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RESEARCH ARTICLE OPEN ACCESS

Contraceptive use and its associated factors in Nigeria: Evidence from during and after COVID-19

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Abstract
Objective: The COVID-19 lockdown widened the unmet contraceptive need with far-reaching implications for contraception methods and usage beyond the lockdown period. We set out to examine contraceptive use during and after the COVID-19 lockdown in Nigeria and its associated factors.
Methodology: This is an online survey of 1051 adult Nigerians aged 20–59 years between June 2023 and October 2023. The data obtained were analysed using descriptive analyses, chi-square, multiple logistic regression, and factor analysis. Odd ratios and their 95% confidence intervals were estimated.
Results: The frequency of contraceptive use was significantly higher during lockdown than after lockdown ($p<.05$), and the proportion of adults who used injectable LARC and pills was consistently higher during the COVID-19 lockdown than after lockdown. Gender and accessibility showed a significant association with contraceptive use during the lockdown ($p<.05$), while after lockdown, gender, wealth index, parity, and religion were significantly associated ($p<.05$).
Conclusion: The impact of global health crises such as COVID-19 could be felt in the provision of sexual and reproductive health care services, including contraception. Given that accessibility is strongly associated with contraceptive usage during such emergencies, there is a need for the government and related non-government organisations to assist in enhancing the availability of contraceptives at a reduced cost, especially during such emergencies. Given some of the associated factors, there is a need for more enlightenment on contraceptive use, and collaboration with religious leaders to help address the religious gap in contraceptive use should also be encouraged.

Keywords: Nigeria, Contraceptive use, COVID-19, Lockdown, Logistic regression, Odds

Plain English Summary

The COVID-19 lockdown made it harder for people in Nigeria to access contraception. This study surveyed 1,051 adults to compare contraceptive use during and after the lockdown. Results showed higher usage during the lockdown, especially for injectable contraceptives and pills. Access and gender influenced use during the lockdown, while after the lockdown, income, number of children, and religion also played a role. To improve contraceptive access in future crises, the government and NGOs should ensure affordability and availability, while education and collaboration with religious leaders can help address barriers.

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Introduction

Nigeria is the most populous country in Africa as well as the most populous black nation in the world (1). As of 2022, the population of Nigeria stood at over 218 million, and it is projected to increase to 377 million by 2050. The Nigerian population is supposed to catalyse socio-economic development, but if the population is not well controlled, it can lead to an increase in demand for social amenities, water, energy, and other available facilities. This has become a major concern in Nigeria (2). The issue of rising population in Nigeria has been linked with rising cases of social vices, a high rate of out-of-school children, an increased poverty rate, maternal mortality, and even terrorism.

This, therefore, emphasises the need to keep the population at reasonable levels in a way that will stimulate socio-economic development and the normal functioning of human beings. One of the ways to control population growth is through family planning. Family planning remains a great public health intervention and has gained acceptance globally, especially in the developed nations of the world, but the case is different in Africa (3). The use of contraceptives is a key factor in preventing unwanted pregnancies (4) and reducing maternal and child mortality (5).

Despite the immense benefits of the use of contraceptives, the advent of the COVID-19 pandemic has introduced some challenges to the family community. Virtually all aspects of human behaviour have been adversely affected by the COVID-19 pandemic. The impact of the COVID-19 pandemic has been felt in all spheres of human existence: health, politics, economy, education, and the entire family unit (6, 7). Nigeria has its share of the COVID-19 pandemic. On February 27, 2020, the first case of COVID-19 was confirmed in Nigeria by the Infectious Disease Centre in Yaba, Lagos, Nigeria, after which the virus spread to almost all the states in Nigeria.

As a way of preventing further spread of the virus, the government introduced restrictions on movement (1, 8). All non-essential services in the country were closed by the Federal Government of Nigeria with effect from March 30th, 2020. Restriction of movement was imposed in Lagos State, Ogun State, and the Federal Capital Territory (FCT). After this, interstate movement was banned in some states in Nigeria. The introduction of the lockdown to curtail the further spread of the COVID-19 pandemic led to an upsurge in the burden of the existing unsatisfied need for family planning, and thus, individual families faced challenges in accessing modern contraceptives (9, 10, 11, 12, 13). This study examines contraceptive use in Nigeria during and after the COVID-19 lockdown and its associated factors.

Materials and Methods

Study Area

Nigeria is a country in West Africa, located between latitudes 4°N and 14°N and longitudes 2°E and 15°E. It comprises 36 states and the Federal Capital Territory (FCT), Abuja, with a total of 774 Local Government Areas (LGAs). As the most populous country in Africa, Nigeria has a predominantly young population, making reproductive health a critical issue influenced by socio-economic factors, cultural beliefs, and healthcare accessibility.

Study design, setting and selection of participants.

The cross-sectional survey design was adopted. The sample size of this study was estimated using the Kish formula:

$$n_0 = \frac{Deff \times z_\alpha^2 \times p(1-p)}{(1-r)\times e^2}$$

Where, n_0 is the sample size to be determined, Deff is the design effect, Z = value from the standard normal distribution at α level of significance, r = attrition rate and p is the prevalence of contraceptive use in the study area. In this study, Deff = 3, Z_α = 1.96, r = 15%, p = 26.3%[2].

$$n_0 = \frac{3\times 1.96^2 \times 0.263(1-0.263)}{(1-0.15)\times 0.05^2} = 1051.229$$

Hence, a sample size of 1051 was obtained. Out of the 1051 online questionnaires expected, only 954 copies of the questionnaire were retrieved and found usable. This represents 90.7% of the expected online questionnaire.

Data sources and measurement

A self-administered questionnaire titled "Contraceptive Use During and After COVID-19 Lockdown" was used to obtain data. The questionnaire was divided into four sections (A, B, C, and D). Section A consisted of items on the demographics of the respondents; Section B elicited information on the asset ownership of the respondents, which was used as a measure of the wealth index of the respondents. Section C focuses on contraceptive use during the COVID-19 lockdown, while Section D assesses the use of

contraceptive use after the COVID-19 lockdown. There are a total of 34 items on the questionnaire. The questionnaire was presented to three validators for validity assessment. These independent experts examined the content of the questionnaire items, their clarity, the appropriateness of the language, and their suitability in line with the purpose of the study.

Data analysis

The responses of the respondents were retrieved, saved in Microsoft Excel, and imported into the Statistical Package for Social Sciences version 20.0. Frequency and percentages were used to analyse all categorical variables, while the mean and standard deviation were computed for quantitative variables. The association between categorical variables was examined using the Chi-square test, factor analysis, and binary multiple logistic regression to identify factors that are significantly associated with contraceptive use during and after lockdown, and hence, odds ratios and 95% confidence intervals were estimated.

Results

Demographics characteristics

The result of demographics of the respondents, as presented in Table 1, showed that 50.9% of the respondents were male and 49.1% were female, with age ranges between 20 and 59 years and a mean age of 34.48 years. The results also revealed that 12.5% of the respondents were between 20 and 24 years old, 14.6% were between 25 and 29 years old, 8.7% were between 30-34 years old, 28.1% were between 35 and 39 years old, 15.4% were between 40 and 44 years old, 7.7% were between 45 and 49 years old, and 3.1% of the respondents were above 49 years old. All the respondents were found to have tertiary education, while the distribution of respondents by religion indicates that 85.5% were Christians and 14.5% were Muslims. In terms of ethnicity, 89.4% were Yoruba, 7.3% were Igbo, and 3.2% of the respondents did not indicate their ethnicity. Results showed that 28.6% were single, 70.2% were married, and 1.2% of the respondents were either divorced or separated. The result for parity reveals that 22.0% of the respondents had no child, 37.1% had 1-2 children, 14.6% had 3-4 children, 11.0% had more than 4 children, and 15.3% of the respondents did not indicate their parity. The wealth index of the respondents based on asset ownership revealed that 20.2% were poorest, 19.9% were poor, 20.3% were fairly poor, 18.4% were wealthier, and 21.1% of the respondents were wealthiest.

Table 1: Demographic characteristics

Demographic characteristics	No. of Respondents	Percentage (%)
Sex		
Male	486	50.9
Female	468	49.1
Age (years)		
20-24	119	12.5
25-29	139	14.6
30-34	178	18.7
35-39	268	28.1
40-44	147	15.4
45-49	73	7.7
Above 49	30	3.1
Education		
Tertiary (above secondary)	954	100.0
Religion		
Christianity	819	85.5
Islam	138	14.5
Marital status		
Single	273	28.6
Married	670	70.2
Divorced or separated	11	1.2
Parity		
None	210	22.0
1-2	354	37.1
3-4	139	14.6

More than 4	105	11.0
No response	146	15.3
Ethnicity		
Yoruba	853	89.4
Igbo	70	7.3
No response	31	3.2
Wealth index classified into quintile		
Poorest	193	20.2
Poor	190	19.9
Fairly poor	194	20.3
Wealthier	176	18.4
Wealthiest	201	21.1

Use of contraceptives during and after the COVID-19 lockdown

The results in Table 2 present the use of contraceptives during and after the COVID-19 lockdown. The overall use of contraceptives among the respondents was 63.6%. The results showed that use of contraceptives was almost the same during and after the COVID-19 lockdown (52.5% versus 55.5%, p > 0.05). This implies that there is no significant difference in the proportion of respondents who use contraceptives during and after the lockdown. For the frequency of use, it was significantly different between the two periods, with more than half of the respondents (57.9%) using them very often, while after the COVID-19 lockdown, only 37.8% of the respondents used them very often (p =0.000, p<.01). Condoms were the most commonly used contraceptives during (66.7%) and after lockdown (74.3%), as more than half of the respondents indicated that they use condoms. The type of contraceptive used during and after the COVID-19 lockdown was not significantly different (p = 0.207), though the use of injectables was higher during lockdown than after lockdown (15.3% versus 11.8%). The percentage use of pills (4.5% vs. 4.2%) and LARC (13.5% vs. 9.7%) was slightly higher during the COVID-19 lockdown than after the lockdown.

Table 2: Use of contraceptives during and after the COVID-19 lockdown

	During COVID-19 lockdown		After COVID-19 lockdown		χ^2-calc.	P-value
	n	%	n	%		
Use of a contraceptive	501	52.5	529	55.5	0.761	0.383
Frequency of use						
Very often	246	57.9	126	37.8		
Often	114	26.8	74	22.2		
Rarely	65	15.3	36	10.8	143.50	0.000**
Sometimes	-	-	97	29.1		
Contraceptive method used						
Condom	327	66.7	176	74.3		
LARC	66	13.5	23	9.7	4.559	0.207
Injectible	75	15.3	28	11.8		
Pill	22	4.5	10	4.2		

Missing values are excluded from the result of analyses, *significant at 5% (p<.05), **significant at 1% (p<.01). LARC- Long-Acting Reversible Contraception.

Factors associated with the use of contraceptives during and after the COVID-19 lockdown

The results of factors associated with contraceptive use in the study are presented in Table 3. The result revealed during the COVID-19 lockdown was that gender (p =.017, p<.05) was found to be significantly associated with contraceptive use, with higher odds among males than females (OR =14.26, C.I = 1.596–127.89, p<.05). There were also increased odds of contraceptive use among respondents with parity above 4 compared with those without parity (OR = 6.02, C.I = 1.5612–25.980, p =.021, p<.05). But after the COVID-19 lockdown, gender (p =.000, p<.01), religion (p

=.000, p<.01), wealth index (p =.000, p<.01), and parity were found to be significantly associated with the use of contraceptives. The odds of contraceptive use were more than 2 times higher among males than females (OR = 2.15, C.I = 1.590–2.915, p<.01), significantly lower among respondents above 25 years than those below 25 years (OR = 0.54, C.I = 0.322–0.899, p =.018, p<.05). The results also revealed that the odds of contraceptive use were about 4 times higher among Christians than Muslims (OR = 3.98, C.I = 2.627–6.030, p<.01), and more than 2 times higher among respondents with parity 3–4 (OR = 2.30, C.I. =1.4444–3.674, p =.000, p<.01) compared with those with no parity, while for those with parity above 4, the odds were also more than 2 times higher than those with zero parity (OR =2.28, C.I = 1.384–3.768, p =.001, p<.01). The results also indicated that generally, contraceptive use was significantly associated with gender, age, marital status, religion, and parity (p<.05), with more than twice the odds among males than females (OR = 2.15, C.I = 1.590–2.915, p<.01), while those above 25 years reported significantly reduced odds of contraceptive use compared with those below 25 years.

Table 3: Binary logistic regression showing factors associated with the use of contraceptives during and after the COVID-19 lockdown.

	During COVID-19			After COVID-19			General use of contraceptives		
Factors	Odd ratio	95% C. I	P-value	Odd ratio	95% C. I	p-value	Odd ratio	95% C. I	P-value
Gender									
Female	1.00						1.00		
Male	14.26	1.596-127.389	0.017*	2.08	1.565-2.772	0.000**	2.15	1.590-2.915	0.000**
Age (years)									
Below 25	1.00			1.00			1.00	0.180-0.563	0.000**
25 and above	0.24	0.014-3.992	0.317	0.54	0.322-0.899	0.018*	0.319		
Marital status									
Never married	1.00			1.00			1.00	0.331-0.775	0.002**
Married	0.30	0.023-3.919	0.359	1.26	0.836-1.891	0.272	0.507		
Religion									
Islam	1.00			1.00			1.00	2.627-6.030	0.000**
Christianity	1.82	0.261-12.680	0.546	2.86	1.901-4.288	0.000**	3.98		
Wealth index									
Poor	1.00			1.00			1.00	0.903-1.663	0.191
Wealthy	1.09	0.161-7.356	0.931	0.78	0.580-1.041	0.091	1.23		
Parity			0.745			0.000**			
None	1.00	-	-	1.00			1.00	2.434-5.256	0.000**
1-2	4.11	0.320-52.841	0.278	1.12	0.783-1.587	0.5460	3.58	2.357-6.324	0.000**
3-4	2.99	0.208-42.983	0.421	2.30	1.444-3.674	0.000**	3.86	2.668-8.562	0.000**
Above 4	6.02	1.5612-25.980	0.021*	2.28	1.384-3.768	0.001**	4.78		

Accessibility of contraceptives									
Not easily Accessible	1.00			1.00			1.00		
Easily Accessible	11.422	1.202-108.535	0.034*	2.42	0.902-4.535	0.144	1.57	0.308-2.591	0.672

**significant at 1 %(p<.01), *significant at 5% (p<.05).

Discussion

This cross-sectional study reveals the patterns of contraceptive use during and after the COVID-19 lockdown in Nigeria and also unveils its associated factors. In this study, we observed a significantly higher frequency of contraceptive use during the COVID-19 lockdown than after the lockdown period. Specifically, we observed that the proportion of adults who used injectable LARC and pills in the study was consistently higher during the COVID-19 lockdown than after the lockdown. In addition, we also observed that contraceptive use was significantly associated with gender and accessibility during the lockdown, whereas gender, wealth index, parity, and religion were all significantly associated with contraceptive use after the lockdown. This suggests that the COVID-19 pandemic has a significant impact on family planning and possibly population growth dynamics. Remarkably, this study showed that there was a higher frequency of contraceptive usage during the COVID-19 lockdown than after the lockdown, as a higher proportion of adults used contraceptives more often during the COVID-19 lockdown than after the lockdown. This finding may be because couples spent more time together during the lockdown as a result of the restrictions on movement. Bonding and social contacts are potential triggers for sexual contact. The possible increased coital frequency during the COVID-19 lockdown probably promotes more frequent use of contraceptive devices. In addition, the availability of self-care contraceptive methods, including Sayana Press, and the provision of large quantities of contraceptive commodities at each visit to reduce the frequency of hospital visits have been postulated by (14) as possible reasons for more frequent use of contraception during the COVID-19 lockdown.

This study also revealed a significant effect of contraceptive accessibility on the use of contraceptive methods during the lockdown. This finding is corroborated by the results of previous cross-sectional studies (9, 10), which also identified accessibility as a major determinant of contraceptive use. Access to contraception is an integral component of sexual and reproductive health care packages for individuals and families. The movement restriction brought about by the COVID-19 lockdown could serve as a barrier to accessing contraception, thereby making accessibility a major determinant of contraceptive usage during the lockdown periods.

Contraceptive use in the study was associated with age, gender, marital status, religion, and parity. This finding is consistent with the results of previous studies (9, 12, 13). Religion, for instance, has been previously identified as a major determinant of contraceptive use. Some religious sects frown on modern contraceptive methods. Others faulted and forbade contraception in its entirety and prohibited members of their religious sects from using contraception, especially modern methods. However, it is quite interesting to note that males were found to be more likely to use contraceptives than females in this study.

The findings also revealed that there was a more consistent increase in the use of contraceptive methods, particularly LARC, injectables, and pills, during the COVID-19 lockdown than after the lockdown. A similar cross-sectional study carried out by (15) in Senegal reported a similar shift to longer-acting reversible contraception (IUDs and implants) during the COVID-19 lockdown. This may be due to the fear of having unwanted pregnancies, as posited by the Guttmacher Institute, which predicts that over 15 million people will experience unwanted pregnancies as a result of COVID-19. It might also reflect the desire of families to adopt a more effective contraceptive method that requires fewer frequent hospital visits for resupply of contraceptive devices during the period of movement restriction.

Conclusion

The impact of global health crises such as COVID-19 could be felt in the provision of sexual and reproductive health care services, including contraception. Given that accessibility is strongly associated with contraceptive usage during such emergencies, there is a need for the government and related non-government organisations to

assist in enhancing the availability of contraceptives at a reduced cost, especially during such emergencies.

Declaration

Ethical approval and consent to participate

This study complied with ethical guidelines for online surveys. Participants had the right to proceed or withdraw at any time and could skip any questions. Confidentiality was ensured by excluding personal identifiers, which were clearly stated on the first page of the questionnaire. Formal ethical approval was obtained from the Directorate of Research and Strategic Partnerships, Bowen University, Iwo, Nigeria.

Consent for publication

All authors consented to the publication of this work under the Creative Commons Attribution-Non-Commercial 4.0 license. Additionally, upon publication, we transfer full copyright ownership, including all associated rights, exclusively to the journal.

Availability of data and materials

All essential data supporting the findings of this study are included in the article. Additional data can be provided upon request from the corresponding author.

Competing interests

The authors declare no conflict of interest.

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Authors' contributions

STK was involved in drafting the manuscript, designing the questionnaire, data analysis and interpretation of results, as well as the discussion of the findings. OAC was involved in developing the questionnaire in the SurveyHeart environment and in drafting the conclusion. AOT was involved in the editing of the manuscript and the health implications of this study, as AOT is a consultant family Physician. All authors approved of the final version of this manuscript.

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