in South Africa also found that condom usage is the most preferred contraceptive method among young people (Seutlwadi *et al.*, 2012). This is also similar to the findings in Imo state of Nigeria, condom was the most reported contraceptive method used (Duru *et al.*, 2015). Several other studies have yielded comparable findings (Kelčiková *et al.*, 2020; Renjhen *et al.*, 2010). The

present finding could be attributed to easier access to condoms which could be purchased freely without medical prescription. Rampant multimedia condom campaigns over the years could also be a contributing factor.

Predictably, age had a positive influence on modern contraception among unmarried adolescents in Nigeria, a result that mimics those of other studies (Ahinkorah *et al.*, 2020). The use of contraceptives undeniably increases with age. It is expected that older and educated adolescents may have better access to methods which enables them to understand the benefits of contraception. Religion was not related to contraceptive use in this study. However, an earlier study in the eastern part of the country showed that religious belief deterred adolescents from contraception. The study reported that Christianity preaches abstinence and frowns at sex among unmarried adolescents. Hence, adolescent contraception is not a matter of discussion at all among devout Christians (Ezenwaka *et al.*, 2020).

Also, the present results indicated that secondary and higher education promotes the use of modern contraceptive methods. Evidence from other studies also supports that higher education has the power to shape perceptions and attitudes towards contraception, and dissolves every contrary belief about modern contraception (Ajaero *et al.*, 2016; Nsanya *et al.*, 2019). In addition, Nigerian adolescents from the poorer households used modern contraceptives compared to those in the poorest household. A plausible explanation could be to ensure a better quality of life as having more children would worsen the socioeconomic condition of such homes. Previous Nigerian studies have suggested that households with high socioeconomic status are more likely to practice modern contraception (Ahinkorah *et al.*, 2020; Ajaero *et al.*, 2016). It is also possible that adolescents in the poorer household engage more in sexual activity for socioeconomic support and as a result need to protect themselves. Studies have also shown that contraceptive use is higher among those with multiple sexual partners (Anyangu, 2010; Essiben *et al.*, 2018).

Remarkably, the present study also found that internet exposure is significantly associated with modern contraception. Precisely, adolescents who have browsed the internet, used modern contraceptives as opposed to those who have never used the internet. Internet usage exposes adolescents to information on different topics, contraception inclusive. It's possible that adolescents now resort to the internet to get more information about their sexual and reproductive health since there is limited information in schools and homes. It has been argued that access to family planning messages alters negative attitudes towards contraception (Ajaero *et al.*, 2016).

Having a sexual partner and more importantly, multiple sexual partners are associated with contraceptive use. A study in Cameroon has reported similar findings among sexually active adolescents. The study found that having only one

partner hinders modern contraceptive use (Essiben *et al.*, 2018). This is probably because adolescents think having one sexual partner is safer than having multiple sexual partners as this could lower the risk of contracting STI.

### **Limitations of the study**

The limitation of this study includes the use of dataset from a cross-sectional survey and so suffers time-related defects. A causal relationship between the outcome of interest (modern contraceptive use) and respondents' characteristics cannot be established. This limitation should be considered in interpreting the results of this study.

### **Conclusion and implication for health policy**

Unmarried Nigerian adolescents' usage of modern contraception is of high importance to policy makers and public health practitioners in view of its implications. Hence, this study contributes to the global debate on the determinants of contraceptive use and intention with a focus on its associated socio-demographic circumstances among sexually active unmarried adolescents aged 15-19 years in Nigeria. Age, education, internet usage, and multiple sexual partners are associated with modern contraceptive use among unmarried adolescents in the country. Therefore, there is a need for dynamic public enlightenment campaigns and awareness programmes on adolescent reproductive health and contraception, particularly targeted at the youth and uneducated.

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## *Determinants of contraception among unmarried Nigerian adolescents* 115

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*Determinants of contraception among unmarried Nigerian adolescents* 117

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