

Knowledge and Use of Contraceptives Methods Amongst Unmarried Women in Northern Nigeria. Insight from the Performance Monitoring and Action Data (2018)

Daniel T. Omole¹, Nchelem K. Nchegbo¹, Nebechukwu H. Ugwu^{1,2,3}, and Makinde A. Olusesan¹

¹Viable Knowledge Masters Abuja, Nigeria, ²Demography and Population Studies Programme, Schools of Public Health and Social Sciences, University of the Witwatersrand, Johannesburg, South Africa ³Institute for Development Studies, University of Nigeria, Enugu Campus, Nigeria

For Correspondence: henryhills02@yahoo.com

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Abstract

Background: Contraceptives have played a crucial role in women's empowerment and health improvements in recent years, with increasing efficacy. However, despite these advancements, surveys have consistently shown stagnant contraceptive prevalence rates among sexually active youth, particularly in northern Nigeria. This study aimed to investigate the knowledge and utilization of contraceptive methods among unmarried women in northern Nigeria. **Methods:** The study utilized data from the 2018 cross-sectional performance monitoring survey by Action-Nigeria, involving a nationally representative sample of women aged 15 to 49. **Results:** Among the respondents, 89.4% were sexually active unmarried women (those who were unmarried and reported sexual activity within the previous 12 months of the survey), with 35.8% using at least one contraceptive method. Irrespective of recent sexual activity, respondents demonstrated a knowledge score of contraception methods exceeding 50%. **Conclusion:** Unmarried women in northern Nigeria exhibit a reasonable understanding of contraception, with the majority having knowledge of at least one method. Contraceptive use among sexually active unmarried women in this region is also moderate. Addressing this situation requires the implementation of targeted programs aimed at increasing contraceptive adoption among sexually active women in northern Nigeria.

Keywords: Contraceptives, Northern Nigeria, unmarried, Sexual health, contraceptive use

Introduction

Most sexually active unmarried people are concerned about unplanned pregnancies because of the social stigma that accompanies it and the economic factors (W. Smith et al., 2016). According to the UN Women, for every dollar earned by a man, women only earn 77 cents worldwide (UNWOMEN, 2022) the lower the income of women the lesser access they have to contraceptives (Finer & Zolna, 2011) . Contraception is not a new practise; traditional contraceptive methods such as abstinence, withdrawal, lactation amenorrhea, and folk methods have long been known and accepted, but they are not completely effective, particularly for unmarried women (Ajayi et al., 2018). Because traditional methods created unmet needs, modern contraceptive methods with higher effectiveness were introduced.

The usage of contraception has helped to alleviate the dread of unwanted pregnancy. Recent estimates extrapolate that about 308 million unintended pregnancies were prevented with the use of modern contraceptives in 2017 (World Health Organization, 2020), and 67 million unintended pregnancies could have been prevented if the needs for modern contraceptives were met (World Health Organization, 2020). The proportion of all modern contraceptive users who are unmarried women rose from 12.1% in 2000 to 15.7% in 2019 (Kantorová et al., 2020). Globally, unmarried women account for 16% of women with an unmet need for modern contraceptive methods (Kantorová et al., 2020).

Despite advances in both knowledge and desire to delay or space childbirths, many Sub-Saharan African (SSA) women continue to have low uptake of modern contraceptives and high rates of unmet need (Blackstone et al., 2017). Many Sub-Saharan African women would like to have more control over their childbearing. Nonetheless, many refuse to use family planning because they are afraid of the negative consequences and have health issues (Lith et al., 2013). Poor and less educated women in particular, employ temporary contraceptive techniques that are less successful than those used by other women who do not wish to have any more children and use contraception (Lith et al., 2013). In Sub-Saharan Africa, about 8 million women plan to cease having children in the future (Lith et al., 2013). The unintended pregnancy rate in sub-Saharan Africa

was found to be 29%. Women who have never been married had the highest percentage of unintended pregnancies (62.8%), while women who are married recorded 22.8% (Ameyaw et al., 2019). According to Adde et al., 2021 pregnancy termination was significantly correlated with the need for contraceptive methods, education, the sex of the household head, and socioeconomic disadvantage among women.

There is a need to increase educational awareness for women of teenage age on contraceptive methods to reduce maternal mortality. Prior to the 1960s, no population strategies of any type existed in African countries; by the mid-1970s, just 25% did, and by 2009, this figure had risen to 64% (Aliyu, 2018; Cleland et al., 2006). From the literature, it was observed that family planning programmes in Sub-Saharan Africa have used three modes of service delivery: community-based systems, commercial outlets, and healthcare facilities. In 1996, more than half of Sub-Saharan Africa's population lived in nations with some form of contraceptive distribution programme (Aliyu, 2018; WHO, 1995). Community-based distribution (CBD) involves non-clinical family planning service approaches are used in this programme to promote the use of safe and simple contraceptive technologies through community organisation, structure, and institutions. The World Health Organisation says different people can be recruited for the distribution service. Zimbabwe was the first country to initiate a CBD programme. Nigeria has had some sort of CBD programme since 1990 (Aliyu, 2018).

Nigerians deeply ingrained socio-cultural values do not entirely agree with some of the available contraceptive methods. Educational level, marital status, parity, socio-economic status, fertility intention, and awareness of family planning methods are also major factors that affect contraceptive usage in Nigeria (Alo et al., 2020). According to a 2020 report by the National Bureau of Statistics, about 13% of women in Nigeria used contraceptives in 2018 (NATIONAL BUREAU OF STATISTICS, 2020), compared to the 65.3% of women aged 15–49 in the United States that used contraceptives in 2017–2019 (Daniels & Abma, 2020). The Nigerian government plans to increase the contraceptive prevalence rate to 27% by 2024, according to the Nigerian Family Planning Blueprint for 2020–2024 (Federal Ministry of Health, 2020), which is still below the current

contraceptive prevalence rate in developed countries like the United States of America.

The Nigerian Round 5 Household and Female survey in 2018 estimates that about 36.6% of unmarried women in Nigeria have unmet needs for contraceptives (Centre for Population and Reproductive Health (CPRH) et al., 2020). Although unmet demand and access to modern contraceptives among adolescents are known to vary with women's marital status, with unmet need for modern contraceptives being highest among unmarried girls, and the majority of literature on contraceptives has focused on married women (de Vargas Nunes Coll et al., 2019; Nsanya et al., 2019). Focusing on the SDG (Sustainable Development Goal) 3 and 5 (which aims to ensure universal access to sexual and reproductive health-care services by 2030), specifically, insights are necessary into to understand the knowledge and usage of contraceptives amongst unmarried women in Northern Nigeria and not solely comparative insights into contraceptive usage between married and unmarried women.

Methods

Study Design

The Performance Monitoring for Action (PMA) surveys involve interviewing a sample of females aged 15 to 49 years old as well as a probability sample of health facilities, pharmacies, and retail outlets inside the selected communities that provide family planning services. Female respondents are asked questions about their background, birth history and fertility preferences, use of family planning methods, and other information that policymakers and programme administrators can use to improve health and family planning (Centre for Population and Reproductive Health (CPRH) et al., 2020).

This study would quantitatively utilize the cross-sectional study from 2018 Nigeria Round 5 Household and Female (HQFQ) Survey by the PMA project, to analyse the how the knowledge and usage are affected by the socio-demographic factors amongst women in Northern Nigeria.

Data Source

This research would be primarily based on data from 2018 Nigeria Round 5 HQFQ Survey by the Performance Monitoring for Action (PMA) project.

Nigeria (National) Round 5 Household and Female (HQFQ) survey used a three-stage sampling approach within a sample of seven states - Anambra, Kaduna, Kano, Lagos, Nasarawa, Rivers, Taraba. One state per zone was selected using probability proportional to size from among each of Nigeria's six zones. The seventh state (Kaduna) was allocated to the northwest zone. The Bill & Melinda Gates Institute provided overall direction and support for Population and Reproductive Health at the Johns Hopkins Bloomberg School of Public Health through a grant by the Bill & Melinda Gates Foundation.

Sampling

302 clusters of enumeration areas (EAs) were drawn from the National Population Commission's master sampling frame. In each cluster of EAs, households and private health facilities were listed and mapped; 35 households (40 in Lagos) were selected per cluster of EAs. Occupants in selected households were enumerated and eligible females of reproductive age (15-49) were contacted and consented for interview (Centre for Population and Reproductive Health (CPRH) et al., 2020).

Sample Size

The final sample included 10,070 households and 11,284 females (Centre for Population and Reproductive Health (CPRH) et al., 2020). The dataset consisted of 3787 responses from unmarried women (Never been married or Living with a partner) in Northern Nigeria (using the zones North West, North Central and North East)

Variable Measurement

The variables used for the analysis were derived from the survey questionnaire for the Nigeria (National) Round 5 Household and Female (HQFQ) survey 2018 and the research objectives accomplished.

Dependent Variables

- Knowledge on the various contraceptive method: Based on method heard about before. An image appeared on the screen for some methods. If the respondent said that she has not heard of the method or if she hesitates to answer, the probe was read aloud and an image of the method was shown when available.

- Usage of various contraceptive methods: Based on methods used prior. An image appeared on the screen for some methods. If the respondent said that she has not used the method or if she hesitates to answer, the probe was read aloud and an image of the method was shown when available.

Study outcome

The contraceptive prevalence rate (CPR) among unmarried women that were aged 15-49 in northern Nigeria was defined as follows.

CPR =

$$\frac{\text{Number of unmarried sexually active* women aged 15–49 years that reported use of a contraceptive method during the survey}}{\text{Number of unmarried sexually active women* girls aged 15–49 years}}$$

*Unmarried women reporting sexual activity in the last 12 months prior to the survey

Contraceptive methods was defined to consist of the following, female sterilization, male sterilization, intrauterine contraceptive devices (IUD), injectables, contraceptive implants, contraceptive pills, male condoms, female condoms, lactational amenorrhoea, emergency contraceptives, diaphragm, foams and jelly, standard days methods, withdrawal method, other traditional method (WHO, 2020).

Independent variables

- Marital status: The marital status of each household member, as reported by the household respondent. For verification, the female questionnaire includes an additional question (FQmarital status) with the same response options. There are five of them.

Possible responses and values in the dataset are shown in parentheses below:

- Currently married (1): Married by the government or religious institution
- Currently living with partner (2): Living together without a formal civil or religious ceremony

- Divorced or separated (3): Married previously, now divorced or separated
- Widow or widower (4): Married previously, spouse died
- Age range: Age of each member of the household, in years, as reported by the household respondent at the time of the interview. An additional question (FQ_age), is included in the female questionnaire for verification to facilitate analysis.
- Wealth quantile: Households are divided into either wealth quintiles or tertiles, based on the distribution of wealth in the sampled households (wealthquintile coded: 1, 2, 3, 4, 5; wealthtertile coded: 1, 2, 3). Quintiles and tertiles are created by distributing approximately equal percentages of households, using weights, from the variable score. Wealth categories are created at the household level, not individual level; that is, approximately 20% (or 33%) of households (one observation per household-weighted) are in each wealth category. Quintiles and tertiles are created by distributing approximately equal percentages of households, using weights, from the variable score. Each household is assigned a score (equal to the variable score) based on the number of assets possessed. Households with a lower score are placed into lower wealth quintiles or tertiles. At the population level (all observations), the distribution may be skewed.

Place of residence: The urban (1)/rural (2) status of the EA in which the household was interviewed. PMA uses the urban/rural status that the NSO (National statistic organisation) assigns the EA.

Education level: Highest level of formal education—excluding Bible, Koranic School, and short courses—attended for each eligible woman in the household, as reported by the female respondent at the time of the interview. Possible responses vary by country and include primary, secondary, post-secondary, and other intermediate levels in the formal school system. Technical or vocational training beyond primary school (coded: 1, 2, 3, 4, etc.) is also included.

Data Analysis

We requested for the dataset from the PMA platform. The dataset was accessed and cleaned to allow for specific observations from unmarried women aged 15–49 years in the northern zone of Nigeria. The socio-demographic characteristics, sexual activity, knowledge of contraceptives, and current usage of contraceptives of the respondents were described. Explanatory variables with p values <0.05 were considered to be statistically significant. Analysis was conducted with Stata version 17.0.

Socioeconomic position (Wealth index quantile) was created using information from the questionnaire on ownership of livestock and durable goods, as well as characteristics of the dwelling unit, including wall, floor and roof materials, water sources, and sanitation facilities (Performance Monitoring for Action, 2020). Based on the overall score of each individual's responses in each section, the contraception knowledge and usage variables were created with score ranges of 0 (Zero Knowledge), 1-8 (Fair knowledge), and 9-16 (Good Knowledge) for both the variables. If a respondent answered "yes" to a question, they received a score of 1, and if they said "no" or "don't know," they received a score of 0. A respondent who receives a maximum score of 9-16 for knowledge of contraceptives methods is considered to have good knowledge on the methods covered in the questionnaire. If a respondent does not have maximum score of 9-16 then the respondent does not have full knowledge on the contraceptive methods mentioned in the survey. The respondent's current use of contraception as of the survey's time period would be reflected in the score for contraceptive use. A score of 1 if they have used a contraceptive before and 0 if they have not used the method before.

Ethical consideration:

The study utilized a secondary dataset from PMA with all identifier information removed. The survey was approved by the Ethics Committee of the ICF Macro at Calverton in the USA and by the National Ethics Committees in Nigeria. All study participants gave informed consent before participation and all information was collected confidentially. The dataset was downloaded from the PMA website and is free to be used by researchers for further analysis.

Results

We applied the research population sample characteristics to the dataset and identified about 1,661 female respondents, who were unmarried and between the age range of 15-49 living in northern Nigeria. It was observed that the respondents seemed to have an equal distribution in their place of residence 50.6% urban and 49.4% rural, while majority were from the north-western zone of northern Nigeria (59.19). The age range of 15-19 was the age range for majority of the respondents (64.42%), the median age for sexually active women in the 12 months prior to the survey was 21 years, and 22 years for non-sexually active unmarried women. Respondents had a secondary level of education as their highest level of education with 65.4%.

Table 1: Table of Frequencies of demographics

Demographics		N(%)
Age range of female respondent		
15-19	1070	(64.4)
20-29	520	(31.3)
30-39	65	(3.9)
40-49	6	(0.4)
Zone		
NC	463	(27.9)
NE	215	(12.9)
NW	983	(59.2)
Place of residence		
urban	841	(50.6)
rural	820	(49.4)
Highest level of school attended		

<i>never</i>	101(6.2)
<i>primary</i>	169(10.4)
<i>secondary</i>	1064(65.4)
<i>higher</i>	294(18.1)
Wealth quintile for National	
<i>Lowest quintile</i>	473(28.5)
<i>Lower quintile</i>	487(29.4)
<i>Middle quintile</i>	346(20.9)
<i>Higher quintile</i>	198(11.9)
<i>Highest quintile</i>	155(9.3)
Religion of Head of Household member	
<i>Christian</i>	597(35.9)
<i>Islam</i>	1008(60.7)
<i>Other</i>	56(3.4)
Usage of methods	
<i>Zero usage of methods</i>	1418(88.3)
<i>Usage of one to three methods</i>	170(10.6)
<i>Usage of four to six methods</i>	2(0.1)

Knowledge on contraceptive methods

Majority of the respondents had a fair knowledge on the contraceptives methods inquired. The majority of those polled knew something about the contraceptive methods in question. This indicates that they are familiar with around 1-8 of the survey methods. Some 38% of respondents were knowledgeable on about 9-16 of the methods mentioned.

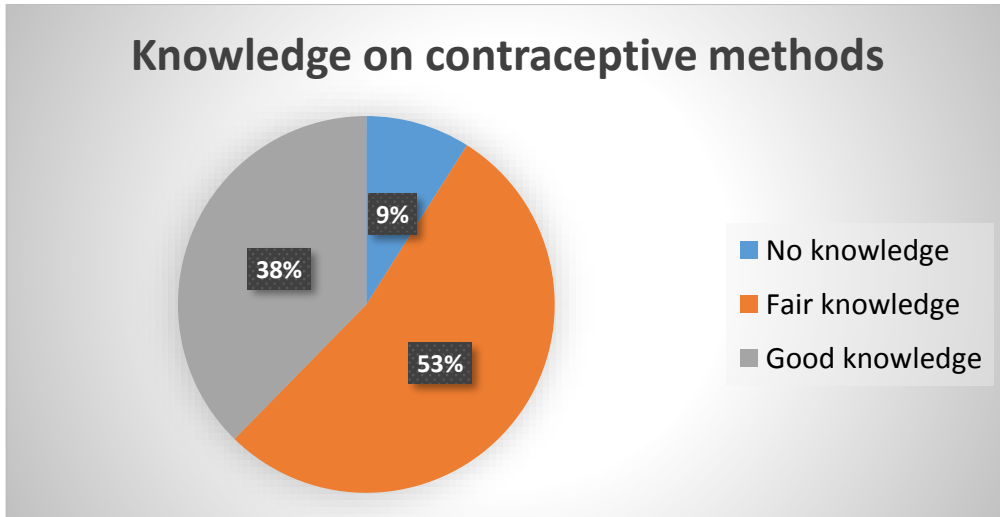


Figure 1: Knowledge of contraceptives

Sexual activity of respondents

Majority of the respondent's did not respond to the sexual activity question. A high percentage of the respondents 89% had reported not being sexual active or not been engaged in sexual activity 12 month prior to the survey.

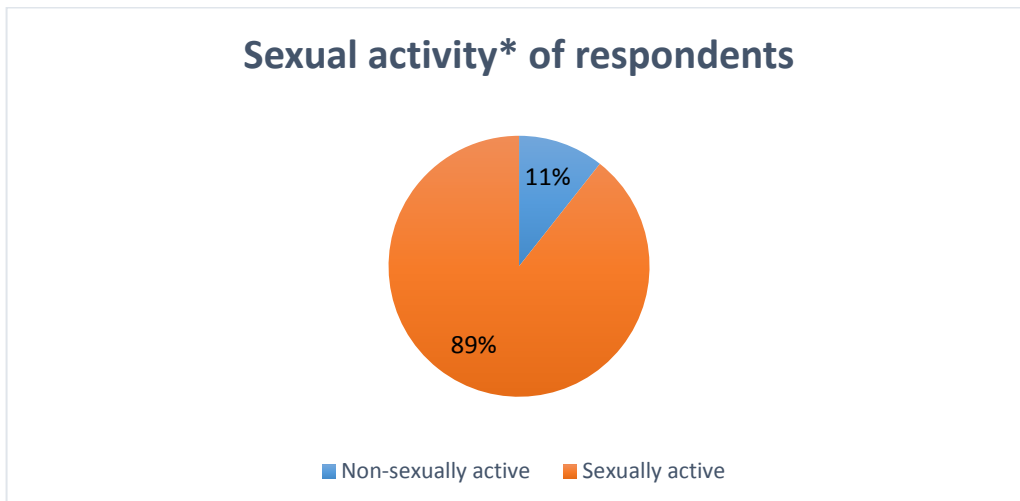


Figure 2: Sexual activity of respondents

Sexual activity amongst respondents.

Regardless of sexual activity in the previous 12 months, respondents were found to have a knowledge of contraception methods score above 50% ($P > 0.05$). There was no significant association observed between the knowledge of

contraceptives and sexual activity. A high proportion of the respondents whether sexually activity or non-sexually active for a year had not used a method of contraception.

Table 2: Table of knowledge and usage of contraceptive methods and sexual activity

	<i>Sexual activity</i>		P-Values
	Non-sexually active	Sexually active	
	N(%)	N(%)	
<i>Range of knowledge of contraceptives</i>			
<i>No knowledge</i>	0(0.00)	3(0.7)	P=0.827
<i>Fair knowledge</i>	21(43.8)	182(44.6)	
<i>Good knowledge</i>	27(56.3)	223(54.7)	
<i>The range of methods used by respondents</i>			
<i>Zero methods</i>	40(81.6)	253(64.2)	P=0.050
<i>One to Three methods</i>	9(18.4)	139(35.3)	
<i>Four to Six methods</i>	0(0.00)	2(0.5)	

Knowledge, usage of contraceptives and educational attainment

Between the respondent's knowledge of contraceptives and if they were currently using a contraceptive method, a statistical association is observed. The respondent's highest level of education was related to how knowledgeable they were about contraceptives. Although majority of the respondents had completed secondary education, 8.5% (88/1031) had no knowledge of contraceptives.

Table 3: Table of knowledge on contraceptive, current or recent user of contraceptive and highest level of education of respondents

	<i>Range of knowledge of contraceptives</i>			P-Value
	No knowledge	Fair knowledge	Good knowledge	
	N(%)	N(%)	N(%)	
<i>Current or recent user of contraceptive</i>				
<i>No</i>	141(100)	809(95.2)	468(79.1)	P= 0.000
<i>Yes</i>	0(0)	41(4.8)	124(21.0)	
<i>Highest level of school attended</i>				

<i>Never</i>	24(17.0)	63(7.4)	13(2.2)	P=0.000
<i>Primary</i>	29(20.6)	103(12.1)	27(4.6)	
<i>Secondary</i>	88(62.4)	609(71.7)	334(56.4)	
<i>Higher</i>	0(0.00)	75(8.8)	218(36.8)	

Age, knowledge and usage of contraceptives

Respondents had good understanding about contraception across all age groups. Contraception was used by only 20.30% (102/494) of respondents in the 20–29 age group, which is comparable to the 30% (18/60) of respondents in the 30–39 age group who reported using at least one contraceptive method. The knowledge of contraceptives, the methods of contraceptive used, and sexual activity of the respondent is statistically significant with the age of the respondent.

Table 4: Table of Knowledge, usage of contraceptive methods, sexual activity and age range of respondents

	Age of female respondent				P-VALUE
	15-19	20-29	30-39	40-49	
	N(%)	N(%)	N(%)	N(%)	
Range of knowledge of contraceptives					
<i>No knowledge</i>	130(12.8)	11(2.2)	0(0.00)	0(0.00)	P=0.000
<i>Fair knowledge</i>	644(63.5)	190(37.9)	15(23.8)	1(20.00)	
<i>Good knowledge</i>	240(23.7)	300(59.9)	48(76.2)	4(80.00)	
The range of methods used by respondents					
<i>Zero methods</i>	979(93.9)	392(78.7)	42(70.00)	5(100.00)	P=0.000
<i>One to Three methods</i>	52(5.0)	101(20.3)	17(28.3)	0(0.00)	
<i>Four to Six methods</i>	0(0.00)	1(0.2)	1(1.7)	0(0.00)	
Sexual activity					
<i>Non-sexually active</i>	11(6.7)	29(12.1)	6(11.8)	3(60.00)	P=0.001
<i>Sexually active</i>	154(93.3)	211(87.9)	45(88.2)	2(40.00)	

Misconception on contraceptives

A substantial percentage of the participants were uncertain about whether they might become pregnant after one sexual encounter without taking birth control. Additionally, a considerable percentage of respondents said that if they had intercourse frequently without using birth control, they would not become pregnant.

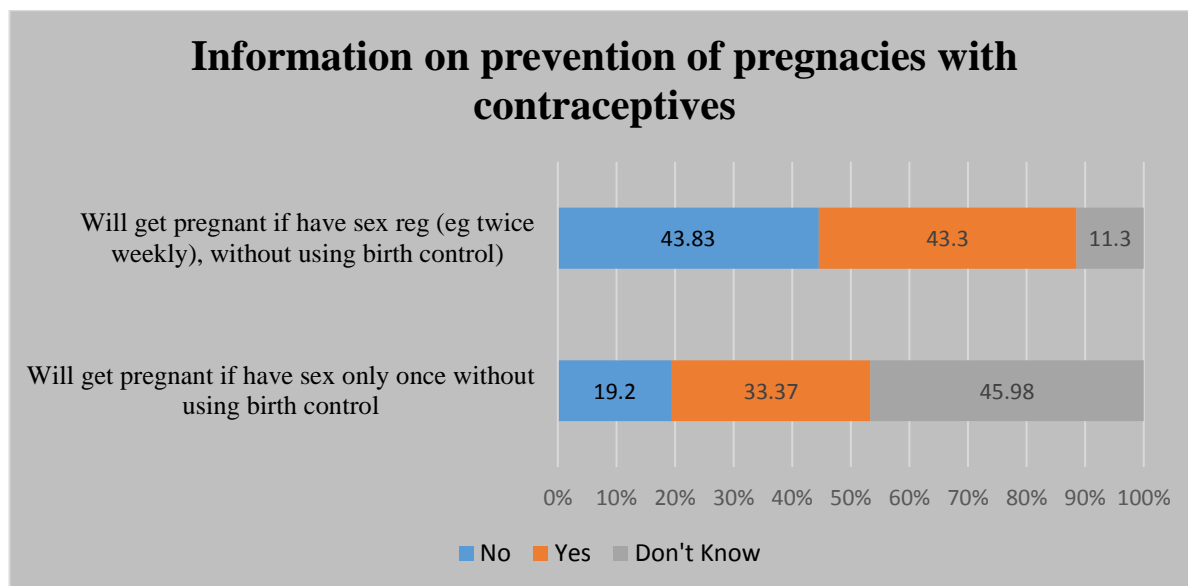


Figure 3: Information on prevention of pregnancies with contraceptives

Information channels on family planning

A high percentage of the respondents > 50 % have not heard about family planning on any of the information channels. Also high percentage of the respondents have heard about family planning on the radio (47.1%), followed by having seen family planning information on a poster or billboard. There was no statistical significance between sexual activity and family planning information channels.

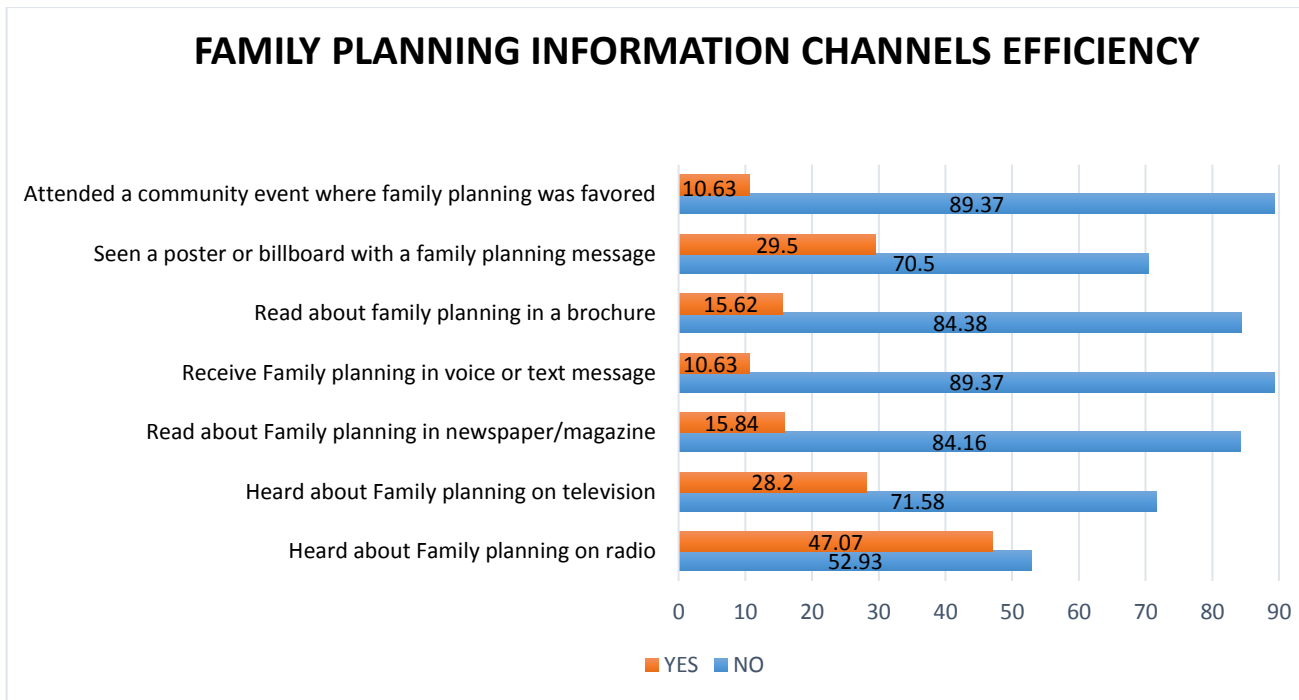


Figure 4: Family planning information channels efficiency

Discussions

This study's main objective was to identify the most efficient family planning information channels as well as the knowledge and use of contraception among single women in northern Nigeria. Generally, across all demographics, respondents had very good knowledge of contraceptive methods. The vast majority of respondents remained silent regarding their sexual activity. A sizable proportion of those who responded were sexually active. Contraceptive use was found to be low among respondents when compared to sexual activity, though data on frequency of sexual activity was not observed.

This study identified that though there was a good level of knowledge of contraceptives, it did not correspond to the usage of contraceptives. Even in regions where women may have low parity, high levels of contraceptive awareness do not always translate into regular contraceptive use (Omo-Aghoja et al., 2009; Avidime et al., 2010). Social stigma, access, age range and financial capacity may contribute to the low rate of contraceptive use, but other factors are also at play. It is obvious that many people do not yet consider using contraceptives to delay, space out, or restrict childbearing to be a necessary

component of safe motherhood. The region's proponents of reproductive health should focus their attention on this task.

The stigma against premarital sex, the misconception that using contraception will harm one's health and cause infertility, infrequent sex, and a lack of sex education from parents and schools are some of the beliefs that some literature attributes to the low use of contraceptives among sexually active women (Agyemang et al., 2019; Sedgh et al., 2016; Chandra-Mouli et al., 2014). However, the usage of contraceptives when observed with the unmarried women who were sexually active seemed to low because majority of the women were not using a contraceptive method as at the period of the survey.

As observed in our study women with a secondary education are more likely to use contraception than women without this correlates with a study by (Alabi et al., 2019) that had corresponding findings. This is expected and may be partially explained by the fact that educated women are better able to compare different contraceptive options and select the one that will work best for them. An educated woman is also simpler to relate to and engage with when discussing procedures and potential side effects of a chosen contraceptive method than is an uneducated woman. Higher levels of education among women have generally been linked to better reproductive health behaviours (Wado, 2018).

Access, age range, marital status, level of knowledge about contraception, and acceptance of using contraceptives are all factors that affect how often people, especially women, use contraceptives. According to our study, male condoms are the most effective method of birth control that respondents currently use, with emergency contraceptive pills coming in as the second most popular choice. Additionally, a high level of awareness of male condoms and emergency contraceptive pills is present, which is consistent with the observed high usage rate. This is crucial because it is possible that the moderate level of contraceptive use among sexually active women is a result of their need for accessibility and sparse sexual activity. Due to the low rate of parental approval for contraceptives in this population, there may also be a low risk of parent discovery (Crawford et al., 2021).

Long-acting reversible contraceptives (LARCS) are strongly promoted globally, in contrast to short-term contraceptive use that have higher usage, due to their superior effectiveness and fewer contraindications. These techniques have a number of advantages, including complete empowerment of women over reproductive choices and durability, but they also have drawbacks, such as significant access restrictions and the fact that they do not provide the same level of protection from sexually transmitted diseases as condoms (Shoupe, 2016). LARCs use was significantly lower in this population, which is consistent with a study that found that while LARCs are preferred by adolescents in Sub-Saharan Africa, they are not commonly used by Nigerian adolescents (Mccurdy et al., 2014; Crawford et al., 2021).

We examined the various channels used in family planning method campaigns to see which was the most effective. Contraceptive use may be influenced by social, cultural, and religious beliefs, and some literature suggests speaking with religious authorities and close friends to increase contraceptive awareness and use (Oyefabi et al., 2019; Barot, 2013). According to our research, radio is the most effective medium for single women to learn about family planning options. It was clear that the other channels were ineffective, necessitating the development of advocacy programs to increase usage. The effectiveness of websites, social media, and blogs was not evaluated. Teenagers now have greater access to information than ever before, thanks to new mobile-friendly social media information platforms.

Sexual health education programmes should be integrated into the curricula of students in northern Nigeria's senior secondary schools and universities to encourage precise and reliable knowledge and allow contraception methods to be more accessible. Campaigns to enhance social acceptance, particularly among parents and other adult guardians, should be supported. The most commonly seen contraception techniques were male condoms and emergency contraceptive pills. Methods that give women full control of their contraception should be promoted through campaigns. To boost access and reduce stigma, effective community contraceptive distribution systems should be developed and implemented in northern Nigeria.

Conclusion

According to this study, unmarried women in northern Nigeria have a fair understanding of contraception, with the majority aware of at least one method, yet this knowledge doesn't consistently lead to contraceptive use among sexually active individuals. It is evident that various factors, including social stigma, limited access, age, and financial constraints, contribute to the lower-than-expected rates of contraceptive adoption. These findings underscore the urgent need for targeted programs aimed at increasing the uptake of contraceptive methods among sexually active women, with a focus on encouraging delayed childbearing to mitigate the risks associated with early pregnancy and unsafe abortions. In northern Nigeria, it is crucial to implement programs that promote contraceptive use among sexually active women and encourage delayed childbearing to reduce the risks associated with unsafe abortions, early pregnancies, and disruptions to life goals.

Limitations:

The data utilized relied on self-reported information, introducing the potential for social desirability bias, which may have prompted participants to offer socially acceptable rather than entirely accurate responses. Selection bias is another concern, as the survey's focus on girls residing in households at the time of the interview, with a non-response rate influenced by school attendance, could limit the generalizability of the findings. Unmeasured confounding variables may also influence the results, and the study's limited geographic scope raises questions about its applicability to diverse sociocultural contexts. Lastly, the potential for chance effects should be considered due to sample size and response variability.

List of abbreviations:

PMA:

Performance Monitoring for Action

LGA:

Local government areas

MC:

Modern contraception

SSA:

Sub-Saharan Africa

SDG:

Sustainable Development Goals

CPR:

Modern Contraceptive Prevalence Rate

HQFQ:

Household questionnaire and Female questionnaire

LARC:

Long-acting reversible contraceptives

IUCD:

Intrauterine contraceptive device

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Authors contribution:

Daniel T. Omole, Nchelem K. Nchehgo and Nebechukwu H. Ugwu were involved in conception and study design. Daniel T. Omole and Nchelem K. Nchehgo were involved in drafting of the manuscript. Nebechukwu H. Ugwu and Nchelem K. Nchehgo were involved in critical revision of the manuscript for important intellectual content. All the authors were involved in final approval of the manuscript and decision to submit the manuscript for publication. All authors read and approved the final manuscript.

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Data availability:

The datasets used during the current study are available from the corresponding author on reasonable request.

Informed consent statement:

All study participants gave informed consent before participation and all information was collected confidentially. The dataset was downloaded from the PMA website and is free to be used by researchers for further analysis. We adhere to ethical guidelines and standards in the analysis and reporting of this data. We respect the principles of confidentiality and anonymity to protect the privacy of all participants in the original PMA 2018 data collection.

Conflict of interest:

None to disclose

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